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There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy

Hamlet, I.5

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A Case Study of Intercultural Philosophy of Medicine: Biomedicine, Classical Chinese *Medicine* and the Colonial Mind-set

Contents

Part I

Introduction

Chapter One

The Colonial Mind-set: How It Conceives *Zhongyi*

ARIIMO	The Axiom of Respecting the Identity and Integrity of the Medical Other
Bm	Biomedicine
CM	Clinical Medicine (in Bm)
CC*M*	CC*M-Zhongyi*: Classical Chinese *Medicine*
CCD*P*	Classical Chinese Daoist *Philosophy*
CC*M-Zhongyi*	Classical Chinese Medicine
C*P*T	Chinese *Philosophy* Tradition
I*M*	Integrated *Medicine*
MEP	Medieval European Philosophy
MWM	Modern Western Medicine
MWP	Modern Western Philosophy
MWS	Modern Western Science
WWI	World War One
WWII	World War Two
RCT	Randomised Controlled Trial
TC*M*	Traditional Chinese *Medicine*
TC*M-Zhongyi*	Traditional Chinese *Medicine*
WPT	Western Philosophy Tradition

Introduction

This book focuses on the following themes:

1. It attempts to assess the nature of the relationship between what, today, is commonly called Biomedicine (Bm) /Modern Western Medicine (MWM), on the one hand, and what may be called Chinese *Medicine* 中医/*Zhongyi*, commonly referred to in the West as Traditional Chinese *Medicine* (TC*M*), on the other. However, as it stands, this is unsatisfactory; in reality today, there are two versions of Chinese *Medicine* – one is TC*M* and the other is CC*M* (Classical Chinese *Medicine*). In fact, one should straightaway for the sake of clarity distinguish between **TC*M-Zhongyi*** and **CC*M-Zhongyi***.[1]
2. It argues that there is an appropriate as well as fruitful way to grasp that relationship between Biomedicine (Bm) and CC*M-Zhongyi* and an inappropriate as well as sterile way to do so.
3. As already observed in 1 above, the latter may be characterised in terms of **The Colonial Mind-set**, with MWM/Biomedicine (Bm)[2] cast in the role of **The Coloniser** and CC*M-Zhongyi* the role of **The Colonised**.
4. It also attempts to show that The Colonial Mind-set in the case of MWM/Bm has two aspects: endogenous[3] and exogenous, so to speak, applied to the two main domains of the medicine, namely, Clinical Medicine (CM) on the one hand and Epidemiology on the other. Endogenously applied, the role of The Coloniser is assigned to CM and that of The Colonised to Epidemiology. Exogenously applied, the role of The Coloniser is assigned to MWM/Bm and that of The Colonised to CC*M-Zhongyi*. In either context of its application, The Coloniser is celebrated as superior/the Gold Standard, The Colonised is denigrated as inferior/sub-standard/flawed.
5. The Colonial Mind-set, however, is/was not only invoked by The Coloniser, especially in the exogenous context but also by The Colonised. As a result, The Colonised Chinese Mind,[4] too, perceives their own indigenous *medicine* to be substandard/flawed.

[1] Chapter Five of this book will demonstrate that TC*M-Zhongyi* is the product of The Colonised Mind which may be said to be the chalk in contrast to CC*M-Zhongyi* the cheese.

[2] The term "biomedicine" first appeared in 1922 or thereabouts but did not enter common usage till after WWII. Depending on the context and historical period, this author uses either this term or "Modern Western Medicine" (MWM).

[3] This usage is found only in American English, according to Collins Dictionary; as it is a handy word to use, this author is happy to borrow it, to refer to "originating from within", "developing internally".

[4] This phrase embodying an abstraction is used here only for stylistic considerations – one should perhaps use a clumsier circumlocution to refer to the fact that there are certain Chinese people (especially amongst some of the elites) who have seen fit to adopt such a denigrating attitude to CC*M-Zhongyi*.

6. The Colonial Mind-set necessarily involves upholding **Essentialism of Method/Methodological Exceptionalism**: it upholds the standard of scientificity of The Coloniser as **The Paradigm of Scientificity**, while denigrating that of The Colonised as pseudo-science or even unintelligible "mumbo-jumbo". In other words, it mistakenly reads difference as inferiority. This leads to a spectacular absurdity, the absurdity involved in judging a cat to be a sub-standard dog when a cat is simply not a dog.
7. The appropriate and fruitful way to grasp the relationship between MWM/Bm and CC*M-Zhongyi* is to rid oneself for good of The Colonial Mind-set. By so doing, one would be able to embrace the **Axiom of Respecting the Identity and Integrity of the Medical Other** (**ARIIMO**), thereby giving CC*M-Zhongyi* its due place in the global history of medicine.[5]

The Colonial Mind-set and Essentialism of Method

Let us labour the point that MWM/Bm and CC*M-Zhongyi* are two very different systems of medicine/*medicine*; they are rooted in very different theoretical/philosophical frameworks, the former in the Modern Western Philosophy Tradition (MWPT or more generally as the Western Philosophy Tradition, **WPT** for short) and the latter in Classical Chinese *Daoist philosophy*[6] (CCD*P* or more generally as the Chinese *Philosophy* Tradition, **C*P*T**, for short). Each philosophy generates and underpins its own science and its own medicine. In other words, Bm/MWM upholds, implicitly or explicitly, its own paradigm of scientificity; so, does CC*M-Zhongyi*. It is also undoubtedly true that Bm, global-wise, is the dominant medicine, and CC*M-Zhongyi* is not. This, in turn, leads to Bm and its paradigm of scientificity being upheld as "the Paradigm of Scientificity", and any rival to or deviation from it is judged by the same token to be inferior/flawed or pseudo-science, even "mumbo-jumbo". Such an approach constitutes Essentialism of Method, the meaning of which is self-explanatory, namely, that in any domain there is one and only one way/method of conducting the activity which is correct. As already observed, it may also be called Methodological Exceptionalism.

Essentialism of Method may be seen as an embodiment of The Colonial Mind-set, with its Janus-faced roles of The Coloniser and The Colonised – The Coloniser is Bm, The Colonised, CC*M-Zhongyi*. The book will also attempt to show that Essentialism of Method is philosophically questionable or flawed in numerous ways.

First, it may be said to be questionable according to the philosophy of the later Wittgenstein, that of the *Philosophical Investigations*, posthumously published in 1953, focussing on the notions of games to illustrate the character of language-games as a form of life as well as family resemblance. We use language when we make up stories, when we play act, when we report a tsunami, when we make a joke, when we thank and compliment others, when we theorise and hypothesise in science, when we declare a judgment in a court of law, and so forth. Similarly, we play numerous games: games played by children, by adults, played indoors, played outdoors, games which are heavily structured with referees and global headquarters or those with one or two simple or no rules, games played by more than one or by one player. We have no difficulty recognising and identifying them all as games, but we would be hard put to find one single common feature to them all (save bestowing the label "game" on them). We can no more give a final essential definition of "game" than we can find "what is common to all those activities and what makes them into language or parts of language (*PI* 65)."

In a family with numerous siblings, some are male, some female, some are taller, others shorter, some have larger body mass index (BMI), others smaller, some have blond hair and blue eyes, others auburn hair and brown eyes and so forth. There probably is no one single trait you can pick out as common to them all, yet we have no difficulty identifying them as siblings.

Sibling 1:	male (m)	blond hair & blue eyes (a)	tall (b)	low BMI (c)
Sibling 2:	female (f)	blond hair & blue eyes (a)	height av. (e)	higher BMI(g)
Sibling 3:	female (f)	blond hair & blue eyes (a)	tall (b)	low BMI (c)
Sibling 4:	male （m)	auburn hair & brown eyes (d)	height av (e)	low BMI (c)

Siblings 1 & 2 have in common a, but differ in respect of m/f, b/e and c/g
Siblings 1 & 3 have in common a, b and c but differ in respect of m/f
Siblings 1 & 4 have in common m and c, but differ in respect of a/d and b/e
Siblings 2 & 3 have in common f but differ in respect of d/a, e/b and g/c
Siblings 2 & 4 have in common d, e but differ in respect of f/m and g/c
Siblings 3 & 4 have in common c, but differ in respect of f/m. a/d and b/e

[5] The same approach could be used in the case of medicines other than CC*M-Zhongyi*.

[6] One needs to distinguish between Daoist *philosophy* 道家 *daojia* from Daoist religion 道教 *daojiao*. For detailed discussion: see Lee 2021 (Open Access).

Siblings may not have a single thing which one can pick out in common to them all constituting their identity as siblings; instead, they share "a complicated network of similarities overlapping and criss-crossing (*PI* 66)".

Such insights help one to see that Essentialism of Method is philosophically questionable in the context of The Colonial Mind-set in respect of different systems of medicine. To modify Wittgenstein's analogies of games and family resemblance somewhat to suit the nature of this particular "game", one could say that MWM/Bm and CC*M-Zhongyi* share a complicated network of general similarities overlapping and criss-crossing but also an equally complicated network of specific criss-crossing differences.

And now to exploring whether Essentialism of Method also constitutes a **category mistake**. Gilbert Ryle 1949 invoked the notion of category mistake in order to criticise Descartes's account of the Soul/Mind-Body relationship in terms of dualism – Descartes taught that the person consists of two substances, the Body which is physical, occupying a portion of space and time and Soul which is not physical but exists, accounting for the fact that we, humans differ from other animals including that we possess a unique kind of consciousness. Soul was replaced by mind in Ryle's account which claimed that Descartes was wrong as there was no substance called Mind, that Mind did not exist independent of Body/brain. There was just the body with a brain and it was the brain which was responsible for our being able to think and to feel. Ryle called Descartes' category mistake "the dogma of the Ghost in the Machine". This "maintains that there exist both bodies and minds; that there occur physical processes and mental processes; that there are mechanical causes of corporeal movements and mental causes of corporeal movements (1949, 11)." Whether Ryle had demolished Descartes remains to be seen,[7] but for the moment, let us focus on the notion of category mistake itself. For the purpose of this study, a category mistake is said to occur when in a given context, an item in a discourse which ought to belong to one category is erroneously judged/characterised under another. Apart from the Cartesian Mind-Body issue, Ryle cited other examples of category mistake.[8] He did point out a well-known joke arising from one;[9] however, as his book was published in 1949, naturally he could not have cited the very well-known humorous example since published from *The Complete Molesworth*, with the caption "A few parrallelograms (sic) basking on Mount Olympus: Pythagoras stalking them".

Unlike Pythagoras himself who could sun-bathe on Mount Olympus should he have so wished, parallelograms are Euclidean geometrical figures, and it is obvious that it just makes no sense to talk of such entities sun-bathing. Nor does it make sense to talk of Pythagoras stalking such geometrical configurations, like a dirty old man prowling around gorgeous young ladies in bikinis as they lie on their towels on a beach on some Greek island at the height of the tourist season in the summer. However, people who think this to be a genuine category mistake must be pretty demented. Anyone who knows the provenance of the sentence quoted would know it comes from a humorous volume by Geoffrey Williams and Ronald Searle 1958, 47 where Searle. the great cartoonist, had drawn the sketch as illustration. The point on the part of the authors is to raise a laugh. Of course, the laugh makes sense only because it is predicated upon the reader's intuitive grasp of a category mistake.

Take this example which was offered in extreme seriousness, nothing to do with humour, joke or satire; yet strangely enough, philosophers including Ryle have failed to see that the book amounts to having committed a category mistake. Julian Offray de la Mettrie (1709-1751), a hundred years after the death of Descartes, published in 1748 in Holland his famous or infamous work entitled *L'homme machine* (in English as *Man A Machine*, two years later).[10] Upon its appearance, the book was publicly burned and de la Mettrie was forced to flee to Berlin where he stayed until his death in 1751, under the protection of Frederick the Great. He wrote:

> The human body is a machine which winds its own springs. It is the living image of perpetual movement. … Let us now go into some detail concerning these springs of the human machine. All the vital, animal, natural, and automatic motions are carried on by their action. Is it not in a purely mechanical way that the body shrinks back when it is struck with terror at the sight of an unforeseen precipice, that the eyelids are lowered at the menace of a blow, as some have remarked, and that the pupil contracts in broad daylight to save the retina, and dilates to see objects in darkness …?
> ... The human body is a watch, a large watch constructed with such skill and ingenuity, that if the wheel which marks the second happens to stop, the minute wheel turns and keeps on going its round, and in the same way the quarter-hour wheel, and all the others go on running when the first wheels have stopped because rusty or for any reason out of order.
> … To be a machine, to feel, to think, to know how to distinguish good from bad, as well as blue from yellow, in a word, to be born with an intelligence and a sure moral instinct, and to be but an animal, are therefore characters which are no more contradictory, than to be an ape or a parrot and to be able to give oneself pleasure.

[7] Chapter Eight of this book will explore this problem.
[8] These are: (a) The visitor to Oxford University, who after having been shown all the colleges, the libraries, the laboratories, the gardens and parks, the river, its boathouse and its boats, at the end of the day complained that he had not been shown the University. (b) In a military parade, the observer had watched the battalions, the batteries, the squadrons march past, and yet claimed that he had not seen the division, (c) In a cricket match, the visitor had seen the batsmen, the bowlers, the fielders at play, and yet he said he had not observed team spirit. (d) The student of British politics had learnt all about the Cabinet, Parliament, the various Ministries, the Judiciary, the Monarchy, the Church of England and yet appeared to be foxed by the nature of the British Constitution. This author leaves it to the reader to work out how compelling these examples are.
[9] "She came home in a flood of tears and a sedan-chair (1949, 11)."
[10] URL = http://www. cscs.umich.edu/~crshalizi/ LaMettrie/ Machine/ .

> … Let us then conclude boldly that man is a machine, and that in the whole universe there is but a single substance differently modified.

The human being, up to then, was universally regarded in Western theology/culture as God's crowning creation (Thesis I). In other words, we are God's artefacts/handiwork. As such, humankind as God's artefact satisfies Aristotle's four causes: God (the efficient cause) chose certain material (material cause) to make us according to a certain plan to be upright, ambidextrous bi-ped, male or female (formal cause), so that we may love, honour and obey Him (final cause). When secularism set in with the Enlightenment, God dropped out of the picture and Western enlightened elites simply regarded human beings to be like other beings, part of the natural order of things, such as lions and tigers, except that we humans possessed a type of consciousness which seemed to be of a higher order in that we could think abstractly, use symbols/language which can be written down (Thesis II). While Thesis II challenged Thesis I, de la Mettrie went one step further to pronounce human beings are machines (Thesis III) – now, that is truly radical and revolutionary, hence the burning of his book and his self-exile.

We humans make machines; machines are our artefacts. Artefacts are made by us to fulfil our purpose/intention and desires. Take a statue of Alexander the Great. A statue, as an artefact, *par excellence*, also satisfies all four of Aristotle's causes: the material (we chose to make it in bronze), the formal (we cast it as Alexander in the shape of a Hellenistic male, not a female), the final (we put up the statue in our town square to honour our hero); the efficient (the sculptor had cast it). Things in the world are divided into two major ontological categories: our artefacts on the one hand and on the other, naturally-occurring things which, in principle, have come into existence, continue to exist independently of us, will continue to exist should we become extinct as a species, and had existed in the history of planet Earth well before the human species evolved with the peculiar kind of consciousness we do, indeed, possess. The naturally-occurring domain of things live for themselves (the biotic, animals and plants) or live by-themselves (the abiotic, such as rivers and mountains). Thesis II and Theses III are two distinctly different modes of existence.[11] So, to confuse humans who make artefacts with the artefacts they have made, that is, their own products, is surely to commit a category mistake. Furthermore, de la Mettrie said that humans are machines, the most mechanistic of human products/artefacts.

This ontological *volte-face* or category mistake is not a thought experiment; nor is it a humorous gesture to raise a smile if not a guffaw (such as the Williams and Searle example). This is for real: a genuine category mistake not made as a pedagogical tool nor by the humorous-inclined but by serious philosophers, and accepted, as we shall see, by scientists upon which they proceeded to erect the Age of Modern Science/Modernity and the Age of MWM/Bm. We give, here, a very brief account of the impact of this category mistake in MWP.

For a start, it penetrated even the domain of natural theology.[12] Take as one example, Hume's straw man, Cleanthes, who was set up as exponent of the very view that he, Hume (in 1799), intended to demolish – the words put into Cleanthes's mouth are as follows (1998, 15):

> Look round the world; contemplate the whole and every part of it: You will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines, which again admit of subdivisions to a degree beyond what human senses and faculties can trace and explain. All these various machines, and even their most minute parts, are adjusted to each other with an accuracy which ravishes into admiration all men who have ever contemplated them. The curious adapting of means to ends, throughout all nature, resembles exactly, though it much exceeds, the productions of human contrivance; of human design, thought, wisdom, and intelligence. Since, therefore, the effects resemble each other, we are led to infer, by all the rules of analogy, that the causes also resemble; and that the Author of Nature is somewhat similar to the mind of man, though possessed of much larger faculties, proportioned to the grandeur of the work which he has executed. By this argument *a posteriori*, and by this argument alone, do we prove at once the existence of a Deity, and his similarity to human mind and intelligence.

The point of citing this famous passage is, from the standpoint of this book, not about the so-called design argument for the existence of God, but as illustration of how the categorical *volte-face* /category mistake had entered even theological discourse – the world which the Almighty had created was nothing but one vast machine, made up in turn of a series of smaller machines.

William Paley's later, even more well-known contribution in his book, *Natural Theology* 1802, demonstrates a similar point, but with this difference – in Paley's case, he actually wanted to infer from the watch (with its intricately related mechanical parts) to the existence of the watch-maker in the same way as the eye (with its intricately related

[11] For detailed argumentation about the difference between the two modes of existence, see Lee 1999.

[12] As a matter of fact, by late Medieval times, even the imagination of theologians (apart from that of other elites as well as the aristocracy) had been captured by clocks and other mechanical automata. Certain authors had already referred to the cosmos as *machina mundi*. One of the most famous is Nicole Oresme (1323-1382), mathematician and theologian (Bishop of Lisieux). In 1370, he had written: 'And these powers are so moderated, tempered, and ordered against their resistances that the movements are made without violence. And except for the lack of violence, it is like the situation when a man has made a clock and lets it go and be moved by itself. Thus, it was that God let the heavens be moved continually according to the proportions that the moving powers have to their resistances and according to the established order' (Merchant 1980, 223).

mechanical parts) would lead one to infer that the eye (the organism of which the eye is but a part) must have a maker, namely, a divine one.[13]

> In crossing a heath, suppose I pitched my foot against a *stone* and were asked how the stone came to be there, I might possibly answer that for anything I knew to the contrary it had lain there forever; nor would it, perhaps, be very easy to show the absurdity of this answer. But suppose I had found a *watch* upon the ground, and it should be inquired how the watch happened to be in that place. I should hardly think of the answer which I had before given, that for anything I knew the watch might have always been there. Yet why should not this answer serve for the watch as well as for the stone? Why is it not as admissible in the second case as in the first? For this reason, and for no other, namely, that when we come to inspect the watch, we perceive—what we could not discover in the stone—that its several parts are framed and put together for a purpose … [The requisite] mechanism being observed … the inference we think is inevitable, that the watch must have had a maker. Every observation which was made in our first chapter concerning the watch may be repeated with strict propriety concerning the eye, concerning animals, concerning plants, concerning, indeed, all the organized parts of the works of nature. … [T]he *eye* … would be alone sufficient to support the conclusion which we draw from it, as to the necessity of an intelligent Creator.

Even today such discourse is not without resonance – witness the talk about intelligent design in the debate which also involves Richard Dawkins's defense of Darwinian natural selection in his 1986 book. Dawkins would have no objection in principle to conceiving the world as well as the various entities in it to be very complicated machines, except that their complexity as machines requires no divine creator. Indeed, in the view of two other recent theorists of biology (Maturana and Varela), organisms are "autopoietic machines". In other words, organisms are self-organizing machines, but machines nonetheless.[14]

Furthermore, such a category mistake has subverted even the very expression of a point of view whose explicit end is to combat it. Take the following example:

> Douglas explained that his journey to Madagascar had lit a fire within him that would not go out. In the company of a zoologist called Mark Carradine, he had found and photographed the elusive lemur known as the aye-aye, an experience, together with reading Dawkins, that had made him realise that the *technology* that now most excited him was the one that had evolved over millions of years and resulted in him and me and, ultimately, the device that wouldn't stop going "boing". He really wanted to understand this business of life and extinction. He and Mark had hit it off straightaway, and the plan was now to find seven more species like the aye-aye that were in imminent danger of disappearing for ever. [The italic is inserted by the author of this book.]

These are the words of Stephen Fry (2009) who published in June 2009 with Mark Carwardine a sequel to the original book of 1990 by Douglas Adams and Mark Carwardine. The subject matter of these two books is to lament the extinction of species and their remit is to raise awareness about the potential threat to the extinction of endangered species. Species in the wild (as opposed to domesticated ones) are *par excellence* the results of natural evolution and selection, and hence, are naturally-occurring phenomena. Yet Fry has lapsed (even without realising it) into characterising the process of natural evolution and its issues as mechanical processes and technological products. How ironic that he appears to be unaware that the naturally-occurring is the ontological foil of the artefactual/technological mode of being. Fry's non-ironic use of the word "technology" in the sentence quoted above is evidence of the clearest kind of the depth to which the ontological *volte-face*/ category mistake has penetrated contemporary consciousness.

In other words, this particular category mistake is a great success story. MMW/Bm rests in the main on accepting it and furthermore, to adopt the role of The Coloniser with respect to any other system of medicine which differs from it in significant ways; it consigns such alternatives to the role of The Colonised. Essentialism of Method married to such a category mistake cannot accommodate **ARIIMO**.

Take judges at a cat show. We know that cats purr and meow, dogs bark and if properly trained obey their owners' commands. Now it would be absurd and ridiculous to judge a cat using the standards for judging the goodness of a dog, concluding that a cat is inferior to a dog as the animal does not bark and does not obey commands. The absurdity would be so obvious that we cannot imagine judges at a cat show doing anything as ridiculous as that; everyone except the possibly demented does not accept that there is only one "valid" yardstick for judging animals in shows. There are as many "valid" yardsticks as there are different animals – which yardstick applies depends entirely on the animal entered for a particular show. There are cow shows, horse shows on top of dog shows and cat shows. Yet the upholders of the yardstick in the "medical show" appears oblivious to the existence of different yardsticks in different systems of medicine, each to be understood in terms of its own philosophical/theoretical presuppositions, its own entailed methodologies for diagnosing and treating patients. It makes no sense to write off another system in a blanket manner as defective/inferior/unintelligible just on the grounds that it is different from one's own.

[13] URL = http://www.ucmp.berkeley.edu/history/paley.html .
[14] For detailed argumentation, see Lee 1999, Chapter 5.

To do so is equivalent to mistaking a cat show for a dog show: Let us say that Bm is the equivalent of dogs in a dog show and CC*M-Zhongyi*, the equivalent of cats in a cat show. CC*M-Zhongyi* is the cat which meows and so is judged to be an inferior dog, when it is not a dog but a cat.

There is isomorphism and symmetry here. Yet MWM/Bm in its role of The Coloniser appears not to get the point.

Interlude: History of Colonialism/Imperialism

Colonialism, sometimes also called Imperialism, is a very old phenomenon – one immediately thinks of the Roman Empire in the West (31 BCE – 476 CE) and the Mongol Empire in the East (which reached its zenith during the 13th and 14th centuries CE). The phenomenon necessarily involves two major parties, The Coloniser and The Colonised. In the main, historically, the former typically did it through military might – they may be referred to literally as well as metaphorically as men who conquered on horseback. This constitutes the first phase; the second phase or aspect which follows is the seizure or control of the economic resources of the conquered.[15] The third phase or aspect may be called the cultural phase[16] when The Coloniser imposed his own culture on The Colonised in the name of its own superior (military and economic) might – it is this cultural phase that this study is fundamentally interested in.

However, one must immediately point out that history itself is more complex than any neat schema a theorist may care to impose upon it. The complexity in this context refers to several possible reactions on the part of The Coloniser to the militarily and economically subdued:

1.The Coloniser might simply leave behind its language which after many centuries of evolution and development became the indigenous languages of the various regions once occupied by The Coloniser.[17]

2. The Colonised, or at least the elite amongst them, happily accepted the superiority of the culture of The Coloniser or readily absorbed their imposed culture whether, sub-consciously or consciously, and soon learned to adopt a condescending attitude to their own indigenous culture, leaving it behind as being fit, perhaps, only for the un-educated peasants or the ill-educated masses.[18]

3. What is slightly more unusual is a third possibility, when The Coloniser after their military, political and economic capture of The Colonised saw fit to adopt/absorb in the main the indigenous culture. This phenomenon happened twice in Chinese history. The first occurred during the short-lived Yuan dynasty (1271- 1368 CE) of Mongol rule when the Mongols conquered Northern China, ending the Northern Song dynasty (driving the Song Court to retreat and escape to south of the Yangzi River (Jiangnan 江南); the second took place during the Qing-Manchu rule of China (1636 or 1644 – 1911/1912) which lasted several centuries. The conquerors/Colonisers realised that while it was easy to conquer on horseback, ruling from horseback would not be easy, if not impossible. On these two occasions, the indigenous elite, their language and culture turned out to be indispensable to the smooth running of

[15] One can think immediately of one exception to the rule, namely the British Empire in the case of India. On that continent, the East India Company preceded the British Raj which emerged to protect commercial/economic activities. However, having admitted that, it still remains the case that the British Raj also proceeded to capture, control and undermine indigenous economic activities, such as the destruction of the thriving Indian cotton (cottage) industry. The goal was to promote the products of its own cotton industry established on British soil after the success of the African slave trade had enabled cotton plantations to flourish in North America, whose raw cotton could be then be sent across to Britain to be spun into cloth by machines in mills. (Witness Styal Mill in Cheshire which one can visit today as a museum as well as the former Cotton Exchange in the centre of Manchester, now functioning as the home of the Royal Exchange Theatre). Cotton as an industrialised commodity was then exported to British India, a captive market for such goods. One can perhaps characterise this dynamic interplay of forces as follows: the economic activities of the British East India Company were underpinned in the end by the military might of the British Raj who in turn strengthened and promoted economic activities, this time not only in India itself but also in metropolitan England.

[16] These phases need not be taken to be temporal in character; they may or may not be, depending on the instance one is studying. The crucial point made here is that the distinction into three aspects/phases is conceptual in character.

[17] This was what happened to Latin, the language of the Romans and the official language of the Roman Empire. When they left Western Europe, Latin eventually developed into the Romance languages we know today, such as French, Italian, Spanish, Portuguese and even Romanian. (Romania was a province of the Roman Empire, called then, Dacia.) English in turn was greatly influenced by French as far as its vocabulary was concerned after the Norman Conquest of 1066.

[18] An example of this may be found in English society after the Norman Conquest. The English elite adopted French (the language of the court) as the superior language, leaving English to the peasantry and the lower orders. As a result, in studying the history of the English language, one would find that while the meat of the cow was called "beef", an anglicisation of the original French word "boeuf", the person who looked after the cow (the peasant) was called "cow herd". Only the elite could afford to buy and eat beef, the meat from the animal destined for their table. It would be vulgar and unrefined for them to talk about eating cow-meat at table, whereas it would have been *de rigeur* to talk about serving *boeuf saignant* – steak served rare. (See Lee 2008, Part I.)

the new dynasty; hence, though, initially harassed and persecuted, their bureaucracy, their civil service examination (*keju* 科举, which selected successful candidates as officials based on their command of the canonical texts), their *philosophy*,[19] their language (written[20] and spoken)[21], their taste in the arts[22] managed to survive intact down the ages, as well as their *medicine.*[23]

4. Yet this third possibility did not prevent some Chinese people from embracing what earlier we have outlined as possibility 2 above, when The Colonised come to accept unquestioningly the superiority of the culture of The Coloniser. This version happened in the relatively recent history of China, when Qing rule in the 19th century was both militarily and politically weak and suffered great humiliation at the hands of Western powers, especially the British who forced the sale of opium on China, ironically in the name of free trade. The British was faced with an intolerable balance of payment problem; while the British imported Chinese goods in huge quantities, especially tea, silk (not to mention rhubarb), the Chinese appeared not tempted to find British products fascinating enough to want to buy them. The British, then, conceived of pushing opium[24] upon them as a commodity whether they wanted it or not – hence the infamous Opium Wars (1839-1842 and 1856-1860), which the Chinese lost, followed by the signing away of sovereign territorial rights,[25] including the secession of Hongkong island in perpetuity to the British at the end of the First Opium War.

These were traumatic moments for the Chinese nation[26] and its psyche; they prompted people, especially the elites to reflect upon every aspect of their own history and culture. Overwhelmingly, they came to the conclusion that

[19] There were many *philosophies* but only two may be mentioned here: *Rujia* 儒家/commonly called Confucianism and *Fajia* 法家/The Legalist School as they could be said to be at the extreme opposite ends of the *philosophical* spectrum. (See Lee 2021(Open Access) for an account of the relationship between them in ancient sinology scholarship.)

[20] Their calligraphy was greatly prized.

[21] The Qing princes were schooled in both Manchu and Han-Chinese. The Qianlong emperor prided himself on his ability both as calligrapher and poet, in two domains of quintessential Han culture. (Official documentation was in both languages).

[22] The Yongzhen emperor is an outstanding example of a Qing prince who had absorbed unfailingly such taste in some aspects of the visual arts. Although his reign was unfortunately short, only a mere thirteen years, he had commissioned some of the most exquisite pieces in the later history of Chinese ceramics from the imperial kiln at Jingdezhen 景德镇. It is also significant that he chose not to be buried with his father, the Kangxi emperor and other Manchu forebears in Dongling 东陵, the Eastern Necropolis but to pioneer a new site called Xiling 西陵, the Western Necropolis in Yi county 易县 – for the Han Chinese (those colonised by the Manchus), *The Yijing*《易经》/(*The I Ching*)/*The Book of Change* was a foundational canonical text of their culture and civilisation and was held to have originated in that county. However, the Yongzhen emperor, like his father before him and his son after him, conducted literary inquisitions against the Han elites, its scholar-officials, although he was not averse to using Han officials provided, they satisfied his strict criteria of efficiency and good governance. At the same time, in ruthless pursuit of efficiency and stamping out corrupt practices, many of his reforms also benefited the common people, directly or indirectly. (See Mote 2003.) In that sense, The Colonised respected him to the extent that even its grave robbers appeared to have refrained from robbing his tomb – his is the only intact tomb amongst all the tombs of the Qing rulers. It is speculated that amongst the tomb goods could be found some exquisite pieces of art. The government in Beijing today feels no urgency in excavating it, thereby also showing respect for the long-dead tomb owner.

[23] The canonical texts of CC*M-Zhongyi* include: *The Huangdi Neijing* 《黄帝内经》,《神农本草经》*The Shennong bencao jing /The Divine Farmer's Materia Medica* and *The Shanghanzabing lun*/《伤寒杂病论》. However, Chinese *Medicine*/*Zhongyi* as CC*M-Zhongyi* (as opposed to TC*M-Zhongyi*) regards *The Yijing*, a *Daojia* text to be a foundational text – see Lee 2018, Chapter 10 which shows for the benefit of those who are not aware of the fact that CC*M-Zhongyi* is referred to by the Chinese themselves down the centuries as *Yidaoyi* 易道医 – namely, it is that *medicine* which embodied/embodies the cosmology/*philosophy* of both *The Yijing* and *The Laozi*《老子》.

[24] Opium was manufactured and processed from poppy seeds by the British in India. This commodity formed 15-20% of the revenue of the East India Company. The British annexed Sindh and other parts of the Indian subcontinent in order to protect the monopolistic grip of the East India Company on opium production. By the late 1830s, the British was selling some 1,400 tons of the commodity to China. The Special Imperial Commissioner, Lin Zexu 林则徐, wrote to Queen Victoria (later crowned Empress of India in 1877) pointing out the immorality of such commerce: "You do not wish opium to harm your own country, but you choose to bring that harm to other countries such as China". Naturally, this rebuff in the name of moral reciprocity fell on deaf years; Lin got no reply from the British monarch. (See Ames 2019.)

[25] The Treaty of Nanking, signed on 29 August 1842 ending the First Opium War, not only opened more Chinese ports to Western trade, but also very significantly exempted foreigners from Chinese laws.

[26] Note that history is dynamic involving processes of re-grouping and change. By the time of the 19th century, faced with Western imperial powers who came to China from afar with their gunboats and their accompanying "diplomacy", the older divide between the Manchus as Coloniser and the indigenous people (the majority of whom are commonly referred to as the Han people, the people whose ancestors inhabited the Central Plains, around the two great river basins, especially that of the Yellow River, who also saw themselves as the descendants of the Yellow Emperor) as Colonised gave way to a new grouping with the Western powers identified as The Coloniser and the people of China (Manchu, Han and others) as The Colonised.

Chinese culture in all aspects needed reforming and modernising. The mantra of **Modernisation** as the way to salvation from then on became seared into the Chinese consciousness.[27]

Obviously, the Chinese army and its collection of naval vessels had proven useless against the superior military might of Western powers. What about education? Surely, the old learning based on the Confucian/*Rujia* 儒家[28] classics was an irrelevance in the new age of Modern Western Science (MWS for short) and its Technology? Some intellectuals even went further to identify their written language as a big drag upon progress, as it is a non-alphabetic script. None other than Lu Xun 鲁迅 (1886-1936), one of China's intellectual giants of the 20th century thought that Latinisation was the way forward.[29] His evidence seemed to have rested on the observation that the most successful societies which were Western all used the Latin alphabet;[30] hence to be successful and progressive, the Chinese language must abandon its traditional writing and opt for Latinisation. Furthermore, these Western societies at that time also had a higher literacy rate than in China. The Latin alphabet, after all, has only twenty-six letters; once mastered, it appears as if one could readily learn how words are spelt rather effortlessly by comparison with learning Chinese characters/words, which are so much more complicated, even if they are modular in construction.[31] He and others were convinced that one major, if not the sole cause of being backward as a nation and which prevented China from modernising itself was its written language. His reasoning was somewhat simplistic and therefore misleading to say the least, if not logically flawed outright; but at that time his fellow elites who were just as desperate as himself found it compelling.[32]

The Latinisation project did not die with the death of Lu Xun;[33] it lived on and was still a thorny issue leading up to the establishment of the People's Republic of China in 1949. The seriousness of the matter is reflected by a

[27] This was not simply the lesson which the Chinese drew from such humiliating confrontation. The Japanese had thought it wise to modernise themselves at their own pace and under their own terms rather than to do so when external circumstances forced the process on themselves, as happened in the case of its neighbour, China. Japan entered what historians call the Meiji Restoration period after the ascension to the throne of the young Meiji emperor in 1868. The new political leaders pursued an extensive and intensive programme of political, economic and military reforms along Western lines with the explicit goal of making the Western powers accept Japan as an equal. In other words, Japan aimed to join the club of The Coloniser to escape the fate of The Colonised, a fate which befell the Chinese. To quote some of the language used: "Using the barbarian to control the barbarian", "Enrich the country, strengthen the army". Other forms of modernisation involved building a rail network, and a modern education system set out in 1872. A high-ranking mission to Europe and America came back in 1873 with a report which argued that economic development was an indispensable base of power. For a short but succinct account, see Beasely 1981-1982. In this project of Modernisation, Japan turned out to be very successful. Indeed, it acted out the role of The Coloniser in Asia, leading up to WWII. Even after its defeat at the end of WWII, its reputation at the level of "soft power" remained though not at the level of military might – for instance, Japanese people in apartheid South Africa were considered to be "honorary Whites" unlike Chinese people who were not.

[28] From now on, the preferred term of this study is *Rujia*; the followers of Confucius, the *Ruists* and Kongzi 孔子 (instead of the Latinised version of the name, Confucius).

[29] Lu Xun denounced Chinese writing in the most forceful language possible. In 1936, he wrote that if the Chinese system of writing was not destroyed, China would certainly perish: 汉字不灭, 中国必亡 *Hanzi bu mie, Zhongguo biwang.* In《门外文谈》/*An Outsider Chats about Scripts* – see Mair 2002.

The Latinisation project was viewed as a nationalist project, cutting across the Left-Right political divide. The party led by Chiang Kai-shek and that by Mao Zedong, both endorsed it.

[30] Britain, France, the USA (and earlier in Modern Western history, Italy and Spain) would come to mind. The Russians, too, used an alphabet, though not the Latin but the Cyrillic alphabet; and they ran a powerful empire, like the Spanish, the British and the French.

[31] See Lee 2008, Part II for details.

[32] For instance, he and others appeared to have overlooked the fact that the Japanese language used three different scripts, including Kanji, that is the Chinese script. The other two are phonetic alphabetic scripts, called Hiragana and Katakana, with 46 letters each. This did not prevent Japan from emerging as a modern power which the rest of the advanced world had to take note of, to say the least. The three scripts are still used today, sometimes with all three appearing in one sentence. The Japanese appear happy with such an arrangement even though in principle and technically, Kanji could be ditched.

[33] Neither did the process of Latinisation even begin with him. As early as 1605, the Jesuit, Matteo Ricci, had published a book in Peking using the Latin alphabet primarily to teach foreigners (mainly fellow missionaries presumably) Chinese. It is called《西字奇迹》 *Xizi qiji*/*The Miracle of Western Letters*. Another Jesuit in China, twenty years later, Nicolas Trigault, produced a similar teaching aid, based on Ricci's earlier publication, called《西儒耳目资》*Xiru ermu zi* /*Aid to the Eyes and Ears of Western Literati*. The scholar-official of the late-Ming to early Qing dynasty scholar official, Fang Yizhi 方以智 (1611-1671) was the true precursor to Lu Xun as his motivation was also one of modernising a script which he considered to be too cumbersome and complicated for China's own good. He set out the flaws of Chinese writing while singing the praises of Western alphabetic, in his《通 雅》*Tong Ya.* (See Mair 2002.) However, *Pinyin* per se would not solve any serious problem of learning Chinese as there are so many different regional speeches and dialects that a foreigner having learnt one set for one specific regional speech would have to learn another set of *Pinyin* to cope with a different regional speech. In 1949, the PRC solved the problem which eluded Qinshihuangdi (the First Qin Emperor) by using the speech of Beijing as the Common Speech. Attempts which preceded it appeared not to have addressed this problem; at best they would have limited use and application

conversation between Mao Zedong and the American journalist, Edgar Snow in 1936 about the necessity of sweeping away its feudal past including its written script.[34] However, things turned out to be otherwise. The PRC would have embraced Latinisation but for the fact that Mao himself and many other senior Party members were devotees of Chinese calligraphy; they realised that Latinisation might in the long run undermine and even destroy this very ancient art form.[35] So they refrained and introduced another reform: to modify and simplify the strokes required in writing a character/word. The modified script is called *jianti* 简体 while the so-called traditional script is called *fanti* 繁体.[36] Increasingly, the latter is used officially and systematically only in Taiwan;[37] the UN has recently decreed that the official Chinese script is *jianti* Chinese. Latinisation does play a minor role in China in general and education in particular in the PRC; it is called *Pinyin* 拼音. Young children are taught to speak what is called *Putonghua* 普通话 /Common Speech via *Pinyin*,[38] and street names, for instance, appear also in *Pinyin* to enable foreigners to read them readily. Forty years or so down the line from 1949, the electronic revolution took place; *Pinyin* conveniently already exists which serves as a handy way of inputting Chinese characters in a computer.[39]

On this score, the Chinese, as a nation, collectively can heave a sigh of relief as they need no longer worry about the country being held back by its seemingly archaic manner of writing. On this score, too, the Chinese need not feel the need any more to regard their system of writing as sub-standard, flawed in one way or another, requiring to be replaced by a foreign system such as the Latin alphabet. In other words, on this issue, they need no longer play the role of The Colonised.[40] Instead, *Pinyin* stands out as a successful way of coping with new challenges posed by an

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and hence, would have been a waste of time and effort on the part of the student unless they intended to stay put for the rest of their lives in that geographic-linguistic location.

[34] Snow reported Mao as saying: "Chinese characters are so difficult to learn that even the best system of rudimentary characters, or simplified teaching, does not equip the people with a really efficient and rich vocabulary. Sooner or later, we believe, we will have to abandon characters altogether if we are to create a new social culture in which the masses fully participate."

[35] To the Chinese, calligraphy is the highest art form, even above that of painting.

[36] No one should get over excited by the distinction between *fanti* and *jianti* and be obsessed by the myth that the former is truly traditional and ancient while the latter is new-fangled and not rooted in history. In reality, some *jianti* characters/words are simply reversions to much older versions, older than the *fanti* versions, as a matter of fact. In other cases, they are versions found in manuscripts of scholars down the ages – indeed, the committee in charge of the project culled a lot from the manuscripts of none other than Lu Xun himself. For accounts of this convoluted and complex relationship in English, see, for instance, De Francis 1984, Curt 1991, Gu 2013, and Lee 2008.

[37] *Fanti* is officially endorsed in Hongkong and Macau but many people would not find *jianti* too difficult to cope with once familiar with it and vice versa for people used to *jianti* with regard to *fanti*. The context usually tells the reader how to read the character, whether as *jianti* or *fanti*. IT has made any check very easy indeed, as there are software programmes available free online for instant conversion.

[38] To understand this need, one must recall that China is a vast country geographically-speaking but also a linguistically diverse and rich place. Apart from something like three hundred non-Han speeches and languages, even among Han speakers, diversity reigns supreme. Just to cite three major examples: Cantonese (Yue/粤), Fukienese (*Minnan*/闽南) and *Putonghua*. A Cantonese speaker would not understand *Minnan* speech and *vice versa*; both speakers would not understand *Putonghua* without having been put through the paces. (Some older people in Hongkong today whose mother tongue is Cantonese would find *Putonghua* unintelligible.) Even amongst those who speak what in the past was called Mandarin (now called *Putonghua*), there are immense differences between such speakers from region to region. However, what unites all these diverse linguistic phenomena is the written language itself – the same character/word may be pronounced differently by different groups from different regions of the country, but they all write it the same way. (For this, the nation has given much thanks to the First Chinese Emperor (r. 246 BCE – 210 BCE), Qinshihuangdi 秦始皇帝, who during his very short rule, nevertheless, managed to introduce massive reforms including the linguistic – his own favoured font/script was *Xiaozhuan* /小篆/Lesser Seal Script, which is still used today in seal carving.) It is not the unity of speech but the unity of script which had preserved China as a cultural entity down the ages. The scholar-officials in the bureaucracy would write their reports using the same script, even though between them on the level of speech, a Tower of Babel might well exist. In the 19th century, the son of the Persian ambassador to the Court at Peking/Beijing was given an education through tutors hired by the father to put him through the paces of the *keju*/civil service examination. He was successful; according to the rules, he was eligible to be appointed aa official, was duly appointed and sent out to the provinces on official duty. He stuck at it for a while, but then resigned and went back to his homeland – he found it difficult to cope with the local speech(es) and felt his professional efficiency impaired as a result of such incomprehension. (Unfortunately, this author has mislaid the set of notes made many years ago regarding this point, and so cannot cite more precise historical and bibliographical details. If any reader knows, please pass the information to the author.)

[39] However, this is not to say that *Pinyin* is the only means available. Other techniques exist, which, once mastered, may even be faster than *Pinyin*, one is assured. *Pinyin*, though, has the virtue of requiring no further investment of time and effort.

[40] However, one should recall that although the Chinese were never officially colonised (Hongkong island, apart), it was unofficially so. Witness the Treaty of Nanking/Nanjing and the Treaty of Versailles which ended WWI. Hence the conceptual distinction between Coloniser and Colonised applies to it.

ever-changing world without compromising the identity and integrity of the Chinese system of writing with a history of dating from the Chinese Neolithic Age according to the latest findings of Chinese scholarship.[41]

We will be returning to *Pinyin* later in the book to see in what way it can function analogously as a methodological paradigm presented by ever new and ever-changing technological challenges to the identity and integrity of CC*M-Zhongyi*. For the moment, let us look at another challenge from the Age of Modernity in yet another domain of that culture.

The Age of Modernity: Modern Western Philosophy and Modern (Western) Science and Technology

If a rough date has to be assigned to the Age of Modernity, a date both convenient and non-arbitrary would be the 17th century in Western Europe. Two things (intimately linked, though not often perceived as such) emerged, Modern Philosophy, on the one hand and Modern Science, on the other. In the former, two intellectual giants spring to mind: René Descartes (1596-1650)[42] in France and Thomas Hobbes in England (1588- 1679, publishing his masterpiece *The Leviathan* in 1651). *The Leviathan* is commonly perceived to be a work in political philosophy; however, it may also be read as an early systematic account of what came later to be called Positivism.[43] Positivism, as a philosophy replaced neo-Aristotelianism, the philosophy of the Medieval Ages in Europe. To put matters simplistically, Medieval philosophy invoked all four of Aristotle's causes: formal, final, material and efficient. Positivism rejected two and retained only the material and the efficient. The other two were eliminated on the grounds that they are unintelligible, obscurantist and later came to be called metaphysical (in the abusive sense of the term as used by the 20th century version of Positivist philosophy, the Logical Positivism of the Vienna Circle[44]). Take the following phenomenon – as a stone falls from a height, it seems to fall faster and faster. Medieval Physics underpinned by Medieval Philosophy explained the phenomenon thus: every object has its own natural home. The natural home of things like stone is Earth. As the stone falls through the air, it is getter nearer and nearer home. A human being who has been away on a long journey from home feels happier and happier at the prospect of seeing his loved ones again, and hence would run faster and faster as he approaches nearer and nearer home. Such an explanation relies on final cause, the purpose, the goal of the activity. From the vantage point of Modern physics ever since Newton's Laws of Motion, such an explanation sounds weird. Modern physics is quantitative in character and has nothing to do with formal and final causes. Modern physics is the "queen" of Science, all preceding claims to being and doing Science is pseudo-science. Modern Science has outgrown the metaphysical stage according to Comte's law of development. It is firmly in the realm of the quantitative and the measurable, only of material and efficient causes.

Although Modern Science had arrived in Western Europe by the 17th century, it is by no means the case that Science-derived Technology (the kind we are all too familiar with today such as Biotechnology) followed immediately in the wake of the fundamental discoveries of MWS. There was a gap; that gap, however, was filled in the early stages

[41] Since the beginning of the 20th century, Chinese scholarship had identified the writing of the late Shang dynasty to be its earliest form of writing. This writing is called *Jiaguwen* 甲骨文/The Oracle Bone Script, used in the divination rites of the Shang dynasty. The ox shoulder blades and tortoise shells with writing inscribed on them were traced to a village called Xiaotun 小屯, in Anyang 安阳 county, in Henan 河南 province. It turned out that Anyang was a capital of the late Shang dynasty. However, in the light of new discoveries since then, the history of Chinese writing could be pushed back to much earlier times, to the Neolithic period. In the 1980s, archaeologists discovered thirty tombs belonging to a late Neolithic culture called the Dawenkou 大汶口 Culture (4500-2500 BCE). On some of the pottery shards were what looked like writing; scholars ultimately succeeded in deciphering seven, which demonstrates that they are part of a writing system preceding *Jiaguwen*, the forebear of the Shang script. In March 2003, scholars at the Gansu Research Institute studying a painted Neolithic pot concluded that the seven marks on it were actually seven different ways of writing the same character/word. Then in 2007, after some twenty years of study, scholars made known their investigation into a discovery in Ningxia 宁夏 province of some rock carvings at a huge site called Damaidi 大麦迪. They revealed that they were convinced that these carvings were no mere squiggles but that about two thousand marks are actually characters/words – what impressed the scholars most of all was that they appear not to be isolated but systematic symbols. If their interpretation survives critical scrutiny in the longer run, this would mean that the Chinese writing system could be dated to between seven and eight thousand years ago, putting back the beginning of that writing some three thousand years earlier than the dates of other known texts and inscriptions. It would also mean that Chinese writing would not only be the oldest in continuous use but also the oldest in the history of human civilisations, roughly eight thousand years old. See Lee 2008, Part II.

[42] Cartesian contribution will be explored later, especially in Chapter Eight which looks at the Mind-Body problem.

[43] See Lee 1989, Chapters 2 and 3.

[44] In the history of Positivism, between Hobbes and the Vienna Circle was the work of another Frenchman, Auguste Comte (*Cours de philosophie positive,* 1830-1842). Comte, like all positivists, was concerned with finding criteria to distinguish scientific knowledge from the non-scientific as well as the pseudo-scientific. In the *Cours*, he announced that he had discovered a universal fundamental law which governed the development of the human mind, both at the level of the human species and of the individual. "This law is that each of our principal conceptions, each branch of our knowledge, passes successively through three different theoretical states: the theological or fictitious, the metaphysical or abstract, and the scientific or positive" (Andreski 1974, 20). In other words, the scientific is the most advanced in human evolution.

by a very strange phenomenon (strange to readers today), not so much of Basic Science driving Technology, but of what may be called Craft-based Technology leading to discoveries in Basic Science.[45] An example of this is the engine which drove the pump to prevent flooding in deep mines; the same engine later drove trains and made ships sail on the high seas, the motor of the Second Industrial Revolution in the UK/the world.

Modern Technology, even when initially Craft-based rather than Science-derived, posed a new challenge to China, fuelling its anxiety about Modernisation if it were not to be humiliated, left behind, and colonised. So, the dark shadow of The Colonised had hovered since the Opium Wars. Towards the end of the Second Opium War, when negotiating the surrender to the British and the French, another supreme humiliation was inflicted upon the nation. These troops in 1860, led by Lord Elgin, in retaliation for some members of the official British delegation being tortured and killed by the Chinese, proceeded to loot and burn Yuanmingyuan 圆明园 (the so-called Old Summer Palace), some eight kilometres from Peking/Beijing.[46]

One must modernise or one would perish or be humiliated. Modernisation gripped the consciousness even more than before. New knowledge must supplant the old – new knowledge was Scientific Knowledge, the kind of knowledge which Westerners possessed, not the knowledge which one had absorbed down the ages via the Four Books and Five Classics 四书五经 /*Sishu wujing*.

Following not far behind the gunboats and military might were the Christian missionaries who were keen to save the souls of the Chinese by converting them to their one, true faith. These adopted a different strategy from the first lot in the Ming dynasty. The Jesuits, such as Matteo Ricci (1552- 1610) who did their best to convert the Ming Wanli emperor (r.1572 - 1620) had hoped for a repeat of the success when the missionaries converted Constantine to Christianity in 312 CE and then via the Edict of Milan in 313 CE legitimised the acceptance of Christianity in his empire.[47] Unfortunately, Ricci found Wanli immune to the appeals of such a faith, in spite of the Jesuits bringing many novel gadgets to impress and tempt him and in spite of the fact that Wanli's court wanted to tap his mathematical and astronomical brain.[48] This time in the 19th century, the missionaries were not Catholics but were mainly Protestants (from Britain and the USA). They brought with them something more impressive than gadgets and even mathematical and astronomical knowledge. This time they brought with them Western Medicine, its powers to heal, cure diseases, to save lives. At least, that was the message they successfully propagated to those they hoped to convert, but as we shall see in a moment, the truth about Western Medicine of the period was something less than miraculous in saving lives. Medical missions established themselves during the 19th century, opening clinics and hospitals, providing training for nurses[49] as well as doctors.

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[45] See Lee 2005 for details regarding the distinction between Science-Derived and Craft-based Technology, as well as the relationship between the former and basic scientific discoveries from the vantage point of the philosophy of science.

[46] So vast was the ground and the complex of buildings that it took three days and four thousand men to burn things to the ground in 1860 during the Second Opium War. When the burning and destruction finished, the British and French troops caused an inscription in Chinese to be put up, saying: "This is the reward for perfidy and cruelty" – see Hernon 2003. The Empress Dowager Cixi 慈禧 made efforts to restore it but in 1900 the place was burnt down yet again during the Boxer Rebellion by Western troops, leaving it in utter ruins anew – see Bowlby 2015.

The Qing Qianlong emperor during his six-decade-long reign made Yuanmingyuan his main permanent residence and place of work; he spent a lot of resources to make it increasingly more ornate, even incorporating Western baroque architecture into the landscape. After Qianlong, the Qing rulers carried on this practice. (The Forbidden City dating from the Ming dynasty which one can visit today in Beijing was used on ceremonial and ritual occasions.) In other words, Yuanmingyuan was Buckingham Palace and Whitehall all rolled into one, an analogy which might make sense to readers familiar with British constitutional practices. In an imagined scenario, the sacking of Yuanmingyuan could be said to be equivalent to the burning and looting of Buckingham Palace and Whitehall by foreign troops resident in the UK. Buckingham Palace is said to contain many art treasures; the innumerable art treasures in Yuanmingyuan were either looted by the British and French troops as part of the sacking or destroyed during the sacking. Some of these artefacts could still be sitting in the attic of some of the descendants of these troops or in museums in the West which bought them, whether knowing that they were looted goods or not. Occasionally, some notable items would appear in an auction, at reputable auction houses in Paris, London and so forth – see BBC News 02/03/2009; *Global Times* 19/12/2018.

[47] For the purpose in hand, the controversy surrounding Constantine's conversion, that he could have done it entirely for political reasons, is irrelevant and hence, will be ignored.

[48] Ricci is an instance of The Coloniser going native – he never left China, lived there for twenty-eight years, became sinicised, died and was buried in Peking, in a plot granted to him by the Wanli emperor. This cemetery in the Haidan district of the city today contains eighty-eight graves of Jesuit missionaries. According to Ming protocol, foreigners could not be buried in mainland Chinese soil but at best in Macau or repatriated. Ricci himself wanted to be buried in Peking; given his contributions in promoting intercultural exchange, an exception was made in his case.

[49] Modern nursing is attributed to Florence Nightingale, especially for her work during the Crimea War (which broke out in late 1853) where her efforts to improve the sanitary conditions of the hospital to which the wounded soldiers were sent in Constantinople (Istanbul, today) reduced the death rate of the inmates by two-thirds. In 1860, she used her private family fortune to fund the establishment of St. Thomas' Hospital in London and within it, the Nightingale Training School for Nurses. (See Florence Nightingale 2020) But these achievements fall under Epidemiology rather than CM.

In an absolute ironic twist of history, these very missionary doctors offered treatment and cure to opium addicts, the very victims of the opium trade foisted upon the natives by their own governments.[50] The twist is even more interesting in that their cure consisted of giving the patients morphine pills which became known as "Jesus opium" as they were doled out by the missionary doctors![51] Yet so colonised were the minds of some Chinese that they appeared not to have noticed that the treatment and cure offered to opium addicts by the missionary doctors were bizarre to say the least.[52] In any case, many of the Chinese elites as well as ordinary people had by then become addicted to the opium-smoking lifestyle (see Zheng 2005) and their brains be-numbed by the drug.

Under the circumstances to which the country had been reduced, it was easy to accept uncritically that anything coming from the West must be deemed to be superior, regardless of merit. This was the supreme impetus behind the necessity for Modernisation. The Colonised might have a system of *medicine* with a history of more than two thousand years, but before the altar of Modernisation, it must be denounced as flawed and the foreign medicine must be sacralised.

From the mid-19th century to the mid-20th century, what was the state in reality of MWM (today called Bm)? What can this medicine cure? In a nutshell, if truth be told, very little. A very brief history of that medicine will make the point obvious. To prevent immediate misunderstanding about the nature of this claim, one must straightaway distinguish between CM, on the one hand and Epidemiology on the other. As these two domains of medicine are embedded in very different philosophical and causal frameworks, their trajectories developed differently and ought to be differently evaluated.[53] However, for now, let us concentrate on what CM had to offer to patients who visited their doctors in the mid-19th century in the homelands of these missionary doctors who were doling out "Jesus opium" in China. Like doctors everywhere, they looked out for symptoms and signs. They asked the patients about how they felt; where the pain or discomfit was; how keenly felt was the pain and so on (ascertaining symptoms). They also observed the patients as to how they walked (very slowly or at a pace consonant with their age); how they looked (pale, flushed in complexion); did they show lumps and lesions in parts of their bodies; were they speaking in a robust voice or could manage only a mere whisper, were gasping for breath; was the breath smelly, and so on (ascertaining signs).[54] They felt the pulse to find out the rate of the heartbeat.[55] Although the stethoscope was invented in 1816 in France, a practical version was not available until 1851. The missionary doctors sent to China in the mid-19th century could have been equipped with such an advanced piece of gadgetry, although this would be unlikely as the new equipment had not entered mainstream medical practice for sure.[56]

However, these missionary doctors would have qualified as doctors in their homeland. What did their medical education, theory and practice consist of? The lay person may be surprised to learn that the most common treatment used at the time was based on outdated medical theory. This treatment was venesection or to use plain English, bloodletting. It involved the doctor using a small knife, a lancet,[57] to open up a vein from which blood was drawn. So ubiquitous and enduring was this technique that even as late as 1911, *The Lancet* carried an article, entitled "Cases illustrating the uses of venesection". Indeed, as late as 1923, Sir William Osler, in that year's edition of his opus, *Principles and Practice of Medicine* (first published in1892 and had for forty years been the standard textbook of CM), bestowed favour on venesection as a therapy. This cure-all was used to treat a truly far-reaching range of conditions, indeed every kind of illness; alphabetically listed, it included acne, asthma, diabetes, fever, gout, poisoning (including from carbon monoxide and mustard gas suffered by the victims of such attacks in the trenches of WWI in

[50] To their credit, they opposed the abuse brought on by the trade and in that way influenced public opinion in their homelands against it.

[51] This cure was also sold in the USA until 1906 when the US Food and Drug Act ordained that all ingredients of pills must be made transparent and were banned because of the false claim of cure made on their behalf. Morphine was isolated from opium in 1805 and then touted as a cure for opium addiction - see St. James 2017; Morphine as a Cure for Opium Addiction 2020; Understanding Morphine 2020. The Colonised might have been impressed, consciously or sub-consciously, by the isolation of morphine from opium as a feat which only the chemistry and pharmacology of The Coloniser could accomplish.

[52] Opium in its various forms was in use as drugs to cure diseases in Victorian Britain – for instance, it was used to treat asthma. However, true to the class spirit of British society, opium pills were coated in varnish for the working classes, silver for the rich and gold for the very rich. Furthermore, opium addicts in that era were weaned with heroin (today, the drug of choice is methadone). See Crane 2011. Heroin is a more refined derivative from the resin of the poppy plant than morphine; both are highly addictive. The fact that the missionaries offered opium addicts, morphine pills, was therefore not surprising given the practice at that time. However, their belief about the cause of addition must have seemed strange to the Chinese opium addicts, as these Christian evangelists held that addiction is a sin, like original sin, linked to the Biblical story of Adam and Eve. Hence, they called their morphine pills "Jesus opium".

[53] See Chapters Two and Three to follow.

[54] It would strike those readers familiar with CC*M-Zhongyi* in any way that the practitioners of the *medicine* did nothing so different from what the doctors in Western Europe and the USA were doing – for details of how CC*M-Zhongyi* practitioners diagnose and treat patients, see Lee 2018, Chapter 8 (in particular).

[55] However, this pulse should not be confused with the *mai* 脉 which the Chinese physician felt; *ma*i should not be translated as "pulse" – see Lee 2018, Chapter 5.

[56] At least this author has not so far tracked down a source to say that missionary doctors in China had them.

[57] This is why a leading medical publication in the world is called *The Lancet*.

1916), and many others. Furthermore, it was also used as a general regimen to maintain health and longevity. Two famous personalities killed by excess use of venesection were George Washington and King Charles II. The American President was killed by his doctors in 1799 – see Moerman 2002. Earlier, the British monarch also died at the hands of his doctors who prescribed a relentless series of treatments combining blood-letting and emetics – see Evans 2004.

Another technique used, also related to blood, was leeching – here, the blood was removed not directly via cutting a vein with a knife, but was sucked from the patient by leeches.[58] These treatments were acknowledged to be inefficacious (according to the best evidence available at the time) but yet were prescribed. One wondered why. A possible explanation could be that doctors could not just let the patients go away empty handed as that would be too demoralising to both patients and doctors. Who knows whether those missionary doctors who prescribed the same for their Chinese patients, including "Jesus opium" did so for the same reason? The missionary context provided an added incentive – the patients who were comforted by the treatment doled out to them by these foreigners did not have to pay consultation nor treatment fees whereas if they had gone to a *Zhongyi* practitioner, they would have to pay a small fee on top of buying the medicinals[59] prescribed as treatment. The missionary doctors and their activities would be paid for by the donations of fellow believers back home who hoped not only to save the patients' bodies but primarily their souls through this gesture of generosity.[60]

Not only were the treatments mentioned above known to be inefficacious as already pointed out, it was also acknowledged that they embodied outdated and therefore, unscientific theories. They relied on the humoral theory of medicine whose origin can be traced back to the times of Hippocrates (ca. 460-370 BCE) and to Galen three centuries later, which was not finally retired until in the late 19th century. (See Wootton 2006.) The human body was said to have four humours – these were black bile, yellow bile, phlegm and blood, with each humour corresponding to one of the four temperaments, the sanguine (blood), the choleric (yellow bile), melancholic (black bile), phlegmatic (phlegm). If these humours were balanced, the person would be healthy; an imbalance would lead to illness. As the humoral theory held that the four humours were found in blood, it followed that to get a proper balance between them would require that any excess be drained off by venesection. Now the history of science and medicine tells us that Harvey had discovered blood circulation via the heart as a pump in 1628; that oxygen was discovered in 1775; that haemoglobin (the protein molecule carrying oxygen in the blood giving it its red colour) was discovered in 1840.[61] That history also tells us that Harvey had shown that what flowed through the arteries and the veins was the same substance except that arterial blood carried oxygen and venous blood did not. Yet in spite of such knowledge, doctors performing venesection believed that letting venous blood cured disease/illness while holding that letting arterial blood would cause harm and should be avoided at all cost.

This brief historical survey of medical education, theory and practice shows that the missionary doctors, strictly speaking, had little to offer to their Chinese patients by way of cures. What spoke to the Chinese could, therefore, not be the efficacy of their treatment; perhaps what spoke to them most of all was the military and economic might of the countries of which they were nationals. Such might would have rubbed off in other domains, such as medicine, making the Chinese play the role of The Colonised, putting the foreign medicine on a pedestal and down-grading or even rubbishing their own system of *medicine*. It made some of The Colonised elite feel that *Zhongyi* was so sub-standard that it ought to be written off totally or less drastically, it must be modernised and brought up to scratch.

To sum up the discussion so far presented, the Chinese appeared to have identified at least two, if not more, domains of their culture which embodied backwardness: their system of writing which must be replaced with Latinisation and their system of *medicine*. By the mid-20th century, the cry of Modernisation in the form of Latinisation for the written language appeared to have been stifled for good, as we have seen; the cry of Modernisation in the domain of *medicine*, however, has been raised time and again even today, as we shall see later. With every advance in MWM/Bm, The Colonial Mind-set rears its head and its voice to demand that CC*M-Zhongyi* must modernise if its existence is to be tolerated.

The Spell of Modern Western Medicine/Biomedicine as Clinical Medicine on The Colonised: Can it be Dispelled?

For this narrative of The Colonial Mind-set to unfold regarding medicine/*medicine*, one must pick up the story of the developments of MWM/Bm from the late 19th century to the mid-20th century in Europe and the USA. Our study so

[58] The French favoured leeching so much that in the 19th century, they had run out of leaches and had to import them from Turkey, increasing from a mere 100,000 in 1824 to 33 million in 1827; in turn England imported six million from France. The demand for leeches was just as brisk in the rest of Europe – see Duke 1991.

[59] This study uses the term "medicinals" to refer to the ingredients which can make up a particular prescription in *Zhongyi* treatment. Although *Zhongyi* is commonly in the West called "herbal medicine", this is strictly speaking not correct. Plants predominate but animals and their parts as well as minerals are also used.

[60] Some poor people converted to Christianity and they were the "rice-bowl Christians" who looked to the missionaries for whatever economic relief rendered them.

[61] The discovery is attributed to a German biochemist, Friedrich Ludwig Hunefeld.

far has revealed that MWM by way of CM had nothing much to show for as far as both theory and therapy were concerned. The spectacular major advance in medical theorising involves the work of the French Louis Pasteur (1822-1895) and the German Robert Koch (1843-1910) which ushered in the Age of Bacteriology. Their discovery of germs as the causal agents of disease put paid to the humoral theory and the miasma theory of disease. Their discovery of disease-causing microbial organisms is said to have put Scientific Medicine finally on a secure basis. However, this tale of discovery, heroic though it be, did not produce any impact at the level of CM, of effective treatment of individual patients till more than sixty years later after the end of WWII, when the Australian-born Howard Florey (1898-1968) and the Berlin-born Ernst Chain (1906-1979) managed to mass produce penicillin by 1943, after having successfully isolated and purified it. Penicillin, an antibiotic, was discovered accidentally by the Scottish-born Alexander Fleming (1881-1955) in 1928. The so-called "magic bullet" with which Bm is associated was born, strictly speaking after WWII.[62]

Such advance made some of the Chinese elite even more worried how backward *Zhongyi* 中医 must appear by comparison with MMW and its spectacular scientific discoveries. So mesmerised were they that they failed to notice that MMW and *Zhongyi* share many commonalities between them, their differences notwithstanding.

In the history of MWS, there is an obsession on the part of some scientists called "Physics envy". This obsession led all other sciences to aspire to the level of scientificity achieved by physics. In a simplistic nut-shell, it is held that physics is not merely explanatory but is also capable in terms of its laws to make very precise predictions which are measurable and quantifiable. Biology, in particular, felt very vulnerable, even in the light of Darwin's theory of evolution, as alas, that theory though able to explain phenomena appears totally incapable of making any precise predictions in the way physics can do and does.

One could say "Western-Science Envy" has fuelled the anxiety and urgency of Modernisation with the Chinese elites. Some of these elites even as late as the first decade of the 21st century, never mind earlier during the last, became so agitated by the existence and/or toleration of *Zhongyi* (including even TC*M-Zhongyi*) that they engaged in a polemical attack on the *medicine*. According to Gu 2013, 136, this was conducted mostly online, although a book did appear in 2007 [63] detailing the campaign to abolish it, asking people to petition the government to strike it off the Chinese medical curriculum as well as to deprive it of other forms of support. A leading light, someone called Zhang Gongyao wrote an article "Farewell to Traditional Chinese Medicine" in *Medicine and Philosophy*, 4, 2006, (cited by Gu 2013),[64] thus:

> I can say responsibly that traditional Chinese medicine is neither a positive culture nor a kind of science; it does not even qualify as a "pseudoscience." Rather, it is a swindle carefully designed by ancient Chinese scholars who failed in the civil service exams and exploited the mentality of people pressurized by illnesses. to search for cure.

[62] Alas, the image of this "magic bullet" has of late been dented through excessive use of antibiotics not only in CM but also in commercial-industrialised farming of animals, leading to the emergence of the superbug which has cunningly evolved to be antibiotic-resistant. Incidentally, one should always bear in mind that antibiotics are only relevant to the killing of harmful bacteria, not of virus. Hence, as shown by the COVID-19 virus pandemic beginning in 2020, the hope of controlling it rests ultimately on the successful development of a vaccine. However, one must add that the process of developing vaccines is both complex and time-consuming. In the history of vaccines, there have been successes as well as failures. For instance, Koch's initial vaccine against tuberculosis was a distinct failure and an effective treatment for the disease had to await the availability of the antibiotic, streptomycin in 1946. Pasteur did manage to produce a successful vaccine against the anthrax bacterium in 1870 when he used a version of RCT on animals. (There is some controversy of late surrounding Pasteur's anthrax vaccine but is of no relevance to our pre-occupation at hand.) On the other hand, vaccination against the smallpox virus was successfully conducted by Edward Jenner in 1796, eight decades before Pasteur's anthrax vaccine by using cowpox to produce immunity against smallpox. Well before Jenner, one method of variolation had been used in China to prevent the disease by exposing individuals to old scabs of those who had smallpox which contained a milder version of the virus. (However, modern theoretical understanding of the genomics of SARS-CoV-2, the virus which causes COVID-19 as well as more advanced technology have enabled three vaccines to be developed all in less than a year and is being rolled out in the UK and elsewhere in the West at the beginning of 2021. Russia, China and India have each produced their own vaccine(s).)

To prevent misunderstanding, one must point out that some drugs (not antibiotics) were available to CM before the end of WWII, such as aspirin (since 1897 as a mass drug) and salvarsan (since the early 1910s, an arsenic-based drug for treating syphilis). Paul Ehrlich, the inventor of the latter used the term "magic bullet" to describe it; however, the drug had drawbacks in its application. Hence, the mantle of being the real "magic bullet" later fell on antibiotics as these could cure any disease caused by bacteria, not just one designated disease, such as cholera. Furthermore, they are available in the main as pills which can readily be swallowed.

[63] *Criticism of Traditional Chinese Medicine*. Beijing: Concord Medical University Press (as cited by Gu).

COVID-19 has prompted a bout of support for *Zhongyi* as well as criticism of it as being non-scientific. This time the champion of *Zhongyi* (as TC*M-Zhongyi*) turns out to be the PRC government led by Xi Jinping (see *The Guardian* 03/06/2020); for a critical account, see Cyranoski (May) 2020b.

[64] This author only came to read Gu 2013 when all the basic thinking and writing of this book have been completed and hence, did not have the opportunity to benefit from it right at the beginning of the project. However, this author has benefited from the joy of having discovered that a fellow scholar shares a similar orientation.

Gu 2013, 136 rightly disparages and mocks such a campaign in the following words:

> The campaign is typical of those whose minds have been colonized by ideological epistemology of the Western production. It is their firmly held belief that whatever cannot be accounted for by Western science is not scientific and should be rejected for having no value. Because Chinese medicine is based on a theoretical system that is entirely different from that of Western medicine, and because its clinical efficacy cannot be explained by Western medical theory, they have good reasons to dismiss it as "false science" and "quackery". What needs to be mentioned is that their attack represents the rekindling of an old debate over traditional Chinese medicine fueled by the many Western-trained Chinese scholars of the 1930s who attempted to employ government power to abolish traditional Chinese medicine in Chinese society. Needless to say their attempt met with complete failure. In a similar manner, the recent campaign to abolish traditional Chinese medicine fared even worse and ended with wide-spread ridicule and condemnation.

In the language of Gu 2013, such a misguided attack suffers from "Sinologism" and its related process of "Sinologization". Gu and this author see eye to eye on the misguided nature of such an enterprise, even if this author uses a different language to critique it.[65] He elaborates on the two notions as follows:

> One can find in these remarks a distinct note of intellectual Sinologism, for one can hear a voice loud and clear: that the Chinese scholars' results do not count and must be authenticated and approved by Western scholars, who are the ultimate arbiters. (p172)

> Sinologization is an undeclared but tacitly administered institutionalization of the ways of observing China from the perspective of Western epistemology that reuses, or is reluctant, to view China on its own terms, and doing scholarship on Chinese materials and producing knowledge on Chinese civilization in terms of Western methodology that tends to disregard the real conditions of China and reduce the complexity of Chinese civilization into simplistic patterns of development modelled on those of the West. … De-sinologization is to self-consciously de-institutionalize the sinologistic ways of observing China and doing scholarship on Chinese materials. It involves two major aspects: one pertaining to Chinese scholars, the other relating to non-Chinese scholars. De-colonization for Chinese scholars is to be aware of the drawbacks and shortcomings of sinologistic ways of doing scholarship, to recognize the limits and limitations of Western concepts and conceptualizations, to overcome a blind faith in the efficacy of Western theories, and to self-consciously reject the intellectual habit of doing scholarship in terms of the culture-specific models and methodologies of the West. In the final analysis it is a process of intellectual emancipation of a mind shackled by Western perception, conception, and generalization, a spiritual restoration of the faith in one's own abilities and creative power, and a resuscitation of one's zeal for original creation. De-sinologization for non-Chinese scholars is to have a clear awareness of the inevitable subjectivity of one's perspective of observing China, to be on guard against doing Chinese scholarship on Western terms, and to strive to produce knowledge and scholarship on China in as objective and scientific a manner as possible. (pp219-220)

To dispel the low self-esteem and the sense of inferiority entrenched in the consciousness of The Colonised, one must wean such people to a new orientation which has two aspects to it:

(a) Negatively, to avoid committing Essentialism of Method and its associated category mistake (or in the words of Gu 2013 to abandon Sinologism and Sinologization).
(b) Positively, to adhere to **ARIIMO**.

Doing so would enable them to see that CC*M-Zhongyi* is just as valid as Bm but each within its own context – they are very different but equally valid systems of medicine/*medicine*. Each has its own theory, its own related cluster of therapies, its own procedure for diagnosing and treating illnesses, its own method of evaluating success and failure with regard to their therapies. Each has its own strengths and its own weaknesses. However, in spite of these differences, there are commonalities. In this way, one can engage with the Medical Other in a respectful as well as fruitful manner.

We will be looking at the differences in the chapters to follow, but what are its commonalities? Banal as these may appear when spelt out, all the same it is necessary to do so. Their commonalities stem from the simple fact that they are systems of medicine/*medicine*. Any systematic medicine/*medicine* which claims to be scientific subscribes to the following:

1. Disease/illness is a natural phenomenon; it has nothing to do with supernatural entities called God/gods punishing human beings for having sinned or disobeyed his commands.[66] As such, it has natural causes.

[65] The project of this book in undermining and attempting to eliminate The Colonial Mind-set is also akin to what Karchmer 2015, 2017 has called for, that The Colonised mind should "decolonise" itself. See also other labourers in the same field such as Lau and Sit 2020.

[66] The ancient Chinese had their Enlightenment by the time of Confucius/Kongzi 孔子 (551-479 CE), if not before; The German Enlightenment (from the point of view of philosophy) would include Leibniz and Kant – very roughly one may use the 18th century as a guide. See Lee 2021, Chapter 2 (Open Access) for a critical assessment of Kant who is acknowledged as the leading Enlightenment philosopher and thinker.

2. Patients are people suffering from a condition which causes them discomfort/pain/potential death, who seek help from practitioners.

3. The aim of Medicine/*Medicine* is to diminish the discomfort/pain of patients, even if it cannot cure them in absolute terms of their suffering.

4. Amelioration or cure implies that one must use a diagnostic procedure to determine what could have led to the suffering.

5. Patients are asked to report their symptoms. (Symptoms are subjective reports about themselves, not directly accessible to an observer.) As already observed, they point out where the ache/pain is, in the head/the stomach/the chest/ the limb(s); what kind of ache/pain it is, stabbing/dull/chronic/acute; that the pain increases/decreases when seated/standing upright/lying down; that they cannot sleep/have lost their appetite/ feel depressed/ anxious/ worried/sad; that nausea/vomit occur in the morning/at night/after a meal …

6. Patients may also point out signs, such as they have a lump in one of their breasts, a bruised patch on their shin, and so forth. While medical practitioners cannot access the patient's symptoms, they can ascertain for themselves the signs as these are, if not objective, at least are inter-subjectively checkable by fellow practitioners. Practitioners, *ex hypothesi*, are more experienced and have greater expertise and so can observe more signs and analyse them more systematically than the patients themselves.

7. Based on signs and symptoms, the practitioners, leaning upon their theoretical knowledge, their own clinical experience as well as the experience of fellow practitioners whose experience they might have learnt about through professional publications or even through the professional grape-vine, would attempt a diagnosis.

8. Their diagnoses would indicate possible treatments.

9. Treatments would be prescribed in good faith that they would do patients good and patients would accept and apply the treatments also in good faith that they would work.

10. Patients and practitioners would evaluate the treatments: do they work at all/in limited fashion or are fully effective?

11. Practitioners would use the same clinical endpoints to judge the success or failure of diagnosis-cum-treatment: amelioration of condition/total cure/death.

12. Such evaluations would go towards enlarging the practitioners' corpus of knowledge, skills and expertise which would enable them and future generations of practitioners to become better diagnosticians and prescribers of better treatments.

In other words, both systems share the same goals/values, not to mention in general the same broad methodology. Their practitioners follow the same calling, to benefit fellow human beings through relieving them of their pain/suffering brought on by their illness. Western Medicine likes to cite the Hippocratic Oath[67] as an embodiment of such values; in reality, that Oath contains much that is totally alien to the West and incompatible with the values of Bm (at least as practised in the US, the UK and other Western countries today). For a start, it calls upon a suit of pagan gods, well-known, such as Apollo, lesser known, such as Asclepius and Hygieia and even obscure ones, such as Panacea. The oath-taker has to foreswear surgery, a fundamental part of MMW/Bm. It forbids carrying out abortions as well as practising euthanasia/assisted dying outright, under all circumstances which are very contentious and controversial issues in Western societies today, either fiercely rejected or upheld by certain sections of the populous. It also requires practitioners to teach "this art" without "fee or contract" which again is at odds with the practice in Western societies.[68] However, three things still find favour: (a) to uphold medical confidentiality, (b) not

[67] Hippocrates lived 460-370 BCE, traditionally regarded as the "Father of Medicine" (or more accurately the founder of the Hippocratic school of medicine). What he taught is said to be contained in what is called the Hippocratic Corpus of books, actually written a hundred years after his death. This Corpus indicated that the school subscribed to the view that the remedy for illness lay primarily in a healthy diet and exercise. Failing that, some plants/herbs would be prescribed. They also talked about how to cope with joint dislocation. One cannot be sure if he himself had written the Oath.

[68] For this wording, see The Hippocratic Oath 2002. Actually, this oath must be read in the context of the first paragraph which states very clearly that entering the medical profession was becoming a member of a professional body through becoming a member of the teacher's family. When a person was accepted by a physician to learn the skills/expertise, the pupil had to swear an oath of allegiance to the teacher as well as the community of physicians; he had to regard his master/teacher as his father,

to do harm or injustice to patients (presumably in prescribing treatments for patients) and (c) not to commit sexual impropriety with regard to members of the patient's household, of either sex, whether free persons or slaves (one could read it as applying also to the patients themselves).

Zhongyi has an equivalent formulated by Sun Simiao 孙思邈 (580-682 CE), a distinguished theorist/ practitioner/medical scholar who lived during the Sui-Tang period and was honoured with the title of "King of Medicine" or "King of Medicinals". He was said to be a child prodigy; even at the age of seven, he could learn per day a thousand words of the classics in which he steeped himself so that by the time he was twenty he had mastered *philosophy* (which included *Daojia* 道家, *Rujia* 儒家 and *Fojia* 佛家 /Daoist *Philosophy*, Confucianism and Buddhism) as well as the literature on *medicine*. His interest in *medicine* came from his childhood experience; as a sickly child, his parents sought medical help everywhere, but to no avail, leaving the family more or less bankrupted. Given his intelligence and his learning, he could have become a court official and led a comfortable, cosy life. Indeed, he was approached by the Sui Court. However, he turned his back on such an existence as he saw the poverty and the suffering of the common people all around him, brought on by exorbitant taxes and corvée, not to mention epidemics which normally flourished in the midst of such dire circumstances. Instead, he served the common people in the countryside. Eventually when the Tang dynasty was established, the Tang emperors did succeed, to an extent, in persuading him to come to Court, showering him with many honours. However, he regarded it, at best, as a part-time appointment; he spent a lot of time roaming widely around the countryside surrounding the capital, treating/curing the common people while collecting traditional prescriptions still in use as well as gathering herbs and studying them. Finally, after some years, he left Court altogether (in 674 CE?) to dwell full time in his cave, to pursue his own life and agenda as a hermit and alchemist. His pursuit of longevity appeared to have been successful as he died at the ripe old age of a hundred and one.[69] His dedication to *medicine* earned him great respect and admiration. Posterity had built many temples dedicated to him, and his cave became a place of pilgrimage.

His attitude to *medicine*, not as a mere profession but as a profound calling, rested on the axiom that all human life was precious and invaluable and that the goal of the physician was to save as many lives as his abilities permitted him. His detailed thoughts on such a calling, found in the preface to one of his two books[70] entitled 大医精诚 *Dayi jingcheng/ The Great Physician's Absolute Sincerity* (also, amongst others, as *Importance of medical knowledge and medical ethics for a physician*), may be summarised as follows:

(a) Duty to relieve the suffering of, and/or heal those who are ill, wounded and dying.
(b) This duty exists whether the sufferers are rich or poor, of noble or lowly standing, attractive or unattractive, educated or uneducated: treat all patients equally.
(c) Carrying out such a duty can be dangerous and full of difficulties:[71] the physician must not be afraid and shirk duty.
(d) Never be deterred by the filth and stench emitted by some very ill patients; never turn such patients away.
(e) Always stay calm, focus on diagnosing correctly and accurately; always pay attention to patients' safety.
(f) Respect fellow physicians; never be jealous of others.

Practitioners of CC*M-Zhongyi*, in particular, today are exhorted/expected to adhere to this Declaration of Medical Ethics.

Sun Simiao said one needed to study and know:

(i) Buddhism to open oneself to compassion and empathy for fellow human beings.
(ii) The *Rujia* canon to embody in the self the virtues of humaneness (仁) and righteousness/what is correct and appropriate (义).
(iii) The foundational text of Chinese culture and civilisation, *The Yijing* /I Ching as well as other texts in *Daojia* (Daoist *philosophy*) such as *The Laozi* 《老子》 and *The Zhuangzi* 《庄子》 as without the latter two, one would not be able to understand the harmonious inter-twinning of *Yinyang* 阴阳, the movement of *Qi* 气[72] in the person (to promote and maintain health)

his family as his own, to regard his children as his own siblings. Once accepted, the pupil was then taught the profession free of charge; he, in turn, would teach it to his own sons and the sons of his teacher.

[69] Some even said at a hundred and forty-two.

[70] His two books are: 《备急千金要方》*Bei ji qianjin yao fang* /*Invaluable Essential Formulas for Emergencies* which he wrote at the age of 71 and 《千金翼方》*Qianjin yi fang/Invaluable Supplementary Formulas.*

[71] Think of the risks to life faced by all health-care workers (doctors, nurses, paramedics, ambulance workers, hospital porters and cleaners alike) during the COVID-19 pandemic, especially in the UK where PPE (Personal Protective Equipment) failed to arrive during the height of the UK crisis. Sun Simiao himself successfully treated several hundred patients suffering from leprosy.

[72] This term will be left untranslated here; the concept will be explored in later chapters of this book.

(iv) The other *philosophies* of the Warring States Period as well as history in order to understand the present through the past.

These demanding requirements are set out in the chapter entitled 大医习业 *Dayi xiye* /*The Great Physician's Professional Practice*, which preceded the chapter setting out his Declaration of *Medical* Ethics. You can see that the conception of *Zhongyi* as set out by Sun Simiao is one which instantiates what this book calls Ecosystem *Science*, a theme which will be explored in detail in Chapter Four of this book. To understand it, one must situate it within Chinese history, *philosophy*, society, culture and civilisation; it cannot and should not be apprehended as mere technical know-how. Its therapy is rooted in its theory, its theory in its *philosophy*, its *philosophy* in its history, culture and civilisation – the Microcosm is embedded in the Macrocosm; together they form a *Whole* (what in Chinese is called 天人相应 *tianren-xiangying* or 天人合一 *tianren-heyi*, what in sinology literature is translated as "Correlative Thinking" but which this author translates as "Macro-Micro-cosmic *Wholism*").[73]

Structure of the Book Explained

The chapters to follow in this book fall into five parts and will present argumentation to support the orientation outlined above.

Part II (**History and Philosophy**), in the main, is both historical and theoretical, covering Chapters Two, Three and Four which explore the nature of the relationship between these two systems of medicine/*medicine* in two related ways:

1. Their respective theoretical/philosophical vantage points.

2. Their respective historical developments and evolutions.

The historical dimension appears to be critical. In Bm, there are two critical moments, so to speak, both in the 19th century:

(a) The rise of bacteriology as a biomedical science was pioneered by commonly acknowledged giants such as Pasteur (1822-1895) and Koch (1843-1910). Their achievements, initiating the Age of Bacteriology, introduced a new conception of disease, referred to as "solid medicine". **Chapter Two** deals with this development.
(b) The other new model of understanding disease was conceptualised by the rise of Epidemiology, as pioneered by John Snow in London over the cholera epidemic in 1854. **Chapter Three** looks at the cluster of concepts embedded in this new development.

In this development of MWM, "solid medicine" perceives itself to play the role of The Coloniser/The Superior, assigning to Epidemiology the role of The Colonised/The Inferior. This shows that The Colonial Mind-set can also be endogenously applied, as already earlier mentioned *en passant*.

These developments could be analysed theoretically and philosophically in terms of their respective ontologies, and their respective models of causality as well as their entailed methodological implications. Very briefly, "solid medicine" as pioneered by the Age of Bacteriology rests on what may be called Thing-ontology on the one hand and the Monofactorial, Linear Model of Causation, which may also be called the Billiard-ball Model, on the other. In other words, its conception of disease is of a "disease-entity", a thing (such as a bacterium, a fungus, a parasite, a DNA sequence and so on), and is committed to one disease-causal agent producing one effect, the disease in question, with the causal arrow pointing one way only, namely thus, →, from cause (a) to effect (b).[74]

In contrast, Epidemiology focuses on what may be called Process-ontology (but not to the exclusion of Thing-ontology, however, as we shall see) on the one hand and the Multi-factorial, Non-linear Model of Causation on the other, where the causal arrow, so to speak, points both ways, in a reciprocal fashion, namely thus, ↔, from (a) to (b) as well as (b) to (a). This understanding of disease focuses not so much on the disease-entity or the individual sufferer harbouring the disease-entity (which causes the suffering) but more on the disease-pattern which can be found in a population, the pattern being the result of the inter-relationship between certain things and events as well as processes at work. It may also be understood as Ecosystem Science (which in turn may be characterised as a form of Systems Thinking).[75]

[73] For one interpretation of this conception of *Zhongyi*/CCM-*Zhongyi* in English, see Lee 2017a and 2018; in Chinese, see *Liu.2003 and its English translation as *Classical Chinese Medicine* in 2019.
[74] See Lee 2012b, 2017a, 2020.
[75] See Lee 2019; Lee 2021, Chapter 6 (Open Access).

The time-scale of Bm or its forebear MWM is relatively short as MWM can be dated from the 17th century onwards when MWP replaced Medieval European Philosophy (MEP) to back the new science. MEP rests on neo-Aristotelianism, invoking Aristotle's four causes (material, efficient, formal and final); WMP retains only material and efficient causes while vigorously discarding formal and final causes on the ground that these smack of metaphysics in the abusive sense of the term, as already observed. At the same time, it embraces a version of Dualism in the form of the Body-Mind Dualism which privileges Body over Mind, as the study of Body is considered to be objective, capable of quantification which are the hallmarks of scientificity, the paradigm endorsed by MWM backed up by MWP.[76] Furthermore, it is committed to the ontological *volte-face*/category mistake of regarding the human being no longer as an organism but as artefact/machine.

Within such a relatively short time-scale, Bm can be shown to support two contrasting models of disease involving two contrasting theoretical/philosophical and methodological frameworks.

But what then about CC*M-Zhongyi*, the medicine indigenous to China and its cultural roots with a history of at least two thousand years?[77] In spite of its long lineage, Bm/WMM is/has been sceptical about its claim to the status of systemic *medicine* whose hypotheses can in principle be subject to testing, thus qualifying the *medicine* to be "scientific" in the standard understanding of the term. **Chapter Four** also critically looks at the claim and counter-claim to scientificity. This part of Chapter Four demonstrates the application of The Colonial Mind-set in an exogenous context as MWM/Bm plays the role of The Coloniser and CC*M-Zhongyi* is assigned the role of The Colonised.

Part III (**Conflict and compatibility: can they be harmonised?**) contains two Chapters, Five and Six.

Chapter Five looks at attempts in the 20th century to reconcile the two medicines both at the level of theory and practice and to construct an "integrated *medicine*"[78] (I*M*): (a) in the earlier decades and (b) in the 1950s after the establishment of the People's Republic of China in 1949. Analysis shows that in one respect, these are two radically different projects, although both could have been guided by the goal of trying to achieve an integration between CC*M-Zhongyi* and MWM/Bm. They both failed, each in its own way; their failure could be said to show that any such attempt at integration is bound to fail as integration means assimilation rather than adhering to ARIIMO.

Chapter Six critically assesses in turn the theoretical/philosophical cum methodological frameworks of pharmacology/*pharmacology* as understood and practised by CC*M-Zhongyi* and Bm. It looks at one particular medicinal in Chinese *Materia Medica* and its transformation into a pharmaceutical product relevant and acceptable to Bm. It examines the work of Tu Youyou 屠呦呦 (1930-) and her team who eventually won the Nobel Prize in Medicine in 2015, nearly five decades after the work was completed. As Tu Youyou herself is aware, the project of transformation is not without traps and faces possibly insurmountable obstacles in the process of forcing, so to speak, a square peg to fit a round hole. The medicinal plant, *qinghao* 青蒿 / Herba Artemisiae Annuae became *qinghaosu* 青蒿素, called artemisinin in Biomedical pharmacology, which became the drug of choice for treating malaria. This is how TC*M-Zhongyi* attempts to be integrated with Bm. This is not how CC*M-Zhongyi* regards the use of medicinal plants in the diagnosis of an illness and in the prescriptions invoking them as being relevant to treating the patient under diagnosis. In other words, the Nobel honour is bestowed on TC*M-Zhongyi* (as I*M*) not CC*M-Zhongyi*.

In general Part III demonstrates that The Colonised can never hope to achieve equal footing with The Coloniser, as built into The Colonial Mind-set is the *status quo*, that The Colonised will always remain inferior, a subaltern to the Officer Class. These two chapters show that the only possible condition of integration is under the terms set by The Coloniser/The Superior Class.

IV (**Potential for compatibility and harmonisation?**) contains only one chapter. **Chapter Seven** turns with hope in exploring the latest evolution and developments within Bm itself over the last two decades or so. These show a turning away from the model of Reductionist philosophy and its Reductionist methodology as well as its Monofactorial Linear Model of Cause (call this Bm Mark I) to a Wholist orientation, invoking a model of Multi-factorial, Non-linear causation. Let us call this Bm Mark II. This chapter highlights some cutting-edge technologies and new disciplines in Bm Mark II, such as genomics, transcriptomics, proteomics and metabolomics under the aegis of Systems Biology.

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[76] See Lee 2018, Chapter 6.

[77] Its foundational text, *The Neijing*, is today acknowledged by the community of (Chinese) scholars to have emerged as a fully mature text, probably during the Western Han period (206 BCE-24 CE). The operative phrase is "fully mature" as parts of it can be dated to the Warring States Period. Earlier scholarship (during the Song and the Qing dynasties) had regarded it to be a text of the Eastern Zhou period (770-221 BCE), the period of the Spring and Autumn Annals and the Warring States. See * 黄帝内经 at https://baike.baidu.com/ item/%E9%BB%84%E5%B8%9D%E5%86%85%E7% BB%8F/ 97915?fr=aladdin#1.

[78] This author would have used the term "Integrative Medicine" but for the fact that it is already in use, to refer to any medicine whose treatment takes into account the emotional/personal/social/cultural/environmental circumstances in which patients find themselves. (See The Andrew Weil Center for Integrative Medicine 2020). It appears to have much in common with what this author refers to as Ecosystem Science – see Chapter Four of this book.

This new orientation away from the Monogenic Conception of Disease as disease-entity (Thing-ontology) towards that embedded in Ecosystem Science (as exhibited by Epidemiology) renders Bm in the 21st century closer to the theoretical/*philosophical* orientation endorsed by CC*M-Zhongyi* down the centuries. Chapter Seven anticipates in principle a new era of understanding between Bm and CC*M-Zhongyi* as there now appears to be a common ground for the fruitful and meaningful exchange of ideas and concepts both at the level of theory and clinical practice. This potential meeting of minds, ironically, has been brought about by internal developments within MWS itself while CC*M-Zhongyi* has/had remained faithful to its theoretical/*philosophical*/methodological roots for more than two thousand years. It is also ironical that some practitioners of TC*M-Zhongyi* while welcoming this new radical development in MWM/Bm and MWS, nevertheless, in the next breath claim that it is time for TC*M-Zhongyi* to catch up with this progress in Bm by "modernising" itself! This is the mentality of The Colonised gone haywire. CC*M-Zhongyi*, as Ecosystem *Science*, is *Wholist* in orientation at every level of its theory and practice; so why does it need to be "modernised"? The Colonised has become so addicted to its role that it can no longer see its way to discarding it even when it is now clear that the boot is firmly on the other foot.

Part V (Irreconcilable Differences in Two Domains) Although the scope for respectful harmonisation between the two medicines, hopefully, may be on the increase, if and when colonial blinkers are removed, there are still two serious areas of conflict which appear to remain unresolved at the theoretical/philosophical level in their respective analytical understanding of:

(a) The concept of person(b) The concept of *Qi*: Is it real? Does it exist? How does it work? Is it verifiable or falsifiable?

Chapters Eight and Nine explore critically the respective sets of contentious issues involved and the interrelationship between them with regard to (a) and (b) above.

Chapter Eight investigates the cluster of issues which make up what is called the Mind-Body problem in WPT. WPT embraces Dualism while C*P*T/CCD*P* adheres to what this author calls Contextual-dyadism. It is also the case that WPT adheres strictly to the objective-subjective divide and considers only the objective to be fit for inclusion within the domain of Science. These two philosophical presuppositions then underlie the notion of the individual patient as understood by Bm where emotions are relegated to the domain of the subjective and hence, the "unscientific". This, then, yields a very misleading and diminished notion of person-hood compared with that in C*P*T/CCD*P* and CC*M-Zhongyi*. As a result, for Bm, eliminating or controlling the placebo effect becomes an obsessive goal of "scientificity", as understood by its Gold Standard, the RCT.

Bm (except in the sub discipline of psychiatry/psychosomatic medicine since the 1950s) stubbornly focusses on the physical aspects of the patient in diagnosing his/her medical condition as well as in treating it. In contrast, CC*M-Zhongyi* accepts that the concept of *person* is a primitive concept, that is, the *person* is the site where the physical and the mental attributes are inextricably entwined, in the same way as *yin* cannot be separated from *yang* and *yang* cannot be separated from *yin*. From this, it follows that all illnesses necessarily have a psychosomatic dimension, that diagnosis as well as treatment must take into account the mental/emotional/moral/social context of the patient, even one who presents him/herself with a broken leg. CC*M-Zhongyi* is Ecosystem *Medicine/Science* and is *Wholist* at every level of organisation, analysis and understanding, *shenti* 身体, therefore, should not be translated literally as "body", but as "person-body", an embodiment of what may be called *Yinyang Wholism*, an inextricable entwining of the physical (*yin*) and the mental (*yang*) aspects of the human being.

Chapter Nine finally attempts to come to grips with the most serious obstacle standing in the way of a respectful inter-relating orientation between Bm on the one hand and CC*M-Zhongyi*, on the other. This concerns the vexing concept of *Qi*, a concept which is totally alien to Bm Thinking but crucially fundamental to *Zhongyi* especially CC*M-Zhongyi*. Does *Qi* embody *Thing-ontology* or *Process-ontology* or even both as *Thing-ontology-cum-Process-ontology*, an aspect dealt with in some detail in Chapters Four and Eight? This chapter tackles head-on the issue whether *Qi* in its two modes exist, but especially *Qi*-in-dissipating mode. *Qi*-in-dissipating mode is embedded very clearly and obviously in the theory and practice of all forms of CC*M-Zhongyi* therapy such as decoction (汤药 *tangyao*), massage (推拿 *tuina*), moxibustion (灸疗 *jiuliao*, the burning of 艾 *ai*/ moxa[79]), 气功 *qigong* as well as acupuncture. If *Qi*-in-dissipating mode does exist, then it must be testable. Can meaningful tests be designed and carried out to establish its existence? This chapter argues that such tests exist although it would be a fundamental mistake to expect them to take the form of quantifiable outcomes or of RCTS. In other words, this chapter explores the testing of the *Qi* Hypothesis in general but the *Qi*-in-dissipating mode Hypothesis in particular, via the methods of testing used endogenously in CC*M-Zhongyi*.

[79] The terms "moxa" and "moxibustion" in Chinese are 艾 *ai* and 灸疗 *jiuliao*. The Western world first came to know about them via the Portuguese missionaries in the 16th century. *Ai* is mugwort which botanically is Artemisia argyi which in Japanese appears as *A. mogusa*, evolving to sound as "moxa" and hence "moxibustion", the therapy which involves usually the burning of pieces of compacted dried *ai* or *aicao* 艾草(leaves of the *ai* plant).

Part VI (The Axiom of Respecting the Identity and Integrity of the Medical Other: A Possibility)

Chapter Ten looks systematically at *Qi* via the notion of the *Jingluo* Network (经络, often translated in English as the system of Channels or Meridians in the person-body) which is a core hypothesis in CC*M-Zhongyi*. This chapter goes beyond the last which has simply shown that all *Zhongyi* treatments are predicated on the existence of *Qi*-in-dissipating mode, to looking at *Qi* operating systemically in the person-body in a complicated network of *jingmai* 经脉 to sustain the living individual and to allow him/her to flourish. Again, it is in acupuncture that the *Jingluo* Network is most transparent even to the relatively untutored. Anyone who has ever walked into the clinic of a *Zhongyi* practitioner would find acupuncture charts and models depicting the main *jingmai* of the *Jingluo* Network. However, ironically, such an unfamiliar type of treatment appears to "enjoy" a status in the West (meaning in those parts of the world which have not traditionally been part of the Chinese cultural zone) in the last few decades, often denied to other forms of CC*M-Zhongyi* and even TC*M-Zhongyi*, such as decoctions. Such countries appear to tolerate its use even to the extent of recognising its relevance for treatment in many domains**,** such as illnesses pertaining to the digestive, emotional, eye-ear-throat, gynaecological, musculo-skeletal, neurological, respiratory and other conditions.[80] As Bm has as yet not found, to its satisfaction, any evidence for *Qi*'s very existence, never mind any explanatory mechanism for its purported effects, the obvious fall-back is to consider it as pseudo-science and its effects as simply placebo effects.[81] But could this be all? And should it matter? This chapter will look at an investigation of the *Jingluo* Network using modern biophysical methods to investigate the "reality" or otherwise of this system in the person-body. In other words, in contrast to Chapter Nine which looks at endogenous methods to test the hypothesis regarding *Qi*-in-dissipating mode in CC*M-Zhongyi*, this chapter explores an exogenous method of testing the hypothesis as well as that of the *Jingluo* Network; in this case, the investigating team used biophysical instruments and measurements.

At first sight, probing behind the "Appearance" in this biophysical manner looks like another attempt, at least, initially, to make CC*M-Zhongyi* respectable by authenticating it in terms of the Paradigm of Scientificity endorsed by Bm. However, this is not the end of the story.

The attempt, on the part of the chief investigator, leads to an ironical outcome. From being an out and out sceptic of CC*M-Zhongyi*, he has become an adherent of this system of *medicine* as a result of his investigative project and now utilises it himself (a limited version of its application) as well as recommends others to utilise it, at some cost to his original career. In terms of the philosophy of science, Chapter Ten looks at how such a transformation could have occurred – how The Colonised abandons The Colonial Mind-set and by implication opts for ARIIMO.

PART VII (Conclusion)

This has two parts:
(a) Summary of the main theses identified and explored in the book
(b) Brief discussion about a second over-arching philosophical framework within which the theses examined could be meaningfully grasped, namely, Constructive Realism to complement the first over-arching framework raised in Part I, Chapter One, namely, Wittgenstein's notions of language games and family resemblance. Together, it is hoped that they would be sufficient to undermine Essentialism of Method or Methodological Exceptionalism, the Paradigm of Scientificity endorsed by the Coloniser as Superior, downgrading that of the Colonised to the status of being Sub-standard or Inferior.

Conclusion

The attention of the reader must be drawn to the following house-keeping rules:

1. Terms such as "philosophy", "medicine" are given in two versions, one in normal font, the other italicised. The latter is invoked when the terms are used in contexts referring to Chinese theorising and practice in these domains. This is done to highlight the main burden of this study, to demonstrate The Colonial Mind-set at work as well as to expose the commonalities and differences between the two systems of Medicine/*Medicine*.

2. This term "zhongyi" cannot and will not be translated into English as "Chinese Medicine" for fear that an English reading public would identify it with TC*M* only – see, for instance, Scheid 2002. In Chinese, "zhongyi" simply refers to that *medicine* which in one form or another is practised today in China but whose roots go back to at least

[80] See Acupuncture 2020.
[81] See Silberstein 2009; Derbyshire 2013; Rodriguez and Stern 2014; Interlandi 2016; Acupuncture: In Depth 2016; Koppelman 2018.

two and a half thousand years of history. The *medicine* today in China may take two forms. In English, they are distinguished as follows, as proposed by this author: CC*M*/Classical Chinese *Medicine* which does not want to compromise its historical *philosophical*/cosmological roots as found in canonical texts – call it CC*M-Zhongyi* for short, on the one hand and on the other, TC*M*/Traditional Chinese *Medicine* which does, as TC*M* is Integrated Medicine/IM – call it TC*M-Zhongyi* for short.[82] For instance, the title of *Liu Lihong's book (2003), which makes a passionate plea for CC*M-Zhongyi*, is *Sikao zhongyi* 《思考中医》which may literally be translated as *Systematic Exploration of Chinese Medicine* or *Systematically Exploring Chinese Medicine.* It is obvious then that "zhongyi", in Chinese usage, cannot be equated simply with TC*M-Zhongyi*.

For the purpose of this book, *Zhongyi* will consistently be referred to, for short, either as CC*M-Zhongyi* or TC*M-Zhongyi*, depending on the context. Occasionally, *Zhongyi* is invoked on its own when the context makes it clear that it may not matter too much which of the two versions the reader ought to bear in mind. In other words, this usage is a reminder that there are some commonalities in spite of the differences between CC*M-Zhongyi* and TC*M-Zhongyi*.

3. To help readers to follow the exploration of a theme in each chapter, an index of acronyms will be provided at the beginning of each chapter.

4. A foundational, if not the foundational, text of CC*M-Zhongyi* is *The Huangdi Neijing* 《黄帝内经》/ *The Inner Canon of the Yellow Emperor.* It will be referred to as *The Neijing* for short, in the rest of this book.

Appendix (Biomedicine and Chinese *Medicine/Zhongyi*: Is Integration on Equal Footing in Limited Domain Possible?)

This appendix briefly explores a new domain of therapy and theory in China in the last few decades which appears to be in accordance with the Axiom of Respecting the Identity and Integrity of the Medical/*Medical* Other (ARIIMO). In Chinese it is 小针刀疗法 *xiaozhendao liaofa* which in English is called Acupotome Therapy; in Chinese the theory is 针刀医学 *Zhendao yixue* (*Zhendao Medicine*) which in English is called Acupotomology. It seems promising as a candidate for genuine integration of the two systems rather than simple assimilation of the one to the other.

[82] TC*M-Zhongyi* has abandoned the concept of *Wuxing* 五行 which, however, is an integral part of C*P*T and CCD*P* and therefore, of CC*M-Zhongyi*. See Lee 2018, Chapter 3. (*Wuxing* could be translated as "Five Phases of *Qi* Transformation", although this author prefers simply to use the term untranslated.)

Part II

History and Philosophy

Chapter Two

Clinical Medicine in Modern Western Medicine/Biomedicine Its Philosophical/Theoretical Framework and Its Model of Causality

Bm	Biomedicine
CM	Clinical Medicine in Bm
CRISPR	Clustered Regularly Interspaced Short Palindromic Repeats, forming basis for CRISPR-Cas9 genome editing technology
DNA	Deoxyribonucleic Acid
MCD	Monogenic Conception of Disease
MWM	Modern Western Medicine
PU	peptic ulcer
PUD:	Peptic Ulcer Disease
RNA	Ribonucleic Acid

Introduction

In medieval Europe, the Church and its teachings were all powerful. By and large, people accepted the view that illness/disease was sent by God as a punishment for the sins committed through violation of His commands. The plague was understood as such by many. Some flagellated themselves, others went on pilgrimages, or prayed to special saints dedicated to particular afflictions to intercede on their behalf. Yet others combined them all just to be on the safe side and also wore holy medals and other protective devices on their bodies. There were also those who believed that illness/disease was caused by demonic possession. However, though the supernatural source of affliction was dominant, it was not monopolistic by late Medieval times – other ideas, secular in nature, were about. Some attributed the provenance of disease to (a) planetary causes, either astrological or astronomical, (b) the imbalance of the four humours in the person, if they followed the humoral theory, (c) the environment if they subscribed to the miasma theory. On the therapeutic front, the scene was equally mixed. Some doctors would prescribe charms and some monks would prescribe herbal remedies along with prayers – monastic medicine, today, is studied by historians of medicine, not to mention by Big Pharma.[1] In general, the Latin West during the early Middle Ages had lost the tradition of medicine associated with Hippocrates and Galen (129 – 210? CE) following the collapse of the Western Roman Empire, although the tradition persisted in the Eastern Roman Empire (Byzantium). Eventually, beginning in the 11th century, it returned to the Latin West predominantly via the translations of these original Greek texts in the Islamic world by their scholars,[2] thereby making it possible for the Latin West eventually to recover them.

From then, the humoral theory said to originate from Hippocrates as well as the miasma theory prevailed in Western Europe as a secular account about the origin of disease till the arrival of what may be called "solid medicine" in the Age of Bacteriology with the emergence of the germ theory of infectious diseases, in the 19th century.[3] This new dawn of "scientific medicine" was ushered in by the work of two acknowledged giants in medicine, Louis Pasteur (1822-1895) and Robert Koch (1843 -1910). Pasteur's work on microbiology not only covered disease-bearing organisms but also those which damaged industries such as sericulture (silk), viticulture (grape vine) and milk (pasteurization). He put the last nail into the coffin of spontaneous generation. In sum, he is commonly said to be the

[1] See Watts and Hayes 2013.

[2] Arabic was the scholarly language of the Islamic world, just as Latin was in the Latin West. (For instance, Thomas Hobbes published some of his writings in Latin in the 17th century). However, this does not mean that these scholars were ethnic Arabs or that their mother tongue was necessarily Arabic, only that they were exceptionally proficient in the scholarly language as they could read it and write in it. Although not much in detail is known about the provenance of these scholars, many would probably have been bi- or tri-lingual, such as in Greek, Persian, Arabic, and would have come from different parts of the Islamic world.

[3] Today, the medical consensus subscribes to "solid medicine" in the following ways:
(a) infectious agents include bacteria, virus, prions, fungi, parasites, covering diseases such as various form of tuberculosis, malaria, syphilis, cholera and so forth;
(b) genes as DNA sequences in diseases such as cystic fibrosis, muscular dystrophy;
(c) poisons (which can exist in solid form)
(d) particles such as found in asbestosis, pneumoconiosis.

father of the germ theory of disease which covered not merely harmful bacteria but also virus (as shown by his work on rabies including producing a vaccine against the disease). Koch discovered the cause of anthrax as well as that of tuberculosis, the tubercle bacillus. Within two decades (1881-1899), an impressive number of germs were found for a variety of diseases including cholera, diphtheria, typhoid, tetanus, plague, rabies, tuberculosis. These discoveries were aided and abetted by the use of industrial dyes, developed by German chemists, which made the bacteria visible as well as allowed different bacterial species to be distinguished via the technique of staining.[4]

The rise of the science of bacteriology roughly coincided with the arrival of new therapeutic treatments which started to come on stream replacing traditional therapies (such as venesection and leeching), generally acknowledged to be useless. Pasteur had pioneered a successful vaccine against rabies. Paul Ehrlich (1854-1915), pupil of Koch, had advanced the idea of the magic bullet; in 1909, he and Sahachiro Hata (1873-1938) demonstrated that Salvarsan, their arsenical compound, could kill the spirochete of syphilis without too drastic side effects such as killing the patient. Admittedly, Koch's vaccine called tuberculin was a distinct failure; an effective treatment had to await the arrival in 1946 of streptomycin, an antibiotic, which was part of the mid-20th century version of the "magic bullet" when Fleming's 1928 chance discovery of penicillin was translated into mass manufacture through the efforts of Florey and Chain after WWII, as observed in Chapter One.[5] This story of the rise of antibiotics ushers in an unprecedented era of pharmacological and therapeutic success in medicine. As a result of the rich theoretical crop of discoveries of infectious agents as well as brand new effective drugs in treating the diagnosed diseases (especially post-WWII), it is not a wonder that "the germ theory of disease" has become seared into the consciousness of the medical establishment as well as that of lay people as the "Golden Age".[6]

In 1905, Koch was honoured with the Nobel Prize in Physiology/Medicine for his discovery of the tubercle bacillus as the cause of tuberculosis, putting on a firm scientific footing that the disease is an infectious one. However, it was ironic that Koch spent his entire Nobel Prize Lecture delivered in Stockholm on the occasion of the official award ceremony on Epidemiologic measures to control the spread of the disease, such as: registration of the victims, hospitals to cater for the more serious cases, sanatoria for the less serious, teaching the victims and their families to observe rules of hygiene such as how to expectorate so that the bacillus carried in the sputum would not infect others, to keep physical/social distancing, improving the housing conditions of the poorer sections of the populace so that other members of the family did not have to share the same bed or the same bedroom with the sufferer, non-pharmaceutical measures which are familiar to us in the second decade of the 21st century because of the COVID-19 pandemic. Unlike COVID-19, there were no vaccines or drugs available against the disease, as already observed.[7] The Nobel Committee must have evaluated his contribution to Medicine as pure theoretical discovery, although the hope that pharmaceutical treatment based on such a theoretical insight into the aetiology of the disease would come at some future date. As we have seen, that hope took a long time in coming, not till 1946 for streptomycin to appear, and 1921 for an effective vaccine, called BGC, to become available. The name of the vaccine came from the two French medical scientists, Albert Calmette and Camille Guerin. who spent 13 years, from 1905-1921 (work having to stop during WWI) perfecting it, to make it safe.[8] However, the Nobel Prize Committee did not see fit to reward them for their pains.

The same ironic story holds in the case of the cholera epidemic in India in late 1883-1884. Koch headed the German Cholera Commission to study it. There in February 1884, Koch announced his conviction that the vibrion was the cause of cholera, as he managed to find them in the intestines and stools of cholera victims as well as in autopsies of such victims but not in those not infected. His claim was given a mixed reception in Germany, a predominantly negative one in France and an emphatic rejection in Britain, a controversy which only theoretically was resolved as late as 1959 when SN De finally discovered the toxin that caused cholera. However, regardless of

[4] A well-known one is the Gram stain which distinguishes the Gram positive from the Gram-negative type of bacteria. The former type of bacteria is more sensitive, for instance, to the antibacterial action of penicillin, iodine and acids. For a brief account of the technique, see http://www. microbiologyprocedure.com/staining-methods-in-microbiology/differential-stains.html.

[5] See Tansey 1997. (Fleming, Chain and Florey shared the Nobel Prize in Medicine in 1945.)

[6] For one significant dissenting voice about this "Whig" account of the history of modern medical therapies, see McKeown 1979. Also some serious disenchantment with antibiotics began slowly to set in for a variety of reasons, such as (a) large quantities have been known to be prescribed, which, *ex hypothesi*, eliminate nearly all bacteria in the guts, whether harmful or non-harmful, (b) the ability of bacteria to replicate and mutate quickly leading to strains which are resistant to extant antibiotics, creating what is sometimes called "superbugs" – see http://www.iom.edu/~/media/Files/ Activity% 20Files/Public Health/ MicrobialThreats/Davies.ashx.

[7] There are two drugs available to treat serious, hospitalised cases of COVID-19, namely, the anti-viral drug, remdesivir and the steroid drug, dexamethasone, reducing to an extent the period of hospitalisation or the mortality rate. However, there is no drug analogous to an antibiotic in the case of bacterial infection.

[8] Today, the consensus of scientific opinion is that a vaccine for COVID-19, given new methods and immediate sequencing of the genome of the virus (SARS-CoV-2) a week after its official identification, should take time, up to a year or even 18 months, but not as long as 13 years. Also, some two hundred teams worldwide are working on such a project. As things have turned out, the several safe vaccines with different efficacy rates for different demographics have appeared in less than a year of the appearance of the virus.

such theoretical disagreement, Koch was convinced that the right way forward was through an Epidemiologic strategy of providing clean water for the victims. *The Indian Medical Gazette*, August 1888, 241-242 with the by-line, Koch on Cholera in Calcutta, wrote that Koch "drew the comfortable inference that 'sanitary measures may succeed in gradually depriving the disease of its epidemic character'– a hope to which the immunity of the best sanitated parts of the town give considerable encouragement." That verdict is repeated by Lippi and Gotuzzo 2013:

> Koch understood the importance of clean water, and the introduction of filtered water pipes led to a fall in the incidence of the disease. Confirmation of Koch's discovery was provided 8 years later, when cholera ravaged Hamburg, sparing the adjacent town of Altona, where water filtration had protected the town from disease. The importance of water 'purification' and after analysis provided evidence in support of Koch's theory, and showed a way to solve the problem by using the weapons of prevention. This is why Koch's discovery must be regarded as a public health triumph.

Indeed. (See also Blevins and Bronze 2010.)

Another irony is associated with the history of cholera in MWM. Koch, as it turned out was not the first to have discovered *vibrio cholerae* to be the cause of cholera. In 1854, when John Snow investigated the cholera outbreak in Soho, London and concluded that drinking the water via a pump in Broad Street provided by the Southwark and Vauxhall Company had caused people to fall prey to cholera, little did he know that in the same year, an Italian anatomist of humble origin, Filippo Pacini (1812-1883) had discovered it in autopsies of cholera victims. This error of attribution was not officially rectified till 1965 by the international committee on nomenclature when the bacterium was named *Vibrio cholera pacini* Pacini 1854 – see Who first discovered vibrio cholera?

In 1876 when Koch discovered with the help of his microscope small rod-shaped bacilli in the blood sample from a sheep which had recently died from anthrax, he knew that these bacilli were the cause of the disease, anthrax. He did this by setting out a process of careful analysis which attempted to prove to others beyond a doubt that these were the causal agent. He drew up a powerful methodological tool, known as Koch's postulates or Henle-Koch's postulates, which were immediately recognised as the Gold Standard for determining causation in infectious diseases. This set of ideas helped to lay down since the beginning of the 20th century the basis of what may be called The Monogenic Conception of Disease (MCD). It suffices here to comment on only three aspects:

I. Koch said: "diseases are best controlled and understood by means of causes, in particular, by causes that are "natural, universal and necessary".

The bacterium is natural, alright. This is unproblematic. At a stroke it destroyed the very old religious view that the cause of diseases was an expression of divine displeasure as well as its therapy in terms of prayer/miracle. Simultaneously, it also overturned the Hippocratic/Galenic account in terms of "fluid" medicine. "Solid" medicine became the new paradigm in medical thinking, displacing the miasma theory, predominantly held at that time. A new research programme came into existence, a programme which after more than a hundred years is still regarded as "progressive".

What does "universal" mean? Let us interpret it to mean: whenever the disease occurs, the bacterium said to be the cause is present. This is to say that the presence of the bacterium is a sufficient condition for the disease. However, empirical evidence does not bear this out. For instance, take the discovery that *Helicobacter pylori* is the cause of peptic ulcer, for which Marshall and Warren were awarded the 2005 Nobel Prize in Medicine. According to the (US) Centers for Disease Control and Prevention, two-thirds of the world's population have *H. pylori*; 90 per cent of people known to possess the bacterium do not have peptic ulcer, only 10 per cent do in the presence of the bacterium. Such data throw doubt on the claim that the bacterium is a sufficient condition of peptic ulcers.

How about Koch's other claim that it is a necessary condition? Empirical evidence again fails to support this, as there are people who have no *H. pylori* in their system and yet develop peptic ulcer because they take ibuprofen/aspirin/naproxen collectively referred to as NSAIDS, non-steroidal anti-inflammatory drugs.[9] The possibility of plurality of causes[10] had been overlooked.

II. He said: "each disease is caused by one particular microbe – and by one alone. Only an anthrax microbe causes anthrax; only a typhoid microbe can cause typhoid fever".[11]

[9] See *Medical News Today* 2017; http://www.nutramed.com/digestion/ulcer.htm.

[10] There may be several distinct clusters of factors ((A + B + C → E), (D + F + $\bar{G}$ → E), (X + Y + Z → E)), each sufficient to bring about the effect, but none is necessary. It is glib to understand cause simplistically in terms of necessary and sufficient conditions. One may explain a fire in a house as caused by a short circuit. However, the fire would not have occurred but for the presence of other conditions, such as inflammable material in the vicinity of the faulty wiring and a strong wind. In another cluster, an arsonist had poured cans of petrol over an old wooden barn with no electrical-wiring and then setting it alight with a match.

[11] As cited by Evans 1993, 20.

This is true but only trivially so, as Koch might not be prepared to call a disease by a certain name, unless a particular microbe is found for it. This problem, one could say is also faced by Warren and Marshall – they face a choice, between saying that:

(a) patients displaying a set of signs and symptoms (x, y, z) pertaining to what we normally call peptic ulcer (PU) would upon testing be found to be infected with *H. pylori*.
(b) only patients displaying x, y, z and upon testing are found to be infected with *H. pylori* suffer from peptic ulcer disease (PUD).

(a) is a factual claim which happens to be false; (b) happens to be true, but its truth is trivial as it is an analytic or definitional truth. Patients with PU have been excluded from (b) through the simple device of linguistically legislating them out of existence – only patients with *H. pylori* count as suffering from the disease called PUD.

III. Koch strengthened the above by setting out his guidelines or methodological rules for ascertaining the cause which are called the Henle-Koch postulates:[12]
(i) The bacteria must be present in every case of the disease.
(ii) The bacteria must be isolated from the host with the disease and grown in pure culture.
(iii) The specific disease must be reproduced when a pure culture of the bacteria is inoculated into a healthy susceptible host.
(iv) The bacteria must be recoverable from the experimentally infected host.

We have already commented on (i), that it turns out to be trivially true. With regard to (ii), (iii) and (iv), as formulated, let is assume that he was talking about animal hosts. However, in his study of cholera in India, he did not succeed in infecting animals with the bacteria, as already observed. However, from other investigations which he conducted, such as autopsies of cholera victims, he found the bacillus in the stomach of the corpses. In this critical example, he did not hold himself to the postulates he had enunciated. Neither did he succeed in culturing certain suspect pathogens causing diseases to humans such as malaria and leprosy. Nor at first did he realise that some people who might be asymptomatic carriers of pathogens would elude his postulates. A further limitation is that at best these postulates apply only to pathogenic bacteria, but not viruses which, however, were not discovered till the 1930s. Viruses cannot be cultivated in lifeless media in the lab as they are parasitic upon living matter to survive and to replicate. Although these postulates have run into anomalies, nevertheless, so compelling was the hold they have/had over medical research in MWM/Bm[13] that numerous attempts have been made to adapt them to new developments both theoretical and technological with some or no success.[14]

Thing-ontology and Solid Medicine

What is "a thing"?

The dominant strand in WPT is what may be called Thing-ontology. To elucidate this, let us just see what we understand or mean by "thing". A thing may be characterised in terms of two sets of properties: **Set A** refers to its shape and size, **Set B** to its solidity, impenetrability and stability. In other words, a thing is something which occupies space and time, is hard and enduring. A thing, thus understood may be any macro-sized object which can be very, very large like heavenly bodies such as a planet, or it can even be sub-microscopic, very, very small such as an atom. More generally for us with our naked eyes, they are medium-sized objects such as a mountain, an oak, a tiger, a mound on the ground made by badgers, ants and their ant hills, a sapling, a mustard seed.

The ancient Greek philosophers, first Leucippus, then his pupil, Democritus (c 460 - c 370 BCE) are acknowledged to be the progenitor of Thing-ontology. His physical and cosmological doctrines invoked two notions: Space/the Void on the one hand and Being, on the other. The Void was like a vacuum, amounting to an infinite space within which an infinite number of atoms moved. These atoms constituted Being, that is, the physical world; they were the smallest bit or unit to which matter could be reduced no further (in Greek *atomon* means "indivisible"). Hence, atoms are very small, so small as to be invisible to the naked eye (it was not till the invention of the electron microscope in the 1930s

[12] Koch was the pupil of Jakob Henle (1809-1885) who, in 1840, had set out what he regarded as the key concepts of causation in medicine in a book; Koch developed and presented them in his lectures of 1884 and 1890. See Evans 1976 for a detailed account of their emergence and application in the history of MWM. Evans gives a slightly different presentation of the postulates.
[13] Warren and Marshall were awarded the Nobel Prize in Medicine and Physiology in 2005 (on the hundredth anniversary of the prize to Koch) for their discovery that *Helicobacter pylori* is the cause of peptic ulcer; for a critique of their work and of Henle-Koch's postulates in general, see Lee 2012b, 98-103 and 108-110.
[14] See Evans 1976.

that they become visible to us, humans), and as such fill the space they occupy. Hence in this sense, they are fundamentally homogenous but they differ in shape, in position, in size and in arrangements.

Rocks, trees and humans are all made of atoms, except that their combination and arrangement are different. However, they do appear to our senses to differ qualitatively but this is not Reality – it is simply the case that different combinations and configurations of atoms cause our sense organs to have different impressions, such as that something is hard or soft, bitter or sweet, cold or hot. (Scientific) reality is such that there are only homogeneous atoms *per se*, whether these are the atoms of water (soft) or of granite (hard). The difference between water and granite lies in their difference in shape, one is smooth and round (the water atoms roll past one another), the other jagged and uneven (the granite atoms hook on, clump together to form a solid body). Atoms are eternal but the macroscopic objects embodying them are not. Although the actual piece of granite may, over a geologically long period of time, decay and perish, the atoms of which it is made do not perish – these live on to form ultimately other compounds, to constitute other things/objects. "Death" and "birth" in that sense are only apparent.

According to Democritus, the atoms are not only eternal but also uncaused; there is no need for a god/God, an external intelligent cause to account for them in his framework. So too is their motion. Originally, the atoms moved in all directions, involving collisions and hence producing "vibrations", during which the atoms (of a certain shape) came into contact with similar atoms in this great whirling, swirling rushing about of atoms – in this way, larger bodies and worlds were formed. No design or purpose of any kind is involved, whether human or divine – all these movements and motion happened in a purely mechanical manner. Furthermore, on this view, there is change, but all change is merely change of place. Hence, the emphasis is on space but does not appear to make room for time.

Thing-ontology is Materialism which, by and large, has provided the ontological underpinning for Modern Science, beginning in the 17th century, with Newton's achievements rapidly being elevated to the iconic pedestal occupied by such a science and such a philosophy behind it.[15] The operative word is "by and large", as the remark is not intended to deny other philosophical inputs to embellish and add further dimensions to it, such as that of Descartes, in particular his dualist philosophy. The Newtonian sciences based on a Thing-ontology research programme has been and is still a very powerful one in spite of several centuries of science exploiting it. In the second half of the 20th century, a spectacular success was the discovery in biology of the DNA double-helix by Crick and Watson in 1957, ushering in, a few years later, another powerful technology with which everyone, today, is familiar, Biotechnology. In the abiotic domain, Nanotechnology has also made an appearance; working at the level of individual atoms, scientists in 1989 managed to create the acronym "IBM". Biotechnology, Nanotechnology, Information Technology, and Robotics (Artificial Intelligence)[16] together appear to power another industrial revolution. One must not also fail to mention the discovery of graphene (2004), a material so thin that it is no more than the thickness of a single carbon (graphite) atom, and yet is reputed to be even harder than diamond.

In CM, the things which medical scientists are interested in include very small things such as bacteria and viruses, things visible under microscopes only. The Golden Age of solid medicine could not have come about without these technological inventions. The first compound microscope was invented in the 1590s, although who the inventor was is in some dispute, either Hans Lippershey or Hans and Zacharias Janssens, all living in Middelburg, Holland. However, the invention was worked upon and improved by others, such as Galileo Galilei and Robert Hooke. In 1670, Antoine van Leeuwenhoek had designed the single lens microscope which enabled him to see the spermatozoa of dogs and humans, not to mention bacteria from the mouth and protozoa. That was the kind of microscope that Koch would have used to discover his pathogenic microbes (bacteria). However, light microscopy had its limits; it might render bacteria visible but not viruses – the largest virus is smaller than the smallest bacterium. For the virus to become visible, we must wait till 1933 when two German scientists Ernst Ruska and Max Knoll built the even more powerful electron microscope – the wavelength of an electron is smaller than that of visible light, and so, electron microscopy could achieve much higher resolution.[17]

[15] This is not the place to talk either about Newtonian Science or Newton's conception of space – for a quick account, see Rynasiewicz 2014.

[16] Information Technology is based on Bi-valent Logic – for a detailed discussion see Lee 2021 (Open Access), Chapter 3. Robotics (incorporating AI) appears to be a powerful combination of hardware which is Thing-ontology (a robot is a machine which has to be constructed out of material of some description such as steel, plastic or whatever) and a software programme. The software rests, it appears, on Mathematics (which since Russell and Whitehead is said to be logic), statistics, data mining, machine learning (which appears to involve algorithms). (Apparently, there is a lot of confusion about what counts as AI – what some call AI, others deny that the label applies. Hence, one has to hedge one's bet, so to speak, until the discourse settles down eventually.

[17] See Who Invented the Microscope? L*ive Science* 2013.

The images we see of SARS-CoV-2 are taken by using two techniques of electron microscopy, SEM and TEM which offer different views of the object. The former scans the surface of the sample and records information about it which bounces back, like a satellite image. The latter transmits electrons through the sample and projects a cross-section of its inner structure. These two images combined enable scientists to observe the virus and how it moves in and out of host cells. – see *Vox* 2020.

Microbiologists debate whether viruses are living or non-living things.[18] This controversy is not germane to our preoccupation – the focus, here, is on whether viruses count as "things". Things can be living or non-living as we know. Nor is size relevant to the issue. A thing can be non-living and as large as planets such as Earth, Mars or as Australia, a continent of Earth; it can be as small as a speck of dust, or a virus (if viruses do not count as living things). A thing can be living, as large/tall as a sequoia tree, the largest dinosaur which once roamed Earth but now extinct, neither too large nor too small like humans, or small as midges in some parts of the world such as the Scottish Highlands (in ecologically similar parts of North American, they are called "no see ums"), a bacterium or a virus (that is if viruses are considered to be living things). A virus is a particle containing protein and genetic material; it may be defined as a genetic capsule.

Things are relatively stable – the operative word here is "relatively". Some things like the Himalaya mountains appear to us to be unchanging, but like all phenomena, this mountain range, too, is subject to change over time, not the time scale as measured by human history, but as measured geologically. They have not existed from the beginning of our Solar System. They are considered to be relatively young, only some 65 million years old, the result of a spectacular collision of tectonic plates below the earth's crust. They are not Platonic forms; since their birth, they have been changing, subject to the forces of weathering, the climate, even the vegetation which have appeared below the snow-line. One fine day in the dim and remote geological future, when we humans would have probably become extinct as a species, these mountains would no longer be so tall, so sharp, but more rounded and softer in outline.

Nature is about change-in-stability/stability-in-change. The human organism is no different – not only is it obvious that the individual who was born is different from the individual grown and developed as an adult and again from the individual who is now elderly and decrepit but yet, we have no difficulty in saying that John Smith is one and the same individual. Of course, we know that our body is made up of cells, different types of cells; yet the average person may not be aware of the replacement rate of these different types of cells in us. For instance, the turn-over time of stomach cells is 2-9 days, of white blood cells, 2-5 days, of platelets, 10 days, of skin epidermis cells, 10-30 days, of red blood cells, 4 months, and so forth. We shed cells all the time which are continuously replaced. Yet again, we have no difficulty in saying that John Smith is one and the same individual in spite of all these events taking place.

Viruses may evolve at a fast rate, and when their genetic content changes, they change their identity, yet they satisfy this minimalist definition of being a thing – something which has shape and size, occupying a certain portion of space and time. They are not macro-sized objects, as they are not visible to our naked eyes. Neither is an atom visible to our naked eyes; we have no doubt that they exist, are "things" as they, too, satisfy the minimalist definition of being "a thing".

Billiard balls, Newton's Laws of Motion, The Monogenic Conception of Disease and its Model of Linear Monofactorial Causality

John Dalton (1766-1844) discovered the modern atomic theory of matter. As already observed, the most basic thesis of this scientific discovery is that although we see different things in the world around us, nevertheless, they are made up of the same type of basic particles of matter, atoms, said to be the smallest, indivisible and indestructible bit of matter.[19] They are solid. There are different kinds of atoms in the world, with all atoms belonging to the same element being identical – for instance, an atom of oxygen is the same whether that oxygen atom is found in water or in the air. These atoms, however, are combined and arranged in different proportions and ways, which account for why things such as a mountain and a tiger look very different to us as macroscopic objects. A more formal way of putting his discovery is to say that it consists of the following theses:

1. Matter is made up of atoms that are indivisible and indestructible.
2. All atoms of an element are identical.
3. Atoms of different elements have different weights and different chemical properties.
4. Atoms of different elements combine in simple whole numbers to form compounds.

[18] It depends on how the concept of life is understood – if ability to replicate is the defining characteristic of life, then viruses are not living things, as they cannot replicate themselves without entering a host, using the host's metabolic mechanisms for replication. In other words, one could say that they have the genetic but lack the physiological where-with-all to do so. In that sense, their biology is somewhat peculiar and unique. They do evolve; evolution is a characteristic of living organisms. It is true that viruses evolve very fast, even faster than bacteria, but evolution at a fast rate does not undermine their status as things. The genetic content of viruses consists of RNA only; when different strains of viruses enter a host, their genetic material get mixed and new strains appear.

[19] Today, science has gone beyond this to the discovery of sub-atomic particles such as electrons, protons and nucleons; these fall into the domain of post-Newtonian Science.

5. Atoms cannot be created or destroyed. When a compound decomposes, the atoms are recovered unchanged.[20]

Dalton's discovery has been nicknamed the "Billiard-ball Model" on the grounds that atoms are like billiard balls, small, solid, hard things and that they move according to Newton's Three Laws of Motion. The game of billiards requires a table designed with a particular top, balls of a certain design and colour, cues, and two players each holding a cue. Player A with their cue aims at their chosen ball, gives it a shove (which imparts motion to the ball) with the cue, thereby moving the ball along (effect), which in turn moves (effect acting in turn as cause), hitting another ball causing it to move (effect), and so on. The movements of the balls illustrate perfectly Newton's Three Laws of Motion,[21] which according to one formulation reads:[22]

First Law (of Inertia)	A body will remain at rest or keep moving in a straight line at constant speed unless acted upon by a force
Second Law (of Motion)	The rate of change of momentum of a body is directly proportional to the force applied; the change in momentum occurs in the direction of the applied force
Third Law (of Motion)	All forces between two bodies exist in equal magnitude and opposite direction

Koch's work may be said to lay the foundation of MCD. To remind the reader, he had said that: "each disease is caused by one particular microbe – and by one alone. Only an anthrax microbe causes anthrax; only a typhoid microbe can cause typhoid fever". [23] As one commentator has put it: "the final hope and aim of medical science is the establishment of monogenic disease entities (Taylor 1979, 21)". As MCD holds that every disease has a single cause, implying a notion of cause which is monofactorial and linear; it may also be said to be Humean in character when cause is understood in terms of linearity[24] – what purports to be the "cause" (this C: this SARS-CoV-2) is followed by what purports to be its "effect" (this E: COVID-19) in any one particular instance of observation. One cause produces one effect; the causal arrow is unidirectional. Linear causality of the simplest kind may be represented as shown in Figure 2.1. (The causal relationship is indicated by the causal arrow thus: →.

Figure 2.1 Simple Linear Causality

Figure 2.2 below represents a more complicated variant. A (the cause) leads to B (the effect), B in turn acts as the cause leading to the effect C, and so on along the chain.

[20] For this version, see John Dalton 2020.
[21] See Newton's Three Laws of Motion: Billiard Balls 2010.
[22] Bear in mind that Newton wrote in Latin.
[23] As cited by Evans 1993, 20.
[24] This ignores other aspects and possible flaws of the Humean account of cause in terms of constant conjunction or uniformity of sequence. For Hume causality is not necessity *de re* but a human psychological construct. In other words, cause refers to nothing and means nothing more than saying that we humans have often, and consistently, observed that a certain phenomenon A is followed by phenomenon B. Putting one's hand in the fire is always followed by the hand being burnt. Our expectation that B follows A (or that A is constantly conjoined with B) makes us then say that A is the cause of B. However, in reality, there is nothing in the nature of fire to cause the burning of human flesh. We simply project our expectation on to Nature. This analysis of cause is part of inductive logic, a logic which is the outcome of a very long series of observations and nothing more. An immediate drawback of inductive logic thus understood is that observations in the past, no matter how long and how well established, cannot guarantee the future. The sceptical doubt raises its ugly head – it is logically compatible to accept that all the particular As so far observed are accompanied/followed by Bs and yet doubt that the next A may not be thus accompanied. Our ancestors in a certain part of the world might have observed that the rainy season had always followed the dry season, yet it makes sense to be anxious whether rain would fall at the end of this dry period. May be, the logically more sophisticated of our ancestors then started using probability language instead of generalisations – "All As are followed by Bs" is replaced by "The probability of an event A is P(A)", or "The probability of an event A lies between $0 \leq P(A) \leq 1$". However, such a move does not remove the sceptical doubt, as one's confidence in probability estimates is itself dependent on past observations. Having noted such a problem, it does not need to detain us further as our focus here is not about this issue.

Another drawback to the Humean analysis of cause in terms of constant conjunction/uniformity of sequence also need not detain us long. Suffice to raise it *en passant*. Critics often point out that the concept of cause cannot be reduced to constant conjunction/uniformity of sequence – all first-year philosophy undergraduates can tell us that although thunder always follows lightening, lightening is not the cause of thunder. To infer that it is the cause is to commit the fallacy of *post hoc, ergo propter hoc*, a grievous flaw in logical thinking. (See Beebee 2007 on the Projectivist Interpretation of Hume.)

Figure 2.2 A Series of Linked Cause and Effect

An instance using again the COVID-19 pandemic as pedagogical illustration:[25]

This specimen (i) of SARS-CoV-2 (cause) → this patient (i) falling ill of COVID-19 (Effect) →
This patient (i) with specimen (ii) of SARS-CoV-2 (cause) → this patient(ii) falling ill of COVID-19 →
This patient (ii) with specimen (iii) of SARS-CoV-2 (cause) → this patient (iii) falling ill of COVID-19 →

However, the two variants confirm that Linear Causation embodies two significant features:

(a) The causal arrow is unidirectional, from Cause to Effect.
(b) Causation is Monofactorial, that is, only one causal variable is involved leading to one effect at any one time.

MCD and its Linear Causal Model render MWM/Bm falling under the aegis of what may be called the Newtonian Sciences. Furthermore, MWM/Bm strive to render the cause-and-effect relationship measurable and quantifiable. And it also sees that advancement goes hand in hand with technological developments, the higher the tech, the more the gain in knowledge – from the humble stethoscope, then the optical microscope, followed by the electron microscope as already indicated. The chance discovery of X-rays by Roentgen (1845-1923) occurred in 1895; within five years, CM had considered it an indispensable diagnostic tool for studying fractures and foreign objects residing in the human body, at least in theory if not in practice given unequal access to healthcare in societies at the time – see Howell 2016.

These technologies fall into Thing-ontology as their virtue is to render things not visible to be visible, not visible because they are too small, and hence needed microscopy to help us see them, such as bacteria and viruses. In other cases, we cannot see them because they are inside our bodies; the relevant technologies then help us to see what we normally cannot see, such as our bones. We can even measure what we can see – where exactly is the fracture, how large is the fracture, is one leg longer than the other leg and by how much. If the bone is truly so badly fractured and shattered and there is no hope of the leg being helped to heal in any way, then there is the option of surgery and the insertion of metal support. If our tonsils or appendix get inflamed, then they can be removed. If our heart is beyond repair, we can resort to organ transplantation. In other words, surgery, too, falls typically within Thing-ontology.

The beginnings of serious surgery could be traced back to the 16th century when the great barber-surgeon, Ambroise Paré (1510-90), as military surgeon, applied the principles of Vesalius's anatomy to the treatment of war wounds.[26] He pioneered new techniques such as ligature to stop bleeding (although the rate of infection was so high that it was abandoned as a practical measure) as well as accidentally found a more effective substitute (a tincture made from egg yolk, turpentine and oil of roses) for cauterization during amputation. He also developed artificial limbs and some new surgical instruments. He held that the pain in phantom limbs was in the brain, a view which neurology today accepts. He set out five reasons for surgery which have all come to pass and have not, in general, been surpassed since (see Drucker 2008):

> There are five duties of surgery: to remove what is superfluous, restore what has been dislocated, to separate what has grown together, to reunite what has been divided, and to redress the defects of nature.

Paré's *raison d'être* for surgery captures its essence as Engineering and engineering – the word in upper case "E" stands for the ontological *volte-face* performed by de la Mettrie when he conceived the human being as machine; the word in lower case "e" simply refers to the industrial/technical skills involved in building houses, bridges, roads, trains, planes, Space shuttles and so forth, being relevant to surgical operations. Paré's goal was to render the human machine leaner, more efficient, with only fully functioning parts. Hence, (seemingly) redundant parts may be removed. In this spirit, many children in the USA (particularly of middle-class parents in certain states at one period) were routinely subjected to tonsillectomy to prevent inflammation and its associated problems; paediatricians held/hold that this set of lymphoid tissues play(ed) no significant role in the immune system.[27] Fractured bone parts must be

[25] Note that this is just a thought experiment, as it assumes the opposite of what happens in reality in the COVID-19 pandemic. For a discussion of the rate at which the infection spreads in the UK, for example, and how reliable or otherwise is the figure R to measure it, see Adam 2020.
[26] He not only excelled in treating battlefield wounds, but also in obstetrics. He served four Valois kings – see Lawrence 1993; http://www.sciencemuseum.org.uk/broughttolife/people/ambroisepare.aspx.
[27] See http://www.pedisurg.com/PtEducENT/tonsils.htm. Compare this more extreme view with a more moderate one issued by the NIH - http://www.nlm.nih.gov/ medlineplus/ tonsilsand adenoids.html#cat1. However, in other countries, the attitude

repaired; amputated limbs must be replaced by prosthetic ones; diseased organs must be removed or replaced by either transplanted ones[28] or by non-organic manufactured substitutes (such as heart pacer and/or stents); blocked arteries must be unblocked (such as angioplasty) and so forth.

A notable historian of medicine, Porter 1996, 96 has put this point well:

> …surgery was human engineering; as with car maintenance, one peered under the bonnet and repaired faulty parts. Nowadays, transplant surgery permits, for the first time, replacement of parts that are beyond repair. Mechanical and reductionist approaches found their culmination in spare-part surgery.

One might even venture to say that modern, high-tech surgery, based on the latest theoretical advances in the various relevant basic sciences, has reached the height of engineering the human body (save in the case of the brain, an organ which resists transplantation) in accordance with the ontological axiom of human-is-machine. It is true that such a body must be fed with drugs to prevent it from rejecting foreign parts; a machine cannibalized from other machines must need greater attention and care than one originally manufactured with all its parts as functioning whole. The next step in surgery promises even to overcome this limitation as stem cell research could grow new organs from a cell of the individual human body.

Today, surgery has travelled a very long way from its trade origin as barber-surgeons. Far from being disdained, surgeons, in particular, neurosurgeons have come to stand for the utmost in human cognitive development. A common saying goes: "as clever as a brain surgeon". Like artesans or engineers, surgeons, too, rely not simply on their brain but also on their ability to express through their hands this knowledge in delicate and precise operations in manipulating the human-body as machine.

However, two discoveries of a different order in physics in the 20th century provide an alternative model to Newtonian Science, which may be called post-Newtonian Science. Einstein pioneered Relativity (Special and General) Physics and Niels Bohr and others Quantum (or sub-atomic) Physics. However, prestigious they might be in their own right, nevertheless, they did/do not appear sufficient to dent (see Lee forthcoming (DeGruyter), Chapter 9) or undermine the prestige of Newtonian Science itself.

Conclusion

1. Newtonian Science works within the framework of Thing-ontology, an ontology which may be said to reach back to Ancient Greek Philosophy via the atomism of Leucippius and Democritus.

2. Modern atomism via the discovery of John Dalton in 1803 reinforced this ontological framework.

3. All things/objects are made up of atoms arranged in particular ways.

4. Newton's Three Laws of Motion govern the behaviour of things, both macro- and micro-sized objects (but not sub-atomic particles).

5. The Humean Linear, Monofactorial Model of Causality is in accordance with Newtonian motion.

6. Bacteria, viruses as well as parasites, prions, genetic material[29] are disease-entities when these turn out to be pathogenic. They are "things" though not visible to the naked eye.

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to tonsillectomy is somewhat different – doctors, on the whole, would not recommend the operation in advance, but only in the light of a personal history of frequent and severe attacks of tonsillitis. Furthermore, they also believe that tonsils are not without function as they believe that they help fight ear, throat and nose infection in young children – see http://hcd2.bupa.co.uk/ fact_sheets/html/ tonsillectomy.html . Theodor Kocher obtained the Nobel Prize in 1909 for his work on the physiology, pathology and surgery of the thyroid gland. Thanks to his study of the serious consequences of surgically removing the thyroid gland (total strumectomy), which helped to cast light on its normal functions, total strumectomy was discarded and many were saved from severe suffering as a result. Furthermore, by the 1890s the isolation of active thyroid hormones made replacement therapy possible. See http://nobelprize.org/nobel_prizes/medicine/ laureates/1909/press.html .

In the same spirit, the adrenal gland was also surgically removed. But what is perhaps even more surprising (at least to readers today) is that at the turn of the 20th century, Elie Metchnikoff (1845-1916), a well-known member of the Pasteur Institute, Nobel Prize winner in 1908 for his work on the immune system, propounded the view (1903, 249 & 252) that the large intestines in the human organism had contributed "nothing to the well-being of man", but only posed many dangers to it. As it would take too long for evolution to attrite that organ, he proposed it best to accelerate that effect by using surgery to remove most of it – see Albury 1993.

[28] See Ellis 2001, Chapter 15.

[29] This latest addition to the model of solid medicine neither departs from Thing-ontology nor from Monofactorial causation even though in reality, so far at least, it applies in principle only in the rare cases of diseases identified as caused by single-

7. The Golden Age of Bacteriology, ushered in by Pasteur and Koch, committed MWM/Bm-CM to MCD which instantiates the Linear, Monofactorial Model of Causality (the Billiard-ball Model).

8. The is the era of solid medicine, of MWM/Bm-CM as Newtonian Science.

8. MWM/Bm-CM as Newtonian Science considers surgery since Paré as its paradigmatic treatment and technology.

gene defects. In the future, it is conceivable to use CRISPR, a technology which emerged in 2012, acting as a kind of molecular "scissors" to edit genes – a snippet of the "offending' DNA could be "snipped off" to eliminate the disease it causes.

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Chapter Three

Epidemiology in Modern Western Medicine
The Endogenous Colonised

Bm	Biomedicine
CM	Clinical Medicine in Bm
MWM	Modern Western Medicine
NSAIDS	Non-steroidal anti-inflammatory drugs
WPT	Western Philosophy Tradition

Introduction

This chapter continues to demonstrate that MWM may be divided into two major domains, between CM on the one hand and Epidemiology on the other, with a philosophical/theoretical rupture perceived to exist between them. Chapter Two has argued that CM rests on Thing-ontology and a Humean-Linear, Monofactorial, or Billiard-ball Model of causation; it is Newtonian Science, as disease-entities ("solid medicine") are "things" whose behaviour are governed by Newton's Three Laws of Motion.

However, Epidemiology primarily, though not exclusively, focuses on Process-ontology and implies a Non-Linear, Multi-factorial model of causation. As such it distinctly falls outside the domain of Newtonian Science and may be said to constitute a post-Newtonian Science in Medicine, similar to but different, naturally from the other well-known post-Newtonian Sciences in physics such as Relativity and Quantum Physics. These two just mentioned famous examples occurred in the 20th century, while the post-Newtonian Science of Epidemiology emerged during the mid-19th century; in that sense, it predates the radical rupture with Newtonian Science on the part of Einstein and Bohr and hence, ironically, may be regarded as a pioneer in this new philosophical orientation.

Process-ontology

Thing-ontology, as argued in Chapter Two, is the dominant ontology of WPT especially under the aegis of Modern Science-and-Technology since the 17th century. However, there is another ontology, which is Process-ontology, although this alternative plays only a very marginal role at best in WPT. Its pioneer in ancient Greek philosophy is Heraclitus (c 535 – c 475 BCE), pre-Socratic philosopher. Heraclitus is credited with having written one book, which he was said to have donated to the temple of Artemis in his native Ephesus (in today's Turkey). This book did not survive intact but only in fragments (over one hundred); it appeared to have consisted of sayings and epigrams rather than continuous exposition, some about science, others about human affairs as well as theology. He had been seen by different people to hold different, even contradictory views, such as that he was a material monist or a process philosopher, an empiricist, a rationalist or a mystic.[1] However, this small discussion would focus on that interpretation which sees him as a processist as propounded by Rescher 1997, 2000.

He is normally said to have advanced three claims: the flux doctrine, coincidence of opposites and material monism (that fire is the source and nature of all things). The second is held to be an entailment of the first – if everything is changing or flowing, then "every pair of contraries is somewhere co-instantiated; and every object co-instantiates at least one pair of contraries"[2]

Let us take a quick look at the flux doctrine; the most commonly held view seemed to have come from Plato *via* Cratylus: "Heraclitus, I believe, says that all things pass and nothing stays, and comparing existing things to the flow of a river, he says you could not step twice into the same river." (Plato *Cratylus* 402a = A6).[3] However, the most recent scholarship today holds that Plato and those influenced by him down the ages are not correct, as the most reliable textual evidence from the fragments do not support it; the reliable fragment reads: "On those stepping into

[1] For an accessible account, see Graham 2005, 2008 and 2011; see also Robinson 1987.
[2] Barnes 1982, 70.
[3] As cited by Graham 2011.

rivers staying the same other and other waters flow".[4] If this is genuine Heraclitus, then it would not support Plato/Cratylus's interpretation, as it seemed to be contrasting the human who stepped into the river as remaining constant with the waters in the river changing, as they obviously would and do, but, nevertheless, with the river remaining constant or the same. Instead, as Graham 2011 contends, it would mean that Heraclitus was not saying something unacceptable, namely, that all things are changing such that we cannot confront them twice, but something more defensible and more profound. This is the thesis that certain things stay the same only by changing. Our own bodies are one such example (an example already looked at in Chapter Two) – the body we were born with, the body which grew from infancy to adulthood, from maturity to decline is a body which changes all the time. At the same time, the cells which constitute such a body are renewing themselves at regular intervals, at any one given moment. On this reading of Heraclitus, flux and constancy are not mutually exclusive, but that paradoxically, change is the basis of constancy.[5]

Ever since Aristotle, Heraclitus had been said to be a material monist – for him, fire is the ultimate reality, that all things are nothing but manifestations of fire. (Other Milesians, such as Thales or Anaximenes respectively held that water or air was the ultimate ontological category.) But if he were, the critics – see Graham 2011– of such a view point out two flaws: first, that as a material monist, his choice of fire would be odd, as fire is the least substantial and the most transient of so-called elemental stuffs; second, if he were really a material monist, then this could not be reconciled with the flux doctrine when that doctrine is understood in a radical way – the change of everything into everything else, that fire can turn into water, water into earth … He must either hold that change is illusory or he must be a material pluralist.

The influence of Heraclitus is measured not so much by the influence which his processist approach had upon his fellow Greek philosophers but more by the reaction which his perspective appeared to have provoked. First, it impelled Parmenides (born c 515 BCE, writing actively in the early part of 5th century BCE) to retort with universal stasis against his universal flux. Plato, *via* Cratylus, thought his account was fit only for characterising the sensory world where change was obvious and endemic, but opted to embrace Parmenides for his world of the Forms, of Reality. In an ironic sense, Heraclitus could be said to have performed an immense service to Western philosophy when Plato rejected him, thereby bestowing on Western philosophy his *imprimatur* of substance/Thing-ontology. (Whitehead was held to have said words to the effect that all philosophy after Plato is but a footnote to Plato.) Aristotle tried his best to "naturalise" Plato's substance-/thing-ontology of unchanging forms, and in that very limited sense, to accommodate the Heraclitean view of flux, but his compromise did not bear too much fruit either. Rescher 1997, 11 says that Aristotle's half-way house ontology "was less one of substances pure and simple than one of substances-in-process".

As for his influence on WPT for the last two millennia or more, it could be said to be nil. Process Philosophy/ontology did not make another appearance till the last century in WPT. The modern philosopher, normally credited with having systematically constructed Process Philosophy is Alfred North Whitehead (1861-1947). His career is often divided into three stages. In his first "incarnation", he collaborated with Bertrand Russell at Cambridge to produce the three-volume magisterial *Principia Mathematica* 1910/1912/1913, in defence of logicism, namely, the thesis that mathematics could be reduced to formal logic.[6] The work remains a towering achievement notwithstanding criticisms against the project.

Next, Whitehead left Cambridge for London, becoming eventually professor of applied mathematics at the Imperial College of Science and Technology in 1914. He tried to improve science education but with no real success; he also busied himself with constructing a philosophical foundation for physics, especially as it became obvious that the work of Einstein would require revision of the ideas of space, time and motion.

However, in 1924, Harvard offered him an appointment as professor of philosophy. At the age of sixty-three, he crossed the Atlantic and eventually became a metaphysician, constructing a systematic account of Process Philosophy first through the publication in 1925 of *Science and the Modern World* and later of *Process and Reality* 1929 which were based on his Gifford Lectures delivered at Edinburgh University in 1928. In the former book, he gave an account of the rise, the triumphal achievements and impact of what he called "scientific materialism", which is, that the object of study in science is matter in motion. He argued that this materialism was nothing but an abstract system of mathematical physics, which we have mistakenly taken for the concrete reality of nature. For instance, in Euclidean geometry, we take a line to be something which can be said to have length but no breadth, that a point can be said to have position but no magnitude – such views are erroneous as they are the result of mistaking the abstract for the concrete which he called "The Fallacy of Misplaced Concreteness" 1925, 64, 72. In reality, a spatial point is more than an abstraction; it involves volume. Indeed, he wrote: "In a certain sense, everything is everywhere at all times. For every location involves an aspect of itself in every other location. Thus, every spatio-temporal standpoint mirrors the world" (1925, 114). In other words, any object in real life may be seen as a series of events and processes. By

[4] This writer knows no Greek, classical or modern, and so relies entirely on those scholars and commentators who do.

[5] On this last point, for details, see Lee 2017a, Chapters 5 and 6 for an analogue of this view, regarding the three meanings of the term *yi* 易 in the ancient Chinese text, *The Yijing*.

[6] For a brief account, see Irvine 2010.

1929, he went so far as to hold that process, rather than substance, is the basic ontological constituent of the world. If Reality is not enduring substance, then it could be a process of becoming (which he called his philosophy of organism). He thought that while substance philosophy/ontology could be adequate for Newtonian physics, Scientific Materialism would not be adequate to cover Quantum Physics, biology (which appeared to invoke teleology) and certainly not psychology. One would need to work towards a metaphysical framework unifying space, time, matter, events and even teleology.

Rescher 1997, 20-21 sums up his philosophy thus:

> Whitehead fixed on "process" as a central category of his philosophy because he … regarded time, change, and creativity as representing salient metaphysical factors. The building blocks of reality … are not substances at all but "actual occasions" – processual units rather than "things" of some sort… Whitehead envisions a "philosophy of organism" in that everything that exists not only forms part of the organic organization of nature-as-a- whole but also will itself constitute an organism of sorts – an integrated whole with an organic constitution of its own. But it is the pervasiveness of the growth/decay cycle operative throughout nature that marks this metaphysic of organism as being a metaphysic of process as well.

What impact did Whitehead's Process Philosophy have on WPT in the last eighty years? It would be no exaggeration to say that it had made very little impression overall. It has not succeeded to revise the mainstream philosophical framework to support the new post-Newtonian sciences, which have emerged in the last hundred years or so.[7] However, he had slightly better luck in theology where his view was taken up in the form of process theology, developed by the philosopher Charles Hartshorne and theologians such as John B. Cobb, as Whitehead held that an essential attribute of God is involvement with temporal processes. In contrast, more orthodox forms of Christian theism hold that God is an entity which is wholly eternal (therefore non-temporal), unchanging (immutable), not affected by the world (impassible). Process theologians, while not denying that God possesses such attributes, nevertheless, hold that God in some ways can be said to be temporal, mutable and passible.[8]

On the whole, Process Philosophy was better received in the USA than elsewhere. According to Rescher, many American pragmatists could be said to be processists, such as Peirce, James and Dewey; indeed, the friendship between William James and Bergson (of which more in a moment) bore witness to this. Charles Sanders Peirce (1839-1914), like a lot of thinkers of the period, was impressed by the theory of evolution as expounded by Charles Darwin (and William Wallace), which seemed to exemplify change and spontaneity at work in nature. In other words, the universe (at least in the biotic domain) appeared to be undergoing constant change and development. His countryman, William James (1842-1910) was similarly impressed. To quote Rescher 1997, 15:

> James saw the world as a sea of flux comprising a manifold of changes that are not a clear-cut replacement of one hard-edged state by another but a melting and fusion of boundaryless processes that lead into one another. The blooming buzzing confusion of physical process and the ordinary stream of consciousness that provides for structural awareness provide, as James sees it, the key to philosophical understanding to the world's course of things.

Apart from Whitehead's construction of Process Philosophy in his third "incarnation" in the USA in the 20th century and the American pragmatists who appeared to be working towards such a philosophy in a desultory manner in the 19th and early 20th centuries, two or at best three other European philosophers are usually mentioned who could be said to have contributed towards the project in the last four centuries. These are: Gottfried Leibniz (1646-1716), possibly G.W.F. Hegel (1770-1831) and Henri Bergson (1859-1941), A brief look first at Bergson. He rejected the mechanistic view of time in science; in his letter to William James who befriended him, he wrote:

> I had remained up to that time wholly imbued with mechanistic theories. ... It was the analysis of the notion of time, as that enters into mechanics and physics, which overturned all my ideas. I saw, to my great astonishment, that scientific time does not endure. … that positive science consists essentially in the elimination of duration. This was the point of departure of a series of reflections which brought me, by gradual steps, to reject almost all of what I had hitherto accepted and to change my point of view completely.[9]

He considered that time, as measured by a clock, which is the conception of time employed by "positive science" to be the spatialized conception of time which allowed for quantification and numbering only, but excluding all other aspects. To him, duration, that is, "real duration" (*durée réelle*) or "lived time" should not be identified with extension, succession with simultaneity and quality with quantity. He distinguished qualitative from quantitative multiplicity – the latter saw homogeneity amongst similar looking objects, whereas the former implied heterogeneity. In his doctoral dissertation, *Time and Free Will* (2001/1910, 76-77), he cited the example of a flock of sheep. The "positive" scientist would see the members of the flock as uniform (or at best as male or female, big or small); he would count them up,

[7] Process-ontology fares better outside WPT proper in Epidemiology, an increasingly important branch of Bm. See Lee 2021 (Open Access), Chapter 6 which deals with this issue in detail.
[8] See Stengers 2011/2002.
[9] See Bergson's letter to William James 2014.

note in his record the number "25". He could count them because each animal is spatially separated from its neighbours, each occupying a location whose co-ordinates could be specified. However, if one were studying the flock from another philosophical perspective, one would notice that each member of the flock is somewhat different from its companion, for instance, one male from another male, one female from another female, one lamb from another, and so on.

His thoughts on Process Philosophy were most clearly expressed in his most popular work, *Creative Evolution* 1998/1907 written under the influence of the theory of evolution. He did not doubt evolution as a fact, but he criticised what he saw to be a mistaken philosophical interpretation of it, as such mechanistic account invariably failed to grasp the importance of duration. Instead, he argued that the entire evolutionary process should be understood in terms of a "vital impulse" (*élan vital*), which manifests itself continuously through generating new forms. In other words, evolution is not mechanistic but creative, changing and developing all the time. Becoming is, therefore, endemic in the nature of reality, but "positive science" distorts and falsifies it by imposing static and discrete concepts upon the study of such a nature. In other words, "positive" or "mechanistic" science grasps reality in terms of material things which are solid, discontinuous, with clear and distinct boundaries between them. As such, it leaves out duration and its state of flux. In sum, one could say, he rejected a static universe in favour of one which is dynamic, in perpetual motion, involving change and evolution.[10]

As for Hegel, his contribution to Process Philosophy is said to rest on a triad of terms: "being", "nothing" and "becoming". At first sight, "being" appears to be both "immediate" and simple, but upon reflection it may not be so, as it is meaningful only in opposition to another concept, "nothing". "Nothing" in one obvious sense is absolutely distinct from and opposed to "being", yet in another sense, they appear to be the same as no criterion is at hand to differentiate between them. To get out of this difficulty, Hegel proposed a third category, that of "becoming", which contains within itself the two paradoxical concepts, "being" and "nothing" – when something "becomes", it moves from the latter into the former category. In this sense, the third term in the triad contains the first two, overcoming them as two sublated "moments" (stages/phases) – the term in German, Hegel used is *aufhebung* (which is translated as "sublated"). Hegel's philosophy is often portrayed in dialectical format – thesis leading to antithesis which leads to synthesis; the latter itself in turn becomes the thesis, leading to its own antithesis and so on.[11]

Aristotle's logic is about separate, discrete identities related in a deductive structure, whereas Hegelian logic aims, it is held, to replace this static view with a dynamic model involving, not merely parts, but the Whole. The Whole (synthesis) is meant to constitute an overcoming which retains what it has overcome; this then ratchets up the process to the next level of a spiral, so to speak. This is, therefore, not "mechanical" logic but what may be called an "organic" logic. The dynamic aspect of his logic, he calls the power of "negation" or "contradiction" – it is this "negativity" of thought, which enables one to transcend the static/the habitual to arrive at another level. Under thesis, a thought is postulated which, upon reflection, turns out to be incomplete or even contradictory; this leads then to the affirmation or postulation of its negation, the antithesis, which may also turn out to be unsatisfactory. And so, both thesis and antithesis have to be sublated under synthesis, reaching a higher level of unity.

Again, Rescher 1997, 13 has summed up the matter succinctly:

> For Hegel, whatever exists in the world of reality or of ideas is never a stable object but a processual item that is in transit and cannot be properly understood through its stable properties or as a successism of stable states, a matter of now this, not that. It is a process, an item constantly reshaped in an ongoing development proceeding through the operation of a dialectic that continually blends conflicting opposites into a unitary but inherently unstable fusion. Historical change is omnipresent. For Hegel, the real in all its dimensions can be understood and accounted for only in processual terms.

In the history of WPT, Leibniz is considered by Rescher, 1997, 2000 to be the pioneer of Process Philosophy. His basic ontological category is what he called "monads"; the word from Greek means that which is one, has no parts and hence is indivisible. Leibniz was writing at a critical period as he was a contemporary of Newton; hence his rejection of the atomistic world-view which Newton and others were using to underpin their new science was highly significant. While atoms are defined as the smallest unit of matter, with extension, out of which all other larger material entities in the world are built, Leibniz's monads were meant to be without extension, as he considered that space was an illusion (at least at the metaphysical level).

Leibniz claimed that a metaphysics, to be adequate, must be capable of giving a complete account of Reality. Only a complete concept could do that; his monads were meant to fulfil that role. A complete concept must contain within itself not merely all the predicates of the subject of which it is the concept, but must also contain all other predicates to which it is related – this implies a vast unifying network of relationships between monads. As the monad is meant to be a complete concept, it follows that it manifests not only properties contained within it, here and now, but also "potentially" in the future; furthermore, it must also contain within it traces of all the properties it exhibited in the past. As he said, the monad is both "pregnant" with the future and "laden" with the past (*Monadology* §22). In other

[10] See Bergson on process philosophy 2014 (for a brief account); see also Leonard and Moulard Leonard 2013.
[11] See Rescher 1997, 13; Redding 2012; Maybee 2016. See Hegel's *Phenomenology of Spirit* 1807; *The Science of Logic*1812-1816; *Philosophy of History*1830-1831.

words, his kind of metaphysics encompassed past, present, and future – the historical, temporal dimensions at their fullest. It thereby emphasised time, not space, whereas atomism focussed on space, while in the main excluding time. When circumstances are right and ripe, so to speak, these properties, thus "folded up" in the monad, would unfold themselves. However, to understand any one manifestation of them at any one moment in time, strictly speaking, one must see it within its full historical context. Hence, Leibniz held that the monad is a substance which is one, simple and indivisible. In this sense, the monad is self-contained – from such a standpoint, the relation between cause and effect are not real, being part of Appearance only. For instance, he held that metaphysically speaking, it did not matter whether we said that the ship pushed the sea water to produce large circles or that the water was caused to produce all these circles, thereby causing the ship to move.[12] If cause and effect do not constitute the basic agency of change, how did Leibniz explain the inter-relatedness of things, which he proclaimed exist? He invoked the theory of pre-established harmony – each monad, being self-contained, could not be said to influence another but it just happened to be the case that every monad is "synchronized" with one another by God in accordance with His conception of the perfect universe.

Leibniz held that Reality must be grasped at different levels, most importantly, at two:

1. At the metaphysical level which is the highest, each monad simply unfolds according to the kind of thing it is – at this level, concepts of causality, even space and time are not appropriate.

2. The next level down is the descriptive level which is the level at which the finite, imperfect, human mind tries to grasp the world *via* concepts such as cause, operating in space and time. This is the level at which science operates. At this level, Leibniz appeared to have no quarrel with the mechanistic view of matter; his objection appeared to lie in the claim that at the metaphysical level, Reality is accordingly "mechanistic".

Leibniz distinguished between four different types of monads: matter, plants, animals, humans. They all have internal properties but also express external relations with one another (in his language, they have "perceptions"). However, the last three, unlike matter, have what he called "appetition" (for example, they strive to achieve an outcome – the plant strives to get sunlight and in so doing, grows taller than the surrounding plants and rocks). The last two have memory (or at least those animals higher up in the animal kingdom do); only the last, namely, humans, have reason (Monadology §§ 18-19 and 29).

Just as Reality must be grasped at two different levels, time must be grasped at three levels:

1. Of God who ordained pre-established harmony and is an entity which is eternal, and hence, atemporal or beyond time.

2. Of each monad which is continuously unfolding itself, that is, immanently becoming it-self.

3. Of mere chronology, which is the external framework of the "nows".

Our finite human minds can operate only at levels 2 and 3, and hence differ from that of God which is not a contingent but a necessary being. For us humans, level 2 does the "real" work, so to speak, for it is at this level of time that change would be accommodated – each monad embodies the internal principle of change.

The above is but the scantiest of outline that space and remit of this study would permit about Leibniz's philosophy,[13] as well as the history of process metaphysics from ancient Greek philosophy to Whitehead's articulation in the 20th century.

Process-ontology, Non-linearity and System/Ecosystem Thinking

Broadbent 2017, 93[14] characterises Epidemiology as follows:

[12] "Draft letter to Arnauld", 8 December 1686 – see Burnham 2005.
[13] For a succinct, detailed though relatively brief but accessible account, see Burnham 2005.
[14] See also Bhopal 2008/22016, 3 for his much shorter definition. According to Riegelman and Kirkwood 2015, 232: "Our definition of population health – the totality of all evidence-based public and private efforts to preserve and promote health and prevent disease, disability, and death. This broad 21st century definition requires public health agencies and professionals to collaborate with a range of government agencies and healthcare professionals and institutions." See also Coggon, Rose & Barker 2020, Chapter 1.

> Definitions of epidemiology vary, but include some common elements, especially the phrase "distribution and determinants of disease." I define "epidemiology" as the study of the distribution and determinants of disease and other health states in human populations by means of group comparisons, for the purpose of improving population health. … Epidemiology is a discipline that essentially involves documenting the way health states occur in human populations, and trying to explain the documented patterns of occurrence. … Most epidemiologists, though not all, will also accept that the purpose of epidemiology is to improve population health. … the history of epidemiology definitely links it to both medicine and public health.

Epidemiology, as confirmed by above, is generally said to be interested not so much in the fate of individual patients as in preventing the emergence of disease patterns amongst communities and populations. Certainly, the nineteenth century pioneers such as John Snow (1813-1858, generally acknowledged to be the founding father of Epidemiology) [15] during the cholera epidemic in London in 1854, was keen to work out why one neighbourhood in London suffered a cholera mortality rate fourteen times greater than another neighbourhood, rather than investigate why this or that particular individual died of cholera. However, this does not mean that successful epidemiological research would have no impact on individual lives as it clearly can and does. For instance, once the handle of the pump in Broad Street was removed, the death rate fell dramatically. While lab researchers concentrate on identifying the infectious agent and producing an effective form of treatment against the disease-causing agent, Epidemiology concentrates on public health measures to prevent a certain disease-pattern from emerging. In other words, while CM relies on pharmaceutical interventions, usually in the form of drugs and vaccines, Epidemiology typically invokes non-pharmaceutical interventions/experiments/measures, especially when neither drugs nor vaccines are available to curb the spread of an infection, such as to date (August 2020) with regard to COVID-19; such interventions in the case of this pandemic include what may be called The Testing Intervention (short for test-track-trace-isolate)and the Lockdown Intervention.[16]

The fall in the cholera mortality rate had nothing to do with the kind of knowledge celebrated by MCD. Snow could only infer that there must be something unsavoury about the pump and what it pumped up, which made people fall ill upon drinking water contaminated by such a source. It was not until 1884, thirty years after Snow's pioneering work in 1854, that Koch discovered that the infectious causal agent was the *vibrio cholera*.[17]

Time has moved on since the 19th century. Epidemiology, today, is said to be a young, developing science, whose "ancestry" is very recent indeed. Broadbent 2017, 93 writes:

> Epidemiology did not emerge as a distinct field until the latter part of the twentieth century, and indeed teaching approaches and career paths are still not finalized. (Perhaps they will never be.)

Two pioneers who should not be ignored may be said to be Austin Bradford Hill (1897-1991) and Richard Doll (1912-2005) whose research work is generally acknowledged to have put epidemiological investigations on an impeccable scientific footing from the methodological point of view. (Doll's substantial findings cover not only the tobacco-lung-carcinoma link, but also between other substances such as asbestos and cancer, radiation and leukaemia,

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[15] In fact, a little earlier in 1847, Ignaz Semmelweis (1818-1865) carried out a type of investigation, methodologically similar to that of Snow. He demonstrated that puerperal fever was infectious as well as contagious and that its incidence was significantly reduced, when medical staff, before tending to patients in the maternity ward, was instructed to wash their hands, after visiting the mortuary and touching the cadavers.

However, Epidemiology, then and now, is commonly perceived to be as different as cheese is from chalk. Today's Epidemiology involves heavy theoretical modelling making a set of assumptions (often based on experiments) about mechanisms of transmission, duration of latency of the virus/bacterium, etc. and attempting to predict the likely outcome of different/alternative interventions. The dimension of mathematical modelling began in the nineteenth century with the epidemiologist, Ronald Ross (1857-1932) and the mathematician, Hilda Hudson. Ross was awarded the Nobel Prize in medicine in 1902 for his discovery in 1897 that malaria in humans was transmitted through the bite of infected anopheline mosquitoes, in particular of *P. falciparum.* See Kucharski 2020, Sinden 2007. For the pioneering SIR model, see Kermack and McKendrik 1927. See Alam *et al*. 2020 as a recent representative example in the COVID-19 pandemic.

In spite of the obvious differences between then and now, this author wishes to emphasise their similarities, that all models of Epidemiological reasoning (whether earlier or later) rest on the same methodological concept of experiment/intervention derived from a hypothesis, and therefore, that Epidemiology is Interventionist Science. For detailed exploration of this argument, see Lee Forthcominga.

[16] For details and a critical appraisal see Lee Forthcominga.

[17] The truth is more complicated. Nobody, including Koch himself, knew that an Italian scientist called Filippo Pacini (1812-1883) had already made the discovery in 1854. Pacino died poor and obscure. In 1965, 82 years after his death, the international committee on nomenclature adopted *Vibrio cholera Pacini 1854* as the correct name of the cholera-causing organism. See last chapter which has raised this issue.

alcohol and breast cancer[18] as well as establishing that smoking increases the risk of heart disease.) Their work, in establishing that tobacco is a crucial in the production of lung cancer, led to the banning of smoking in public space and other measures to discourage smoking.[19]

The causal model invoked by this kind of epidemiological research (in the context of tobacco smoking and lung cancer) in today's Epidemiological Thinking (from the causal vantage point) may be represented by the image of the Triangle of Causation,[20] but greatly enhanced, as shown below:

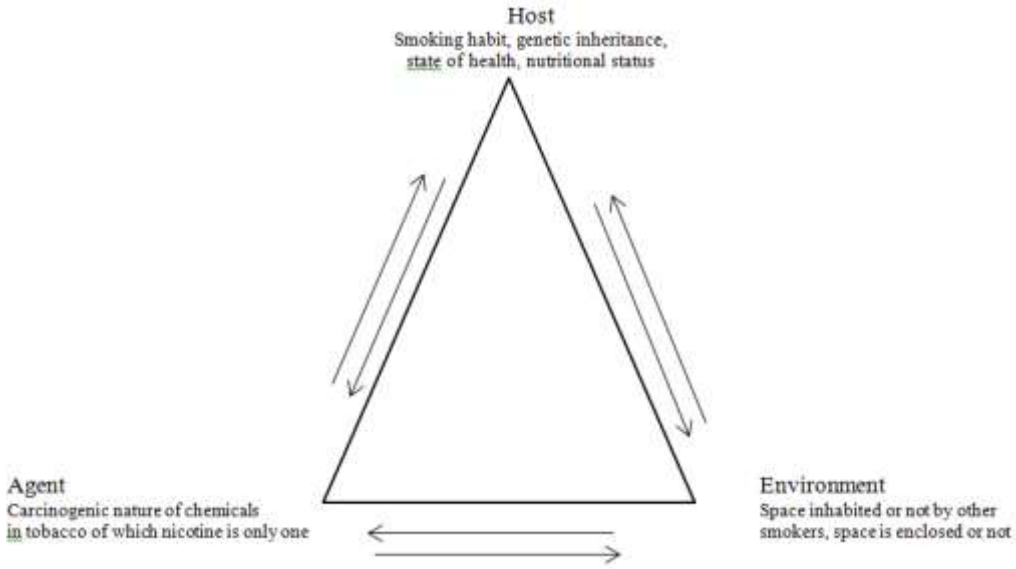

Figure 3.1 Epidemiological (enhanced) triangle of relevant variables and causation
The causal arrows are bi-directional, instantiating reciprocity in causality

There are three main variables: Host, Agent and Environment between which the causal arrows indicate reciprocity – the causal arrows are bi-directional. This advanced causal model obviously differs from that exhibited by MCD (and, indeed, from the earlier Snow model of Epidemiological Thinking). Below is a quick comparison between the two models.

Note that in the smoking-lung cancer example not only is it the case that there are three main variables involved in the model of causation, but that each of these three main variables is internally complex, with causal reciprocity (the causal arrows being bi-directional) obtaining among them.[21]

Host includes several variables, such as the smoking and/or the alcohol-drinking habits of the individuals, their respective genetic inheritances, general state of their health/age/nutritional status/occupational status.

Agent includes the carcinogenic nature of not only one chemical, but also the many chemicals found in tobacco smoke, of which nicotine is only one.

Environment includes whether the space in which the individuals dwell/work consists of smokers, even if they themselves do not smoke, whether the space is enclosed or not, and if enclosed whether adequate ventilation obtains, and if not enclosed, whether the air outside is polluted or clean, and so on.

Of late, some researchers appear to want to develop this more refined characterisation of Epidemiology Thinking even further, to approximate it closer to Systems Thinking. O'Connor and McDermott 1997 distinguish a system from a heap: the former is a series of inter-connected parts, which function as a Whole; when parts are removed or added to, it changes; its behaviour depends on its overall structure (the arrangements of its component parts). The latter is a

[18] For an alternative assessment, see Epstein 2003.
[19] For details and a critical appraisal of their Case-control and Cohort Studies which established the causal link between smoking cigarettes and lung cancer, as well as their work in pointing to the concept of Odds Ratio in modern Epidemiological Thinking, see Lee Forthcominga.
[20] See Bhopal 2008/2016, 131-35.
[21] This is what is meant by "multi-factorial" in this context. (However, when Broadbent talks about "multifactorialism", he could be referring to plural causes, that is, an effect brought about, independently, by more than one cause. For instance, peptic ulcer can be caused by either *Helicobacter pylori* or the over use of NSAIDS.)

mere collection of its parts; its parts function independently of one another; hence the arrangement of its components as well as overall structure is irrelevant, as its behaviour depends merely on its size.

The notion of system can be used to describe complex biological relationships (such as in Ecology/study of ecosystems). It may be used to characterise relationships/processes found in an organisation, such as a company. It may also be used in understanding illnesses, their diagnoses and treatments as found in *Zhongyi*/CCM.[22] Hence, this author prefers to call Ecosystems Thinking/ *Ecosystems Thinking*.[23]

Ecosystem Thinking/Systems Thinking is keen to point out that the relationship between events/processes involves complicated systemic linkages, drawing out clearly such a methodological implication of Wholism. One can re-cast the enhanced Triangle of Causation in terms of nesting ecosystems: Host (the person) as Ecosystem 1; Agent (the chemicals in tobacco smoke which are carcinogenic to the Host) as Ecosystem 2; Environment as Ecosystem 3 (Is the person normally in a space occupied by other people who also smoke, is the space normally occupied an enclosed space or one which is fully open and ventilated?). See Figure 3.2. Each ecosystem has numerous components which are complexly inter-related as a Whole (hence Whole 1, Whole 2 and Whole 3 corresponding with Ecosystem 1, Ecosystem 2 and Ecosystem 3). Indeed, all the three Wholes/Ecosystems (1, 2 and 3) may be said to form another more-encompassing ecosystem, namely, Ecosystem 4.

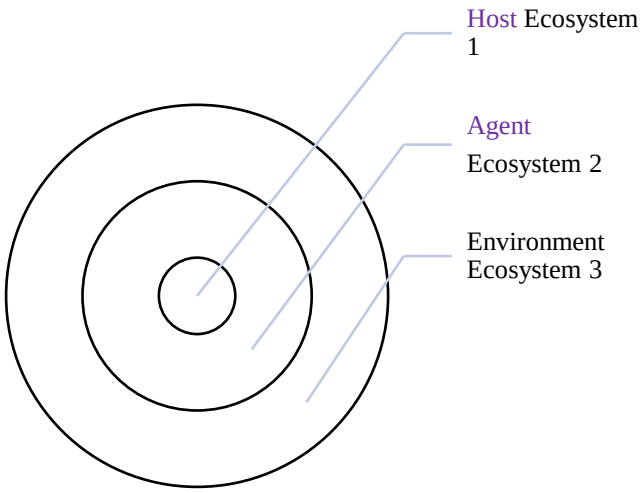

Figure 3.2 Epidemiological causation as ecosystem nesting of concentric circles

The most important aspect of Systems/Ecosystem Thinking which have impressed researchers working at the cutting edge of Epidemiological Thinking is that "from a systems perspective, health is conceptualized as an emergent property of a system, in which processes operating at the levels of individuals and populations are inextricably connected" (Diez Roux 2011). Systems approaches emphasise the need to understand dynamic interrelations between various components.

> Because the effect of a given input depends on other conditions in the system, emphasis shifts from isolating the causal effect of a single factor to comprehending the functioning of the system as a whole. Complex systems typically include heterogeneous agents at various levels, contact structures between agents, adaptation, nonlinear dynamics, and stochasticity. These features lead to the emergence of patterns at various scales. (Diez Roux 2011)

[22] See Hejazi 2020; Lee 2017a, 21, 126-132, 138, 311, 325.

[23] For detailed arguments, see Lee 2019. Briefly: Ecology is a post-Newtonian Science which emerged after WWII in the last century just as Epidemiology is also a post-Newtonian Science. Ecology's key concept of the ecosystem has given rise "eponymously" to what may be called Ecosystem Science/Ecosystem Thinking, which emphasises the importance of feedback loops (both negative and positive) in the history of ecosystems. To grossly over-simplify: an ecosystem consists of biotic and abiotic components, interacting with one another in a complex manner, involving feedback loops, synergism, reciprocity; it constitutes a system/Whole, exhibiting change-in-stability. In other words, it is a system in dynamic equilibrium. Ecosystem is not only a thing which occupies space, it is a pattern of processes which does occupy space but which also changes as it occupies that space and alters itself as well as the space it occupies. Therefore, it presupposes both Process-ontology and Thing-ontology. The same holds true analogously in an epidemic which is the object of interest and study in Epidemiology: a virus or a bacterium, as argued in Chapter Two is a thing (exemplifies Thing-ontology) but it is being investigated regarding its rate of spread (the R number), to whom does it spread (which sub-population in a population is the most vulnerable?), how does it spread (via droplets when the affected sneeze or cough?) and so forth (these mechanisms of and processes in the spread of infection exemplify Process-ontology). An epidemic, like an ecosystem, is a dynamic system exhibiting change-in-stability.

Such an approach involves identifying and studying the presence of important causal loops in the system. In many types of population health problems, feedback mechanisms are found between behavioural and environmental features as well as between health and social circumstances. An instance of the former is this: the availability of healthy food promotes a healthier diet, which in turn creates an increase in the demand for healthy foods; an instance of the latter obtains when health affects income and income in turn affects health. These are self-reinforcing tendencies.

Enlarging a little: Take the case of the incidence of smoking, and ultimately of its related problems of disease and ill health and attempts to lower it. Admittedly, each of the following interventions produces some effect, each in its own right: smoking cessation programmes, prohibiting smoking in public spaces, increasing cigarette taxes, social marketing, and so on. However, the Epidemiologist in accordance with Systems Thinking would also consider what would happen when all the relevant interventions are combined; the total joint effect might be greater than the sum of their effects when produced in isolation from one another (synergistic effects). In a system, when changes in a factor/variable provide feedback into the process, generating feedback loops, which may produce positive or negative impacts. Suppose high taxes on cigarettes would reduce the number of smokers. The next step to pursue is to see if higher taxation would lead to changes over time in social attitudes to smoking, which may then make it possible to increase enforcement of public smoking regulations. If it does, then this would be a positive feedback impact. On the other hand, raising cigarette taxes would mean the treasury has less money to render smoking cessation programmes accessible to help individuals to quit the habit. This then would lead to a negative feedback impact.

In other words, Systems/Ecosystems Thinking embodies Wholism whose component parts and their processes constitute a dynamic system with very intricate feedback loops, which can reinforce the processes of change or dampen them. Under the former, a new equilibrium would eventually be reached; under the latter, equilibrium would be restored. Wholism accommodates both instability and stability; both positive and negative feedback loops can occur in a system.

Let us set out the differences between CM, its MCD and its Monofactorial Linear Model of Causality with Epidemiology with its Multi-factorial Non-Linear Model of Causality in Text-box 3.1 below:

	Monogenic Conception of Disease: Linear a	Epidemiological: Non-linear b
I	Humean/Billiard-ball	Non-Humean
II	Monofactorial	Multi-factorial
III	One cause, one effect	Inter-acting causal variables leading to even a synergistic effect
IV	Causal direction moves in a single uni-directional straight-line	Causal direction is reciprocal/bi-directional, from A to B, B to A
V	Static, ahistorical	Dynamic, historical
VI	Atomistic Materialism: the whole is no more than the sum of its parts	Wholism: the Whole differs from/is greater than the sum of its parts; emergent properties
VII	Reductionist	Non-reductionist
VIII	Solid medicine/Thing-ontology	Patterns of events in populations/Process-ontology

Text Box 3.1

Conclusion

1. In MWP, Process-ontology, ironically, is present by its absence. Indeed, in the history of WPT, after Heraclitus, it disappeared from view until Whitehead resurrected the subject in the 1920s, but to no avail.

2. Instead, Process-ontology managed to play a role, though not a prestigious one, in the history of MWM, from the mid-nineteenth century onwards when Epidemiology made its significant appearance via John Snow's public health measures over the cholera epidemic in London in 1854.

3. However, the dominant and prestigious role in MWM is occupied by CM as "solid medicine" after Pasteur and Koch ushered in the Age of Bacteriology towards the end of the nineteenth century. Koch in turn ushered in MCD; this was reinforced in the twentieth century by the chance discovery of penicillin in 1928 which kills germs, the pathogenic bacteria (though not viruses, lest one forgets).

4. As a result, post WWII, CM triumphed with its pharmaceutical interventions (drugs/antibiotics and vaccines); this in turn means the triumph of Thing-ontology and its Monofactorial, Linear Model of Causality. CM, in general, and RCTs, in particular, become The Coloniser in MWM.

5. Epidemiology, resting characteristically (though not solely)[24] on Process-ontology with its Multi-factorial, Non-linear Model of Causality and its non-pharmaceutical strategies, is made to play second fiddle to CM with its reliance on RCTs.[25]

6. Epidemiology is also judged to be sub-standard when compared with CM as it exemplifies Systems/Ecosystem Thinking and Wholism; on the other hand, CM sits comfortably within the framework of Atomistic Materialism and its implied Reductionist methodology. Epidemiology is then made to play the role of The Colonised, the ontological-cum-methodological foil of CM.

7. CM as The Coloniser is upholding its own standard of scientificity as the Paradigm of Scientificity/the Gold Standard and imposing it on Epidemiology which, however, rests on a different standard of scientificity. In so doing, The Coloniser/CM commits Essentialism of Method which, as demonstrated in Chapter One, amounts to committing an absurdity. It is absurd to judge a cat to be a sub-standard dog using the criteria of goodness appropriate to a dog show; analogously, it is just as absurd to judge Epidemiology as sub-standard using the Paradigm of Scientificity instantiated by CM/RCT. Cats are cats, not sub-standard dogs, just as Epidemiology is not sub-standard CM/RCT.

8. However, at a deeper level, it may be argued that both CM and Epidemiology have this in common: they are forms of Interventionist Science, and that each intervention made in either domain is an experiment derived from a hypothesis which is primarily based on empirical data. Furthermore, their respective style of experiment (pharmaceutical interventions via RCTs in the one case and non-pharmaceutical interventions in the other) can be tested and the outcome critically assessed, whether it is verified/corroborated or falsified. As this is not the place to examine this claim, it suffices to set out detailed arguments elsewhere – see Lee forthcominga & forthcomingb.

9. Ironically, although Epidemiology, since its emergence from the mid-19th century constituted, one could claim, the first post-Newtonian Science, it did not enjoy the status of venerable pioneer in the Pantheon of Science, unlike Relativity Physics and Quantum Physics in the 20th century which are venerated as pioneers and rupture-makers of post-Newtonian Science/Physics.

10. However, all this may be about to change as CM in Bm itself appears to be showing small signs of opting for a more Wholist orientation, and hence, moving closer to Epidemiological/System/Ecosystem Thinking.[26]

[24] Strictly speaking, Epidemiology may be characterised as "Process-ontology cum Thing-ontology"; while concentrating on investigating the spread of an infection (Process-ontology) such as COVID-19 in the pandemic, it necessarily recognises that the disease-entity called SARS-Cov-2 is the virus (Thing-ontology) responsible for COVID-19. This aspect of Epidemiology will be taken up again in Chapter Four which explores the ontology of CC*M-Zhongyi*.
[25] For details of the Cinderella Role assigned to it, see Lee 2012b.
[26] See Chapters Four and Seven of this book.

Chapter Four

CC*M-Zhongyi*/Classical Chinese *Medicine* as The Exogenously Colonised

Bm	Biomedicine
CC*M-Zhongyi*	version of *Zhongyi* which is Classical Chinese *Medicine*
CCDP	Classical Chinese Daoist *Philosophy* (*Daojia*)
CM	Clinical Medicine (in Bm)
C*P*T	Chinese *Philosophy* Tradition
DNA	Deoxyribonucleic Acid
EBM	Evidence-based Medicine
Em-ism	*Qi* could be regarded as *Energy*-cum-*Matter*; an aspect of *Qi Wholism*
MCD	Monogenic Conception of Disease
MWM	Modern Western Medicine
MWS	Modern Western Science
RCT	Randomised Controlled Trial
RNA	Ribonucleic Acid
WPT	Western Philosophy Tradition

Introduction

Chapter Three has explored Epidemiology as The Endogenously Colonised in MWM. This chapter looks at The Exogenously Colonised, namely, CC*M-Zhongyi*. It is worth reminding the reader that Western Medicine went through various theoretical and philosophical ruptures since the Ancient Greeks – first, the humoral theory of Hippocrates and later Galen, then the miasma theory prompted by the medieval occurrence of plagues (such as the Black Death), which persisted for several centuries right up to the 1800s. Finally, the Age of Bacteriology arrived in the late 19th century, with the germ theory replacing the miasma theory of disease. As the theoretical framework changed, so did the diagnosis and treatment of the patients. The humoral theory favoured venesection and leeching, treatments which carried on up to even WWII. After WWII, following the discovery of penicillin in 1928, the germ theory relied excessively on mass-produced antibiotics, the "magic bullet" of the new era.

In contrast, CC*M-Zhongyi* since its inception at least two thousand or more years ago,[1] has suffered no theoretical rupture. That is why *The Neijing* remains to this day a foundational text for all students and practitioners of CC*M-Zhongyi*, a *vade mecum*. Such a tradition of canonical texts is so antithetical to the spirit and practice of MWM that it is hardly surprising that CC*M-Zhongyi* cannot be seriously entertained, because according to MWM only the latest publications endorsed by RCT-EBM (Evidenced-based Medicine) would count as relevant, and that only historians of medicine would look at out-dated texts. MWM/Bm scrupulously distinguish between extant, sanctioned latest medical theory and practice on the one hand and the history of medicine and historical texts on the other, a distinction which is alien to CC*M-Zhongyi*.

This chapter briefly sets out and explores CC*M-Zhongyi*'s uninterrupted theoretical/*philosophical* and methodological framework.

Process-ontology cum *Thing-ontology* in the Chinese *Philosophy* Tradition (C*P*T-CCD*P*)

This study contends that in C*P*T-CCD*P*, the fundamental *ontological* category is *Qi* 气 (best left untranslated in the opinion of this author). However, one must immediately add two caveats. First, C*P*T does not explicitly distinguish *philosophy* into the four major domains which WPT does; these four domains are metaphysics (including ontology), epistemology, logic, and values. But it is plausible, if not obvious, to infer that C*P*T does so implicitly in order that

[1] Archaeological evidence exists today which dates the earliest acupuncture needles (砭石针 *bianshizhen*) to a Neolithic site, 多伦头道洼 (Duoluntoudaowa) in Inner Mongolia. These stone needles were discovered in 1963. For more details about the dating of CC*M-Zhongyi*, based on textual as well as non-textual evidence, see Lee 2018, Appendix One.

the critical reader may make sense of the texts which form the core of the tradition.[2] Second, the fundamental *ontological* category which is *Qi* 气 will not be explored in all its aspects in this chapter; other aspects will be explored in Chapters Nine and Ten to follow. In this chapter, we will only look at how best to understand the concept of *Qi* within the framework of *Thing-ontology* and *Process-ontology*.

This study attempts to characterise *Qi* as the ultimate *ontological* category via the theses presented below:

1. Categorically, *Qi* is not Matter *simpliciter*, but something much more complex, less simple-minded than *Matter* in a straight-forward sense. *Qi* is both *Matter* and its polar opposite, not-*Matter*, so to speak. (What this in turn means will be spelt out a little more later.)

2. For the moment, it suffices to back up the point above by citing what *The Zhuangzi* has to say. Scholars, on the whole, are of the opinion that the earliest expression of *Qi* as a cosmological/*philosophical* concept may be found in it.[3] Admittedly the passage comes from a chapter called *Knowledge Roaming North* 知北游, which is not part of the Inner seven chapters, but which, nevertheless, accords with the understanding of the Dao, as found in *The Laozi* and other *Daojia* texts.[4] This core *Daojia* text says that *Qi* is capable of two modes of existence or being, which may be called: (a) *Qi*-in-concentrating mode (*qi ju* 气聚); (b) *Qi*-in-dissipating mode (*qi san* 气散).[5] The relevant passage reads:

> 生也死之徒，死也生之始，孰知其纪！人之生，气之聚也。聚则为生，散则为死。若死生为徒，吾又何患！故万物一也。。。。故曰：‘通天下一气耳。’。。。

It may be rendered (by this author) as follows:

> Life is but the companion of death, just as death is the beginning of life, life and death being complementary processes. Who knows the detailed entirety of the process? Life of the human being is but the concentration of *Qi*. *Qi* concentrates, thus life occurs; *Qi* dissipates, death occurs. As life and death are necessary companions, I do not regard death as a disaster. … Thus *wanwu* 万物 (the myriad things/all things in the world) are part of the One, *Qi*. Hence goes the saying: ‘Permeating All-under-heaven is *Qi*.’

3. *Qi*-in-dissipating mode preceded *Qi*-in-concentrating mode. In other words, in the origin and evolution of the Universe (宇宙 *yuzhou*), the former existed before the latter. *Yuanqi* 元气, that is, Original *Qi* was *Qi*-in-dissipating mode; it was followed later by the appearance of *Qi*-in-concentrating mode – after that, the one follows upon the other in a seemingly endless cycle of succession.[6]

4. Of the two modes of being, *Qi*-in-dissipating mode, in contrast to its polar counterpart (that is, *Qi*-in-concentrating mode), may be said to be the default mode of being for two reasons. First, its existence as Original *Qi* but also because, as we shall see, the *qi* “released” through decay or death of the physical object which once embodied *Qi*-in-concentrating mode is returned to *Qi*-in-dissipating mode. This would accord well with two (of the three) meanings of the term “易” embedded in the *Yi* of *The Yijing*, namely, 变易 *bianyi* (“to change”/“change”) and 不易 *buyi* (“not to change”/“no change”). However, this should not be interpreted to mean that *Qi* in *Qi*-in-dissipating mode is not itself subject to change. (Everything in the Universe changes including *Qi* when expressed as *yin qi* 阴气 (the *qi* of *yin*) or *yang qi* 阳气 (*qi* of *yang*) which will be explored later.) However, in this context of application and understanding, as just set out, *Qi*-in-dissipating mode may be said to be subject to change, whereas *Qi*-in-concentrating mode, relatively speaking, appears not to be subject to change and so is said to remain constant. (Later in the chapter, we shall explore this point further.)

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[2] For the purpose of this study, the core texts are *Daojia* texts: these include *The Yijing/I Ching* 《易经》, *The Laozi*《老子》, *The Zhuangzi*《庄子》, *The Huainanzi* 《淮南子》, *The Neijing*. Daoist *philosophy* or Daoism is 道家 *Daojia*; it should not be confused with the Daoist religion 道教/*Daojiao*. While Confucianism or 儒家/ *Rujia* in CPT falls exclusively in the domain of moral, social, political *philosophy*, *Daojia* Thinking and its key texts are concerned in the main with metaphysics and (implied) logic. For details, see Lee 2017a. See also Lee 2021 (Open Access), Chapter 1 for additional clarification of the distinction between *Daojia* and *Daojiao*. However, to reinforce the importance of this distinction, read also Gu 2013, Chapter 6, pp 156-162.

[3] See Zhang 1982 in the translation by Ryden 2002, 49.

[4] See Hoffert 2006.

[5] This is the nearest which this author can get to the meaning of the quotation from *The Zhuangzi* earlier cited.

[6] This account would be more or less consonant with the consensus view of cosmology today in terms of the Big Bang Theory.

5. *Qi* as *Qi*-in-concentrating mode exists as physical things which are said to possess "stuff" and "form" – a rendering in English of 有质有形 (*you zhi you xing*). That which has both *zhi* and *xing* is *Matter*. *Xing* can then be said to refer to a set of properties (let us call it the **A set)** namely, that the entity has size, shape and occupies space (location), while *zhi* could be said to refer to a **B** set of properties, namely, that the entity is solid, impenetrable, (relatively) stable, has weight, and mass (in today's understanding of physics). That is why too, in C*P*T (or at least the *Daojia* tradition of the pre-Qin and early Han times, CCD*P*), *Matter* and *material* entities belonged to the domain called 形而下 *xingerxia* – this expression appeared for the first time in *The Ten Wings* of *The Zhouyi* 《周易》[7] and may literally be translated as "that which exists at the level of shape and size". In contrast, *Qi* in its *Qi*-in-dissipating mode was implied to belong to the domain of 形而上 *xingershang* which may literally be translated as "that which exists at the level above/beyond things with shape and size.[8]

6. These two modes of being or existence are inter-related, inter-transformable. As already indicated, "inter-transformable" means that *Qi*-in-dissipating mode can become *Qi*-in-concentrating mode, and after a period of time, *Qi*-in-concentrating mode returns as *Qi*-in-dissipating mode, thereby setting up a cycle of sustainable exchange between the two modes. The causal arrow moves in both directions as follows:

The passage from *The Zhuangzi* cited above used the life and death of an organism to illustrate the process. The beginning of life is but *Qi*-in-dissipating mode transforming itself into *Qi*-in-concentrating mode while death is but *Qi*-in-concentrating mode transforming itself back into *Qi*-in-dissipating mode – these phases of change mark the birth and death of an organism. However, the cycle starts afresh again, with *Qi*-in-dissipating mode transforming itself into *Qi*-in-concentrating mode, but as another organism – such a cycle carries on sustainably during the entire evolution of life on Earth (that part of our Solar system, which alone harbours life as far as we know). It is important to note that this unchanging mutual transformation of the two modes of *Qi* occurs not only in the biotic but also abiotic domain – for instance, planets such as Earth did not originally exist as *Matter* or *Qi*-in-concentrating mode, but as *Qi*-in-dissipating mode.

It should, therefore, be pointed out that the term *wanwu* can have two meanings – a narrower meaning which refers to organisms but also a broader meaning, such that it refers to entities in both the biotic and the abiotic domains. It is natural to talk about birth and death in the former, less so in the latter. However, the abiotic also has its analogues of birth and death – one can speak of the origin/coming into being, say of a mountain (orology) and eventually of its decay until the mountain no longer exists and all that is left are some stumps or very low hills. The Himalayas are so high for the simple reason that in geological terms they are considered to be very young mountains. But eventually they, too, would wear down primarily through weathering, but conceivably even by movements from the centre of Earth (Process-ontology), changing the crust formation on its surface (Thing-ontology). Mountains, as high and as big as the Himalayas or the Alps, would eventually be transformed from their *Qi*-in-concentrating mode to become *Qi*-in-dissipating mode. The abiotic as much as the biotic are part of *wanwu*, part of *xingerxia*, and therefore are subject to the same processes of change as the biotic according to the ancient Chinese.

In addition to the above, *The Huainanzi* elaborates further on the notion of *Qi*,[9] and in so doing presents an account of the evolution of the cosmos. A relevant passage from the third chapter called "Celestial Patterns"/《淮南子· 天文训》reads:[10]

> 天坠未形，冯冯翼翼，洞洞灟灟，故曰太昭。When Heaven and Earth were yet unformed, all was ascending and flying, diving and delving.
> Thus it was called the Grand Inception. (Translated by Major *et al*. 2010, 114)

> 道始生虚廓，虚廓生宇宙，宇宙生气。The Nebulous Void is the state of Dao, the Nebulous Void engendered the cosmos, the cosmos in turn engendered *Qi* (or the original *qi*). (Translated by this author.)

[7] This is the expanded version of *The Yijing* with material added to it during the Han dynasty – see Lee 2017a.
[8] However, this latter expression is also used to translate the term "metaphysics" into Chinese. (This author, however, has some reservations about this translation.)
[9] The Han dynasty thinkers appeared very keen on the notion of *Qi* – the Emperor Xuan 宣汉帝 convened or caused to be convened a seminar on the subject in 51 BCE – see *Zhu 2005: Vol. 1, 130.
[10] Very unfortunately, this author felt it is not appropriate to use in its entirety the overall excellent translation provided by Major *et al*.; in two places, substitute translations have been provided instead.

气有涯垠，清阳者薄靡而为天，重浊者凝滞而为地。清妙之合专易，重浊之凝竭难，故天先成而地後定。

A boundary [divided] the original *qi.*
That which was pure and bright spread out to form Heaven;
that which was heavy and turbid congealed to form Earth.
It is easy for that which is pure and subtle to converge
but difficult for the heavy and turbid to congeal.
Therefore
Heaven was completed first:
Earth was fixed afterward. (Major *et al*. 2010, 114)

天地之袭精为阴阳 – this phrase is left out of the Major translation but is rendered by this author thus: *Yinyang* came about through the essences of Heaven and Earth pairing with each other.

阴阳之专精为四时，四时之散精为万物。积阳之热气生火，火气之精者为日；积阴之寒气为水，水气之精者为月；日月之淫为精者为星辰，天受日月星辰，地受水潦尘埃。

The conjoined essences of yin and yang caused the four seasons.
The scattered essences of the four seasons created the myriad things.
The hot *qi* of accumulated yang produced fire; the essence of fiery *qi* became the sun.
The cold *qi* of accumulated yin produced water; the essence of watery *qi* became the moon.
The overflowing *qi* of the essences of the sun and the moon made the stars and planets.
To Heaven belong the sun, moon, stars, and planets;
to Earth belong waters and floods, dust and soil. (Major *et al.*, p114-115)

The above passage makes clear the following points:

(a) The biotic and abiotic, heavenly or celestial bodies were all made of *Qi*.
(b) Before *wanwu* (implying the broader meaning) appeared, there was *Qi*.
(c) Before *Qi* was produced by *yuzhou* (the cosmos/universe), the Dao as the Nebulous Void engendered *Yuzhou*. The line of causal production appears to be like this: The Nebulous Void/Dao → *yuzhou* → *Qi* (as *yuanqi*).
(d) The lighter and brighter *qi* led to the formation of Heaven while the heavier and more turbid *qi* Earth.
(e) The lighter and brighter was *yang* qi, the heavier and more turbid was *yin qi*.
(f) The mutual reactions and relations between *yin qi* and *yang qi* led to the four seasons which in turn made the emergence and the existence of the myriad things (*wanwu* implying here the narrower meaning) possible.

We can gloss (c) above as follows: *The Huainanzi* in this passage introduced the notion of the Nebulous Void which *The Zhuangzi* (or *The Laozi*) did not, as well as that of *yuzhou*, filling in a gap or two left by the passage quoted earlier from *The Zhuangzi*; it also provides the link between the two *Daojia* foundational texts on the one hand and itself as a later *Daojia* text, by explicitly mentioning the Dao in the passage cited above.

First take the following passage from the same chapter (*Knowledge Roaming North*) of *The Zhuangzi* earlier cited:

东郭子问于庄子曰：“所谓道，恶乎在？”庄子曰：“无所不在。”东郭子曰：“期而后可。”庄子曰：“在蝼蚁。”曰：“何其下邪？”曰：“在稊稗。”曰：“何其愈下邪？”曰：“在瓦甓。”曰：“何其愈甚邪？”曰：“在屎溺。

This passage is a purported conversation between Zhuangzi and an interrogator called Dongguozi, and may be rendered (by this author) as follows:

Dongguozi: The so-called Dao, where can it be found?
Zhuangzi: It is everywhere.
Dongguozi: Would you mind being more specific as that would make things clearer?
Zhuangzi: It can be found in ants.
Dongguozi: Why is it found in such lowly matter?

Zhuangzi: It can be found in this kind of grass (called *bai*) which invades cultivated fields, and therefore is regarded as a weed, a pest.
Dongguozi: Why, the Dao seems to sink that "low"?
Zhuangzi: It exists in earthenware tiles.
Dongguozi: Can it be found in anything even "lower" than that?
Zhuangzi: Yes, in faeces and urine.
To this last retort, Dongguozi fell silent.

If the meaning of *The Zhuangzi*'s response were read in the light of one of the famous passages from *The Laozi*, then the meaning of *The Zhuangzi*'s passage cited above would become clear. That passage from Chapter 42 of *The Laozi* reads 道生一， 一生二， 二生三， 三生万物 《道德经·四十二章》. This author renders it as "The Dao engenders one, one engenders two, two engenders three, and three engenders *wanwu*." Chinese scholars have down the ages interpreted "one" mentioned in the passage either as Original *qi* /*yuanqi* or equated it with *wuji* 无极 in *Daojia* texts.[11] "Two" would refer to *taiji* 太极, referring to the two types of *qi*, namely, *yin qi* and *yang qi*, as is evidenced in the *Liangyitaijitu* 两仪太极图 (that familiar ubiquitous iconic image of *Yinyang*, as shown below).

Figure 4.1: *Liangyitaijitu* (*Yinyang Wholism*)

7. The terms "yin qi" and "yang qi" are not often found in Chinese texts; sometimes, the term *yinyang erqi* 阴阳 二气 occurs, which may be translated literally as "the two *qi* of *yin and yang*". However, in this book, for ease of exposition, they will be used. In C*P*T and cosmology, *yin* and *yang* are inextricably intertwined. As Figure 4.1 shows, and as the Chinese texts say, *yin* and *yang* are always co-present: in *yin* is *yang*, in *yang* is *yin*. This ontological and conceptual intertwining may be called ***Yinyang Wholism***. Indeed, Figure 4.1 shows three *Wholes*: the *Whole* of the white fish with the black eye, the *Whole* of the black fish with the white eye, which together comprise the largest *Whole*, that is, the white fish on the left and the black fish on the right. Given *Yinyang Wholism*, it is against the grain to separate the two *qi* in terms of the *qi* of *yin* and the *qi* of *yang*. However, this study aims to make the concept intelligible to those outside C*P*T-CCD*P*. Hence, for the limited purpose of this exposition, this author talks of *yin qi* and *yang qi*. As the seasons in the year or in the day[12] change, the ratio in *yinyang er qi* simply alters proportionately and not that ascendance of the one displaces totally the presence of the other.

8. *Qi*-in-concentrating mode *simpliciter* unproblematically falls under *Thing-ontology* and therefore, falls comfortably under *Materialism*. What about the other mode, *Qi*-in-dissipating mode? As earlier suggested, one could just translate it as "not-Matter", the polar contrast of "Matter". Can one be more specific? One small way forward is to say a bit more about ourselves, human beings, who after all are the object of study by CC*M-Zhongyi* when we fall ill and the physician attempts to diagnose and treat our condition. From this context of investigation, we can tease out the following theses:

   (a) A relative or friend will call out a physician to attend to the ill *person* when the *person*, no matter how weak and frail, or even at death's door is, nevertheless, still alive.

   (b) When a *person* is dead, s/he is beyond the help of any physician.

[11] As an image, *wuji* appears as an empty circle.
[12] The Chinese analogues of the four seasons can be found within their twelve-hour system: dawn is the equivalent of Spring, noon of Summer, late afternoon leading into twilight of Autumn and midnight of Winter. In today's globalised twenty-four-hour system, one can say: 3am to about 9am (morning) is equivalent to Spring; 9am to 3pm to Summer when the height of Summer may be represented by noon; 3pm to 9pm (late afternoon and twilight) to Autumn; 9pm to 3am (night) to Winter.

(c) A dead *person* leaves behind a body, that is, a thing, of *Qi*-in-concentrating mode only (which for a limited period of time would continue to remain in this mode until decay sets in).

(d) In the technical language of C*P*T, one could say that *Q*i-in-dissipating mode which used to inform the *person* when alive has departed, leaving behind just a thing, a body, a cadaver as *Qi*-in-concentrating mode.[13]

(e) In other words, both modes of *Qi* are inextricably entwined in a living *person*; by definition being alive means just this. The two modes are inextricably entwined in a living individual in the same way as *yin* and *yang* are inextricably entwined, which we call *Yinyang Wholism*, as earlier mentioned; similarly, we can call the inextricable entwining of the two modes of *Qi* in the living individual *Qi Wholism* or *Em*-ism.

(f) CC*M-Zhongyi* diagnoses and treats the ill *person* through manipulating *Qi*-in-dissipating mode *via* medicinals (in a decoction) or needling as in acupuncture. This *Qi* can stagnate 气滞 *qi zhi* in the *person*; blockage of *Qi* causes the patient to feel pain.[14] Needling or taking certain medicinals will eliminate the stagnation/blockage. The physician does not deal directly with the part of the body (*Qi*-in-concentrating mode) as a thing; rather s/he manipulates *Qi*-in-dissipating mode in order to unblock the stagnation of *Qi*. As a result, that part of the body (the limb, the stomach, the chest or wherever the patient reports as feeling discomfort or pain) after treatment no longer feels painful to the patient, as the stagnation of *Qi* has been eliminated.

(g) This *Qi*-in-dissipating mode in the living human individual, simplistically put, could be of two qualities: excess of *yang* over *yin* (causing *yin* deficiency) or excess of *yin* over *yang* (causing a *yang* deficiency). Either upsets the *Yinyang* balance, hence, the illness. When the first condition occurs in a patient, this constitutes a *rezheng* 热·证; when the second condition obtains, this constitutes a *hanzheng* 寒证. For instance, two patients (say husband and wife) may present themselves to the physician, both diagnosed, according to Bm, as victims of the flu virus causing infection at a particular time of year. Yet CC*M-Zhongyi* may diagnose the husband in terms of *hanzheng* and the wife of *rezheng*; consequently, the physician would prescribe supplementing medicinals (补药 *buyao*) for the former and heat-clearing medicinals (清热药 *qingreyao*) for the latter. This is an instance of what CC*M-Zhongyi* calls 同病异治 *tong bing yi zhi* Same illness, different treatments and demonstrates very clearly that CC*M-Zhongyi* is understood theoretically and in practice in terms of its metaphysics/ontology of *Qi*

[13] In common popular discourse, there is a belief that an individual possesses 魂魄 *hun* and *po*; these two concepts serve to explain the nature of human consciousness in a human being who is alive. However, there is a difference between the two – the second dies when the person dies, as it is concerned with that aspect of consciousness which is involved with our ability to feel sensations (of pain) and emotions (fear, anger) – it is tied up with the body as a thing. On the other hand, *hun* which appears to be involved with the cognitive aspect of human consciousness is said to be able to survive death, rather equivalent to the concept of the Christian soul which survives death. This kind of popular discourse about the uniqueness of human consciousness could be interpreted also to hint at a version of Cartesian dualism in the form of the ontological distinction between Mind and Body – the latter is a physical substance, a thing, which is subject to eventual decay and death, while the former is another kind of substance which is not physical. However, C*P*T should not be confused with the implied Dualism of *hunpo* as understood in popular folklore discourse. Chapter Eight of this book addresses how C*P*T grapples with the Mind-Body problem, not in terms of Dualism but Dyadism or to be more precise of Contextual-dyadism.

However, CC*M* also invokes a distinction between *hun*/魂 and *po*/魄 but not in the same way which folklore understands it. Put simplistically and very briefly, one could say that the *person* as living organism embodies both *hun* and *po*. The former is *yang*, the latter is *yin*. As *hunpo*, the term refers to the *person*'s capability to feel certain sensations via the various senses (that is the role of *po*) as well as to think/reflect/cogitate (that is the role of *hun*) – in other words, as *The Neijing* makes clear, it is *hunpo* in the *wuzang*/五脏 which renders the *person* into a harmonious *Whole* as thinking-feeling being (五脏者，合神气魂魄而藏之). One could say that *hunpo* is another way of referring to the Original *Qi*/元气 in the *person*'s *wuzang* which if intact means that the *person* is well and functioning properly. With regard to the *wuzang*/五脏 (which are *yin* standing as polar contrast to the *liufu*/ 六腑 which are *yang*), *The Neijing* elaborates: 心藏神，肺藏魄，肝藏魂，脾藏意，肾藏精志也/*Heart* stores spirit, *Lungs* store *po*, *Liver* stores *hun*, *Spleen* stores thoughts, *Kidneys* store essence and emotions. *Hun* may be differentiated into Fire-*hun* and Water-*hun* (when this concept is inserted within the framework of *Wuxing*); these mark the distinction between male and female, as the male is regarded as *yang* (Fire is *yang* and ascends in a "showy" manner) and the female as *yin* (Water as *yin* flows quietly downwards and sinks). In this sense, one could say that there are four of *hun*. In like manner, one can say that there are seven of *po* – these refer to the seven emotions (joy/喜, anger/ 怒, sorrow/哀, fear/惧, love/ 爱, loathing/恶, desire/欲). Furthermore, desire itself can be differentiated into five types, each associated with one of the five sensory capabilities the *person* possesses: seeing (eyes), hearing (ears), smelling (nose), tasting (tongue), touching (person-body).

This author acknowledges with gratitude the addition of this more nuanced account from *The Neijing* in response to a critical comment of Ephraim Ferreira Medeiros at a conference in Vienna in 2018 when some of the issues of this chapter were briefly presented and discussed.

[14] See Chapter Nine of this book for a detailed exploration of this thesis.

Wholism and *Yinyang Wholism* and their methodological implications. At the same time, it clearly embodies the notion of *Personalised Medicine* in CC*M-Zhongyi*.[15]

(h) Furthermore, CC*M-Zhongyi* needs to be understood within the framework of what may be called Macro-Micro-cosmic *Wholism* (天人相应 *Tianren-xiangying*).[16] This worldview says that we human beings (as individuals) are the Microcosm which reflects the Macrocosm, the Universe at large (*yuzhou*). *Yuzhou* instantiates *Qi Wholism*; hence, so does the Microcosm, the *person*. *Yuzhou* also instantiates *Yinyang Wholism*; so, does the Microcosm, the *person*. *Yuzhou* (the Macrocosm) instantiates the *Laws of Nature* – the *Sishi jielü* 四时节律 (Annual Cycle of the Four Seasons）and the *Zhouye-jielü* 昼夜节律 (Daily Day-Night Cycle).[17] So does the Microcosm, the *person*.

(i) An example of CC*M-Zhongyi* at work to reinforce the thesis that it embodies and implements *Tianren-xiangying*, is the following. According to it, the philtrum, 人中 *renzhong* is not simply a part of our anatomy as Bm appears to regard it – in the foetal history of some individuals, something appears to have gone wrong, as a result, the philtrum has not developed properly and the individual is born with a hare-lip which could be surgically repaired after birth. For CC*M-Zhongyi*, the *renzhong* is not so much anatomical space as the site of great cosmological significance – it is the site when *Tian* (天 Heaven) and *Di* (地 Earth), *Yang* and *Yin* meet, forming a *Whole*, that is, *Yinyang Wholism*. No human being could be alive if *Yinyang Wholism* fails to obtain. Even in today's China, by and large, people would know what to do when a *person* faints and passes out of consciousness in their midst – instead of calling an ambulance to take the *person* to the A&E of a hospital, someone might just pinch the *renzhong*. This pinching of the philtrum restores the *person* to consciousness; the act restores the connection between the *qi* of *Tian* and the *qi* of *Di* and the *person* becomes whole again.

(j) When CC*M-Zhongyi* diagnoses and treats a patient via an investigation of the *mai* 脉,[18] the physician is actually ascertaining *Yinyang* equilibrium in the patient in terms of the concepts of *Yinyang Wholism*, *Tianren-xiangying* and the *Laws of Nature* such as the *Sishi-jielü* 四时节律/Cycle of the Four Seasons. Suppose a physician sees the patient in the depth of winter but diagnoses a *mai* which is a *hong mai* 洪脉, a large and vigorous *mai*, typically associated with Summer. In winter, the *mai* of a normal *person* would be weaker than a Summer *mai*. In other words, the patient's *mai* is out of step with the *Sishi-jielü*; to put it in other words, the patient is suffering from *Yinyang* disequilibrium, which spells trouble a few months later, when Summer appears. Given that *yang* in Summer is at its maximum and *yin* its minimum, the physician predicts that the patient's *yang* would even be in greater excess over *yin*. Therefore, the physician must prescribe straightaway appropriate medicinals/needling to induce a *Yinyang* balance in the patient so that the Microcosm would be in step with the Macrocosm. The fundamental goal and technique of CC*M-Zhongyi* is to simulate in the Microcosm the *Laws of Nature, such as the Sishi-jielü* which hold in the Macrocosm.

(k) The Chinese Universe may be said to be a Sun-driven universe. The Sun stands for 阳 *yang*/heat/warmth/movement, Earth for 阴 *yin*/cold/stillness. Sun-Earth instantiates *Yinyang Wholism* – without the Sun and its heat, Earth would be lifeless. Today we know that the process of photosynthesis in plants requires the warmth of the Sun – hence plants begin to put out new shoots when Spring arrives. This is the season when *yang* begins to increase/ascend (生 *sheng*) while *yin* declines. Crops grow and develop as *yang* further increases (长 *zhang*) and *yin* further declines, until *yang* reaches its maximum in Summer. Crops next mature and are ready to be harvested in the Autumn when *yang* begins to decline (收 *shou*) while *yin* correspondingly begins to rise. Then comes Winter, when there is general die-back, when *yang* is hidden away (藏 *cang*) while *yin* increases to its maximum in the winter. This is the *Law of Cyclic Reversion* (周而复始 *zhou er fu shi*) – Spring, Summer, Autumn, Winter and Spring again with their respective processes of 生长收藏 *sheng, zhang, shou, cang*.

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[15] See Chapter Seven of this book for another discussion.

[16] Chinese *philosophy* in general uses the expression 天人合一 *Tianren-heyi*. Sinologists, following Graham 1986, translate both terms as Correlative Thinking. However, this author does not agree with this translation as it seems to turn an ontological notion into an epistemological one.

[17] However, if one wishes to be truly economical, one could say that the *Second Law of Nature* (the *Zhouye-jielü*) can be readily subsumed under the *First Law* (the *Sishi-jielü*). As already observed, the four seasons can be found within the Chinese twelve-hour system of time keeping.

[18] As Chapter One has reminded the reader, the concept of *mai* should not be translated as pulse or pulse rate, a concept in Bm which measures primarily the heart rate, the number of times, the heart beats per minute. The pulse rate is also said to indicate heart rhythm. *Mai* is a different concept. See Lee 2017a, 279-282; Lee 2018, 49-50, 140-144, 241-251 for an account of the difference. As such, this author prefers to leave the term untranslated. See also Kuriyama 1999.

This part of the Chapter will conclude with a few general comments about *Process-cum-Thing-ontology* such as in the post-Newtonian science of Thermodynamics as well as in Virology in general and SARS-CoV-2 in particular. One would like to point out that they can be understood within the C*P*T-CCD*P* framework of *Qi*-in-concentrating mode (*Thing-ontology*) and *Qi*-in-dissipating mode (*Process-ontology*), that is of *Qi Wholism*.

Let us start with Thermodynamics. Sadi Carnot (1796-1832), the famous French engineer was the first to stumble upon that science.[19] The English had invented the steam engine which went on to fuel the second industrial revolution (the first being based on water power, as delivered by the water mill) in general. Carnot felt that France was being left behind in the new race based on steam; being patriotic, he decided to study the steam engine in order to increase its efficiency, and thereby to overtake its Anglo-Saxon rival. The English inventors were, on the whole, workmen, some even illiterate such as Robert Stephenson; Carnot thought he could design better steam engines as an engineer with a training in science to back him. He discovered that the efficiency of the engine (admittedly an idealized one) depended only on the difference in temperature between its hottest and its coldest parts which drove the mechanism. Although at first ignored, his finding was later incorporated into thermodynamic theory as developed by the German Rudolph Clausius in 1850 and the British William Thomson (who became Lord Kelvin) in 1851.

This science is primarily concerned with the conversion of energy between its various forms as well as with the ability of energy to do work for us. Sometimes, it is said to have three laws and sometimes four.[20] But from the limited point of view here, the only relevant one we need to examine in detail is the first law, which is called the law of conservation of matter and energy. This means that matter and energy cannot be destroyed, only transformed, that energy and matter can be converted from one form to another (for instance, light could be turned into heat and *vice versa*, that solid could become liquid, then gas and back again), but with the total amount remaining constant. Again, for our limited purpose in this context of discussion, all that we need to concentrate on is that part which this author has underlined.

The discussion so far of *Qi* shows that it is in agreement with the underlined portion of the First Law of Thermodynamics, the law of conservation of Matter and Energy. In other words, *Qi*-in-concentrating mode is *Matter* and *Qi*-in-dissipating mode may be said to be *Energy*, an analogue of Energy; the latter is transformable into the former, the former is transformable into the latter. So, it is not implausible to claim that *Qi* and its modes of existence and operation constitute the ancient Chinese version of this law of thermodynamics. But it differs also from this law not merely because it is embedded in a different kind of historical, political and social context but also in a very fundamental aspect, a different *philosophical* framework. Hence, let us mark this difference by italicising the Chinese *law* thus: *The Law of Thermodynamics* while it appears simply as the First Law of Thermodynamics (in the context of modern science since the middle of the 19th century).

In the context of WPT and MWS, as argued in preceding chapters, Matter is the fundamental ontological category, and that Thing-ontology is the dominant ontological framework in WPT. On the other hand, C*P*T appeared/appears to uphold *Thing-ontology cum Process-ontology* (*Qi Wholism*) which then could be said to be endemic in C*P*T and to underpin the kind of *science* it generated. Science in the Western tradition sees Energy as something imported from outside the domain of material reality in order to transform it; it is also the case that Matter is transformed by Energy to become merely another form of Matter (for instance, when wood is burnt, it is reduced by the energy of the fire to become ashes, and in turn to become part of soil), while admitting that in the process, energy is released and no longer available for work (the Second Law of Thermodynamics is about the production of this loss of energy for work, existing as "entropy" instead). In contrast, what this study has called the Chinese *Law of Thermodynamics* was articulated not in the context of technology, of the efficiency of machines, which do work on behalf of Humankind, but in the context of attempting to understand the processes at work in natural phenomena, which humans observed and studied. The ancient Chinese, as a result of this kind of orientation, came to appreciate that *Matter* and *Energy* could not be distinct and separated out from each other, that there was a complex underlying relationship between them. This led them to postulate a Dyadic relationship[21] (between the two modes (*Qi*-in-concentrating and *Qi*-in-dissipating modes as *Qi Wholism*) and the two types (*yin qi* and *yang qi* as *Yinyang Wholism*) which *Qi* could take. Such a conception of *Qi* as the basic *ontological* category also implied that *Qi* as *yuanqi*/Original *qi* of which *Qi*-in-dissipating mode was a part, preceded *Qi*-in-concentrating mode. Furthermore, the relationship between the two modes of *Qi* is also a dynamic as well as internal one. (These relationships will be examined more fully in Chapter Five of this book.)

These points are expressed in Chinese as follows:

(a) 形中有气 *xing zhong you Qi* – in form/shape there is *Qi*
(b) 气中有形 *Qi zhong you xing* – in *Qi* there is form/shape
(c) 气化 形 *Qi hua xing* – *Qi* transforming form/shape

[19] For a quick account, see Sadi Carnot 2018.
[20] For an accessible, brief account see Three laws of thermodynamics 2018; Atkins 2010.
[21] As already indicated, the concept of Dyadism will be explored in detail in Chapter Eight to follow.

(d) 形化气 *xing hua Qi* – form/shape transforming *Qi*
(e) 形化形 *xing hua xing* – form/shape transforming form/shape
(f) 气化气 *Qi hua Qi* – *Qi* transforming *Qi*

An instance of:

(c): *Qi* transforming form:	clouds transform as snow
(d): form transforming *Qi*:	water from the ocean transforms to become clouds (with help of sunlight)
(e): form transforming form:	ice (solid) becoming water (liquid)
(f): *Qi* transforming *Qi*:	the *qi* of water (水气) which constitutes clouds transforms as rainbow

(c) to (f) above are expressions of the dynamic relationships between *Qi* (in its *Qi*-dissipating mode) on the one hand and *xing* (which is *Qi*-in-concentrating mode) on the other. These dynamic relationships could occur because of the internal relationship between *Qi* (in its *Qi*-dissipating mode) and *xing* (*Qi*-in-concentrating mode) which is characterised in (a) and (b) above. This is to say that while *xing* embodies *Qi*, *Qi* also embodies *xing*; that *Qi* and *xing* are not mutually exclusive as *ontological* categories. Another way of putting the same point, but this time in Aristotelian terms, is to say that *xing* (*Matter*) contains *Qi*/*Energy* as well as that it has the potential of transforming itself to become pure *Qi* (*Qi*-in-dissipating mode)/*Energy* – after all, *Matter*/form is really no more and no less than *Qi*-in-concentrating mode. Similarly, *Qi*-in-dissipating mode/*Energy* has the potential to become *Matter*/form which after all is really *Qi*-in-concentrating mode.

Yet another way of helping those outside the C*P*T mode of thinking is to look at Einstein's famous equation, $E = mc^2$ where E = energy, m = mass, c^2 = the square of the speed of light. That equation captures Einstein's discovery of the deep connection between energy and mass.[22] However, Einstein's theory had to await confirmation *via* experiments which was not obtained until 1933 when Irène and Frédéric Joliot-Curie captured in photography the process of energy converting into mass – the photo may be found at the website of the Center for History of Physics, American Institute of Physics.[23]

While this was happening in Paris, two scientists in Cambridge University in another experiment demonstrated the reverse process, that of mass converting into pure energy. The pair, John Cockcroft and E.T.S. Walton, upon breaking apart an atom, found that its fragments, added together, had slightly less mass than the original atom which had flown apart with great energy. Finally in 2005, the year of the centenary of Einstein's discovery, a team of scientists measured the energy of the gamma-rays emitted by radioactive atoms and found that this energy was equivalent to the change in mass of these atoms before and after the emission of the gamma-rays – the equivalence was to within 4 hundred-thousandths of one percent.[24] This equivalence between mass and energy makes it possible to say that mass is a form of energy; *The Law of Thermodynamics* could then be said to be in accordance with this conclusion in post-Newtonian physics as enunciated by Einstein in his special theory of relativity in 1905.

Several things are worth highlighting:

1. Rescher 1997, 2 has provided a succinct contrast between Thing-ontology and Process-ontology:

> Process metaphysics as a general line of approach holds that physical existence is at bottom processual; that processes rather than things best represent the phenomena that we encounter in the natural world about us. The doctrine takes a position within the spectrum of competing following contentions:
> 1. Process has *primacy* over things. Substance is subordinate to process: Things are simply constellations of processes.
> 2. Process has *priority* over substance. Things are always subordinate to processes because processes inwardly engender, determine, and characterize the things there are. But processes as such transcend the realm of things since there are also substance-detached processes.
> 3. Substance has *priority* over process. The only sort of processes there are those involved in the doings and comportment of things.
> 4. Substance has primacy over process. Indeed, substance is all there is; all processes and changes are simply a matter of how things appear to certain (mind-equipped) substances.
> The first two of these competing contentions represent process philosophy respectively in its stronger (Heraclitean) and weaker (Empedoclean) versions. By contrast, the substance approach which process philosophy rejects is represented by the last two contentions. This approach also has a weaker (Democritean) and a stronger (Parmenidean) version.

[22] Mass should not be confused with weight. Weight is the measure of the force of gravity acting on a body, and so can vary, as the force of gravity varies from location to location. Mass is the quantity of matter in a body regardless of its volume or of any force or forces acting on the body. In normal circumstances, the mass of a body can be regarded as constant – see Mass 2020.
[23] See Photograph capturing the process of converting energy into mass 2018.
[24] See Rainville *et al*. 2019; Cox & Forshaw 2010.

2. Rescher was careful to point out that Process Philosophy should not be understood to stand for homogeneity; instead, it would be fitting to use Wittgenstein's concept of "family resemblances" to refer to different versions or attempts to articulate it. For instance, in WPT, process theology is one such version; the Laws of Thermodynamics in modern physics exemplify another; Einstein's Relativity Physics is another instance of Process-ontology at work. In contrast, C*P*T-CCD*P* obtained/obtains in a culture, which has been secular (at the highest intellectual level, that is) for more than two thousand years. Hence, one would not find Chinese intellectuals applying it to theology (as such a discourse did not exist in ancient Chinese *philosophy*); in *CP*T, *Process-ontology/philosophy* was applied consciously and explicitly to the domain of natural phenomena. As things turned out, the Laws of Thermodynamics as well as Relativity Physics and later Quantum Physics turn out to be very close to the *Process-ontology cum Thing-ontology* in C*P*T-CCD*P*, which one could excavate from certain *Daojia* texts.

3. In other words, *Process-ontology/philosophy* in C*P*T has never been faced with the choice of *Process-ontology* over *Thing-ontology* or vice versa. It can accommodate both (*Qi Wholism*); as such, it does not subscribe to the Principle of Excluded Middle at any level of analysis and discourse.[25] Hence both *Process-ontology* and *Thing-ontology* may be regarded as complementary to each other. This chapter has demonstrated how *Qi*, the fundamental *ontological* category operates under two modes – *Qi*-in-dissipating mode and *Qi*-in-concentrating mode. The latter manifests itself as thing (*Thing-ontology*), within a certain given duration of time, after which it reverts back to *Qi*-in-dissipating mode (*Process-ontology*) which, in turn, under certain other sets of conditions would again manifest itself as *Qi*-in-concentrating mode – the cyclic reversion from one to the other repeats itself, and the processes endure, and so do *wanwu*, as a result. It would be a mistake therefore simplistically to regard *Qi* either as a form of *Materialism* (taking the cue from *Qi*-in-concentrating mode only), or as *Energism* (taking the cue from *Qi*-in-dissipating mode only) – it is neither the one nor the other, but it is both at once. One can offer the barbarism "*Em*-ism" (short for "*Energy*-cum-*Matter*") to capture this dyadic characteristic of *Qi*. At one level, it may be correct to say that surely *Qi*-in-dissipating mode is more basic than *Qi*-in-concentrating mode – existentially speaking, the former would have preceded the latter. However, the fundamental characteristic of Chinese *Process-ontology/philosophy* could only be captured by saying that *ontologically*, the two polar contrasting modes are complementary, and they harmonise to form a *Whole*. *Yin* cannot be grasped or endure in the absence of *yang*, and *yang* cannot be grasped or exist in the absence of *yin.* In a similar way, one could also argue that empirically speaking, *yang qi* provides the driving force for the flourishing of *wanwu*, yet *ontologically yin* and *yang* form a harmonious *Whole* as *Yinyang.* This *Wholism* for short is *Yinyang Wholism*, just as at the quantum level,[26] reality is wave-particle duality. All dualities, according to C*P*T-CCD*P* embody Dyadic, not Dualistic Thinking. In the case of the *Yinyang* duality, for instance, one could recognise the existential priority of *yang* over *yin* by saying that *yang* is *primus inter pares* in the *Yinyang* pairing (*Yinyang Wholism*). In the case of the *Process/Thing* duality, one can recognise the existential priority of *Process* over *Thing* by saying that *Process-ontology* is *primus inter pares* in the *Thing-Process ontological* pairing (*Qi Wholism/Em*-ism).

To prevent misunderstanding about the barbarism "*Em*-ism" put forward to capture for readers outside C*P*T-CCD*P* its claim that Q*i* is the basic *ontological* category of its system of thought,[27] let us clarify things a little further. This term has not been coined and put forward as an instance of what some scholars have called "retrospective privileging", that is to say, this author is not claiming that the ancient Chinese have scored a brownie point over Einstein regarding the formula "$E = mc^2$", that they had discovered the physics behind that equation some three thousand years ago before Western scientists. All that this author wishes to do is to draw attention to the following:

A. Cox and Forshaw 2010, 135 says that in the tradition of Western science

> (b)efore Einstein, no one had dreamed that mass could be destroyed and converted into energy because mass and energy seemed to be entirely disconnected entities. After Einstein, everyone had to accept that they are different manifestations of the same type of thing.

Before $E = mc^2$, no-one had thought mass is a form of latent energy.[28] Put very simplistically, the formula works because the speed of light which is finite is held to be constant (186,000 mi/sec such that someone travelling at

[25] For detailed arguments, see Lee 2021 (Open Access), Chapter 4; Lee 2017a, Chapter 9.
[26] For more details in such an exploration on the physics of Niels Bohr, see Lee 2017c.
[27] One should strenuously reinforce the point that it would be a bad *philosophical* mistake to consider *Qi* as either plain matter (Materialism) or plain energy. For the former viewpoint, see Zhang 2002: xvii (Preface by Ryden).
[28] In June 2014, *Nature Photonics* published new research by some physicists at the Imperial College London which shows it is possible to convert light directly into matter using today's technology (such as high-powered lasers and other equipment); this attempt demonstrates (in principle) what was proven in theory by Gregory Breit and John Wheeler in 1934 – see Pike, Mackenroth, Hill & Rose, 2014.

the speed of light, would go round the equator approximately 7.5 times in one second), that nothing travels, so to speak, faster than the speed of light.

B. The ancient Chinese had nothing to say about the speed of light in their account of *Qi*; nor did they distinguish carefully between weight and mass; nor did their account permit calculation of a precise nature in the conversion of mass into energy. These are just some outstanding differences between their *Qi ontology* and modern physics.

The ancient Chinese, within their own *ontological* account of *Qi*, had simply made the distinction between *Qi*-in-concentrating mode and *Qi*-in-dissipating mode, and that there was mutual transformation and inter-change between them.

As the ancient Chinese did not subscribe to Dualistic ontology but Dyadic *ontology*,[29] mass/matter was not separated out from energy (which was the case up to Einstein in the West tradition of philosophy and science); rather *Qi* simply existed and operated as *Qi*-in-concentrating mode as well as *Qi*-in-dissipating mode. These two modes may usefully in the context of appreciating the differences as well as the similarities between different philosophical frameworks generating different forms of science, be regarded, at best, as bearing an analogous resemblance to mass and energy.

C. Those who do not like this label *Em*-ism to characterise the *philosophy* and the *science* of the ancient Chinese, are not obliged to use it as it is not exactly elegant; they could simply spell out the two modes of existence and operation of *Qi*.

D. However, one could perhaps plausibly argue that the ancient Chinese as well as Einstein and scientists after him in the tradition of contemporary physics are respectively grappling to account for a problem confronting them. That problem, Cox and Forshaw 2010, 146 put as follows:

> The process of converting mass into energy and energy into mass is … absolutely fundamental to the workings of nature; it is an everyday occurrence. For anything to happen at all in the universe, energy and mass must be continually sloshing back and forth. How on earth did anyone manage to explain anything involving energy before we knew this seemingly most basic of facts about the workings of nature?

The ancient Chinese did cope in their own way, not in terms of "mass" and "energy" and the speed of light being constant,[30] but simply (to labour the point once again) in terms of their distinction between *Qi*-in-dissipating mode and *Qi*-in-concentrating mode and the continual "sloshing back and forth" between them.

The interpretation given here, however, is not the only interpretation possible; nor is the meaning of *Qi* attempted the only possible one in the totality of Chinese *philosophy* of *Qi*. There may be other contexts of its use in theory and practice which the above interpretation does not reflect so well.

Finally, we take a look at virology which, as a discipline in CM, has been brought recently to the attention of the public because of SARS-CoV-2/ COVID-19. Chapter One of this study has raised the issues of whether a virus is a thing, and if a thing, whether it is a living thing. We now return to this discussion in the light of C*P*T-CCD*P*'s claims about *Qi Wholism* and *Yinyang Wholism*. Virologists regard viruses to be both alive and not alive.[31] This is because although it contains genetic material, is indeed even defined as a genetic capsule, it cannot replicate itself unless it manages to get into a host organism, to get the host's cells to replicate on its behalf. As such, on reflection, why should it be said to present a problem whereas other things, such as a seed is not said to present a similar problem? No one seems to want to ask the question whether a seed is alive or not alive. A mustard seed can no more replicate itself if it remains forever as just a seed than a virus existing outside a living organism. A mustard seed is then just like a virion, an arrangement of matter, including genetic material. To grow, develop, mature, produce seeds of its own, the mustard seed needs to meet up with an appropriate set of circumstances which includes water, light, some nutrients either in soil or in a solution. Similarly, a virus has to meet up with an appropriate set of circumstances which involves infecting a host organism using its metabolism to copy and propagate itself.

In other words, all living organisms are Janus-faced – one side belongs to Thing-ontology (*Qi*-in-concentrating mode), the other side belongs to Process-ontology (*Qi*-in-dissipating mode). According to C*P*T-CCD*P*, as already observed, *Thing-ontology* and *Process-ontology* should be understood as an inextricably entwined pairing, as a *Whole* in the same way *yin* and *yang* are inextricably entwined as *Yinyang Wholism*. In other words, a virus such as SARS-

[29] See Lee 2021 (Open Access), Chapter 3 for an in-depth exploration in general and Chapter Eight of this book in the particular context of the Mind-Body problem in both W*P*T and C*P*T-CCD*P*.
[30] Since 2013, work of some researchers shows results which appear to challenge Einstein's claim – see *Speed of light may not be constant*, 2013.
[31] See The Viral Universe 2020, for some work done by virologists in creating a virus.

CoV-2[32] is neither simply a thing nor simply a process – it is both. In the case of COVID-19, when an infected person coughs, sneezes, breathes, sings or indeed even opens the mouth, the virus (thing/Thing-ontology/*Qi*-in-concentrating mode) shoots out from two orifices of the face, mouth and nose, and falls as droplets which eventually land on surfaces. That is why Epidemiology advocates the strategies of keeping social distancing (of 6 feet/two metres or at least one metre in certain contexts), covering up coughs and sneezes and washing the hands which could have touched surfaces already contaminated. As yet, there are no hard data to support infection through aerosol transmission. However, to be on the safe side, we should all wear masks which could also protect us against such a possibility, just as we should meet in the open air, have effective ventilation if indoors.

Irrespective of the virus's precise mode of transmission, be it by droplets or as aerosols (suspension of the virus in air which we then breathe in), the virus in droplets or aerosols belongs to the Thing-phase of its existence; should it manage to procure entry though the facial orifices of a human being, it will then begin a new and different phase of its existence, the Process-phase which ultimately involves replication using the metabolism of the host cells. These two phases form a Whole; we cannot fully grasp its nature by just talking about the Thing-phase but not also the Process-phase. This Whole differs from *Yinyang Wholism* in this way: in the case of the latter, the two components of the *Whole* are always co-present, with no gap in Space or Time as they occupy the same Timespace. In the case of the former, the two components of the Whole are separated by Time and Space, as they occupy successive portions of Space and Time. The virus as a Whole is just like the Whole constituted by the mustard seed and the mustard plant. In the language of Aristotle's philosophy, we can say that the virus and the mustard seed each possesses the potential of being alive, being able to replicate – the second phase of their existence is already contained in their respective first phases (when their existence falls under Thing-ontology/*Qi*-in-concentrating mode) and that their second phase (when their existence falls under Process-ontology/*Qi*-in-dissipating mode) is but an actualisation of that first phase. The genetic material of the virus is much pared-down, consisting mostly of RNA, not DNA; however, genetic material, whether as DNA or RNA in themselves are things which contain the potential of becoming, say, a plant or an animal – the first phase comes under Thing-ontology and the second developmental stage comes under Process-ontology. C*P*T and CC*M-Zhongyi* marks these two phases in terms of the distinction, in the language of *The Zhuangzi*, between Qi-in-concentrating mode/*Thing-ontology* on the one hand and *Qi*-in-dissipating mode/*Process-ontology* on the other.

Daoist *Philosophy* (C*P*T-CCD*P*) and CC*M-Zhongyi*: Their Model of Causality

From the ontological standpoint, it is obvious that WPT and CM (in MWM/Bm) would find C*P*T and CC*M-Zhongyi* alienating, Playing the role of The Coloniser, WPT and CM would have no qualms under Essentialism of Method to relegate C*P*T and CC*M-Zhongyi* to the inferior status of The Colonised. The Colonial Mind-set is reinforced by the difference in their respective models of causality, as every ontology and metaphysics has methodological implications for doing Science/*Science* and Medicine/*Medicine*. CM in Bm endorses MCD, of disease as caused by a single disease-entity – in other words, it favours a Monofactorial, Linear Model of Causality where the causal arrow is unidirectional from cause to effect only, thus: $\longrightarrow$. In contrast, C*P*T-CCD*P* and CC*M-Zhongyi* implies a model which is Multi-factorial and Non-Linear (exhibiting synergism, reciprocity with feedback loops, both negative and positive; the causal arrow is bi-directional, thus: $\longleftrightarrow$). The former invokes the Billiard-ball Model while the latter the Ecosystem-Model; the one instantiates Newtonian Science *par excellence*, the other not-Newtonian *Science*. Just as CM in Bm relegates Epidemiology to the inferior status of The Colonised, it also necessarily relegates CC*M-Zhongyi* to a similar status.

The alienation is made more intense by the fact that C*P*T-CCD*P* and CC*M-Zhongyi* use its own language to characterise such a Multi-factorial, Non-Linear type of causal thinking – they invoke the concept and language of 五

[32] Note, however, that not all viruses, just like not all bacteria are bad acting solely as pathogenic agents which make us ill. Physiologically, the human organism would and could not function if its digestive system does not possess a microbiome which makes the digestive processes function properly. Medical scientists use bacteriophages which are a form of virus to kill pathogenic bacteria which cannot be treated by the extant armoury of antibiotics – the specially selected virus when introduced into the patient infect the bacterial cells, takes over their metabolic mechanisms and start to replicate its own genetic material. Phage therapy emerged around 1919 but was soon abandoned for two reasons: first, these early attempts posed some problems which were not solved immediately and second, the era of antibiotics after WWII led Bm to abandon the programme until towards the end of the last or beginning of the present century when it was revived with the emergence of antibiotic-resistant strains of bacteria as well as the increasingly scarce supply of new antibiotics from Big Pharma.

Furthermore, virologists and biologists have now realised that viruses are the primary drivers of evolution – see The Viral Universe 2020.

行 *Wuxing* which sounds obscurantist if not totally unintelligible to people outside the tradition. So, what is *Wuxing* and how best can one make it clear and intelligible?

Wuxing[33]

Let us begin by saying what it is not. *Wuxing* should not be confused with another concept called 五材 *Wucai*. The latter refers to five types of physical things or resources, namely, wood, fire, earth/soil, metal, water. We, humans, over the millennia, had learnt how to use such things in order to keep ourselves alive. Very briefly, we used wood to burn as a source of heat/build shelters/make implements; we used fire to cook/keep warm/keep large animal predators at bay especially while we slept/make clearings in the forest for planting; we used soil for growing crops; we used metal to make implements (knives, axes, ploughs, arrows, swords), we used water for drinking/washing/sailing upon. Unfortunately, *Wuxing* also talks about **Wood**, **Fire**, **Earth**, **Metal** and **Water**, creating the possibility of confusion. However, no confusion would arise if one simply bears in mind that *Wucai* is talking about things which fall under *Thing-ontology*, while *Wuxing* is talking about processes of *Qi* transformation and hence the concept falls under *Process-ontology*. No texts historically have been known to exist to record how the discourse of *Wucai* became transformed into the discourse of *Wuxing*. However, one can plausibly suggest the following scenario: the ancient Chinese did not have the equivalent of Holy Scriptures which told believers how their God had created the world and the place of Humankind in such a world. The ancient Chinese had become secular and humanist in outlook since the beginning of the Zhou dynasty; therefore, they only relied on their observation of this world upon which to construct their cosmology and their *philosophy*. So, they started off with obviously very concrete/physical things such as water, soil, metal, wood and fire. Presumably over-time, the more *philosophically*-minded amongst them began the process of abstraction, eventually arriving at a set of concepts which in their view could explain the phenomena they observed. The section above has given some details of how they arrived at their *Laws of Nature*, such as the *Law of Cyclical Reversion*, the *Sishi-jielü*, the *Zhouye-jielü* 昼夜节律/Daily Night-Day Cycle to which they also added *Wuxing* to act as an all-encompassing explanatory framework for the succession of natural phenomena they observed during the course of a year, year after year.

The concept of *Wuxing*, for want of a better term may be translated as "The Five Processual Phases (of *Qi* Transformation)"[34]. The section above has briefly discussed the concept *Yinyang Wholism*; *Wuxing* is but an aspect of *Yinyang*. As such, it would be appropriate to refer to both concepts under the umbrella concept of *Yinyang-Wuxing* or more precisely *Yinyang-Wuxing Wholism*. *Wuxing*, indeed, is about the *qi* of the four seasons (*Sishi-jielü*). The ancient Chinese texts talked about *yang* ascending accompanied by *yin* declining, of *yang* descending/declining accompanied by *yin* rising/increasing throughout the year. Figure 4.2 attempts to make this clear. Note that Winter is at the bottom of the figure where the black fish with the white eye converges with the white fish with the black eye in the *Liangyitaijitu* in the middle of the figure. This means that even in the depth of winter when *yang* is at its lowest ebb and *yin* is at its maximum, *yang* is not totally extinguished but persists, ready to rise again/increase as Winter declines with Spring on the horizon. That is why the figure shows the trigram called Kan 坎 as standing for Winter. Every trigram has three components called 爻 *yao*; the broken *yao* (- -) stands for *yin* and the unbroken *yao* (—) for *yang*. The Kan trigram has a *yang yao* in between two *yin yao* – this *yang yao* represents that even in the depth of winter, *yang* is co-present with *yin*. Likewise, the trigram representing Summer when *yang* reaches its maximum (and *yin* its minimum) which is called Li 离 has a *yin yao* in between two *yang yao*. The two trigrams are Dyadic polar contrasts; the one is a kind of mirror image of the other.[35] The upward arrow on the left represents the gradual increase of *yang* over *yin* from Spring/East (which follows Winter) to its maximum in Summer; the descending arrow on the right stands for the gradual decline of *yang* (which means the corresponding increase of *yin*) from Autumn/West, reaching its minimum in Winter (when *yin* correspondingly reaches its maximum).

[33] For a more extended and thorough exploration of this concept see Lee 2017a, Chapter 7. The account here is necessarily a pared down one.

[34] Or "Five Transformative Phases of *Qi*". However, it would be wrong to translate it as "Five Elements" or even as "five phase element system" (see Fruehauf 2009). It should not be confused with the Greek model of the Four Elements. In the opinion of this author, the term is best left untranslated but explicated in detail. For one relatively short account in English, see Kaptchuk 2000, Appendix F with Dan Bensky; for detailed, theoretical presentations, see Needham and Wang 1956, 232-268 and Porkert 1974, Vol. 3, 43-44. For detailed exploration in Chinese, see *Pan 2013 and *Liu 1980.

[35] For a thorough discussion of the role played by the oldest *Daojia* text known to us, namely, *The Yijing* in C*P*T-CCD*P* and CC*M-Zhongyi* and an analysis of its key concepts see Lee 2017a, Chapters 2, 5, 6 and 9 in particular. (It is the oldest *Daojia* text known to us because it had existed even during the Spring and Autumn period of the Zhou dynasty when Confucius/孔子 Kongzi lived; the sage, who was obsessed by it, was said to have worn through three copies of the text. This shows that it must have predated Kongzi's birth by probably several centuries, as the text available to the sage appeared to be a mature text. For such ancient times, it would not be too far-fetched to say that a mature text would take a long time to emerge.

Figure 4.2 Ascent of *yang or yang qi* on the left (with corresponding decrease of *yin or yin qi*)
Descent of *yang* or *yang qi* on the right (with corresponding increase of *yin* or *yin qi*)

It may present an immediate puzzle to some readers that while there are only four seasons in the year and only four compass points, yet *Wuxing* appears to refer to five processual phases of *Qi* transformation. The ancient Chinese removed the anomaly (a) by adding another "point" to the compass, so to speak which is Centre, occupied by Earth, (b) by creating another "season" in two slightly different ways – the Summer is divided into two parts, Summer and High Summer (长夏 *changxia*) or to take off eighteen days from the four seasons and give them to Centre which is Earth. This shows that for C*P*T, Earth/*Di* is of great significance to its cosmology and metaphysics. Earth/*Di* is the Dyadic polar contrast of Heaven/*Tian*, as already observed; furthermore, it holds *wanwu* (in the larger sense of this term) in harmonious equilibrium. To the ancient Chinese, the compass points were very important from a practical point of view for the purpose of orientation and travel but were of even greater significance from the cosmological vantage point, as they stand for the phases of *Yinyang* throughout the year. As also already observed, Chinese cosmology is Sun-driven; hence *yang* is something associated with Heaven/*Tian* while Earth/*Di* is *yin*. To us Earthbound creatures at the level of direct observation, *yang* from the Sun in the heavens falls on Earth's surface which is perceived to be flat and square.[36] In this way, the ancient Chinese constructed their concept of Timespace, through processes of extrapolation, abstraction and generalisation. This framework also developed a set of analytical tools for organising, systematising information and knowledge, satisfying the methodological criteria of unity, economy and explanatory scope.

The *Wuxing* schema may be spelt out a little more as follows:

	Shaoyang 少阳/East/Spring/**Wood**
	Taiyang/太阳 South/Summer/**Fire/Li** trigram
	Shaoyin/少阴 West/Autumn/**Metal**
	Taiyin/太阴 North/Winter/**Water/Kan** trigram
Water	*Taiyin*, *yin* reaches its maximum
Wood	*Yin* retreats/decreases while *Yang* begins to advance/increase
Fire	*Taiyang*, *yang* reaches its maximum
Earth	*Yin* and *Yang* are at equilibrium
Metal	*Yang* retreats/decreases while *Yin* begins to advance/increase

[36] As a matter of this claim. Take the passage in the s earliest traditional literature, with 而西三万里，夏至 地下行南而东 书纬.考灵曜》This author's render h-westerly direction for thirty thous thousand *li*. For the two equinoxes, Earth moved, yet we on it did not fe when we, too, would not feel the boa n between Earth and Sun, although it did not say that it moved round the Sun, while the Sun stood still.

Two other passages which bear on the matter can be found in *The Neijing*. The first reads: 九星悬郎，七曜周旋。《素问：天元纪大论》This author's rendering reads: "The nine stars illuminate the skies and the seven heavenly bodies revolve in space (that is, interstellar space)." The second is about Earth's position in astronomical space: 帝曰：地之为下否乎？岐伯曰：地为人之下， 太虚之中者也。帝曰：冯凭乎？ 岐伯曰: 大气举之也。《素问：五运行大论》This author's rendering reads: "Yellow Emperor: Earth is below (Heaven), is it not? Qibo: Humans are upon Earth, and Earth is in (interstellar) space. Yellow Emperor: Is Earth supported by something? Qibo: It is supported by (Nature's) *qi* (in space in the sky)."

Shaoyang 少阳/East/Spring/**Wood**
Taiyang/太阳 South/Summer/**Fire**
Shaoyin/少阴 West/Autumn/**Metal**
Taiyin/太阴 North/Winter/**Water**

Water:	*Taiyin* reaches its maximum
Wood:	*yin* retreats/decreases while *yang* begins to advance/increase
Fire:	*Taiyang* reaches its maximum
Earth:	*yin* and *yang* are at equilibrium
Metal:	*yang* retreats/decreases while *yin* begins to advance/increase

Text Box 4.1 *Wuxing and Its Processes of Qi Transformation*

Main Modes of Operation

Wuxing is commonly attributed two major modes of interaction between the five types of *Qi* transformation, and this short account will, by and large, concentrate on them, although there are more complicated details than that. The first may be called the Mutually Engendering or Promoting Mode/Cycle/相生 *xiangsheng* and the second the Mutually Constraining or Controlling Mode/相克 or 相胜 *xiangke* or *xiangsheng*). Figure 4.3 sets them out:

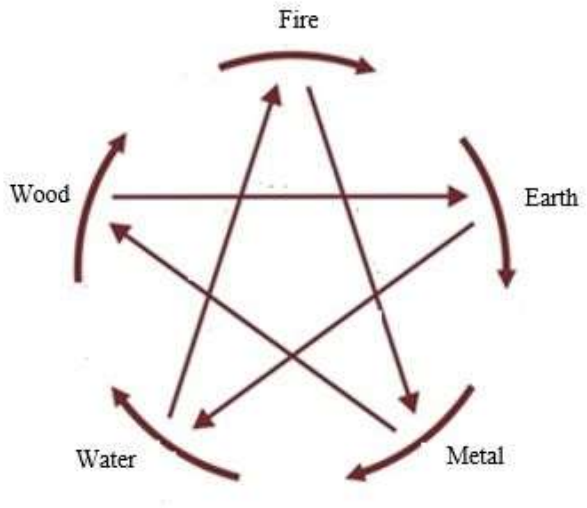

Figure 4.3 The thick broken lines of the circle and their arrows stand for the Mutually Engendering Cycle; the thinner unbroken lines and their arrows inside the circle stand for the Mutually Constraining Cycle

The Mutually Engendering cycle runs as shown below:

> 水生木、木生火、火生土、土生金、金生水
> which may be rendered as: **Water** engenders **Wood**, **Wood** engenders **Fire**, **Fire** engenders **Earth**, **Earth** engenders **Metal** (And the cycle begins again).

It was obvious to the ancient Chinese that water was an indispensable requirement for Life and Life's activities, as already observed. They used **Wood** to stand as a general symbol for all Life and its activities. Hence, it was reasonable for them to postulate that **Water engendered Wood**. To make a fire, early humans, rubbed two sticks or pieces of wood together and through friction to generate a spark and hence to start a fire. It was therefore reasonable for the early Chinese to postulate that **Wood engendered Fire**. They also had observed that fire burnt wood down to ashes, literally, adding to the soil. As **Wood** for them was a general symbol for Life and its activities, the extinction of life with death would return all dead life forms to the soil, to the earth. Hence, it seemed natural to the ancient Chinese to say that **Wood engendered Earth**. **Earth** supported both the biotic and the abiotic, it enables things to move/grow in all directions – upwards, sideways, downwards; it was capable, too, of holding things, which could be found in its bowels. Hence, the ancient Chinese held that **Earth engendered Metal** (with **Metal** standing, not only for the physical objects called metal but for all which the earth harbours and contains, both on the surface and in its bowels). The ancient Chinese also observed two different kinds of phenomena. They noticed that drops of water could

form on the surface of metal. They noticed that the Moon seemed to have something to do with the tides – when the Moon was full, the tide was high, and they were particularly impressed by the high tide at the time of the full moon during the eighth lunar month of their calendar. The eighth lunar month was for them the beginning of Autumn, and as the ancient Chinese associated **Metal** with Autumn, hence they thought it reasonable to say that **Metal engendered Water**.

Although this account of *Wuxing* in terms of its reference to the functions of the five types of physical things could explain something, it would be incomplete without reference to the five kinds of *Qi* the concept stood for, constituting a *Whole*. This more complete account is already implicit in the incomplete one just given. For instance, we can see immediately, for example, why **Water** is said to engender **Wood**, as **Water** stands for the maximum reached by *yin qi* in the Winter (that is, *Taiyin*). We also know the *Law of Nature*, which says that when *yin* or *yang* reaches its maximum, *yin* would give way to *yang* and *vice versa*. As *yang* gingerly begins to re-appear and to increase (as *yin* correspondingly declines), this *yang qi* (namely, *Shaoyang*), giving forth both light and warmth, would herald what we commonly call Spring. Spring provides the ideal conditions for plants to grow new shoots, for animals to come out of hibernation, for humans to start to sow their crops, and so on. In this way, it is eminently reasonable to say that **Water engenders Wood** in the sense that **Wood** simply stands for that kind of *Qi* associated with or is necessary for growth.

As *yang qi* continues to increase, with Summer overtaking Spring, it would be reasonable to say that **Wood engenders Fire** (the soaring temperature would ensure that plants would develop rapidly). Such an abundance of *yang qi* (namely, *Taiyang*) would ensure that plants and animals mature, the former forming seeds and fruits, the latter having brought up their young to fend for itself, eventually to leave the nest. In this spirit, it seems reasonable to say that **Fire engenders Earth** – **Fire** simply stands for that kind of *Qi* associated with development and maturity, typical of biotic Nature.

When *yang qi* has reached its highest point, it would slowly begin to decline after the Summer solstice, but increasingly so especially after the abundant harvest (not simply in terms of crops but also in Nature at large) yielded by the earth – this process would be represented by saying that **Earth engenders Metal**. However, to understand this point we would now have to refer to geology. The ancient Chinese held that the decline of *yang qi* as Autumn approaches could be accounted for not simply by the apparent movement of Sun with regard to the planet Earth but also by *yang qi* being returned to the bowels of the earth where it would remain until the emergence of Spring in the following year.[37] In that sense, one could say that **Earth engenders Metal** – **Metal** stands for that kind of *Qi* associated with the descent/increasing diminution of *yang qi* and the increase of *yin qi* (that is, *Shaoyin*).

The decrease of *yang qi* and the corresponding increase of *yin qi* would accelerate until the depth of winter is reached, at the Winter solstice, when *yin qi* would have reached its maximum (that is, *Taiyin*). The ancient Chinese knew that water transformed to become ice and snow in the winter, when the temperature dropped drastically; in the language of *Wuxing*, they would say that *yang qi* had returned to, and become concealed within the water. (This again is not as unscientific as it might look at first sight, as this account is not at odds with that given by modern science.[38]) So it seemed reasonable for them to encapsulate this process of *Qi* transformation by saying that **Metal engenders Water** – **Water** stands for that type of *Qi* associated with *yin qi* but within which *yang qi*, nevertheless, lurks in readiness, so to speak, to re-appear in the following Spring with the return of the light and warmth of the sun. (Look again at the Kan *gua* in Figure 4.2.)

All told, from the point of view of information and explanation, the most important emerging from *Wuxing* are the processes of *Qi* transformation behind the five different kinds of *Qi* identified by its theoretical framework. These five different kinds of *Qi* in turn can account for the five physical resources (*Wucai*) and their functions as *Wucai* themselves, after all, are nothing but the product of the interactions between *yin qi* and *yang qi*, between *yin* and *yang* as *Yinyang Wholism*.[39]

It is worth labouring the point through Figure 4.4 once again that *Yinyang-Wuxing* is but the mapping of astronomy upon geography together with an account of the relationship between the two.

[37] This claim is testable, and hence, scientific. Empirical evidence exists to support such a claim. Miners working in deep mines claimed that in the Winter, they shed their clothes, but in the Summer, they wore thick garments to keep warm.

[38] For instance, modern science recognises that water can absorb more heat and retain it longer than many other substances.

[39] Indeed, tree rings reveal this relationship very clearly – how old a tree is can be ascertained by counting the number of tree rings it possesses – one ring stands for the passing of a year, the four seasons (the *Sishi-jielü*/the four-seasons cycle). Furthermore, the tree and its rings are things (*Thing-ontology*) but at the same time they also are the tangible and visible manifestation of *Process-ontology*. In other words, they embody *Yinyang-Wuxing Wholism* as well as *Qi Wholism*. In other words, they are perfect exemplars of C*P*T hand-in-hand with Chinese cosmology

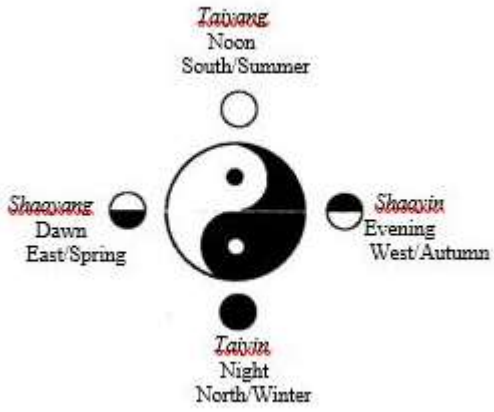

Figure 4.4 Temporal and spatial correlations with *yin qi*/*yin* and *yang qi*/*yang*

Astronomy yielded knowledge about the predominance of one type of *Qi* over another at any particular period in the annual cycle of the seasons (*Sishi-jielü*) and the daily cycle (*Zhouye-jielü*), while geographical knowledge informed the ancient Chinese the location upon which the predominant *Qi* would fall at a specific moment in the cycle. In the daily cycle of *yin* and *yang*, the ancient Chinese observed that the sun rose in the East and set in the West – hence, for them, it was eminently sensible to associate the emergence and increase of *yang qi*" with the East, and its decline (corresponding increase in *yin qi*) with the West. As *yang qi* commenced to increase during Spring, while *yin qi* began to do the same during Autumn, the ancient Chinese felt it eminently sensible to associate **Spring** with **East**, **Autumn** with **West**. The same reasoning led them to associate **Summer** with **South** and **Winter** with **North**, given that China was/is a continent in the northern hemisphere. As such, the southward face of a house is the aspect, which receives the sun, while the north side is exposed to the cold winds from the deserts of Mongolia and the frozen wastes of beyond.

We next turn to the second main mode of *Qi* transformation in *Yinyang-Wuxing*, the **Mutually Constraining** cycle. Again, we can start by looking at certain things and their functions at a mundane level of understanding. The ancient Chinese clearly knew that vegetation was vital to prevent soil erosion and soil loss, especially during heavy rains when exposed soil with no vegetal cover could be washed away; by growing trees on such surfaces, soil erosion would be prevented. So, in this sense, they postulated that **Wood constrained Earth**. Heavy rains could cause floods; to prevent flooding, one could use earth to build dykes and dams – in this sense, the ancient Chinese postulated that **Earth constrained Water**. To prevent a fire from spreading, one would need water to damp down the fire – in this sense, it could be said that **Water constrained Fire**. To make implements such as an axe, a sword, one would need fire to melt the metal before one could cast or mould it – in this sense, the ancient Chinese held that **Fire constrained Metal**. An axe (made from metal) would be useful in chopping down trees, which in turn would provide wood to fuel fires – in this sense, the ancient Chinese postulated that **Metal constrained Wood**.

However, again, for a more adequate account, one must turn to the information the cycle contained in terms of the processes of *Qi* transformation and their inter-active relationships, which entails a great degree of complexity in the two cycles, both the **Mutually Engendering** and the **Mutually Constraining** modes. To bring out this degree of complexity, we have, initially, to introduce two more concepts: too much (太过 *taiguo*) and not good enough 不及 *buji* or insufficient 不足 *buzu.* To be brief, one can simply say excess and deficiency. These two concepts in turn entail a third, that is, normality (平常) when the *qi* in question is normal for the season (平气). In general, to grossly over-simplify a complex matter, let us present the ancient Chinese here to hold that in certain years, the *qi* of any one season could be in excess, that in certain other years, the *qi* of the season would be in deficiency. For instance, years A, C, E, G, I (甲、丙、戊 、庚、壬 which are *yang* years) show excess of *yang qi*; then years B, D, F, H, J (乙 、丁 、己、辛 、癸 which are *yin* years) would show deficiency of *yin qi*. If year A shows excess in **Earth** *Qi*, then in the following year B, **Metal** *Qi* would be in deficiency. Given this deficiency of **Metal** *qi* in year B, the following year C would exhibit excess in **Water** *qi*, and given this excess of **Water** *Qi* in year C, year D would in turn exhibit deficiency in **Wood** *Qi* and so on in the series of the Ten Heavenly Stems (天干 *tiangan*).[40]

[40] The ancient Chinese system of *Tiangan dizhi* 天干地支 Heavenly Stems and Earthly Branches cannot be explicated in a few words. It suffices here to say that it is a calendrical schema based on knowledge of astronomy and its influence on Earth on the part of the ancient Chinese. In English, this schema is called the Sexagenary Cycle as the ten Heavenly Stems and the twelve Earthly Branches create a permutation of sixty years. This schema has existed since the Shang dynasty as attested to by the Shang Oracle Bones. For an account, see Smith 2011.

Another context to illustrate what is meant by normality, excess and deficiency in *Qi* at a particular season of the year would be CC*M-Zhongyi* in an example we have raised earlier. This was about a patient's *mai* 脉 diagnosed in Winter to be more like the *mai* of a normal *person* in Summer. In other words, this *mai* showed excess. The physician would have to prescribe in a certain way in order to correct the imbalance, to restore equilibrium. If a patient were diagnosed as suffering from deficiency of Kidney *Qi* (the Kidney being associated with **Water** in the *Yinyang-Wuxing* system when applied to *medicine*), this deficiency would have to be addressed *via* therapy in order to restore balance (normality).

We next look more closely at how the concept of excess works in the **Mutually Constraining** cycle. If **Fire** *Qi* were in excess, this would over-constrain or control **Metal** *Qi*, as **Fire** constrains **Metal**. This specific circumstance is called 相乘 *xiangcheng*, which may be translated as "taking advantage of mutual weaknesses"; this would provoke the "unexpected" reaction on the part of **Metal**, ironically, to undermine (反侮 *fanhui* which in this context may be translated as "doing the exact opposite, repudiating what it is meant to do") **Water,** whose role is meant to constrain **Fire** itself.

To grasp this complex chain of inter-relationships, look carefully at Figure 4.3 again, and you would see that it displays the following reactions and counter-reactions within the two cycles of *Wuxing* when **Fire** *Qi* is in excess (let us call this example, **Example A**):

1. In this cycle, **Fire** constrains **Metal** (我克 *wo ke*); in other words, **Metal** is constrained by **Fire** (克 我 *ke wo*).

2. As the *Qi* of **Fire** is in excess, this means that **Metal** would be over-constrained in the *wo ke – ke wo* relationship.

3. This over-constraining by **Fire** would provoke **Metal** to "fight back" not directly against **Fire**, but against **Water** instead, as **Metal** engenders **Water.**

4. In this way, **Metal** would induce the *Qi* of **Water** to be in excess**,** which would in turn undermine **Fire,** as **Water** has the role of constraining **Fire**.

5. One could then say that **Fire** has, ultimately, "met its own come-uppance" or achieved an "own goal".

Using the same instance of **Fire**, let us see what happens when its *Qi* is in deficiency – (let us call this **Example B**). This would result in **Water** taking advantage of such a weakness to damage/undermine **Fire** as well as in **Metal** reacting by "repudiating what it is meant to do" to **Fire**, leading ultimately in this chain of reactions to **Earth** being undermined, as **Fire** engenders **Earth**.

1. **Water** constrains **Fire** (*wo ke*); **Fire** is constrained by **Water** (*ke wo*).

2. When **Fire** *qi* is deficient, **Fire** would be unduly constrained by **Water** (*ke wo*); in that way, **Water** would undermine/damage **Fire**.

3. **Fire** constrains **Metal** (*wo ke*); **Metal** being constrained by **Fire** (*ke wo*).

4. However, as **Fire** itself is undermined and weakened by **Water**, **Metal**, in reaction, would take advantage of **Fire**'s weakness and turns around to undermine **Fire**.

5. In the **Engendering** cycle, we know that **Fire** engenders **Earth** (我生 *wo sheng*); but here **Fire** itself has been weakened and its weakened state would in turn impact upon its process of engendering **Earth.**

6. **Earth** constrains **Water,** but weakened Earth would let **Water** *Qi* be in excess.

7. **Water** *qi* in excess, in constraining **Fire**, would weaken **Fire** even more.

These examples touch upon the complex inter-relationships between the two cycles, which do not perform in isolation from one another, but interact to produce a multi-factorial, unified theoretical framework for understanding and explaining phenomena. So, let us explore a little further this aspect *via* **Example B** involving **Fire**, **Water**, **Earth**. In the Mutually Constraining cycle, **Water** constrains **Fire** (*wo ke*) while **Fire** is constrained by **Water** (*ke wo*). It follows, therefore, that **Fire** could not affect **Water** in the **Constraining** cycle. However, in the Mutually Engendering cycle, **Fire** engenders **Earth** (我生 *wo sheng*); **Earth** is engendered by **Fire** (生我 *sheng wo*); but in the Mutually

Constraining cycle, **Earth** plays the role of constraining **Water** (*wo ke*). In this chain of reactions involving the two cycles, we can see how **Fire** and **Water** are ultimately inter-related *via* **Earth** – as **Water** in the Mutually Constraining cycle plays the role of constraining **Fire**.

The sciences of today – Cybernetics, Systems Theory, Physiology, Ecology and others – are said typically to display feedback mechanisms, both negative and positive. Take this instance from Physiology to illustrate negative feedback at work, an instance already touched upon earlier in this chapter: the human body regulates its temperature *via* neural feedback mechanisms operating mainly through the hypothalamus to ensure that its core temperature is between 98° and 100° F (36.7° – 37.8 ° C). One begins to sweat when the temperature of the skin reaches around 37° C; but when the temperature falls below 37° C, sweating stops, shivering begins to increase heat production in the muscles, the flow of heat to the skin is decreased *via* vasoconstriction, the secretion of norepinephrine, epinephrine and thyroxine to increase heat production, and so on. Such devices then return the body to its normal temperature. However, we, humans, resort to medicine under those circumstances when the body is unable to undertake this chain of physiological processes and functioning to return to normal on its own.

Wuxing, in CC*M-Zhongyi*, offers many examples of negative feedback loops. However, for the moment, only one small instance would do to illustrate the same mechanism at work. Take the case which we have already cited above of a patient whose *mai* displayed unseasonal characteristics – in Winter, the normal *mai* should be quiet, not vigorous and large (洪 脉 *hong mai*), which would, however, be normal for Summer. Should a patient display a Summer *mai* in Winter, the physician would diagnose trouble come the summer. As we have already seen, *yang* in Winter retreats into **Water**, with the *yang* hiding within the *yin*, so to speak – look at the *Kan gua* again. *Yin* stands for rest/tranquillity/stillness while *yang* stands for activity/motion. In Summer, *yang* in the natural environment (Macrocosm) would reach its maximum; this *yang* would aggravate the *person*'s own condition (Microcosm). As the person's *mai* even in Winter exhibited not the normal Winter but the unseasonal Summer *mai*, the physician would interpret this to mean that their *mai* would get totally out of control, indicating that there would be an excess of *yang* to such an extent that it might overwhelm and kill the patient. Hence, drugs and/or other therapeutic interventions must be prescribed to return the *person* to normality – the treatment would then be a kind of negative feedback mechanism to restore equilibrium and balance between *yang or yang qi* and *yin* or *yin qi* where health lies.

Let us now return to **Example A** set out above regarding excess of **Fire** *Qi* in *Wuxing*. We can interpret it as negative feedback at work in the language of *Wuxing*.

1. **Fire** is not in a normal state as its *Qi* is in excess.

2. The excess *Qi* of Fire, as a result, over-controls **Metal**.

3. **Metal** reacts by undermining **Water**.

4. **Water**, upon being undermined, would "work harder" to constrain **Fire**.

5. In this way, the original excess in **Fire** *qi* would be reduced, that is, returned to normal.

This would be analogous to the example from modern physiology, which talks about the hypothalamus controlling the various nervous feedback mechanisms to ensure that the body's temperature be returned to its normal range.

On the other hand, today's global warming is a perfect illustration of positive feedback loops at work, shown below (→ indicates causal direction):

1. Historically, a change in atmospheric temperature occurred (caused by the continuous release of carbon dioxide and other greenhouse gases through burning of fossil fuels and the large-scale keeping of cattle), leading to →

2. Melting and shrinking of sea ice cover →

3. Ocean waters absorbing more radiation from the sun (as water has a lesser capacity for reflecting solar radiation than sea ice – the albedo effect) →

4. Temperature rising →

5. Further melting and shrinking of sea ice cover →

6. Further increase in atmospheric temperature →…

Another example would be from Ecology, concerning the relationship between vegetation, earth/soil and water. One can present it as follows:

1. Cutting down trees excessively causes soil erosion/loss →

2. Less soil brings about less regeneration of tree growth →

3. Fewer trees cause greater loss of water/moisture in the soil →

4. More soil loss/erosion →…

One could use the language of *Wuxing*, should we so wish, to encapsulate the same information above:

1. **Metal** constrains **Wood** (*wo ke*). When excessive tree cutting occurs, **Wood** would be adversely affected (with fewer trees left standing – *ke wo*).

2. However, **Wood** constrains **Earth**; with fewer trees around, **Wood**'s ability to constrain **Earth** would be in deficiency (in other words, soil loss/erosion would increase).

3. **Earth** constrains **Water**, but with soil loss/erosion, **Earth** can no longer perform adequately the role of holding back water, owing to its *Qi* deficiency.

4. **Water** engenders **Wood**; but when **Earth** can no longer constrain **Water**, **Water** in turn, in this context, would be in deficiency, and **Water** would be unable to engender **Wood** as normal.

5. When **Water**'s capability of engendering **Wood** is adversely affected, the end result of this chain of *Wuxing* reactions would be an even greater loss/erosion in soil than the initial loss.

This would be like **Example B** used earlier when we looked at **Fire** *Qi* in deficiency. Extrapolating from the various instances illustrated above, we may conclude that excess of *Qi* in *Wuxing* tends to illustrate negative feedback loops, while deficiency of *Qi* to illustrate positive feedback loops at work.

Needham and Wang 1956, 258 is correct in observing that Ecology provides good examples to illustrate *Wuxing* at work. For instance, they cite the case of a predator-prey relationship, namely, that of, say, birds/ladybirds/aphids. Ladybirds are brightly coloured, a signal to their enemies to keep away, as they exude a yellow substance (reflex blood), and rich in toxic alkaloids. Nevertheless, this does not mean that they are immune to enemies. For instance, swifts and swallows are birds, which catch their prey on the wing; these then avoid being poisoned by the toxic chemical of the ladybird. If for some reason, the population of swifts and swallows increase in a particular location (a possible reason being favourable Spring conditions for such animals), this would result in more ladybirds being eaten and the ladybird population would decline. This, in turn, would have a beneficial effect on the ladybirds' prey population as ladybirds themselves are predators upon aphids – this consequence would constitute bad news for gardeners with aphids eating up their favourite plants.

We can conceivably invoke the *Wuxing* cycles involving **Wood**/**Earth**/**Water** to explain the chain of ecological outcome above:

1. **Wood** constrains **Earth**; but **Wood** *Qi* in excess (increase of swifts and swallows) would lead to over-constraining in the *wo ke – ke wo* relationship →

2. **Earth** *Qi* being in deficiency means decrease of ladybird population →

3. **Earth** *qi* (being deficient) resulting in under-constraining **Water** →

4. **Water** engenders **Wood; Water** *Qi* in excess leads to increase in population of aphids.

Take another predator-prey relationship. Imagine the population of foxes increasing in a particular habitat. Foxes prey on rabbits. Increase of foxes would mean decrease of rabbits, but as foxes eat up rabbits, the predator would eventually suffer from shortage of prey. As a result, the fox population would die back, the rabbit population would no longer decline but increase. A new equilibrium between predator and prey would be established, equivalent to a negative feedback loop.

If one were to cast the above in the language of *Wuxing*, it would run as follows:

1. Excess of **Wood** *Qi* (increase in fox population) would over-constrain **Earth** *Qi*, *via* the *wo ke – ke wo* relationship (resulting in decrease in the rabbit population) →

2. Deficiency of **Earth** *Qi* in its state of being undermined would hit back at the stronger party, resulting in decline in the fox population.

As the *Wuxing* Model necessarily rests on *Yinyang*, we can see even more clearly by now why it is appropriate then to link it with the *Yinyang* Model and consider the two models as one, namely, the ***Yinyang-Wuxing* Model**.

CCM-Zhongyi, Yinyang-Wuxing and Ecosystem Science/Science

The discussion so far of C*P*T as found in the *Daojia* tradition of C*P*T rests on *Qi* as the fundamental *ontological* category, but operating under two modes, *Qi*-in-concentrating mode, amounting to *Thing-ontology* and *Qi*-in-dissipating mode, amounting to *Process-ontology*, with the latter being *primus inter pares* in respect of the former (*Qi Wholism*). Such a *philosophy* provides the underpinning for Chinese *science* with its Non-Linear Model of Causation. CC*M-Zhongyi* is a pre-eminent as well as the best preserved in terms of textual evidence of the model of causation in Chinese *science*. In Chapter Three, this author has argued that Epidemiology (as part of Bm) also involves the Non-Linear Model of Causation and like CCD*P*-CC*M*, it is best understood as resting on Process-ontology playing the lead role but not excluding Thing-ontology. (Hence it is apt to call this metaphysical underpinning Process-ontology cum Thing-ontology.) Epidemiology in Bm then may be called Ecosystem Science embodying Ecosystem Thinking/Systems Thinking. As CC*M-Zhongyi* possesses analogous characteristics, it, too, may be called ***Ecosystem Science***, exemplifying *Ecosystem Thinking*. As *Ecosystem Science*, CC*M-Zhongyi* is *Wholist* in its *ontology* and, hence, necessarily non-Reductionist in its methodology.[41]

Furthermore, to reinforce this understanding, we can present CC*M-Zhongyi*'s *Ecosystem Thinking* in terms of concentric circles as ***Ecosystem-nesting***.

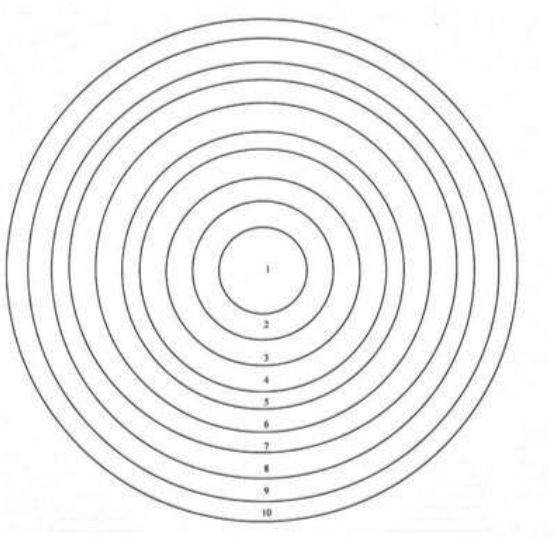

Figure 4.5 Ecosystem-*nesting* in terms of concentric circles

1. Cell
2. Tissue
3. Organ-system, such as the Spleen-stomach organ-system /脾胃 *piwei*
4. All visceral organ-systems (*Wuzang-liufu*/ 五脏六腑)
5. Entire material parts and total functioning of the *person* including emotions
6. *Qi* in *yuzhou* (Macrocosm) as well as in the *Jingmai* via the *Jingluo* network of the *person*-body (Microcosm)
7. Immediate external environment, in which a *person* lives (air, water, food, shelter, climate….)
8. Social/cultural environment (tribes/ethnic groups/polity)
9. Larger physical/social environment, in which a *person* lives (plants/animals/ rivers)
10. The Cosmological Environment, in which a *person* lives (Sun/Moon/Earth….)

[41] This account of CC*M-Zhongyi* is necessarily brief and selective as its aim here is simply to present CC*M-Zhongyi* as *Ecosystem Thinking/Systems Thinking* and as *Ecosystem Science*. For detailed and thorough exploration, see Lee 2017a and 2018. The concept of Ecosystem Science/*Ecosystem Science* is a theme running throughout this book – in Chapter Three, it is discussed in the context of Epidemiology in MWM/Bm; it re-appears later in Chapter Eight which explores the Mind-Body/*Mind-Body* problem respectively in Bm and in CC*M-Zhongyi*.

Although Figure 4.5 shows ten concentric circles, it is important to point out that CC*M-Zhongyi* is not interested in circle 1 but in the remaining nine circles marked 2-10. These circles, according to this author, may be called ***Ecosystems***. Also note that whereas in Bm, the spleen and the stomach are regarded as two different/separate organs, in CC*M-Zhongyi*, the ***Spleen-Stomach*** constitutes a single organ-system (***Ecosystem 3***). All the five organ-systems constitute in turn a larger *ecosystem* (***Ecosystem 4***); this is because although different and separate as anatomical entities (*Thing-ontology*), in terms of their *physiological* functioning (as events/processes, falling under *Process-ontology*), they are intimately intertwined.

To illustrate this point in detail, take ***Ecosystem 3***: it is about the relationship between the *yin* organ and the *yang* organ, such that each visceral organ-system/*Zangfu*/脏腑 has a *yin* as well as a *yang* component. For example, the ***Spleen*** (*yin*) pairs with the ***Stomach*** (*yang*) as *piwei*/ 脾胃, the ***Heart*** (*yin*) with the ***Small Intestines*** (*yang*), the ***Lungs*** (*yin*) with the ***Large Intestines*** (*yang*), the ***Liver*** (*yin*) with the ***Gall-bladder*** (*yang*), the ***Kidneys*** (*yin*) with the ***Bladder*** (*yang*). This ***Ecosystem*** is then an instantiation in CC*M-Zhongyi* of ***Yinyang Wholism***, a fundamental *Wholism* in C*P*T. As already observed, the *yin* organ is called *Zang*/脏, and the *yang* organ *Fu*/腑. Together, they are often called *Wuzang-liufu*/五脏六腑. It suffices here to point out that in Chinese numerology, *wu*/five, being an odd number, is *yang* in character, while *liu*/six, being an even number, is *yin* in character; therefore, they also form part of *Yinyang Wholism* as ***Ecosystem 3***. At the same time under such *Wholism*, (a) the *yin* and the *yang* organ components of each organ-system function *physiologically* as a *Whole*; (b) all the visceral organ-systems in turn function *physiologically* as a *Whole*.

Ecosystem 5 indicates that for CC*M-Zhongyi*, the concept of *person* is a primitive one, that is, the *person* embodies both physical and mental/emotional characteristics some details of which have already been explored in Chapter Five.[42]

Ecosystem 8 reinforces the point made by ***Ecosystem 5,*** emphasising that individual psychology is not itself independent of the value system of the individual's community/society.

Ecosystems 7 & 10 embody larger *Wholes*,[43] within which the individual *person* is embedded. *Qi* in the universe (Macrocosm) affects *Qi* in the individual *person* (Microcosm).[44]

Ecosystem 9 indicates that the individual *person*, their community/society are all part and parcel of another *Whole*, namely, the greater environment within which the community/society lives and works.

Ecosystems 3 & 4 imply that as far as illness is concerned, if the *yin* organ of an organ-system is affected, its *yang* counterpart may also be affected, and *vice versa*. If one visceral organ-system is affected, it is likely that, eventually, other organ-systems would also be affected, as all members of this greater *Whole* are governed by ***Wuxing*** or more precisely by ***Yinyang-Wuxing*** (as earlier established).

The post-Newtonian sciences of today such as Cybernetics, Systems Theory, Ecology and others are said typically to display feedback mechanisms, both negative and positive. In this respect, these sciences of the 20th century are similar to CC*M-Zhongyi* (within C*P*T-CCD*P*) as they are all Ecosystem sciences/*Ecosystemic sciences*.

Conclusion

This chapter has addressed the following themes which can be excavated in CC*M-Zhongyi* as embedded in C*P*T-DDC*P*:

1. The fundamental ontological category in CC*M-Zhongyi* is *Qi*.

2. *The Zhuangzi* explicitly maintains that *Qi* exists in two modes, *Qi*-in-concentrating mode and *Qi*-in-dissipating mode; this is endorsed, implicitly or explicitly, by other DDC*P* texts, such as *The Neijing*.

[42] For readers interested in further detailed textual and *philosophical* exploration of this set of topics pertaining to ***Ecosystem 5***, see Lee 2018, Chapter 6 which also touches on the relationship between *Wuxing*, *Wuzang-Liufu* 五脏六腑 and *Wuqing* 五情 (the basic five emotions).

[43] For a detailed exploration of the relationship between ***Ecosystems 6, 9 and 10***, see Lee 2017 Chapters 7, 10 and 11.

[44] The term referring to the relationship between the Macrocosm and the Microcosm in Chinese *philosophy* in general is *tianren heyi* 天人合一 or *tianren xiangying* 天人相应 in CC*M* in particular. Sinology literature following A. Graham 1986 translates *tianren heyi* as "Correlative Thinking". According to this author, this is an inappropriate translation as the notion is an ontological one and has translated it as "Macro-Micro-cosmic *Wholism*". (See Lee 2017, 277-282.) This concept will be looked at in greater detail in Chapter Nine of this book.

3. *Qi*-in-concentrating mode is *Thing-ontology*; *Qi*-in-dissipating mode is *Process-ontology*. Hence, CC*M-Zhongyi* must be understood within a *philosophical* framework which is neither *Thing-ontology* nor *Process-ontology simpliciter,* but a harmonisation of both. *Thing-ontology* cum *Process-ontology* may be called *Qi Wholism*.

4. *Yuzhou* (the Universe) began with *Qi*-in-dissipating mode (the *Chinese Big Bang Theory*); *Qi*-in-concentrating mode then followed. As *yuzhou* (the Universe) contains *Qi* in the two modes, so, do *wanwu,* including human beings, possess *Qi* in the two modes. This is the thesis of Macro-Micro-cosmic *Wholism*.

5. The transformation of *Qi* from one mode to another may be said to be the Chinese analogue of Thermodynamics.

6. *Qi* is also understood within *Yinyang Wholism,* with *yin qi* and *yang qi* (*yinyang er qi*) forming a harmonious *Whole*.

7.*Yinyang er qi*, their changing relations to each other in the course of a day, of a year are encapsulated in *The Laws of Nature,* such as the *Cycle of the Four Seasons,* the *Daily Day-Night Cycle,* and the *Law of Cyclical Reversion.*

8. *Wuxing* is but another way of talking about these *Laws of Nature*.

9. *Wuxing* makes it clear that as these *Laws of Nature* underpin any domain of natural phenomena we care to identify and to study and that the best strategy to adopt in understanding and explaining such phenomena is to adopt the *Ecosystem* approach. Today, Ecology understands an ecosystem to exhibit both positive and negative feedbacks. So does *Wuxing*. Hence, CC*M-Zhongyi* may be considered to be *Ecosystem Science.*

10. As such its implied causal model is Multi-factorial, Non-linear, exhibiting both negative and positive feedback loops, reciprocity and synergism.

Part III

Conflict and Compatibility
Can They be Harmonised?

Chapter Five

Integrating *Zhongyi with* Biomedicine?

AM	Assimilation Model (of Integration)
ARIIMO	Axiom of Respecting the Identity and Integrity of the Medical Other
Bm	Biomedicine
CC	Cochrane Collaboration
CC*M*	Classical Chinese *Medicine*
CC*M-Zhongyi*	Classical Chinese *Medicine*
I*M*	Integrated *Medicine*
MWM	Modern Western Medicine
NICCAM	National Institute National Center for Complementary and Alternative Medicine (US)
PIT-ism	Principles of ***P****hysiology* (*shengli* 生理), Theory of **I**llness (*bingli* 病理) and Principles of **T**reatment (*yili* 医理); name coined to refer in another way to CC*M-Zhongyi*
RCT-EBM	Randomised Controlled Trial-Evidence Based Medicine
TC*M*	Traditional Chinese *Medicine*
TC*M-Zhongyi*	Traditional Chinese *Medicine*
WM	Western Medicine
WPT	Western Philosophy Tradition

Introduction

The first thing which must be done in this chapter is to clarify certain key terms which are used. To labour an important point, readers are reminded that CC*M-Zhongyi* and TC*M-Zhongyi* are not one and the same *medicine*. The former is the medicine which has existed in China for more than two thousand years; the latter has only existed since the 1950s, a history of a mere few decades and is a deliberate attempt, as we shall see in a moment, to integrate CC*M-Zhongyi* with Bm. This project of integration will necessarily have to shed baggage from CC*M-Zhongyi*, concepts and notions deemed to be too quintessentially Chinese and therefore difficult to reconcile with the core ideas of Bm. For instance, it retires the concept of *Wuxing*, as from the vantage point of WPT and Bm, it is judged to be "obscurantist"/"unscientific"/"metaphysical" in the abusive sense of that term. From such attempts, one can see a chasm growing between CC*M-Zhongyi* and TC*M-Zhongyi* as the former embraces it as part of its identity. (Chapter Six to follow will explore another radical departure, this time in the domain of pharmacological understanding of Chinese *Materia Medica* and the role it plays in treatment following diagnosis.) TC*M-Zhongyi* embodies an attempt to integrate *zhongyi*/中医[1] with Bm. TC*M-Zhongyi* is, therefore I*M*. In other words, the title of this chapter deliberately poses a rhetorical question, to which the short answer is "no", as one system of medicine cannot be integrated with another system without compromising its own integrity (at the level of its metaphysical/ontological core and the methodological implications of such a core, as well as at the level of treatment).

However, the matter cannot be disposed of with a swift dismissal as it hides many issues which ought to be excavated and brought to light.

To begin with, one should distinguish between two contexts in which I*M* is undertaken around the globe today. The first is the Chinese project whose goal is to integrate *Zhongyi* with Bm (as TC*M-Zhongyi*) which is a declared

[1] As already indicated in Chapter One, this term cannot and will not be translated into English as "Chinese Medicine" for fear that an English reading public would identify it with TC*M-Zhongyi* – see, for instance, Scheid 2002. In Chinese, "zhongyi" simply refers to that *medicine* which in one form or another is practised today in China but whose roots go back to at least two and a half thousand years of history. The term today in China may take two forms: what in English may be referred to as CC*M-Zhongyi* (which does not want to compromise its historical *philosophical*/cosmological roots as found in canonical texts) or TC*M-Zhongyi* which does, as TC*M-Zhongyi* is Integrated *Medicine*/I*M*. For instance, the title of Liu Lihong's book, which makes a passionate plea for CC*M-Zhongyi*, is *Sikao zhongyi* which may be translated as *Systematic Exploration of Chinese Medicine* or *Systematically Exploring Chinese Medicine.* It is obvious then that "zhongyi", in Chinese usage, cannot be equated simply with TC*M-Zhongyi.* For the purpose of this book, the term "zhongyi" will be presented as CCM-*Zhongyi* or TC*M-Zhongyi* which is I*M*.

Note that Liu Lihong's 2003 *Sikao Zhongyi* in its English translation 2019 is entitled *Classical Chinese Medicine*. The translators presumably want to make it clear it is a book about what this author calls CC*M-Zhongyi* and not about TC*M-Zhongyi*.

policy of the Chinese government for the past six decades or so. The second is primarily in the Western world, an initiative which is, by and large, free of any governmental support and whose remit is wider than that of the first, as the "other" medicines to be integrated with Bm may include Ayurvedic medicine, homeopathic medicine, just to name two, other than *zhongyi*. For the purpose of this brief and limited assessment, Dong, 2013, WHO 2004, Reports 6, 7, 8, 9[2] on the one hand and Lake 2007, NICCAM 2016[3] on the other may be taken as fair representatives respectively of the two contexts.[4]

The first context is about a project which is motivated by two impulses which may be pulling in opposite directions: first, a sense of pride about *Zhongyi* as an outstanding achievement of Chinese culture and civilisation, second a desire to be seen to be "modern", "advanced", not to be looked down upon as being "ancient" and therefore "backward". This second sentiment, as already shown in Chapter One, is a deep-seated one, born out of the necessity for reform and rejuvenation of that civilisation after it had suffered humiliations at the hands of Western imperialists in the 19th and the first half of the 20th centuries. It has attempted to assess this project from the vantage point of The Coloniser and The Colonised, demonstrating that China has felt the need as The Colonised to catch up with The Coloniser.

The second context is about a project which appears to be born out of disappointment with Bm itself (at least some aspects of it), as it seems to fall short in some cases/domains; the attitude is somewhat tinged with humility in approaching so-called "complementary" others, in an open-minded effort to learn about their strengths while recognising the weaknesses of one's own medicine, or better still, to come to grips with the respective weaknesses and strengths of both Western and non-Western medicines. However, in spite of the ecumenical spirit of the second project (as represented by Lake), it implies, nevertheless, that Bm is the conventional/dominant medicine of Modernity, while the other medicines are complementary to it; the first project, too, ultimately, shares a similar standpoint, as will be shown. They are not free from inconsistencies; however, as Lake 2004 and 2007 have carried out a more systematic examination of the core themes of I*M*, this chapter will be paying it considerably more attention.

Next, one needs to explore what could be meant by integration in the two contexts already identified, the Chinese and the Western. Let us also understand integration, as seems natural, to mean assimilation, where the one medicine is to be assimilated to the other.

In the light of such discussion above, the chapter would end with an appeal for peaceful co-existence between Bm, TC*M-Zhongyi*/I*M* and CC*M-Zhongyi* in China today. Given that Bm and CC*M-Zhongyi* differ at the level of their respective metaphysical/ontological cores and of their respective methodological differences, the only way forward if one wants to aim at a respectful and dignified relationship between these medicines is peaceful co-existence, that is, by adhering to ARIIMO.

Integration as Assimilation

We have said that it seems natural to understand integration in terms of assimilation. (Call this AM for short.) Here is one justification for saying so by looking at an analogue in another discourse, namely, political discourse. An example of AM in recent European history can be found in the case of Western European Jewry, but in Germany and France only[5]– here the preferred term is "acculturation" rather than "assimilation" (see Richarz 2008). Jewish Emancipation[6] occurred step by step in France and Germany; Emancipation, however, was dependent on acculturation (a less radical term than assimilation as the latter seemed to envisage that the Jewish minority would even become Christian and perhaps finally disappear through inter-marriage; while the former implies that the Jewish people would embrace the dominant culture or parts of it but would not completely abandon their own cultural traditions). With Emancipation, there emerged the Haskalah Movement, sometimes referred to as the Jewish Enlightenment, which began with the Berlin philosopher, Moses Mendelssohn (1729-1786). Its main goal was "to lead the Jews out of the religious ghetto, to integrate the Jewish with the non-Jewish world and to bring separation to an end in favour of non-

[2] This publication is issued by WHO in 2004 based on the WHO International Expert Meeting on SARS held in Beijing in October 2003. These Reports are based on treating SARS cases using I*M* in China including Hongkong.
[3] This stands for the National Center for Complementary and Alternative Medicine; it is under the aegis of NIH, USA (its new name is NCCIH/National Center for Complementary and Integrative Health. Lake claims his methodology differs from that of NIH-sponsored studies – see Lake 2007, 59.
[4] Dong is at the Institute of Integrated Medicine, Huashan Hospital, Fudan University, Shanghai; Lake is at the Department of Psychiatry and Behavioral Sciences, Stanford University Hospitals, California. NIH also has a website (URL = https://nccih.nih.gov/taxonomy/term/127)
[5] The operative words are "Western European" in general and "France and Germany" in particular. Assimilation, as characterised in this chapter, by and large, occurred in these two Western European countries only. This discussion, then, necessarily excludes Jewish communities which existed during the same period in other parts of Europe. In Russia, the Haskalah Movement did not, for a variety of political and social reasons, so much lead to assimilation as to produce a modern Jewish community without losing their Jewish identity in terms of adhering to their language and their religious practices.
[6] Jewish Emancipation in Germany and France meant the abolition of discriminatory laws against Jews, the recognition that Jews were/are the equals of other citizens as well as formally granting them citizenship.

Jewish tendencies, customs and knowledge. The pre-requisites for such integration were modernisation and ending the centuries-old blending of religious and social life" (Schumacher-Brunhes 2012). Modernity in the form of secularisation and urbanisation meant that the followers of the Haskalah dropped Yiddish, and accepted German or French education as the method of integration/assimilation. As a result, many Jews achieved great distinction as scientists, musicians, bankers, manufacturers (amongst the elite professions) as well as in less exalted occupations but which were closed previously to Jewish people in those two countries. In other words, they lived their lives as other citizens to all intent and purposes. Alas, such an assimilated/acculturated/integrated world shattered with the rise of Nazism leading up to the Holocaust in the 20th century.

The point of citing the Emancipation-Haskalah Movement (in Germany and France) is simply to work out in analytical/structural terms, whether AM involving *Zhongyi* and MWM/Bm is analogous to that in the political discourse of German and French Jewry outlined above. It is obvious that the Jews in those two countries recognised that German or French culture was the dominant culture (call it X) and that their own traditional culture was not (call this Y). AM in this context appears to imply a relationship which does not amount to one of equal partnership. This is not to say that the Emancipation-Haskalah Movement did not involve a melding of the two cultures together in a more or less Wholistic fashion. By the time of the rise of Nazism, one could distinguish in this domain, three different cultural groupings in Europe – the dominant European-Christian group(s) on the one hand, and on the other, the Jewish Emancipated-Haskalah group (primarily in Germany and France), and the traditional Jewish group(s) in other parts of Europe who were not (for a variety of reasons) caught up so much with assimilation under the Haskalah Movement. Would one be able to identify analogous groupings when this framework is borrowed to shed light on the relationship between Bm on the one hand and *Zhongyi* on the other?

The Chinese Projects of I*M*: Early Republican and Post WWII

We next turn to the Chinese project. It is necessary to distinguish between two attempts which occur at different historical periods: the present on-going project since the 1950s and that which occurred roughly during the first three decades or so of the 20th century. Scholars, in this domain, rightly remind us that the project of integrating the two medicines in China – Chinese and Western (*Zhongyi* and MWM) did not begin under the auspicious of the PRC government.

First, we explore the earlier project as pioneered by Zhang Xichun/张锡纯, the distinguished scholar-physician of the late Qing dynasty and early Republican period. (See Hsu 2001, Bridie 1996, Scheid 2002, Buck 2014, Raphals 2015, *Luo 2011, 2014a, 2014b.） He was appointed director of the first ever established *Zhongyi* hospital in Shenyang, 1918, a project of which he was a leading light. When MWM/now called Bm was first introduced into China in a substantial manner in the 19th century, he familiarised himself with it and taught himself basic Western sciences such as biology, physiology, even mathematics. He wrote profusely about *Zhongyi*; later some of these writings appeared as a book in which also were recorded his own efforts to integrate *Zhongyi* and MWM. This book is called 《医学衷中参西录》/*The Assimilation of Western Medicine to Chinese Medicine*; it has turned out to be very influential. More than 70% of *Zhongyi* practitioners of two decades ago, if not today, rated it as having influenced them most out of a list of ten *Zhongyi* authorities. In it, he recorded Western drugs used in China at the time, noting their medicinal properties, the purpose of their use. Although many of these drugs had long been retired, nevertheless, his record of them is of historical interest. From 1918 on, his pioneering work on the incorporation of MWM into *Zhongyi* became widely known in the country; in 1926, he left Shenyang for the relative calm of Tianjin, and in 1927, he opened a clinic in the city called 中西医汇通医社, a clinic and institute for promoting the integration of Chinese and Western Medicines. The cases he dealt with at this time were recorded through updating his important and influential book which in turn became even more influential.

In particular, he had written about two Western drugs which he had incorporated into his *fangzi* 方子/prescriptions, namely, aspirin and quinine. At that time, many young people had succumbed to *wenbing* 温病/febrile signs and symptoms[7] (see Chapter Nine of this book). In some cases, the illness became what is called 阳明腑实证 (*yangmingfu shizheng*); for instance, the *zheng* 证/(syndrome) pattern differentiation and treatment in question presented itself in one patient as follows: dry, solid stool, high temperature and a *mai* which was taut but with strength/大便燥结，发高烧，脉象有力有点弦. Zhang Xichun prescribed *baihutang*/白虎汤, a Zhang Zhongjing 张仲景[8] formula to which he had added some ginseng, because the patient's proper *qi*/*zheng qi*/正气 was inadequate. The classical formula itself has only four medicinals of which one is gypsum; Zhang Xichun used raw gypsum/生石膏 *sheng shigao* as this

[7] For details on diagnosis and treatment in general and through prescription of medicinals in particular (辩证论治 *bianzhen-lunzhi* /辩证施治 *bianzheng-shizhi*), see Lee 2018, Chapter 9.

[8] For details about Zhang Zhongjing and his contribution to the development of *Zhongyi* (CC*M-Zhongyi*) see Lee 2018, Appendix 2.

medicinal would aid the ginseng to restore the *proper qi* of the patient. After taking this decoction, the patient's temperature became normal, but he developed a new symptom, showing signs of being confused. To cope with this condition, Zhang Xichun prescribed some aspirin, as in his reckoning, gypsum which is a heat-clearing medicinal was insufficient to clear out all the heat in the person-body; the aspirin would help it to do so *via* the emergence of a rash 疹 *zhen*. After that rash attack, the patient recovered.

He also used quinine which he called *jinjinashuang*/金鸡纳霜. This drug was the drug of choice in Western medicine for treating malaria at that time. However, it was not successful in treating all cases of malaria. With such recalcitrant cases, Zhang was successful, using quinine in conjunction with raw/unprocessed gypsum. According to *The Divine Husbandman's Classic of Materia Medica/*《神农本草经》*Shennong bencao jing* (an early Eastern Han dynasty publication which might have taken several preceding centuries to mature as such), this medicinal is somewhat *han*/cold in character; down the centuries, owing to an erroneous understanding of its character, physicians had used it with great caution and in very small quantities believing it to be extremely *han* in character. Zhang Xichun was confident that this was a mistaken view, used it in large quantities; he instructed his patients to decoct two large bowls of the unprocessed gypsum (one *catty*/斤 which is roughly one pound) to take until the heat had gone, and then to take some quinine.

He analysed the nature of aspirin within the framework of Chinese *pharmacology*; a herb's flavour is crucial in determining its functional properties when introduced into the person-body of the patient.[9] He wrote:

> 其味甚酸，其性最善发汗、散风、除热及风热着于关节作疼痛，其发表之力又善表痧疹

It may be rendered as:

> The flavour of aspirin is somewhat sour; its characteristic capabilities include bringing on sweating, dispelling wind, getting rid of heat and wind-heat which induce pain in joints, as well as bringing out to the surface fever rash.

In other words, Zhang's understanding of integration is in terms of assimilation; it amounts to commandeering Western drugs to put them to use within the framework of CC*M-Zhongyi*. The spirit of his project was but a reflection of the prevailing political (in the larger sense of the word) sentiments of the time; towards the end of the Qing and the early decades of the Republican era, when faced with the challenge presented by Western military and scientific-industrial might, the Chinese felt the need for reform in order to survive (as already observed in Chapter One.) This reform was informed by a very anc important *philosophical* distinction in Chinese civilisation between 体/*ti* and 用/*yong*–the former may be translated as "foundation/basis", the latter as "use/instrumental value". (*Ti* may also be represented by 本/*ben* which means "basis" or "foundation"; for example, the expression 以人为本 /*yi ren wei ben* may be translated as "the basic or foundational ethical value is humanity, humaneness".)[10] This distinction obtains in any domain of activity, be it calligraphy, painting, martial arts, *medicine* – every domain of activity has two aspects to it, namely, an internal and an external which the practitioner must cultivate together and simultaneously. *Ti* refers to the *philosophy* and theory presupposed by the activity which constitutes the internal aspect. For instance, doing calligraphy is not simply wielding the writing brush in a particular physical manner (external aspect which is *waigong*/外功) but wielding the brush in a particular way must be accompanied by inner cultivation of strength (*neigong*/内功) which then would find expression in the manner and spirit in which the brush is held, the strokes are made, that is, the inner and the outer affecting the piece of calligraphy which ensues as a *Whole*.

In contrast, modern (Western) civilisation is different, with its focus on *techne* – for instance, in fighting, the emphasis is on the power of the gun held in the hand, the more powerful, the better. The soldier is trained simply to operate the killing machine as efficiently as possible. One killing machine is more powerful than the one it superseded, and therefore, *ex hypothesi*, better. The modern machine gun is more powerful/better than the Gatling gun; the fighter planes of today are more powerful/better than those which operated during WWII. Expert handling and use of the machine are all. In Chinese martial arts, the expert is not simply someone who knows how to see off the opponent with the sharpest knife or sword available but it is the melding together of the quality of the weapon with his own inner strength and spirit in which the act of fighting is carried out. The introduction of modern (Western) thinking into China has unfortunately eroded away or downgraded *ti*, privileging only *yong*. For instance, today in Bm, diagnosis is done, in the main, by tests performed by machines and machines have no souls. Such a worldview, which is politically and culturally more powerful than the ancient Chinese one is bound to erode away the inner aspect of *Zhongyi* through downgrading and undermining its *ti* unless one (such as those who are committed to CC*M-Zhongyi* and ensuring its survival) were consciously to resist such an advance.

[9] See Lee 2018, Table 4. 1 about flavours of medical herbs in terms of *Wuxing* and *Tianren-xiangying*/Macro-micro-cosmic *Wholism.*

[10] It is interesting that in *jianti* today, *ti* /体 is written with *ren*/人 as *bushou* and with *ben*/本 as the second component.

However, in the first two decades of the 20th century, the incursion of MWM into China was still in its early days. It was possible for Zhang Xichun to mount his research assimilating some Western drugs within a framework which could be said to accord with the expression 中体西用/*zhong ti xi yong* which may be rendered as "The foundation is Chinese culture/civilisation with Western science and technology as its hand-maiden, an instrument to enhance its scope and its flourishing". In other words, in Zhang Xichun's understanding of the relationship between *Zhongyi* and MWM, the former is X as it is *ti* or *ben* and the latter is Y as it is *yong*. Zhang's AM project was conducted within the metaphysical *Wholist* framework of what today one calls CC*M-Zhongyi*; this means that the *ti*/*ben* of *Zhongyi* remained intact. However, unfortunately, for the Chinese, the pioneering work of Zhang did not act as a flood-gate of such research; instead, his work in the end amounted to a trickle only, which even soon dried up.

We next turn our attention to the on-going project, initiated since the 1950s, which seems to constitute the mirror image of Zhang's attempt at integration as assimilation. At one important, though not the only, level today, it is found in the great interest of Bm in ethno-botany, through its search for plants whose medicinal properties could be turned into pharmacological products. (Chapter Six to follow will look in detail at the identification of one such plant – Herba Artemisiae Annuae – from which is extracted its active ingredient, artemisinin, the transformation of *qinghao* to become *qinghaosu*.) This transformation entails that Bm is X (dominant/senior partner, indeed is *ti/ben*) and *Zhongyi* is Y (the lesser/junior partner or *yong*). If one were to retain the traditional Chinese distinction between *ti* and *yong*, the original expression, *zhong ti xi yong* (which applied to Zhang Xichuan's attempt) would have to be inverted to read *xi ti zhong yong*/西体中用. The medicinal *qinghao* is only of use to Bm (which is *ti*) when the whole herbal has been reduced to *qinghaosu*, the drug containing the active ingredient of *qinghao* (which is *yong*).[11] This project is then isomorphic to that of Zhang Xichun for which aspirin and quinine on their own would be of no use to *Zhongyi* until they have been "domesticated" within the framework of Chinese *Materia Medica* and its use as understood by *Zhongyi* (CC*M-Zhongyi*) in terms of its trinity of *shengli-bingli-yili* which constitutes its *ti*) – see Lee 2018, Chapter Nine.

The TC*M-Zhongyi* Project as seen and practised outside China: The Lake Project

First, let us look at the TC*M-Zhongyi* project at the level of drug use as it constitutes the most common strand of I*M* whether practised in China or in the West. This level involves the following:

A1. *Zhongyi* medicinals (and other treatments) are said to be efficacious in varying degrees in many instances. This is to say that it relieves totally or ameliorate substantially a particular symptom pattern,[12] such as fever, diarrhoea or whatever. In some cases, they produce better results than Bm drugs in respect of a certain symptom pattern, producing no or less serious side effects.[13]

A2. Such medicinals, said to satisfy 1 above, when used in conjunction with Bm drugs, are effective in the following senses:

[11] Lake 2007, xv writes:

> The increasing use of herbs or other natural substances as medicines is an example of increasingly accepted empirical approaches that do not require changes in the basic theoretical or methodological framework of western science as it exists in the early 21st century."

Obviously, no change in "the basic theoretical or methodological framework of western science" is required because the herbs are simply incorporated into the framework, through transformation of their properties, say from *qinghao* to *qinghaosu*.

[12] The term used by Lake 2004, 2007.

[13] In contrast, Lake 2004 says that, amongst other side effects

> most antipsychotic medications, including older agents like haloperidol, chlorpromazine, and recently introduced drugs like risperidone, quetiapine, and olanzapine, have significant associated risks of debilitating, sometimes permanent movement disorders, in addition to serious medical problems including adult-onset diabetes, toxicities, and drug-drug interactions. … Emerging evidence suggests that chronic use of certain antipsychotic medications up-regulates the brain's dopamine system, exacerbating and prolonging psychotic illnesses". In some cases, side effects (including weight gain, tremor, liver toxicity) are so serious that 50% of bipolar patients opt to stop using the medication in spite of demonstrated efficacy.

Lake holds that while "all Chinese and Western treatments can cause side effects or toxicities; Chinese medicine limits the potential magnitude and consequences of risks."

a) They can reduce (some) side effects of Biomedical treatment and drugs such as radiation, chemotherapy, corticosteroids (principally prednisone), oral contraceptives, oral abortifacients, antibiotics and anti-psychotics[14] – see Lake 2004.
b) They may be used (deliberately) in conjunction with Bm drugs to produce better results than using Bm drugs alone in the amelioration of a certain symptom pattern.
c) Recent evidence shows that certain *Zhongyi* treatments are effective in conditions for which Bm has none to offer such as in age-related memory loss and other kinds of memory problems (Lake, 2004).

For Lake, a passionate advocate of I*M* in the West (at least in the domain of mental health care), the merits go beyond the above for the purpose of healing and treating patients for a mixture of other reasons: the practical one, that on the whole, using TC*M-Zhongyi* treatment costs patients less than Bm, even if both are efficacious to the same extent; the theoretical one, that TC*M-Zhongyi* increases the patient's feelings of control or empowerment (coherence in healing) which promote the process of healing itself; thirdly, as *Zhongyi*'s framework is *Wholistic*, treating the whole patient rather than the major complaint whose treatment can help patient experience improvement in symptoms other than the major one presented. We shall be returning to Lake 2004 later.

However, this account so far (Lake 2004) is at best partial and one needs to look at it in the light of Lake 2007 where he spells out more systematically and in greater detail the relationship between Bm and "complementary others". He invokes two sets of distinctions, between:

I. Three modes of assessing evidence for any medical intervention in respect of a symptom pattern: **Substantiated, Provisional** and **Possibly Effective** (Lake 2007, 58).
Substantiated is defined as evidence which is compelling:

> use of the approach reliably enhances the accuracy or specificity of assessment finds, or improves treatment outcomes with respect to a specified cognitive, affective, or behavioural symptom (which includes) compelling positive evidence from rigorously controlled studies.

Provisional is defined as based on strong evidence from research and clinical observations.
Possibly Effective is defined as evidence which is limited or inconsistent research and clinical evidence.

II. Three general classes of conventional and non-conventional medical modalities: Empirically derived, Consensus-based and Intuitive. It appears that what is Empirically-derived could be **Substantiated**, **Provisional** and **Possibly Effective**. The class of Consensus-based modalities falls short of **Substantiated** although it may eventually qualify as **Provisional** and in some rare cases even qualifying as **Substantiated,** while others would be **Possibly Effective** because of inconsistent findings; this class rests on the endorsement by a professional medical society, as *ex hypothesi*, it lacks "compelling evidence". The third class of Intuition-based modalities, by definition, are not susceptible to analysis or verification using extant empirical methods, and so would be assessed, *ex hypothesi*, as **Possibly Effective**, only, although in principle, it cannot be ruled out that in some distant future, some may be designated as **Provisional** or even **Substantiated**.

Lake implies the following relationship between I and II above:

(a) Empirically-derived is paired with **Substantiated** constituting the highest form of scientificity.
(b) Consensus-based cannot be paired with **Substantiated** and at best can be paired with **Provisional**; it may also be paired with **Possibly Effective**.
(c) Intuitive approaches are paired, at best, with **Possibly Effective.**

Lake's implied pairing as set out, in turn, implies the following hierarchy of scientificity (in descending order) and hence of guidelines in his account of I*M*:

1. Those modalities and approaches whose outcomes are **Substantiated** – the paradigmatic cases which qualify are those which pass the twin Gold Standards of RCT-EBM. In the case of RCT, Lake is even stricter than Evans, Thornton, Chalmers, 2011 as he demands double-blinding (Lake, 2007: 63) as well as randomisation, whereas the British writers rely only on randomisation in the main. As a result, in the opinion of Bm experts, such as those

[14] CC*M-Zhongyi* can do this given its account of *shengli-bingli-yili* 生理，病理，医理/Principles of Physiology, of malfunctioning of such principles leading to illness and the principles to treating (diagnosing and curing) illnesses form a *Whole* (**PIT**-ism) – more exposition will follow later in the chapter. See also Lee 2018, Chapter 10.

sponsored by the NCCIH in the USA, by the Cochrane Collaboration (CC) in the UK, nearly all, if not all, those studies involving non-conventional medical approaches fail to reach such a standard.[15]

> Choose Substantiated over other approaches whether conventional or non-conventional which fail to satisfy this highest criterion of scientificity.

2. Those modalities and approaches whose outcomes are **Provisional** – for instance, in the context of conventional approaches, those Bm drugs which are Consensus-based (such as "off-label" ones) and in non-conventional approaches, some Chinese ones (CM) which he, Lake, has identified as

(a) effective when Bm drugs are not
(b) more effective than Bm drugs even when these are effective
(c) when such CM approaches used in combination with Bm treatments are more effective than using effective Bm treatments alone.

3. When 1 and 2 above are not available, use approaches whose efficacy is verified as **Possibly Effective** but whose putative mechanism of action may be unverifiable.

4. Do not use any approaches whose efficacy is unverified or refuted and whose putative mechanism of action is unverifiable.

The above guidelines have been extrapolated and pared down from those given by Lake 2007, but the essential spirit of such a project is contained in them. We will just single out Guideline 1 for special comment as it typically embodies a concept of integration which considers Bm to be the dominant /superior (X) and *Zhongyi* the contributory or complementary component (Y).[16] This means that Bm is senior partner/X (or The Colonist) and *Zhongyi* is junior partner/Y (or The Colonised), as when all is said and done, RCT-EBM Gold Standards define scientificity in the context of drug testing; as *Zhongyi* does not rise to such standards, they must be downgraded to Guideline 2 and in some cases even to Guideline 3. Such a perspective is analogous to that version of AM as illustrated by the conversion of *qinghao* to *qinghaosu*, when Bm is *ti* and *zhongyi* is *yong*. This then is what TC*M-Zhongyi* amounts to as it invariably takes place under the aegis of The Colonial Mind-set.

Exploring the incoherence of Lake's account of I*M*

It seems odd at first sight to charge the model of I*M* worked out in such systematic detail with incoherence, as Lake himself appears only too well aware of the pitfalls which could be lying in wait for him. He is very careful in making it absolutely clear that Bm ("conventional medicine" in his terminology) and *zhongyi* ("nonconventional medicine") cannot be integrated at the level of their respective metaphysical cores. Lake 2007, 3-4 writes:

> Many nonconventional treatments, and the systems of medicine from which they originate, rest on assumptions that are fundamentally at odds with the philosophical position of Western medicine, which argues that the causes of illness are invariably reducible to physical or biological factors. Nonconventional systems of medicine rest on other assumptions, including the role of complex nonlinear processes in illness causation, the nonlocal nature of space-time, and the corollary view that consciousness has nonlocal effects on health and illness. Further, mind-body and energetic approaches argue that the role of consciousness in healing is not explainable using contemporary scientific models of brain functioning. From an integrative perspective, health and illness are manifestations of complex dynamic interactions between psychological, physical, biological, social and, spiritual factors at multiple hierarchic levels of organization in space and time.

Compare above with Lee 2018, especially Chapters Four and Six in particular to see how much Lake and Lee see eye to eye with each other on this point about the respective metaphysical/ontological cores of Bm and of CC*M-Zhongyi*. However, profound differences between them remain which lead this author to charge Lake with what may be called Essentialism of Method, in spite of his declared ecumenical stance.

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[15] "For most conditions, there is not enough rigorous scientific evidence to know whether TCM methods work for the conditions for which they are used" – NCCIH 2016b.

"Most Cochrane systematic reviews of TCM are inconclusive, due specifically to the poor methodology and heterogeneity of the studies reviewed. Some systematic reviews provide preliminary evidence of /Chinese medicine's benefits to certain patient populations, underscoring the importance and appropriateness of further research. These preliminary findings should be considered tentative and need to be confirmed with rigorous randomized controlled trials" – Manheimer 2009.

[16] This chapter focuses only on *Zhongyi* as the non-conventional medical modality in the I*M* project; unlike Lake 2007 which is very wide-ranging, covering all identifiable forms of non-conventional modalities.

We have dealt with Essentialism of Method in some detail in Chapter One of this volume. All the same a brief outline is called for just to remind the reader about its core ideas:

(a) In every intellectual domain of activity, there is only one method of conducting it which is deemed to be the correct/proper way.
(b) From which it follows that whatever method deviates from the "correct/proper" method is deemed to be sub-standard/inferior/ unintelligible.
(c) In the context of different medical systems and practices, it follows that only one way of undertaking the activity is the "scientific/"correct" method, other systems would be deemed to be "not scientific"/"less scientific"/"pseudo-scientific"; it turns out that Bm/MWM since the 19th century – its theory/ method/practice – is deemed to embody "scientificity" and other systems of medicine are deemed to be "not scientific/pseudo-scientific/not so scientific".

Just quickly to remind the reader: Essentialism of Method may be seen as part of what is sometimes called Eurocentrism, a view which came to the fore during the second half of the 18th century when Europeans began to view non-European cultures as inferior to their own. Surprisingly, it can be traced to the heart of the Enlightenment, in the very writings of Immanuel Kant (1724-1804), often dubbed the greatest Enlightenment or indeed even the greatest philosopher of all times, trumping Aristotle or Plato. Leibniz (1646-1716) and his better-known followers (Wolff and Bilfinger) and others preceding them such as the Jesuits in the 17th and 18th centuries had held very positive views about Chinese culture in general and *philosophy* in particular–see Lee 2016, Chapter 9; Lee 2021 (Open Access), Chapter 2. Kant appeared to have pioneered a radically contrary evaluation of Chinese and other non-European cultures and peoples. For forty summers or so in his lectures in geography (*Physical Geography* 1756-1796), Kant told his audience that the Chinese

> lack talents almost as much as the Negroes do. They have not distinguished themselves in the sciences in so many centuries, so that not a single one of them has become famous and one might learn something from them … there is a nation [the Chinese], that has no talents for invention or insight into matters of the mind … (in the field of moral philosophy) that the entirety of Confucian morals consists of ethical sayings that are intolerable because anyone can rattle them off" … (that the Chinese) never get very far in those sciences at which one arrives through concepts.

(For these quotations, see Reihman 2006, Bernasconi 2002.)

In Kant 1764, 2: 252, Kant observed:

> What trifling grotesqueries do the verbose and studied compliments of the Chinese contain! Even their paintings are grotesque and portray strange and unnatural figures such as are encountered nowhere in the world. They also have the venerable grotesqueries because they are of very ancient custom, and no nation in the world has more of these than this one.

Kant also famously pronounced that "philosophy is not to be found in the Orient" (Ching and Oxtoby 1992, 223). For two centuries afterwards, this mantra was assiduously taken up first by Hegel, then Husserl, Heidegger, Gilbert Ryle (elected Waynflete Professor of Metaphysical Philosophy at Oxford University after WWII), Derrida (1930-2004) and nearly every philosopher, of note or no note, in the West since, until very recently.

Kant's works in the Critical Period (1780-1789) are held to constitute a high-water mark in the European tradition of philosophising and it appears undoubtedly to many that any other way of philosophising (especially in non-European cultures) would not count as doing philosophy or doing it "correctly/properly".

Kant's low opinion of the intellectual/cognitive capabilities of non-Europeans can be directly traced to his racism – he is indeed the pioneer of scientific racism (Bernasconi 2002). (On above, see also Lee 2016; Lee 2021.**)** Kant's sense of European superiority could be seen as part of the rise of Modernity beginning in the 17th century in Western Europe, culminating, it is said in Newton's achievements in science, the Industrial Revolution in Britain in technology, in Kant's Critiques in philosophy. These achievements were accompanied by military might and command of the seas which enabled several European powers to establish their empires around the world –this era of Western imperial expansion and colonisation began with the rise of Portugal as a global sea-power beginning from the late 15th century.

For those who unwittingly/sub-consciously follow(ed) Kant, it was crystal clear that one would not touch *Zhongyi* with a barge pole as it is/was without a shadow of doubt "unscientific". For the more discriminating, such as Lake, not all of it is sub-standard and can be rescued provided it does it within the pale of "scientific" medicine as TC*M-zhongyi* tries hard to do.

This shows that Essentialism of Method in intellectual domains[17] exists today in two forms:

[17] Essentialism of Method can be shown readily to lead to a *reductio ad absurdum* once one departs from the intellectual to the non-intellectual domains of activity. The French may claim that their cuisine is the first/best in the world; however, even

(a) The fearsome version just outlined above pioneered by Kant based on racism
(b) An attenuated version, adhered to even sub-consciously and unwittingly in the medical context by theorists such as Lake, which has nothing to do with racism and denigration of non-European others. It is simply the view that the highest standard of medical scientificity is to be found in the Twin Gold Standards of RCT-EBM.

Sub-consciously following Version (b) would lead Lake to postulate a conception of I*M* which runs into incoherence, which appears to be a consequence of his failure to realise that **the metaphysical/ontological core (*ti/ben*) which underpins any domain of theory-cum-practice, though not directly observable, may imply claims which are susceptible to empirical testing; furthermore, such testing is conducted within its own methodological procedure which is not identical to that which occurs in the philosophical/methodological framework of the dominant medicine.** (Chapter Nine of this book explores this claim in detail.) It is Lake's failure to grasp what is emboldened above which leads him to Version (b).

As Lake has pointed out, the metaphysical core of Bm includes: Materialism-cum-Empiricism, Mind-Body dualism to which may be added Thing-ontology, whereas CC*M-Zhongyi* embodies *Qi Wholism/Em*-ism, *Thing-ontology cum Process-ontology*, *Yinyang Wholism*, Contextual-dyadism as Lee 2017a and Lee 2018 have demonstrated. Methodological implications of the former include Reductionism – to what can be observed to exist, *via* the bare senses/instruments, that is, to the physical, to quantitative and measurable dimensions which are said to be objective and the most reliable, to linear, monofactorial causality as embodied in the Humean Billiard-ball model of causation. On the other hand, that of CC*M-Zhongyi* includes non-Reductionism in general, the non-reduction of Body to Mind (or Mind to Body), a dynamic model of causation which is multi-factorial, non-linear in which different levels of organisation, whether it be that of the organ-systems, of the person-body, of the *physiology*/psychology/ sociology/environment. CC*M-Zhongyi* is Ecosystem *Science* which postulates systemic causation, as shown in Chapter Four's account of its concept of *Wuxing*.

Curiously, at another level, Lake appears to grasp the above in a limited way, but perhaps, not fully enough. Take what he says about *qigong* which amongst all the other *Zhongyi* modalities, he consigns to the merely Intuitive "for which empirical evidence of a putative mechanism will probably not be forthcoming for many decades, if ever." (Lake 2007, 62). Yet he also admits that

> (P)atients who receive qigong treatments frequently experience physiological changes that may be associated with the claimed effects of qigong,[18] for example, "energy" flowing from a qigong master resulting in beneficial changes in autonomic activity. … accumulating evidence supports claims of consistent beneficial physiological effects." (*ibid*.)

These beneficial claims, as predicted or are expected in the light of *qigong* as theory and practice, are dismissed by Lake as "sub-standard" for the simple reason that *qigong* is unlike, say, an antibiotic which may be said to be really "scientific" and effective against a disease entity such as the salmonella bacteria causing food poisoning. In other words, what counts as truly "scientific" is what follows the methodological implications of the metaphysical core of Bm, which amounts to Essentialism of Method, albeit in an attenuated form – Lake in the end elevates RCT-EBM to the highest if not the only level of scientificity. In other words, Version (b) of Essentialism of Method married to AM, sub-consciously at the hands of Lake, assigns Bm to X (the Officer Class) because of RCT-EBM, and *zhongyi* to Y (the subaltern class) as it fails to satisfy the Twin Gold Standards of RCT-EBM.

What is even odder is what follows. Lake is fully aware that CC*M-Zhongyi* as a "nonconventional other" is not merely *Wholistic* but also is *Personalised Medicine*, what is referred to in CC*M-Zhongy*i today as *Getihua* (个体化) *Medicine*. Furthermore, Lake also himself advocates Personalised Medicine in his conception of *IM*; he writes: "Integrative approaches to health in general and mental illness in particular emphasize assessment and treatment approaches that address the unique symptoms of each patient" (Lake 2007, 7) and

> There is a growing evidence for a homeodynamic rather than homeostatic model of body-brain-energy-environment interactions at complex biological, psychological, energetic and spiritual levels of organization of the body in space and time… Homeodynamic efficiency describes the extent to which complex psychophysiological factors maintain mind-body in the optimal range of functioning. This paradigm describes continuously changing dynamic factors that influence the causes and conditions of health and illness." (Lake 2007, 39).

Grasping the above fully should have made Lake realise that it would make no sense to privilege the findings of RCT-EBM over other methods of assessing "nonconventional" medical modalities (such as CC*M-Zhongyi*), elevating

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French pride in their culinary genius does not make them claim that it is the only cuisine or the only "proper/correct" cuisine in the world. If they were to do so, they would become the laughing stock in the world.

[18] Qigong 气功, literally means "the cultivation of *qi*". Generally, it is said to refer to a form of exercise which coordinates body-posture and movements, breathing and meditation in various contexts of activities, such as martial arts, healing and promoting health as well as spirituality. This concept will be looked at again later in Chapter Nine of this book.

their deliverances to the category of **Substantiated** in the set of the empirically derived, accompanied by the downgrading of the "nonconventional" others to **Provisional** or **Possibly Effective** only. While a non-dynamic, linear, monofactorial system of medicine based on Thing-ontology, and therefore, the primacy of Matter, would imply in its wake the methodological procedure of RCT-EBM, Lee 2017b has shown that RCTs only make sense by presupposing the **axiom of homogeneity** in order to render randomisation intelligible, which in turn would render RCT outcomes in statistical terms intelligible. Lee 2017b has also argued that randomisation only prevents allocation bias but not selection bias; it also distinguishes between statistical relevance and clinical relevance. The former could be said to enable those in managerial charge of health care at the macro-level to make rational decisions regarding the allocation of scarce medical resources, but appears largely beside the point for those who are faced with decision-making at the micro-level of health care, with what is "the best" treatment for patients (in the care of doctors/physicians) who have their own very specific needs within very specific psychological/social/financial conditions. In other words, for doctors and their particular patients, the "best" treatment may not be dependent on RCT outcomes (and the meta-reviews of EBM) but on factors of clinical relevance.

Furthermore, Lee 2018, Chapter 7 has also demonstrated that *Zhongyi* as *Getihua Medicine* (*Personalised Medicine*) presupposes the **axiom of heterogeneity** which regards every patient to be different in significant respects from other patients. Patients may present themselves faced with the same external pathological threat, so to speak, yet as they differ in their basic constitutions, their age, their sex, their psychology, their lifestyle, the physical environment in which they live, their specific medical history, their emotional state, and so on, as a result of which the physician would not be prescribing identical treatments for all of them. *Getihua* diagnosis and treatment lie clearly beyond the pale of RCT-EBM. It is not simply the case that CC*M-Zhongyi* outcomes will for now be granted the status of **Provisional,** and that in the distant or not so distant future, when physicians have learnt to become methodologically "more sophisticated", the stigma of **Provisional** could then be exchanged for the laudatory one of **Substantiated**. If CC*M-zhongyi* were to become "methodologically more sophisticated" as understood in terms of RCT-EBM, it would have lost its identity; Lee 2018, Chapters 7, 8 and 9 have demonstrated that the identity of CC*M-Zhongyi* is tied up with its concepts of *Getihua Medicine*, of *zheng* and *fang*, of the unity of *shengli-bingli-yili* Principles of ***P**hysiology*, Theory of **I**llness and Principles of **T**reatment (PIT-ism, for short).[19]

Hence Version (b) of the Essentialism of Method which privileges RCT-EBM is beside the point when Lake and others assess a "nonconventional" approach such as CC*M-Zhongyi* to be sub-standard, that their outcomes must be designated at best as **Provisional**. In other words, Essentialism of Method is as absurd as judging a cat by the standards of a dog show, when it has already been conceded that a cat is not a dog.

So far, the on-going I*M* project as TC*M-Zhongyi* since the 1950s (primarily in China) as well as its slightly more recent counterpart in the West appears to accord with the *xi ti zhong yong* orientation, with Bm being the senior partner (*ti/ben*) and *Zhongyi* being the junior partner (*yong*); furthermore, the assimilation of CC*M-Zhongyi* as *yong* is carried out within a framework (*ti/ben*) which rests on Thing-ontology, on linear, monofactorial causation, and which is reductionist, not Wholist in character.

One can plausibly conclude that TC*M-Zhongyi* necessarily suffers from incoherence as it is an attempt to marry two very different systems of medicine, namely, MWM-Bm on the one hand and CC*M-Zhongyi* on the other. TC*M-Zhongyi* may rid itself of such incoherence if it boldly declares itself to be The Colonised in respect of The Coloniser, which is Bm. What it cannot do is to pretend that it is possible to generate "harmonisation" of equal partnership.

Co-existence, Not Integration

To explore this possibility, we must begin by looking more closely at the relationship between two criteria of assessing treatment outcomes. Lake 2007 has respectively called these "Empirically derived" and "Consensus-based". The former is a very wide-ranging term indeed; however, Lake appears to have given it a very restrictive, narrow meaning so that it coincides with "**Substantiated**" or "compelling evidence". We have already shown that **Substantiated** in turn is equated with the deliverances of **RCT-EBM**. This then has the unfortunate implication of excluding "Consensus-based" from the broad reference of "Empirically derived". Does this matter? What exactly does "Consensus-based" assessment amount to?

Lake equates it with the opinion of experts which counts in the absence of what he calls "compelling evidence" (what is **Substantiated**/conforming with the methodology of **RCT-EBM**). Lake 2007, 58 writes:

> By definition, the evaluation of empirically derived modalities requires the assessment of empirical evidence. In contrast, the validation of modalities that are perpetuated through professional consensus or are based on intuition does not rely on rigorous demonstrations of empirical evidence. In other words, modalities that are maintained through consensus, which comprise the majority of conventional and nonconventional assessment and treatment approaches in current use, are frequently endorsed by a professional medical society in the absence of compelling empirical evidence

[19] For detailed exposition, see Lee 2018, Chapters 8 and 9.

(The underlining is this author's interpolation.)

The operative phrases are those underlined; these simply reflect the values embodied in **EBM** methodology which rates **RCT** at the highest rung, and others (in descending order), namely, Cohort studies, Case-control studies, Case series, Case reports, Opinions.

Note that throughout his book, Lake is ecumenical in spirit in the sense that he is prepared to admit that not all of Bm conforms to **RCT-EBM**. However, this ecumenical spirit serves to muddy the waters unless care is taken to point out that while it may be fair to castigate those Bm modalities as "sub-standard" which have fallen short of Bm's own **RCT-EBM** high standards, it is less than fair or, indeed, meaningful to castigate a "nonconventional medicine" such as CC*M-Zhongyi* as having fallen short, given that it does not and cannot aspire to the methodologically "dizzy" "heights" of **RCT-EBM**. CC*M-Zhongyi*, to repeat, **does not and cannot** adhere to the "rigours" of **RCT**, it **does not** and **cannot** adhere to the requirement of "objective" and quantifiable measures in determining the efficacy or otherwise of its treatments. Other people may wish to find some such measures for CC*M-Zhongyi* treatments (as some do, those patients/their families would want to assure themselves that the treatment has really produced positive results which are "real" and can be objectively ascertained and measured *via* Bm tests), but physicians themselves do not rely on them to account for, or to provide justification, CC*M-Zhongyi* theory and practice. In any case it adheres to its own set of criteria of assessment about its own treatments which include the following (a summary which anticipates a more thorough and detailed exploration in Chapter Nine of this book):

A1. The change in the *mai* 脉 profile from an abnormal one to one considered by CC*M-Zhongyi* theory to be normal for individual patients (with their own specificities in terms of age, gender, lifestyle, personal constitution, medical history), the time of year (whether it is **Summer** or **Winter**) and such like circumstances (deemed to be relevant from the CC*M-Zhongyi* standpoint) when patients present themselves to the physician.

A2. Expected changes in the patients following a specific treatment can be closely monitored, such as how often the patient now urinates or defecates in a day/week?; have the attacks of diarrhoea diminished?; has the patient's excessive sweating decreased?; has the amount of catarrh the patient produced lessened?; are the patient's hands and feet still excessively cold or have they got warmer?; is the patient walking better than before, can s/he now walk without the help of a stick?; can the patient get out of bed by himself and walk?; has the patient's appetite improved?; has the patient gained some much needed weight?; has the patient's complexion/*se* 色 improved?; is the patient less anxious/agitated/depressed than before?;is the patient feeling less/no pain?; is the patient sleeping better?, and so on.

A3. If one so wishes, one can turn some (though not all) of these into quantifiable matters (for instance, the amount urinated each time and how often in a day could conceivably be quantified), but CC*M-Zhongyi* practitioners do not do so. All these signs (set out in A2), however, could be said to be inter-subjectively verifiable – not only the physicians but family/friends can "see" for themselves that the patient is now eating more and enjoying his/her food more, that s/he can now get up to walk unaided when s/he could not before, that the patient is no longer bent over in pain, that the diarrhoea attacks have greatly diminished if not vanished altogether, that the hands and feet are no longer icy cold. Admittedly, today, family/ friends may, on the whole, not be in a position to feel the *mai* (although historically, many households could) which has then to be left to the physician(s); but this, too, is an inter-subjectively determinable matter amongst physicians who are recognised to be properly qualified.

A4. Patients' reports about how much better they feel after treatments are considered to be "subjective" and in the eyes of Bm to have no validity[20]; however, in the eyes of CC*M-Zhongyi*, they are relevant and significant. The patients' felt response is a clear indication of the success or otherwise of the treatment, as CC*M-Zhongyi* itself does not buy the objective/subjective distinction; it is a *medicine* which recognises that illnesses are to a greater or lesser degree, psychosomatic in character; it is a *medicine* which considers the patient in a *Wholist* manner. CC*M-Zhongyi* is premised on the assumption that the "body" is no mere body (a thing, mere Matter) but a person-body with emotions as well as consciousness – Chapter Eight of this book argues in detail that the concept of personhood is a primitive one. CC*M-Zhongyi* does not subscribe to any version of Dualism including that version which underpins Bm.

The comments above (A1-A3) make the following points as far as assessment of its own treatments by CC*M-Zhongyi* is concerned:

B1. It may be said to fall into Lake's category of "Consensus-based"– the consensus of CC*M-Zhongyi* experts.

[20] These are regarded as symptoms (subjective reports by the patients themselves) which must be distinguished from signs (objectively checkable and better still measurable and quantifiable).

B2. These experts, however, arrive at the assessment based on observing what is inter-subjectively determinable, namely, signs of the patients, before and after their treatment.

B3. These experts are capable of distinguishing between those changes which are expected and anticipated given CC*M-Zhongyi'* s theory about the diagnosis and treatment of illnesses or those which are not. CC*M-Zhongyi* practitioners recognise that a patient's illness can be mis-diagnosed, that a *rezheng* 热证 is diagnosed as a *hanzheng* 寒证 or *vice-versa* with their respective different prescriptions, sometimes leading to fatalities.[21] Mis-diagnosis and entailed mis-treatment must be rectified by other more competent physicians.

B4. Clearly such a type of assessment does not conform to the methodology of **RCT-EBM**; however, it may be worth labouring a point already made, that **to judge it as sub-standard because of its failure to do so is itself a gross failure of logic and understanding**.

B5. Nor is it obvious that such an assessment methodology is not empirically grounded as well as theory-driven, just as Bm's own method of assessment in terms of **RCT-EBM** is empirically grounded as well as theory-driven.

B6. The respective theories of Bm and CC*M-Zhongyi* are different, their metaphysical/ontological cores are different; hence, also are the methodological differences implied by their respective metaphysical/ontological cores.

B7. CC*M-Zhongy*'s observations of signs and reports of symptoms from patients, of the anticipated/expected changes in them following from its theory and practice of *shengli-bingli-yili* (**PIT**-ism) fall back ultimately on inductive as well as deductive logic (though applied, not explicitly but implicitly), a method of procedure which in general has been adhered to, in varying degrees, since the dawn of systematic reasoning in the history of humankind.

With all this clarification out of the way, we can now consider the matter of whether one can construct a framework (theoretical as well as political in the larger sense of the term) which does not privilege Bm through privileging the outcomes of **RCT-EBM** over other methods of assessing the outcome of treatments in CCM-*zhongyi*. It can be built up using the following steps:

C1. Abandon the obsession with **RCT-EBM** as the highest accolade of "scientificity" as these are standards set up (unwittingly perhaps) for CC*M-Zhongyi* to fail and be stigmatised as inferior if not totally worthless. One ought to recognise and appreciate that **RCT-EBM** are not universal standards which can be applied to all other *medicines* such as CC*M-Zhongyi*. Furthermore, it is the case that they do not even obtain in all domains of Bm; rather, they are specific standards which at best hold only under certain very restrictive circumstances – they fail to obtain in Epidemiology (and are not universally invoked in certain areas of Clinical Medicine[22]). Regarding Epidemiology in certain contexts of enquiry, one can only use "lesser" methods of scientificity, such as Cohort studies, Case-control studies, Case studies, Expert Consensus, if and when the so-called **Substantiated** criterion fails to obtain.[23]

C2. With regard to CC*M-Zhongyi* treatments, use whatever method of "scientificity" is endorsed by CC*M-zhongyi* itself, such as those set out above under B1-B4 and C1-C7.

C3. It is appropriate here to remind oneself of Aristotle's nostrum (*Nichomachean Ethics,* I, iii) that one should not demand more certainty than the subject allows. In other words, "Expert Consensus" should not be stigmatised as carrying less methodological weight than the twin Gold Standards of **RCT-EBM** in the case of CC*M-Zhongyi*.

C4. Respect its metaphysical/cosmological core and its methodological implications for "doing" *medicine*.

C5. The partnership is about the care and the good of patients – that is the shared goal. At this level, institutional partnership should ensure that the patient's wishes be respected as to which medicine/*medicine* they would like to turn to for help. (This choice is offered in the majority if not all hospitals in the PRC.)

[21] Put simplistically: *rezheng* is a pattern differentiation associated with excess *yang* (and therefore with *yin* deficiency) in whichever *organ-system* diagnosed by the physician; to treat such a condition, medicinals with heat-clearing properties (and accompanied by other medicinals which can supplement *yin*/补阴). A diagnosis of *hanzheng* would require, on the whole, medicinals with *yang*-supplementing properties. One can see immediately the danger of killing a patient when an incompetent physician mis-diagnoses a *rezheng* for a *hanzheng* or vice versa. For further details, see Lee 2018, especially Figure 8.1 and pp249-250.
[22] See Evans et al. 2011 for details.
[23] See Lee 2021b (Open Access).

We have written the above from the standpoint of the relationship between CC*M-Zhongyi* and Bm. We need to comment, however briefly and in scanty outline, the relationship between TC*M-Zhongyi*/I*M* and Bm.

D1. The TC*M-Zhongyi*/I*M* practitioner identifies a symptom or symptom pattern which can be treated using criteria as set out under A1-A2 in an earlier section.

D2. The outcome of such TC*M-Zhongyi*/I*M* treatments is assessed using the methodology embodied in **RCT-EBM**, as these are given the highest accolade of "scientificity". The consensus of Bm experts is that TC*M-Zhongyi*/I*M* treatments fail to pass those hurdles, and thus fail Lake's **Substantiated** criterion, at best only satisfying the **Provisional status** of "scientificity".

D3. This then leads to **Contradiction 1**: **RCT-EBM** must and do presuppose the **Axiom of Homogeneity** if these Twin Gold Standards were to have purchase. However, CC*M-Zhongyi* is *Getihua Medicine*/*Personalised Medicine*; such a *medicine* necessarily presupposes the **Axiom of Heterogeneity**. (See Lee 2017b; Lee 2018, Chapter 7.)

D4. **Contradiction 2**: Lake 2007 has admitted that the metaphysical core of CC*M-Zhongyi/ti* is different from that of Bm. However, Lake, as shown earlier, has not grasped that therefore their respective methodological implications would also differ. TC*M-Zhongyi* theorists and practitioners are then left with the option of living with such a contradiction or that of abandoning the metaphysical core of CC*M-Zhongyi*. The latter option would mean that TC*M-Zhongyi* would have severely compromised, if not totally abandoned, its identity as CC*M-Zhongyi*; an option foisted on it in playing out the role of I*M*.

D5. Hence, TC*M-Zhongyi* can, at best, play a limited hand-maiden role to Bm, at the technical level of efficacity in the use of medicinals as listed under A1 and A2 above but whose efficacity would always be relegated to the **Provisional status** of "scientificity".

Such a relationship between TC*M-Zhongyi* and Bm necessarily privileges Bm/the X partner over TC*M-Zhongyi*/the Y partner. It follows that CC*M-Zhongyi* **does not**, **cannot** and **must not** follow such a path. It follows that the most reasonable strategy to pursue is to permit adequate space for all three medicines in China: Bm, TC*M-Zhongyi* and CC*M-Zhongyi* (two different forms of *Zhongyi*). Certainly, over time and slow processes of development and evolution, there would indeed emerge three distinctive medicines. Following the analytical structure of AM as exhibited in the Emancipation-Haskalah Movement, Bm is equivalent to the dominant European/Christian cultural grouping, TC*M-Zhongyi* (with its contradictions outlined above intact) being analogous to assimilated Jewry in Germany and France under the Emancipation-Haskalah Movement and CC*M-Zhongyi* roughly equivalent to the traditional cultural grouping consisting of those who were outside the German/French Emancipation-Haskalah Movement. If one may use another analogy, this time from the philosophy of zoos, Lee 2006 has argued that zoo animals are a distinctive kind of animal (the analogue of TC*M-Zhongyi*/I*M*) which is neither a domesticated animal, such as cats or dogs nor an animal in the wild such the polar bear in the Arctic. The penguin from Antarctic or the polar bear from the Arctic kept in zoos are no longer wild animals in any sense of the word, as they have been removed from their original ecosystem and put into another entirely different one made to suit our human purpose to exhibit them for entertainment or at best for education – to characterise them as "wild animals in captivity", is a contradiction in term. Analogously, TC*M-Zhongyi* as I*M* is a "species" in its own right, neither Bm nor CC*M-Zhongyi* in any meaningful understanding of that system of *medicine* which has emerged and developed in China for more than two thousand years.

Conclusion

The main points which have emerged from this chapter's exploration may be summarised as follows:

1. It begins by understanding the notion of integration as assimilation in an analogous discourse, namely, political discourse, taking for inspiration the Emancipation-Haskalah Movement in the history of European Jewry (which, however, obtained only in Germany and France). Assessing it from the standpoint of the analytical-structural relationships involved between the Jewish community and the larger/host community, one concludes that the latter is the senior partner (X)/The Coloniser and the former the junior partner (Y)/The Colonised.

2. With this in mind, we then turn to examine two different attempts at constructing the Chinese Project of I*M*, that initiated by Zhang Xichun in the early decades of the 20th century and that under TC*M-Zhongyi* since the 1950s, to see if they can be accommodated within the analytical framework presupposed by the Emancipation-Haskalah movement in Germany and France.

3. It turns out that the Zhang Xichun's project does fit in with the formal analytical structure of AM. The author has looked at Zhang's work *via* the traditional distinction in Chinese culture and civilisation, that between *ti/ben* on the one hand and *yong* on the other, and has concluded that it is a case of *zhong ti xi yong*. This means that *Zhongyi* for Zhang Xichun is X and WM (Western Medicine) is Y, or one could say, more charitably, that *Zhongyi* is *primus inter pares* in respect of MWM. *Zhongyi* at the time when Zhang undertook his research was what today we call CC*M-Zhongyi*; that *medicine*, is wholly *Wholist* in orientation. For Zhang Xichun, then, the aim of his project would have been to produce a version of I*M* in which the "complementary other" would become melded with its senior partner (that is, X which is *Zhongyi* in this context) to form a new kind of seamless *Whole*.

4. It turned out that under Zhang Xichun's project of I*M*, The Coloniser is *Zhongyi* and The Colonised MWM/Bm.

5. However, it turns out that the TC*M-Zhongyi* project as I*M*, whether conducted in China today or outside it (as in the case of Lake) is different from the Zhang Xichun's project in several crucial ways, although it, too, may be said to conform to the formal analytical structure of AM:

   (a) It may be said to be the mirror-image of Zhang's project, as it is a case of *xi ti zhong yong*. This means that Bm is X this time and *Zhongyi* is Y.
   (b) Bm takes the lead and sets the tone; its philosophical foundation (historically and dominantly today) is wholist not Wholist, that is to say it is Reductionist.
   (c) Certain methodological implications follow from Bm's metaphysical core, chief of which is its adherence to the notion of scientificity which privileges the twin Gold standards of RCT-EBM.
   (d) Bm (in the main) rests on Thing-ontology and its model of causation is Humean and linear; CC*M-Zhongyi*, on the other hand, rests on *Process-ontology* and it presupposes non-linear, multi-factorial causation, what this book (following Lee 2017a and Lee 2018) calls Ecosystem *Science*.
   (e) CC*M-Zhongyi* is also *Getihua Medicine*, resting on the axiom of **Axiom of Heterogeneity**; in contrast, RCT-EBM, elevated by BM to be the embodiment of scientificity (X) presuppose the **Axiom of Homogeneity**.
   (f) TC*M-Zhongyi* theorists and practitioners, so far as this author knows, have not confronted the profound differences listed above, head on, for the simple reason that they have failed so far to identify that a serious challenge arising from these differences even exists. How TC*M-Zhongyi* eventually meets this challenge remains to be seen.

6. TC*M-Zhongyi* today, whether in China or outside China, implicitly assigns the role of The Colonised to itself as well as to CC*M-Zhongyi* and that of The Coloniser to Bm/MWM.

7. The only way of avoiding The Colonial Mind-set, in the opinion of this author, is to grant ample space (and resources wherever appropriate) to CC*M-Zhongyi* for it to flourish and to evolve as its practitioners and theorists see fit just as ample space (and resources wherever appropriate) are given to TC*M-Zhongyi* as I*M* to flourish and to evolve as its practitioners and theorists see fit. It is to adhere to ARIIMO.

8. Above all, it means respecting CC*M-Zhongyi*'s distinctive metaphysical/ontological core (its *ti/ben*), its trinity – *shengli-bingli-yili* as **PIT**-ism – which dictates its own distinctive set of criteria for assessing the outcome of treatment/*yili* as indicated under A1-A4 and B1-B7 above.

9. In this sense, what is called for is peaceful co-existence between the two versions of *Zhongyi* (CC*M-Zhongyi* and TC*M-Zhongyi*) with adequate support for both to flourish and to evolve.

10. Were TC*M-Zhongyi*/I*M* to evolve further and further from CC*M-Zhongyi*'s metaphysical/ontological core and its methodological implications, TC*M-Zhongyi* would depart further and further from its historical/ *philosophical*/ cosmological roots and become an even more different "beast" from CC*M-Zhongyi* than it already is today. This author lacks any crystal ball to see into the future as to how it would develop and evolve; however, two main options remain open to it:

   (a) To live with the contradictions identified earlier and carry on regardless.
   (b) To give up, for instance, *Getihua Medicine* and its associated theoretical assumptions and practice in order to remove the contradictions, in which case TC*M-Zhongyi* would be in danger of losing its identity as *Zhongyi* even as *TCM-Zhongyi* today

Chapter Six

Pharmacology: Two Different Philosophies and Methodologies

ACT	Artemisinin Combination Therapy
Bm	Biomedicine
CC*M-Zhongyi*	Classical Chinese *Medicine*
CPT-CCD*P*	Chinese *Philosophy* Tradition-Classical Chinese Daoist *Philosophy*
I*M*	Integrated *Medicine*
MWM	Modern Western Medicine
Pit-ism	Name coined by this author for CC*M-Zhongyi* to refer to the *medicine* combining the principles of *physiology*, theory of illness and principles of treatment
RCT-EBM	Randomised Controlled Trial-Evidence Based Medicine
TC*M-Zhongyi*	Traditional Chinese *Medicine*

Introduction

This chapter examines the philosophy of *pharmacology*/pharmacology as found in CC*M-Zhongyi* on the one hand and TC*M-Zhongyi* conceived as Integrated *Medicine* (I*M*) on the other. The last chapter comes to the conclusion that this I*M* is run along the lines laid down by The Colonial Mind-set, with CC*M-Zhongyi* being relegated the role of The Colonised and Bm the role of The Coloniser; furthermore TCM-*Zhongyi* as IM turns out to be internally inconsistent, having run into contradictions. Will this chapter arrive at a similar conclusion regarding the attempt to marry the *pharmacology* of CCM-*Zhongyi* to that of Bm? Let us begin by looking at CC*M-Zhongyi* and its entailed conception of *pharmacology*.

Pharmacology in CC*M-Zhongyi*

Pharmacological products/medicinals (as treatment) are inextricably entwined with the diagnosis of illness (via what is called *sizhen* 四诊 in CC*M-Zhongyi*;[1] furthermore, medicinals are only one form of treatment used in the light of the diagnosis.[2]

[1] The four methods of diagnosis 四诊 *sizhen* are: 问 *wen* (asking appropriate questions about the patient's history of the illness), 闻 *wen* (a. using the ears to listen to the breathing of the patient, or any other noises made by the patient; b. using the nose to ascertain the smells the patient may be giving off); 看 *kan* (a. looking at the general body-posture, manner of walking and sitting, type of clothing worn; b. observing, for instance, that patient drinks hot water even at the height of the great summer heat; c. 看色 *kanse* looking at the complexion of the patient; d. 舌诊 *shezhen* examining the tongue); 切脉 (taking the *mai* 脉 of the patient to ascertain the state of *Yinyang* in their person-*body* or more specifically in the relevant *organ-systems* of the patient). For details, see Lee 2018, Chapter 8.

[2] After diagnosis, the physician may use one or combine more than one method of treatment. Treatment commonly includes: medicinals which are written out in a prescription (方子 *fangzi*) traditionally requiring decoction; acupuncture 针疗 *zhenliao*; moxibustion 灸疗 *jiuliao*; acupuncture and moxibustion 针灸治疗 *zhenjiu zhiliao*; massage 推拿 *tuina*; cupping 拔火罐 *bahuoguan*; dietary rule and prescription (食养 *shiyang*, 食疗 *shiliao*) Depending on the condition of the individual patient, the physician might advise drinking less alcohol, eat more fruit and vegetables, include some animal proteins in the case of some vegetarians, for the elderly especially to recommend using less oil in the cooking, but more pure sesame oil just before serving up the dish.; take up some form of exercise such as *taiji* 太极; change one's job (if feasible); change one's environment if possible (not necessarily by moving house but improving the environment around the house), try not to get too angry (as excessive anger can damage the *Liver*) and so forth. (For a detailed discussion on *shiyang and shiliao*, see Lee 2018, pp268-275.)

Note that in this long list a good many included have nothing to do with what people not exposed to Chinese culture and its *medicine* would deem to be "medicinal" in the strict sense of the term. Note also that although *Zhongyi* is often referred to

One should always bear in mind that medicinals are prescribed predominantly in the context of *Getihua/ Personalised Medicine*, which rests on the **Axiom of Heterogeneity**.[3] Imagine two patients presenting themselves to the physician.[4] From one point of view, it is correct to observe that they both suffer from the same condition as each has been exposed to the same external pathogenic factor (what in CC*M-Zhongyi* is called 外邪 *waixie*, that is, to the same flu virus in the language of Biomedical discourse) and have been infected. In the context of a Bm consultation, the doctor would prescribe the same drug commonly expected to get rid of the virus. However, in the context of a CC*M-Zhongyi* consultation, two things of note should be observed:

(a) Patients today influenced by Bm usually go to see a physician armed with some Bm documents which often include X-rays or even more high-tech scans, readings about blood pressure, laboratory reports about a variety of biochemical factors found in the blood or urine samples submitted. The physician usually politely acknowledges these kinds of evidence about what could be wrong with them; strictly speaking, from the vantage point of CC*M-Zhongyi*, they are neither here nor there, as diagnosis takes place within a very different theoretical and methodological framework.

In our thought experiment about our two flu patients, the physician diagnoses each of them not simply as individuals bearing the same so-called *waixie*, but also and most importantly how the *waixie* may have interacted with the 内邪 *neixie* (the internal pathological condition of their person-*body*[5], so to speak) which each patient may present. For instance, Patient A, a female, on diagnosis based on *sizhen*, turns out to be hot-tempered, impulsive, has suffered for years from throat problems, with her tonsils flaring up from time to time since her childhood, and the catarrh she spews forth is deep yellow – this set of circumstances may be said to constitute her *neixie*. The interplay between her *waixie* and her *neixie* leads the physician to diagnose the patient to suffer from 风热外感 *fengre-waigan* / "wind-hot" flu, from 阴虚阳亢 *yinxu-yangkang*/*yin* deficiency with excess *yang*. In other words, one could classify this flu patient as a case of *rezheng*. So, to restore *Yinyang* balance in her person-*body*, the physician prescribes her medicinals with bitter cooling/辛凉 *xinliang* properties to reduce her excess *yang*.

On the other hand, the physician discovers that Patient B is someone with an introverted disposition who confirms that he has always suffered from cold extremities. After *sizhen*, the physician diagnoses this flu patient as a case of 风寒外感 *fenghan-waigan*/ "wind-cold" flu, 阳虚阴盛 *yangxu--yinsheng*/*yang* deficiency with excess *yin*. In other words, this patient appears to be a case of *hanzheng*, in contrast to Patient A. The physician, therefore, prescribes medicinals with bitter warming /辛温 *xinwen* properties to restore *Yinyang* balance in the person-*body*.

(b) It follows from (a) above that in principle CC*M-Zhongyi* is capable of treating an illness irrespective of knowledge (using the language of today's Bm's discourse) of the cause in terms of a disease-entity[6] such as a harmful bacterium, a virus, a piece of genetic material, a prion, poison and so forth. All that the physician needs to be sure of is the 证 *zheng* (syndrome or pattern differentiation) of the patient via *sizhen*. This sounds a rich boast or even absurd claim to make; yet it is but the conclusion of following the logic of CC*M-Zhongyi* in its diagnostic methods and the methodological implications which follow from its theoretical/*philosophical* core.

Examples from the history of CC*M-Zhongyi* bear out this seemingly absurd claim.[7] Let us touch briefly on the work of two distinguished physicians. An amusing case concerns the Ming dynasty Miao Xiyong 繆希雍 (1546-1627) who successfully treated a friend who suffered mysteriously from severe and debilitating bouts of diarrhoea without knowing what had caused and brought on the attacks. Through *sizhen*, he became convinced that it was a case of *rezheng* and hence, prescribed accordingly to clear his person-body of the excess *yang*. The diarrhoea bouts stopped; his friend recovered but Miao Xiyong advised him to refrain from sexual indulgence for at least a year as his person-body was very weak. As a result, friend dispersed his concubines or secondary wives. After the dispersal, a servant of the household then told the family that the master had been poisoned by a disgruntled concubine with croton 巴豆 *badou*/Crotonis Semen.

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as "herbal medicine" in translation, strictly speaking this kind of translation is incorrect. It is true that the overwhelming medicinals are plants; however, medicinals can also include animal parts as well as minerals (such as gypsum).

[3] This, however, does not mean that CC*M-Zhongyi* dispenses entirely with mass-produced medicines (群体 化治疗 *quntihua* treatment). In an epidemic such as seasonal flu or in mild cases under normal circumstances, the first port of call would be the local pharmacy for such products. When the illness persists, then the sufferers would see a physician for *getihua* consultation.

[4] See *Hao 2011 for an account of two such patients who consulted him during a flu epidemic in Beijing.

[5] The use of the term "person-*body*" is highly significant for C*P*T and CC*M-Zhongy*i; its significance will be explored in Chapter Eight of this book.

[6] See Lee 2012b, Chapter 10 for a detailed account and critique of the Age of Bacteriology and the emergence of the Monogenic Conception of Disease and of the concept of disease-entity, what Lee 2017a calls Thing-ontology.

[7] For a detailed account see Lee 2018, Chapter 9, especially pp301-315.

The second eminent physician lived in the 19th century, during the Qing dynasty. He is 王孟英 Wang Mengying (1808-1869?) who is recorded as having successfully treated three cases of malaria which the Chinese commonly called 打摆子 *dabaizi* for the simple reason that sufferers would suddenly feel very hot, then suddenly very cold, a variation occurring with regularity. His treatment via medicinals was very different in each of the three cases, as *fangzi*/prescriptions were worked out according to the outcome of *sizhen*, each addressing the specificities of the patient, the interplay between the *waixie* and the *neixie*. Wang Mengying's dates show that he existed well before any Biomedical breakthrough in understanding the nature of malaria and the disease-entity causing it. For instance, Charles Louis Alphonse Lavaran only discovered the existence of the malaria parasite in the blood of a sufferer on 6 November 1880; Ronald Ross did not make his landmark discovery that malaria is propagated by the anopheline mosquito till 1897 when he found the malaria parasite *Plasmodium falciparium* in the contents of the stomach of such a mosquito which he dissected.

Wang Mengying is also recorded as having successfully treated three cases of cholera during an epidemic in Hangzhou in the summer of 1837. Again, he treated them with very different *fangzi* based on his judgment as to the *zheng* exhibited by the patients. His successful treatments well preceded the discovery of the bacterium, *Vibrio cholerae*,[8] at first wrongly attributed to the great pioneer of Bacteriology, Robert Koch in 1883-1884, when in reality, it had already been discovered in 1854 by a humble Italian scientist called Filippo Pacini (1812-1883) to whom official recognition of his discovery was not made till 1965, some eight decades after his death.

Pharmacology in Bm

We need to pause our analysis of the concept of *pharmacology* in CC*M-Zhongyi* for now in order to elucidate Bm's understanding of it before we can continue to give a comparative assessment of the two systems. In this section, we propose to take as an exemplar the "discovery" of *qinghaosu* 青蒿素/artemisinin by Tu Youyou for which she was awarded the Nobel Prize in Medicine in 2015 as already referred to in Chapter One.

The first significant "discovery" in the history of MWM/Bm can be said to date from the Spanish conquest of South America. The Jesuits followed immediately in the footstep of the military, this time to convert souls rather than to grab the territories of the pagans. They found that the Quecha people, indigenous to what today we call Peru and Bolivia used the bark of the cinchona tree to treat malaria. The priests brought the bark back to Europe in the 17th century which was first used to treat the disease in Rome in 1631. Much later, in 1820, the cinchona bark was transformed into the *Materia Medica* of MWM/Bm when two French scientists (pharmacists and chemists), Pierre Joseph Pelletier (1788-1842) and Joseph Bienaimé Caventou (1795-1877) isolated the active ingredient of the bark and called it quinine. The pair also isolated chlorophyll from plants, needed in the process of photosynthesis, amongst other contributions to science.

An important comment is called for straightaway: The Jesuits were attributed the status of "discoverer" of the cinchona bark as treatment for malaria (Claim A). In what sense have they discovered Claim A? Only in the sense that they tumbled across the phenomenon that the Quecha people had been using the bark to treat the disease since time immemorial. Hence, the Quecha people should be attributed the prestige of being the real discoverer of Claim A, not the Jesuits. In other words, the Jesuits and their backers (Christians in general, Kings, dukes and nobilities of Western Europe in particular) operated with The Colonial Mind-set and naturally assigned to themselves the superior role of The Coloniser and the inferior role of The Colonised to non-European Others.

Quinine from the cinchona bark had been the medicine of choice to treat malaria until the 1920s when chloroquine, a synthetic drug emerged to displace its prominence; however, it turned out that the mosquito soon developed resistance to chloroquine, rendering the drug useless. Malaria is endemic in South America and South East Asia. We next jump several centuries to more recent times – the time of the Vietnam War (1955-1975). Soldiers, even native ones, were falling prey to the disease. The North Vietnamese appealed to China to try to find an alternative effective drug. Mao Zedong ordered such a search. Some 500 Chinese researchers worked on this project whether from the standpoint of Biomedical pharmacology or from that of TC*M-Zhongyi.* Tu Youyou was one of those researchers who turned her attention to the latter domain, as she has been trained in both medicines. She and her team eventually succeeded in identifying the plant Herba Artemisiae Annuae/青蒿/*qinghao*, commonly called sweet wormwood. By carefully going through the *medical* texts of the ages, the research team managed to find the plant mentioned in a prescription for febrile conditions typical of malaria in a fourth century text, 《肘後备急方》*Zhou hou beiji fang*/*A Handbook of Prescriptions for Emergencies*, the work of the well-known alchemist-cum-physician, Ge Hong/葛洪 (c 284-346 CE).[9]

[8] It is true that in more recent times when SARS-CoV-1 (2003) and SARS-CoV-2 (2020) emerged, advances in Biotechnology developments in Molecular/ DNA genetics have permitted scientists to uncover their respective genomes in record quick time. However, just to labour a point – this Biomedical feat, as such, is not central to the pre-occupation of CC*M-Zhongyi.*

[9] This text also mentioned medicinals in treating smallpox, typhoid and dysentery – see Hanson 2015.

However, the re-discovery of the plant Herba Artemisiae Annuae for Bm and its Pharmacology is only the first step in exploiting the plant for its own use. To such an end, The Coloniser must manipulate it in such a way as to make it conform to its theoretical/philosophical and methodological requirements. As this philosophy of Pharmacology is a Reductionist one, the entire plant must be stripped of all other components and properties except its active ingredient which is artemisinin/青蒿素 *qinghaosu*. In this sense, artemisinin, indeed, is a new pharmacological product, very different from the medicinal plant *qinghao* itself. Given that its emergence is the result of using the philosophical/theoretical assumptions of a medicine which is very different from those of CC*M-Zhongyi*, using the technology entailed by such a system of medicine, as well as the fact that artemisinin is not found as such in the greater environment, but only in pharmacology labs, it may be correct to call artemisinin an invention (biotechnological variety) than a discovery. The language of discovery may be more appropriately confined to those things/items in the world which previous to their discovery, humankind have not known of their existence before. Not many such items qualify as Planet Earth have been inhabited by Humankind down the millennia – Europeans until the Age of Modernity might not have known of their existence (and in accordance with their Colonial Mind-set call them "discoveries") when in reality, non-European Others have long realised their existence. For instance, the so-called New World – America (North and South), Australasia – have long been inhabited before Cortez, Captain Cook and others (even including the Vikings, in the case of North America well before the Age of Modernity) came from across the oceans to such territories. The Age of Modernity could, however, be credited with the discovery of Antarctica as well as some very deep caves in certain parts of the world.

Although the Nobel Prize came more than forty years after the event, it heralded a new era when both The Coloniser (Bm) as well as The Colonised (the adherents of TC*M-Zhongyi*) come to regard Chinese *Materia Medica* as a rich seam for the pharmacological industry to mine. There is even such a subject called ethno-botany dedicated to such a task with pharmaceutical corporations investing in this potentially rich source of *Materia Medica* waiting for their exploitation. Indeed, this mining is done with the following justification: the non-Biomedical use of medicinals is at best "primitive", "crude", "unrefined", "low grade empirical data" or even dangerous (麻黄 *mahuang*/Herba Ephedrae is officially so regarded by the FDA in the USA), or at worst "unscientific". The original medicinal after all is not uniform (as it is a plant and plants even if genetically engineered to have identical genomes may turn out to differ from one another owing to some differences in their environments), and naturally, the amount of the so-called active ingredient is not identical. In other words, the "unscientific" *qinghao* must be transformed to become the "scientific" artemisinin/青蒿素 *qinghaosu* by undergoing the reductionist procedure mentioned above, using ether to isolate the active ingredient.[10] It is obvious that Biomedical Pharmacology uses its own criterion of efficacity which has nothing to do with the notion as understood by *CCM-Zhongyi* in its use of medicinals in *fangzi*; *ex hypothesi*, *fangzi* even if declared to be efficacious and invoked down the millennia are not "scientific" in the eyes of Biomedical Pharmacology which relies on RCT-EBM, the twin Gold Standards of efficacity and scientificity. It is not surprising then that no one in the Biomedical establishment seems to find it pertinent to recognise that historically the medicinal must have proved efficacious, otherwise why should Ge Hong, one thousand seven hundred years ago, have recorded it as treatment for malaria, or that presumably physicians after him have continued to use it down the centuries, even if such usage is not recorded in the literature available to historians today. Commentators appear systematically to have ignored this history, *philosophy* and methodology and simplistically celebratde the reductionist product itself.

However, this is not to deny that that reductionist product has indeed done a great deal of good, saved lots of suffering and lives ever since it was introduced as the medicine of choice to treat malaria. Nor is it to deny that Tu richly deserves the award of the Nobel Prize. It simply draws attention to the rich irony involved and the inherent problems embedded in the reductionist framework of Biomedical Pharmacology when it mines the *Materia Medica* which belong to another tradition of *medicine*. The award may be considered to be long-delayed, though perhaps not long in the history of decision-making of the Nobel Awards Committees, but long in terms of the fate of artemisinin and its potency as a "magic bullet" against malaria. Ironically, by 2015, there is plenty of evidence that the drug's efficacy is no longer proof against the parasite's evolved resistance to it, not to mention that the female Anopheles mosquito, which hosts the main offending parasite, *Plasmodium falciparum* and spreads it, has also evolved to meet the challenge posed to its existence by insecticides. Evolution of drug resistance, in the history of fighting malaria, had already once before reared its ugly head, as earlier observed – the parasite had rendered chloroquine useless by the 1960s. The Reductionist strategy of Biomedical Pharmacology appears time and again to have run into a brick wall.

What to do with Artemisinin in the face of failure?

Fortunately, Tu 2011 points out that the work of herself and other Chinese researchers have convinced WHO (by 2005) that the way forward is *via* what is called Artemisinin Combination Therapy (ACTs), as an analogue to the

[10] See Tu 2011 and 2015 as well as Rao *et al*. 2016 for details of this procedure.

complex composition of *fangzi* – these combine two active ingredients with different mechanisms of actions. WHO currently recommends five ACTs; which is selected depends on the local strains of the offending parasite. ACTs as first-line treatment have been adopted as policy in 79 countries by 2013 – see WHO 2015. Is this move sufficient to hold back the curse of the parasite developing drug resistance? Alas, the latest monitoring and research show that ACTs are running into difficulties. It appears that the parasite is fighting back –see Mbengue 2015; Tun 2015; Dondrop 2009; Taylor 2009. The hypothesis that active ingredients *per se* (even used together in combination therapies) may lend themselves easy prey to the evolution of drug resistance should not be cavalierly dismissed, as Tu 2011, herself hints (but without spelling it out) as towards the end of her essay, she writes:

> However, the use of a single herb for the treatment of a specific disease is rare in Chinese medicine. Generally, the treatment is determined by a holistic characterization of the patient's syndrome, and a prescription comprises a group of herbs specifically tailored to the syndrome. The rich correlations between syndromes and prescriptions have fuelled the advancement of Chinese medicine for thousands of years.

Biomedicine should do well to pay heed to her intimation as to where the problem could lie.[11]

CC*M-Zhongyi:* Its *Philosophy of Pharmacology*

We have already observed that CC*M-Zhongyi* is *getihua medicine/Personalised Medicine* presupposing the **Axiom of Heterogeneity**. We now return to a brief account of its *Philosophy of Pharmacology* under two aspects: (a) a general outline of the composition of *fangzi*; (b) through deconstructing a prescription/*fangzi*.

A *fang*, as already emphasised, is addressed to a *zheng*. A *fang*, in general, consists of several medicinals each of which falls into the four categories mentioned below:

Category A	Sovereign Medicinals 君药 *junyao*
Category B	Ministerial Medicinals 臣药 *chenyao*
Category C	Assistant Medicinals 佐药 *zuoyao*
Category D	Ambassadorial Medicinals 使药 *shiyao*

Let us take a *fang* which lists many medicinals, not because in general *fangzi* use so many, but just for the purpose of illustrating the nature of *fangzi* and what each category of medicinals is expected to do to the patient's person-*body* in terms of treatment.

This particular *fang* is a classical prescription/经方 *jingfang* as it is found in the work of a very distinguished physician-scholar of the Han dynasty, Zhang Zhongjing who invoked it in his 《金贵要略》*Jinguiyaolü*/*Essential Prescriptions of the Golden Coffer*. It is called 温经汤 *wenjingtang*, an interior-warming formula, invoked in the context of female patients suffering from menorrhagia (excessive uterine bleeding).[12] According to CC*M-Zhongyi*, this condition may causally be traced to three basic factors: blood stasis/瘀血 *yuxue*, *Qi* stagnation/气滞 *qizhi*, congealing due to cold/寒凝 *hanning*.[13]

Let us see how this *wenjingtang* (the medicinals in its composition) could help to eliminate the condition. This *fang* is addressed to a *zheng* where congealing is closely related to blood stasis and *Qi* stagnation, brought about because two of the eight Extraordinary *jingmai* (经脉, usually translated as "meridians" or "channels") – the *chong mai*/冲脉 and the *ren mai*/仁脉[14] – are in state of deficiency and cold/虚寒 *xuhan*. The former is the meeting point of 气血 *qixue*/*qi*-and-blood, and hence is regarded as the Sea of Blood/血海 *xuehai*; the latter is in charge of the uterus. In the female, the relationship between these two *jingmai* and menstruation is an extremely intimate one – gynaecological illnesses, from infertility to amenorrhea, dysmenorrhea, menorrhagia, and so on could be traced to mal-functioning of the two *jingmai*. When these are cold and deficient in *yangqi*, blood congeals, with blood stasis causing stagnation; in turn, such conditions lead to menstrual pain as the flow of blood would not be smooth. By warming the *jingmai*, thus eliminating cold as well as nourishing blood while getting rid of blood stasis at the same time, condition of patient would improve.

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[11] Tu worked within the TCM-*Zhongyi* rather than the CC*M-Zhongyi* framework; her remark here, however, shows that on this point, she sees eye to eye with CC*M-Zhongyi*.

[12] Actually, there are two other similar "prestigious" prescriptions which are said to produce effective results in treatment.

[13] According to Bm, it could be brought on by the growth of fibroids in the uterus; this form of menorrhagia is called endometrial hyperplasia which may or may not involve uterine cancer. In the case of women who have completed their family or who have no intention of wanting children or another child, Bm would recommend hysterectomy.

[14] For some further details. See Lee 2018, Chapter 2.

The *fang* is composed of twelve medicinals for decoction; their respective dosages (in today's measuring system) are given below:

1.吴茱萸 9g	*wuzhuyu*	*Fructus Evodiae*
2.桂枝 6g	*guizhi*	*Ramulus cinnamomi*
3.当归 6 g	*danggui*	*Radix angelicae sinensis*
4.川芎 6g	*chuanxiong*	*Rhizoma ligustici Chuanxiong*
5.芍药 6g	*shaoyao*	*Paeonia lactiflora*
6.牡丹皮 6g	*moudanpi*	*Cortex moutan radicis*
7.阿胶 6g	*ejiao*	ass hide glue
8.麦冬 9g	*maidong*	*Radix ophiopogonis*
9. 人参 6g	*renshen*	*Radix ginseng*
10.甘草 6g	*gancao*	R*adix glycyrrhizae*
11.半夏 6g	*banxia*	*Rhizome pineliae*
12. 生姜 6g	fresh ginger	*Zingiber offiicnale Roscoe*

These may be analysed under four categories:

Category A: Medicinal 1 is an interior-warming medicinal which enters **Liver-Stomach** and **Kidney** *jingmai*. Its flavour is hot and bitter 辛苦/*xin ku* – as such, it can perform the functions of dispelling/散 *san* as well as expelling/泄 *xie*. Its warming property/大热 can get rid of pathogenic cold. For all these reasons, it can get rid of menstrual pain. Medicinal 2 is also warming and can therefore dispel pathogenic cold, enabling blood to flow smoothly. Together, they may be called Sovereign Medicinals/君药.

Category B: Medicinals 3, 4 and 5 enter **Liver** *jingmai*; they can enliven and nourish blood and get rid of blood stasis. Medicinal 6 enters **Liver** and **Heart** *jingmai* and can also enliven blood, eliminate blood stasis as well as get rid of a rise in person-*body* temperature owing to deficiency in *qixue* and/or *yangqi*, in *yinqi*/虚热 *xure*. These may be called Ministerial Medicinals /臣药.

Category C: Medicinal 7 tends to *yin* and can nourish blood in **Liver** as well as **Kidney** *yin*, thereby lessening (internal) dryness. Medicinal 8 is mildly cold and can nourish *yin* as well as clear *xure*. They help Medicinal 1 and 2 to lessen dryness. Medicinals 9 and 10 enter **Spleen**, and can nourish *Qi*. Medicinal 11 enters **Spleen-Stomach** organ-system; together with Medicinals 9 and 10, it can strengthen **Spleen-Stomach**, thereby helping to get rid of blood stasis. Medicinal 12, being bitter and warming can warm the inside and dispel cold; together with Medicinal 11, it can warm the centre and harmonise **Stomach**. This group may be called "Assistant" Medicinals /佐药.

Category D: Medicinal 10 may be singled out to put under a special category in its own right, as it is a medicinal which enters into almost all prescriptions – it has the overall function of harmonising all the other medicinals in a particular *fang*. Hence it may be called "Ambassadorial" Medicinal/使 药.

All in all, this *fang* can warm and nourish *Qi* and *xue* as well as expel blood stasis; at the same time, it is 补药 *buyao*/supplementing medicinals, relying on those with warming properties, but not over-doing the warming by generating dryness instead. In other words, it is typically a *fang* which can be said to satisfy the *Daojia* 道家 ideal of combining polar opposites as a harmonious *Whole*, such as combining hard and soft/刚柔 *gangrou* and in this case hot/dry on the one hand and cold/wet (or moist) on the other. In other words, it is crucial to grasp that although a *fang* such as the above consists of numerous medicinals, each with its own respective properties and function, nevertheless, these medicinals should not be regarded as separate causal items. The efficacy of a *fang* is the effect of *Fang-Wholism*. It follows that it should be regarded as a single treatment, and not twelve different *medical* interventions just simply because the *fang* is composed of twelve different medicinals. In the same way, when several acupuncture points are chosen to treat a particular condition of a particular patient, the insertion of these needles should not be understood as different *medical* interventions but as a single treatment from the *Wholist* standpoint.[15]

[15] The reader should always bear in mind that CC*M-Zhongyi* is embedded in C*P*T-CCD*P* in particular and Chinese culture in general which are utterly *Wholist* in orientation.

Conclusion

One has no choice but to conclude that Biomedical Pharmacology and CC*M-Zhongyi Pharmacology* are very different in character and orientation, as these two philosophies and methodologies of pharmacology follow from the theoretical core of their respective medicines. Just as Bm and CC*M-Zhongyi* are not reconcilable, so neither are the two pharmacologies.

The key differences between the two pharmacologies which the reader ought to bear in mind are the following main points:

1. Biomedical Pharmacology by and large invokes one drug which is the active ingredient derived from one item, say, a plant. Artemisinin/*qinghaosu* is, therefore, a paradigm case of such a drug, as it is the active ingredient derived from the whole *qinghao* plant. It is doubly reductionist in its methodology – not only does it involve only one selected item but that item is pared down to its so-called active ingredient, all other parts and properties of the whole plant are considered as superfluous and irrelevant.

2. CC*M-Zhongyi Pharmacology* is resolutely *Wholist* in its methodological character as it is embedded in C*P*T-CCD*P* in particular and Chinese culture in general which are utterly *Wholist* in orientation. A *fangzi***,** in general, contains more than one medicinal; medicinals are identified in terms of four categories which a *fangzi* strives to cover; the medicinals are usually based on the whole plant, or distinct parts of a plant such as its roots, its leaves, its stems (in the case of herbal medicinals)[16]. Reductionism of a medicinal to its active ingredient would be anathema to it.

3. Bm Pharmacology is entailed by a medicine which subscribes to the Monogenic Conception of Disease (one disease, one cause since the Age of Bacteriology); in its Clinical Medicine, it subscribes to a Humean linear model of Monofactorial Causation, to Thing-ontology. Eventually it also ushered in the age of the "magic bullet" in 1909 when Paul Ehrlich and Sahachiro Hata demonstrated that Salvarsan, an arsenical compound, could kill the spirochete of syphilis. Koch's own vaccine, tuberculin, against tuberculosis turned out to be a failure; however, in 1946, streptomycin, an antibiotic did the trick, following the chance discovery of penicillin in 1928 by Alexander Fleming. Post WWII, Bm and its pharmacology have come to be hailed a "golden age" for nearly half a century until the appearance of resistance to antibiotics owing to over-use of it.

4. CC*M-Zhongyi Pharmacology* is embedded in a *medicine* which, implicitly (a) exemplifies *Ecosystem Science*, (b) invokes a Non-liner Multi-factorial Model of Causation, (c) adheres to *Qi-Wholism* (embracing both *Qi*-in-dissipating mode and *Qi*-in-concentrating mode and hence, invoking *Process-ontology cum Thing-ontology*).

   CC*M-Zhongyi*, unlike Bm, is more focused on *physiology* (*Process-ontology*) rather than on *anatomy* (*Thing-ontology*). It rests on **PIT**-ism, instantiates *Getihua Medicine* and presupposes the **Axiom of Heterogeneity** as shown in Chapter Five of this book. In contrast, Bm presupposes the **Axiom of Homogeneity** and elevates **RCT-EBM** as its Gold Standards as Chapter Five has also demonstrated.

[16] Animal medicinals are either whole if the animal is small, such as silkworms or small snakes (when snakes are marinated in wine, such as the famous five snakes medicinal wine) or a part of a larger animal when a specific part of such an animal is considered to be medically efficacious – for instance the horns of the rhinoceros are thus considered with the grave consequence that the different species of rhinoceros are in grave danger of being hunted to extinction, if extinction has not already occurred.

PART IV

Potential for Compatibility and Harmonisation?

Chapter Seven

Human Biology and The Integrated Systems Approach

ARIIMO	Axiom Respecting the Identity and Integrity of the Medical Other
AM	Assimilation Model (of Integration)
Bm	Biomedicine
CC*M*	Classical Chinese *Medicine*
CC*M-Zhongyi*	Classical Chinese *Medicine*
DFCM	Definition of "failure" as endorsed by The Colonial Mind-set
DNA	Deoxyribonucleic Acid
EMBL-EBI	European Molecular Biology Laboratory-European Bioinformatics Institute
HGP	Human Genome Project
I*M*	Integrated *Medicine* (integrating TC*M-Zhongyi* with Bm)
ISB	Institute of Systems Biology
MS	mass spectrometry
MWS	Modern Western Science
NMR	nuclear magnetic resonance spectroscopy
PAH	defective gene which makes individual unable to produce the enzyme, phenylalanine hydroxylase
PKU	Phenylketonuria
RCT	Randomised Controlled Trial
RNA	Ribonucleic Acid
TC*M*	Traditional Chinese *Medicine*
TC*M-Zhongyi*	Traditional Chinese *Medicine*

Introduction

To understand the emergence of the conception of Human Biology in terms of the Integrated Systems Approach, one must talk briefly about the Human Genome Project (HGP), a 15-year programme which began in 1990 and was completed in 2004, a year ahead of schedule. The HGP itself grew out of the discovery of the double helix structure of the DNA molecule, commonly attributed to Crick and Watson in 1953.[1] A key component of the HGP included sequencing the smaller genomes of certain organisms such as yeast (Saccharomyces cerevisiae), a plant called (Arabidopsis thaliana), the fruit fly (Drosophila melanogaster) and the roundworm (Caenorhabditis elegans), before investigating the human genome itself. The results of these non-human genome investigation are as follows:

C. elegans: 20,000
Drosophila melanogaster: 14,000
Arabidopsis thaliana: 57
Saccharomyces cerevisiae: 6,607

The roundworm which lives in temperate soil environments (*C. elegans*) is about 1 mm in length and has 20,000 genes; surely humans who are much larger and infinitely more complex in all ways must have many more genes. This thinking seemed reasonable and so the HGP began with the assumption that the human genome contained 100,000 protein-coding genes. However, as work progressed in the 1990s, this estimate was revised somewhat downwards to between 50,000 – 100,000 genes. In 2004, the HGP ended up with something like 24,000 protein-coding genes. Today, the actual figure seems to vary depending on the site and source consulted; hence, it may be safer to say that there are either between 20,000 – 25000 or 20,000 – 30,000. Also bear in mind that current gene catalogues contain more RNA genes than protein-coding DNA genes – see Salzberg 2018. In other words, the whole subject is not as clear-cut as one might expect.

Even granted that there could be as many as 30,000 genes in the human genome, how could such a number account for the actual behaviour displayed by us humans, as organisms? What exactly is the relationship between the so-called genotype and the phenotype? The study of genetics, whether Mendelian or Molecular, has prompted two

[1] Rosalind Franklin is not normally acknowledged in spite of her crucial work in crystallography, although her pupil, Maurice Wilkins was awarded the Nobel Prize in 1962 together with Crick and Watson. Franklin died young in 1958, at the age of 38. See Lee 2005, Chapter 4.

responses to the question: on the one hand, genetic determinism and on the other, its rejection.[2] These dichotomous stances are easily grasped in the context of human diseases. The former is impressed by the fact that some diseases are caused by single genes, such as Down Syndrome,[3] or cystic fibrosis.[4] Other single gene or monogenic disorders include sickle cell disease, muscular dystrophy, Huntingdon disease and Fragile X syndrome. However, such disorders are said not to be common, in spite of the fact that several thousands are known to exist. Although disorders may be caused by single faulty genes, it does not mean that the disease would necessarily manifest itself – Phenylketonuria (PKU) is one such instance.[5] In many countries, infants when born are tested to see if they have inherited this condition and in the rare cases where they have, their parents are immediately advised to put the child on a diet (probably lasting a life time) to avoid foods which are rich in phenylalanine, as the inherited defective gene means that the body cannot make an enzyme called phenylalanine hydroxylase (PAH, for short), an enzyme necessary for converting the amino acid phenylalanine into other substances the body needs. The defective PAH gene then leads to the accumulation of the amino acid in the blood, causing a whole range of conditions (intellectual disability, delayed development, behavioural and social problems, psychiatric disorders and so forth), from mild to severe. In other words, the disease will manifest itself or the gene would only be "activated"/expressed in the presence of certain adverse environmental factors.

This understanding goes hand in hand with what is called multi-factorial inheritance (or polygenic) disorders, such as heart disease, diabetes, obesity and most cancers. These are caused by a combination of small inherited variations in genes but acting in conjunction with certain adverse environmental factors.

Genes are embedded in cells; we also know that the internal as well as the external environment of a cell can affect which genes are "turned on", so to speak. For instance, hormones can "tell" a cell to activate a specific gene (internal environmental factor)[6]; outside temperature can change the fur colour in rabbits (external environmental factor).[7]

The complexities above are reflected in the figure below:

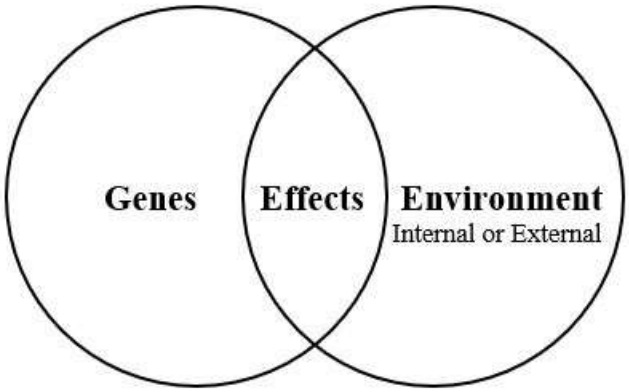

Figure 7.1 Genes interacting with environmental factors, internal and/or external

Not only do genes interact with the external larger environment or with the internal environment of the body in producing certain phenotypical changes and characteristics, they are also related with one another in a complex manner, as shown in the figure below.

[2] In political discourse, the dichotomous stance appears to be starkly adhered to – it is sometimes referred to as the Nature versus Culture debate, especially over the characteristic of intelligence. Those who uphold the Nature stance claim at least imply that intelligence is something one is born with, as part of one's natal genetic endowment. Those who disagree, opting for the other extreme, maintain that intelligence has nothing to do with genes but only with education, upbringing and the environment in general in which people are brought up. The former stance was/is normally associated with the right of the political spectrum and the latter with the left. The former response is also sometimes associated with expressions of racism.

[3] This is caused by an error in the process of cell division during foetal development, resulting in an extra full or partial copy of chromosome 21. This type of Down syndrome is called trisomy 21, accounting for 95% of cases.

[4] It is a condition caused by a faulty gene which affects the movement of salt and water in and out of cells, resulting in the body's tubes and passageways (lungs and digestive organs) being filled up with thick, sticky mucus. There is no cure but the disease can be managed.

[5] PKU is what is called an autosomal recessive metabolic genetic disorder. As such it requires two PKU alleles (one from each parent) to be present in an individual before s/he would experience symptoms of the disease.

[6] See Ing 2005 for a review of the literature on how steroid hormones regulate gene expression.

[7] An experiment used to demonstrate this: an ice pack was strapped to the back of a rabbit with white body fur. At the end of the experiment, when the ice pack was removed, one would find that the rabbit had a patch of much darker fur on its back in exactly the place where the ice pack was. See Role of Environmental Factors in Gene Expression 2012.

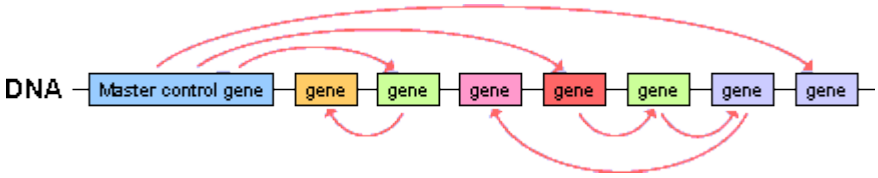

Figure 7.2 Complex inter-relationships between genes[8]

The concept of a master control gene is invoked in developmental biology – a single gene whose expression constitutes the necessary and sufficient conditions for activating many other genes in a co-ordinated manner, ultimately leading to a specific tissue or organ being developed. Pax-6 is said to be such a gene which triggers development of the eye. However, it bears labouring the point that development of cell, tissue, organs, whole organism depends on more than the existence of genes, as the environment, both internal and external plays a critical role in human biology in particular and in biology in general.

Complexity in Human Biological Systems vs Reductionist Simplicity

As already observed, DNA/Molecular Genetics has prompted two opposing approaches to understanding human biology: Gene Reductionism (or genetic determinism) on the one hand and Integrated Systems Approach on the other, as shown in Text Boxes 7.1a and 7.1b.

The Reductionist Approach

Metaphysics of Reductionist Biology

A whole is no more than the sum of its component parts – call this "whole"/ "wholism"

The metaphysics of wholism goes hand in hand with an over-arching Reductionist Methodology: higher levels of organisation (structure and/or function) must be reduced with no remainder to the sum of the structure and/or function of component parts at lower levels of organisation. Let this be represented by a downward pointing arrow:

↓

There are no emergent properties

Body/Organism
↓Organs
↓Tissues
↓Cells
↓Molecules (DNA – deoxyribonucleic acid)
↓Atoms (phosphorus, nitrogen, oxygen, carbon)

Monofactorial, Linear Model of Causality: one cause leading to one effect
Cause → Effect

Text Box 7.1a The Reductionist Approach
The downward pointing arrow means that happenings at the atomic level (the lowest level) constitutes both the necessary and sufficient conditions to explain the behaviour of the Organism (the highest level)
Linear Model of Causation: causal arrow → is unidirectional
Unidirectional arrow also accounts for the "manufacture" of different body components: atoms and molecules of chemicals in genes make specific Proteins, which in turn make Cells, and so forth
One Gene, One phenotypical Effect
See also Noble 2006, Figure 1 for an analogous though different way of presenting the same concept

[8] This figure has been downloaded from: https://evolution.berkeley.edu/evolibrary/images/evo/control_gene.gif.

The Integrated Systems Approach

Metaphysics of Systems Biology

A Whole is different from or more than the sum of its component parts – call this "Whole"/"Wholism"

The metaphysics of Wholism goes hand in hand with a Non-reductionist Methodology: higher levels of organisation (structure and function) cannot be reduced without remainder to the sum of the structure and function of component parts at lower levels of organisation. Let this be represented by the bi-directional arrow:

↕

There are emergent properties[a] arising from the complex causal inter-relationships between component parts of the Whole (synergism, reciprocity, feedback loops)[b] invoking a Non-linear Multi-factorial Model of Causality

Body (Network of Networks)
↕Populations also necessarily embedded in ecological environments
↕Populations necessarily embedded within social/cultural environments
↕Bodies/Organisms (each body containing trillions of cells) forming a population
↕Organs
↕Tissues
↕Cells (Genes in nucleus of each cell)
↕Molecules (DNA in chromosomes, genes)
↕Atoms (phosphorus, nitrogen, oxygen, carbon in DNA's deoxyribonucleic acid)

Text Box 7.1b The Integrated Systems Approach

[a] Emergence: examples of emergent properties include (human) consciousness and memory (see Chapter Eight of this book, Churchland 1986, Kim 2005, Clayton 2004, Clayton and Davies 2006); in non-human organisation, an ant colony; at the level of atoms in chemistry, H_2O or Sodium Chloride (common salt, NaCl,) formed by combining hydrochloric acid (HCl) with Sodium Hydroxide (NaOH), two very dangerous chemicals for humans each separately in their own rights, yet their combined products, salt and water, are harmless and even necessary for human survival..

[b] Synergism: if two relevant causal variables obtain, their total causal effects is greater than the sum of each acting in isolation
Reciprocity: where the causal arrows between two relevant variables (x & y) are bi-directional, with x and y causally impacting on each other
Feedback loops: negative feedback mechanisms return the system to equilibrium upon perturbation; positive feedback mechanisms, upon perturbation, move system to a new context of existence and operation
See Lee 1989a/2020, 63-70.
The term "Network of Networks" is borrowed from "What is Systems Biology?", Institute of System Biology (ISB), 2020

The Integrated Systems Approach may also be presented and explored in terms of Ecosystem-nesting/Ecosystem Science/*Science* which Chapter Four of this book has invoked. We borrow Figure 4.5 but this time to cast light on the matter at hand in this discussion.

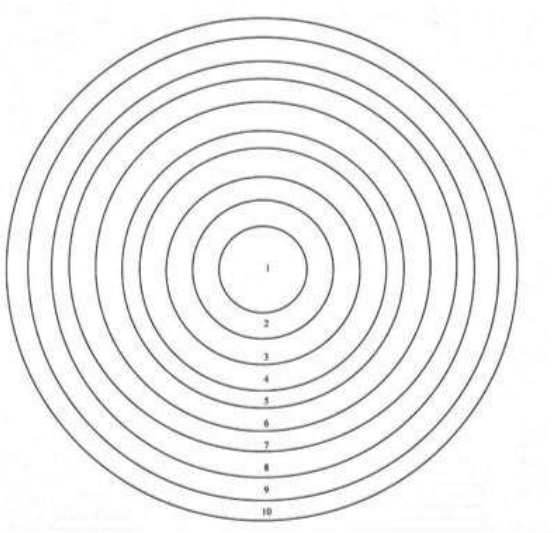

Figure 7.3 Network of Networks as Ecosystem-nesting in Terms of Concentric Circles

1. Atoms: carbon, hydrogen, oxygen, nitrogen, phosphorus which make up DNA (deoxyribonucleic acid)
2. Molecules at the level of genes and their DNA
3. Proteins sub-cellular mechanisms and pathways
4. Cells (DNA is in the nucleus of every cell)
5. Tissues
6. Organs
7. Organism: the human body (each body contains trillions of cells)
8. Populations of Human Bodies
9. Social-cultural Environments in which human populations are enmeshed
10. Larger Physical Environment in which such human populations are embedded
(Levels 9 & 10 are not spelt out in the literature, but are not incompatible with it; and so, have been added.)

Readers may have noticed that this chapter so far has not mentioned the term "Systems Biology". The term itself came into use at the turn of this century (even if the concept itself may not be new) in MWS; it can be found in Kitano 2001, 2002 and in the account of systems biology at the website of the ISB, established in 2000 by Leroy Hood and others.[9] Since then, it looks as if the term itself is much associated with the particular vision of the subject and its application to disease and well-being propagated by the ISB; for this reason, it seems wise to refer to and explore that cluster of ontological and causal concepts which this author has called the Integrated Systems Approach to Human Biology,[10] leaving out the full version of the ISB, to which we will now say a few brief words.

The ISB version is what is called Big-data Science, a multi-disciplinary project (drawing in physics, mathematics, computer science, computer engineering and technology and, of course, biology) composing of three main inputs, namely, Biology, Technology and Computation. Such Big-data Science has spawned four "omics" fields of study: genomics, proteomics, transcriptomics[11] and metabolomics. Here, we will focus on metabolomics in order to draw out its implications for our main thesis, namely, the Colonial Mind-set. One brief account reads:

> Metabolomics is the large-scale study of small molecules (within a mass range of 50- 1500 daltons), commonly known as metabolites, within cells, biofluids, tissues or organisms. Collectively, these small molecules and their interactions within a biological system are known as the metabolome. … Metabolomics is a powerful approach because metabolites and their concentrations, unlike other "omics" measures, directly reflect the underlying biochemical activity and state of cells / tissues. Thus metabolomics best represents the molecular phenotype.
> …

[9] What is Systems Biology? ISB, 2020.
[10] Note that Noble 2006 does not use the term either; the index includes terms like "systems-level interaction", "systems-level properties", "systems-level theory", "systems-level view". Admittedly, the book is intended as a publication in popular science.
[11] We have already looked at genes (genomics), *en passant* at genes synthesising proteins (proteomics). Transcriptomics is concerned with how organisms store genetic information (both as DNA and RNA) for transmission, involving a class of proteins which regulate gene expression. See Horgan *et al*. 2011.

> The metabolome is the complete set of metabolites within a cell, tissue or biological sample at any given time point. The metabolome is inherently very dynamic; small molecules are continuously absorbed, synthesised, degraded and interact with other molecules, both within and between biological systems, and with the environment.[12]

These small molecules have been discovered using two analytical techniques, nuclear magnetic resonance spectroscopy (NMR) and mass spectrometry (MS).[13] From the two quotations cited above, one could see why metabolites have been considered as such exciting "finds". The reasons include the following:

1. Their non-invasive nature, as they can be extracted from any sample of body fluids such as urine, saliva or blood (although this last is already relatively more invasive and stressful than the other two) not to mention gut fluid.

2. As they are produced at the levels of cells, tissues, organs, they can be said to be indicative of a Wholist/Integrated Systems View of the human organism.

3. They reflect dynamic processes of change at work within the human organism.

4. They act as ready biomarkers[14] (a) of the effects of pharmaceutical interventions, (b) indicating the presence of certain risk potentials in patients, (c) alerting the medical profession to the fact that different people may react differently to particular treatments.
   Biomarkers are defined as follows: "objective indications of medical state observed from outside the patient – which can be measured and accurately and reproducibly." (See EMBL-EBI.) They are signs, not symptoms and so pass the test of Scientificity.

5. They act in general as highly useful tools in two major industries, the pharmaceutical and the bio-agricultural.[15]

The implication of the ISB vision of Big-data Science for medicine may be seen in Hood and Friend 2011 and Hood *et al*.2012 in which the notion of P4 Medicine is set out as an implication of Systems Biology-ISB. This refers to Predictive, Preventive, Personalized and Participatory Medicine. In the light of what has been said so far, it is easy to see what is meant by the first three Ps; the last P, Participatory Medicine may be less familiar but it refers to the possibility of taking healthcare away from hospitals and GP clinics into workplaces, even schools but certainly into homes, as individuals can do self-monitoring about weight and calorie intake against a background of information and insights gathered from new technologies, analytic tools and forms of care.[16]

TC*M-Zhongyi*, Metabolomics and Metabolites

Text Boxes 7.1a and 7.1b and Figure 7.3 above together with Figure 4.5 (in Chapter Four of this book) should make readers readily realise why TC*M-Zhongyi* get excited about the discovery of metabolites via NMR and MS, as it subscribes to the metaphysics of *Wholism* (and therefore, of emergent properties), the rejection of Reductionist Methodology and Non-linear Causality (in spite of having discarded *Wuxing* 五行, as shown earlier in Chapter Five of this book).

TC*M-Zhongyi*, as Chapter Five has also demonstrated, is intended as a form of I*M*, and hence, is singularly incoherent and flawed, in the opinion of this book, as it tries to reconcile two very different systems of medicine/*medicine* (unsuccessfully). The latest development in Human Biology and its focus on the Integrated Systems Approach (Bm-Mark II) seems to throw a much-needed life-line to TC*M-Zhongyi* and its desire to hold on

[12] EMBL-EBI of the ELIXR Training Platform; URL = https://www.ebi.ac.uk/training-beta/online/courses/metabolomics-introduction/what-is/#:~:text=Metabolomics%20is%20the%20large%2Dscale,are%20known%20as% 20the% 20metabolome. What appears between round brackets has been copied from ELIXR on another page and inserted here by this author.

[13] See MS vs. NMR: Which One Is a Better Pick for Biofluids Analysis? 2020.

[14] As a concept in medicine, it is not new. For instance, the humble blood pressure machine was invented in 1881 by Karl Samuel Ritter von Basch, an Austrian physician. A high blood pressure reading is regarded as a biomarker of cardiovascular disease risk. This biomarker in the medical language of today is called "a surrogate endpoint for cardiovascular disease".

[15] Research in agriculture from this perspective is expected to increase crop protection and engineering, offer better control of pesticides and in food industries, to identify potentially harmful bacterial strains.

[16] It is none too clear how such a proactive, data-driven type of healthcare would take shape in reality in societies with very different economic and cultural outlooks and practices. A critical voice has been raised – see Fiala *et al*. 2019 who have proposed O4 Medicine (Overtesting, Overdiagnosing, Overtreating and Overcharging) as a reminder that P4 Medicine may not be the rosy vision it appears to uphold.

to a *Wholist* and Non-reductionist orientation, by saying that at long last Bm itself is about to abandon the Reductionist Approach (Bm-Mark I) and align itself with the Integrated Systems Approach to Human Biology. At such a point, in principle, TC*M-Zhongyi* could be integrated with Bm-Mark II more seamlessly and coherently. This interpretation would imply abandoning the Colonial Mind-set with Bm playing the role of The Coloniser and TC*M-Zhongyi*, that of The Colonised, laying the basis for ARIIMO to take root.

However, the Colonial Mind-set is not so easily dislodged by reason and logic – it persists with some adherents of TC*M-Zhongyi* finding it difficult to give up the role of The Colonised, thereby retreating to what appears like an absurd position. Deconstructed briefly, this absurd position may be spelt out as follows:

(a) The discovery of biomarkers, such as metabolites which can be repeatedly and systematically harvested, quantified and recorded as part of Big-data Science and Medicine, provides the world with a new paradigm of Scientificity, namely, The Integrated Systems Approach (that is Bm-Mark II)

(b) Bm Mark-II, although the diametric opposite of Bm-Mark I is now The Coloniser/The Superior Medicine.

(c) TC*M-Zhongyi* (which has done its best to remain *Wholist* in spite of giving up *Wuxing*) remains The Colonised in respect of Bm-Mark II.

(d) This is because the methods/tools which TC*M-Zhongyi* uses in its theory and practice differ profoundly from those employed in Bm-Mark II; they are embarrassingly so "primitive" and "simplistic" in comparison that it is best to turn over the page and quickly do some "catching up" to bring TC*M-Zhongyi* up to scratch.

(e) Hence, the urgent need to "modernise" TC*M-Zhongyi*. When TC*M-Zhongyi* diagnoses and treats patients instantiating the analogue of P4 Medicine (which CC*M-Zhongyi* has/had been doing since its emergence more than two thousand years ago) it must resort to the methods of Big-data Science and Medicine in order to be seen to be "scientific" and accepted as such. In other words, the Colonial Mind-set is indelibly etched into the consciousness of The Colonised.

Only two instances will be briefly looked at to illustrate this mentality.

In 2005, M. Wang *et al.*[17] (Article: "Metabolomics in the Context of System Biology: Bridging Traditional Chinese Medicine and Molecular Pharmacology") write (pp180-181):

> The impressive developments in genomics, transcriptomics, proteomics, metabolomics and bio-informatics **now enable an in-depth scientific approach of TCM using the integrative approach of systems biology**. Moreover, recent developments show that TCM and Western medicine may have more in common than previously assume. **Systems biology will prove to be a valuable tool in TCM research by providing the following deliverables**:
> 1. Proof of concept and efficacy/safety studies with TCM preparations
> 2. Mechanistic studies and development of biomarkers and surrogate endpoints
> 3. Fingerprinting of TCM-products, to guide quality, control and production
> 4. Discovery and validation of new drug targets
> 5. Discovery of new leads

The "enboldening"[18] in the quotation does not occur in the original; the motive for rendering the sentences in bold is to draw the attention of the reader to the language used and to serve to reinforce the charge of playing the role of The Colonised made against the authors of the paper.

The second example is by X. Wang *et al.*[19] 2011 (Article: Potential role of metabolomics approaches in the area of traditional Chinese medicine: As pillars of the bridge between Chinese and Western medicine.) The authors write (in the Abstract):

> Traditional Chinese medicine (TCM) is a holistic approach to health that attempts to bring the body, mind and spirit into harmony. Entering 21st century, TCM is getting more and more popular in the whole world for improving health condition of human beings and preventing or healing diseases. Especially shows great advantages in early intervention, combination therapies and personalized medicine, etc. However, like almost all other ethnopharmacology, **TCM also faces severe challenges and suffers from insufficient modern research owing to lack of scientific and technologic approaches**, restricts the development of TCM in the world. Fortunately, a novel analytical technique, metabolomics (or metabonomics), adopts a 'top-down' strategy to reflect the function of organisms from terminal symptoms of metabolic network and understand metabolic changes of a complete system caused by interventions in holistic context. Its property consists with the

[17] The authors are eleven all told; except for the lead writer with a Chinese name, the remaining ten have European names.

[18] This word "enbold" does not exist in any known English dictionary, but it and its cognate such as "enboldening" have been coined to refer to the process of turning a word/sentence from normal into bold font.

[19] The three authors all have Chinese names.

> holistic thinking of TCM, **may beneficially provide an opportunity to scientifically express the meaning of evidence-based Chinese medicine**, such as Chinese medicine syndromes (…), preventive treatment, action of Chinese medicine, Chinese medical formulae (…) and acupuncture efficacy. This review summarizes potential applications of robust metabolomics approaches in the area of traditional oriental medicine, and **highlights the key role of metabolomics to resolve special TCM issue**.

The Conclusion of the article cited above says:

> In this review, we delineate and discuss metabolomic approaches to resolve special TCM issue. According to the status and problems, **it is concluded that TCM modernization has become necessary and urgent.** Modernization of TCM means the combination of TCM with modern technology, academic thought and scientific culture, in which the most important point is to elucidate the active component of TCM, especially the material foundation of compound prescriptions and their pharmacodynamic mechanisms. Metabolomic/metabonomics is a post genomic technology which seeks to provide a comprehensive profile of all the metabolites present in a biological sample. This property agrees with the holistic thinking of TCM, a unique medical system assisting the ancient Chinese in dealing with disease, plays an increasingly important role in the study of TCM and explains the scientific meaning of evidence-base Chinese medicine.

The "enboldening" here is to illustrate yet again the spirit of The Colonised at work. In other words, the Medical Other must remain sub-standard and inferior until "modernised", "brought up to scratch". This message is reinforced in the authors' Conclusion which while praising *Zhongyi* in one breadth through identifying its distinctive *Wholistic* achievement takes back this compliment in the next by complaining that it is "backward" and therefore urgently needs "modernisation".

The Colonial Mind-set is designed in such a way that The Colonised can never catch up, as the goal-post of "respectability" changes with each new development of Bm, thus:

1. When Bm-Mark I was in place, with its gold-standards being enforced by RCT and their EBM, *Zhongyi* was sub-standard as The Colonised necessarily fails to meet Bm-Mark I's gold-standards of Scientificity.

2. Bm-Mark I upheld The Reductionist Standard of doing Science, while *Zhongyi* upheld the Integrated Systems Standard. However, *Zhongyi* was assigned the role of The Colonised as its explanatory model differs profoundly from that of Bm-Mark I.

3. Bm today appears to be moving on to Mark II, to uphold the Integrated Systems Standard. Logically, one expects that *Zhongyi* would be recognised for its pioneering efforts in developing and upholding such a standard of Scientificity.

4. No, instead *Zhongyi* (whether TC*M-Zhongyi* or CC*M- Zhongyi*) under Bm-Mark II is judged, nevertheless, to be sub-standard, as it does not use the same tools and techniques to arrive at its diagnoses and treatments, successful though these may be.

5. *Zhongyi*'s modes and methods in theory and practice must be made to submit themselves to the test of Scientificity as laid down in Bm-Mark II, in terms of Big-data Science collecting and measuring metabolites.

   Just one example to remind the reader how *Zhongyi* has its own methods of diagnosing and treating patients: amongst other diagnostic tests, ascertaining the *mai* 脉 profile, prescribing in the light of it and so forth which all rest on *Yinyang Wholism*, *Qi Wholism*, the *Jingluo* Network, must now be set aside – diagnosis and treatment will from now on, according to the spirit of The Colonised under Bm-Mark II, be subjected to Big-data techniques and technologies for measuring metabolites (and/or DNA sequences) before the imprimatur of "Scientificity" can be bestowed on them.

6. Furthermore, ever since its emergence more than two thousand years ago,[20] *Zhongyi* had/has theorised and practised so-called *P4 Medicine*.[21] The advocates of "modernising" TC*M-Zhongyi* ought to know this but if they

[20] *The Neijing*: for a detailed exploration of its date and authorship, see Lee 2018, Appendix One – recent archaeological finds in China which consist of non-textual artefacts, such as acupuncture tools now permit dating the emergence of acupuncture well into the Neolithic period of Chinese history. This means that many ideas and concepts embedded in *Zhongyi* practice had appeared much earlier than the text itself. In the light of modern Chinese scholarship, the text itself turns out not to be a straightforward early Han text (although as a mature text, it probably is), as parts of it could be traced to the Warring States period (475-222 BCE) – see *Liu 1980.

[21] In other words, the history of medicine worldwide, in different cultures and historical periods, shows that the concept of "P4 Medicine" obtains – Fiala *et al*. 2019 claim that Hippocrates (460-370 BCE) also held such a notion. See Chapter One of

did, the knowledge appears to have made no difference to their assessment of *Zhongyi* as falling short of being scientific under Bm-Mark II paradigm of Scientificity.

For ***Predictive Medicine* and *Preventive Medicine***, see Lee 2018, Chapter 5, which has looked at the theoretical basis of these two conceptions of related *medicines*, not only through the relevant *medical* texts, but also through the concepts of *shangong* 上工 (the truly brilliant physician), *zhonggong* 中工 (the middling brilliant physician) and *xiagong* 下工 (the merely competent physician). The top category could predict the onset of an illness by detecting the smallest signs of its existence as well as prevent the illness from progressing; the middle category could predict and prevent the onset of an illness when it had progressed beyond the merest smallest signs to something more obvious; the lowest category could only predict and treat the illness when it had progressed to even more obvious and serious a level. Ironically, as Bian Que 扁鹊 (a physician said to have legendary skills and even himself to be a legendary figure in the opinion of some scholars) observed, it is the last category or the least competent who had the highest reputation – if you could successfully treat and cure someone with very advanced signs (almost at death's door so to speak), then great honour would come your way. However, if you had the skills and talents of the truly brilliant physician, could detect and prevent a serious illness by nipping it in the bud at the very beginning of its onset, you would not be able to impress either your patron or the masses, as the treatment would be very simple and not melodramatic – in any case, you could even run up the reputation of being a charlatan, especially when you predict that the illness would take a few years if not a few decades before it would kill the patient. Bian Que said he enjoyed a far greater reputation than his brothers (apocryphal?) who were *shanggong* or at least *zhonggong* whereas he himself, if truth be told, was a mere *xiagong*.

Preventive Medicine also includes Nutrition, *shiliao* 食疗, a big and important branch of *Zhongyi*, down the ages. ***Personalised Medicine*** is discussed in Chapter Six of this book under the concept of *getihua zhiliao* 个体化治疗 in CC*M-Zhongyi*. Every prescription written out by a physician is crafted to suit the diagnosis and circumstances of the individual patient. Take the concept *tongbing yizhi* 同病异治 (treating the same illness differently in different patients). Chapter Six of this book has already alluded to this topic in a somewhat different context. In a flu epidemic, imagine two patients (even husband and wife) presenting themselves with signs and symptoms of seasonal flu. As flu is caused by a virus, antibiotics are irrelevant; a doctor has no special drugs to prescribe (he could recommend a flu jab, if one exists) apart from paracetamol to reduce temperature or ibuprofen should the patients also have aches and pains. Other than these measures, they will be advised to keep warm, to have plenty of rest and sleep, also to drink water to keep off dehydration. In a *Zhongyi* consultation, the couple would be sorely misguided if they expected the physician to prescribe them the same medicinals as they were suffering from the same illness, namely, flu. They would be approaching *Zhongyi* as if it were Bm. The physician could not prescribe until s/he had diagnosed the patient – in the light of diagnosing Patient A (say, the wife), the physician could come to the conclusion that hers was a case of a *rezheng*[22] 热证 and that Patient B (the husband) was a case of a *hanzheng* 寒证. In other words, Patient A suffered from excess *yang* with *yin* deficiency; Patient B suffered from the opposite, excess *yin* with *yang* deficiency. Hence Patient A would be prescribed heat-dissipating medicinals, while B heat-supplementing ones instead. This, in a nutshell, is *Personalised Medicine* at work in *Zhongyi*.[23]

As for ***Participatory Medicine***, the typical expression can take different forms, depending on context: *Zhongyi* by its very nature is democratic, as anyone who is so-minded can learn it, to some extent or other. In imperial times, every literate person would read the foundational texts on the subject, master them thoroughly in some instances, or more usually, acquired some, not simply superficial, knowledge of the matter. Indeed, some candidates who were unsuccessful in the imperial examinations to become scholar-officials ended up opting for a career as a physician instead. As the *medicine* was very much part of the culture, those who were illiterate would have absorbed enough all the same from the general culture to have some basic ideas about it. In consultations, physicians and patients would, on the whole, be able to communicate effectively with one another about the nature of the illness and the mode of treatment proposed. *Zhongyi* is participatory in another sense: the diagnostic procedure includes *wen* 问/ ask in which the physician seeks to elicit from the patient as well as his family (even including servants in imperial times in well-healed households)[24] information, jolting the memory of the patient and family about the history of the illness and the circumstances of the emergence of the illness and its development. This kind of consultation is also participatory in the sense that the patient's long-term care by means of diet and nutrition and so forth must be negotiated with the family. For instance, if the family were not well-off,

this book for a discussion of the Hippocratic Oath. For a detailed discussion of *P4 Medicine* in CC*M-Zhongyi*, see Lee 2018, Chapters 7 and 8.

[22] For an exploration of the concept of *zheng* 证, see Lee 2018, Chapter 8.

[23] This example is taken from *Hao 2012.

[24] Bm upholds the value of patient privacy; in principle, this value is incompatible with such a form of participation in the case of adults. (The operative word is "in principle".)

then even if the patient required certain foods judged to be efficacious but expensive, these would have to be replaced by something less expensive but also in some instances perhaps less efficacious.

CC*M-Zhongyi* may be said to be *Participatory Medicine* in yet another sense. Take the following case, in which a physician successfully diagnosed and treated a patient without resorting to treatment understood in the standard, conventional manner – instead, he conceptualised and designed a project in landscape gardening which he "sold" to his patient who then executed it enthusiastically.[25] This patient presented with symptoms of insomnia (more than six months standing), sunken eyes and a black complexion. Her *mai* was slender but taut (*mai xi er xian*/脉细而弦). Her insomnia began when a neighbour bullied her, she said. The said neighbour without consultation or agreement had built a small kitchen against one of her own walls. In digging the foundation, the neighbour dug up a very large boulder which she then parked in front of patient's house. After the kitchen was completed, the boulder, being too large, could not be manoeuvred away out of the narrow lane. She had to carry her bicycle around the boulder to get inside her own house. Furthermore, her husband had said to another neighbour that the woman who had built the kitchen did consult him, and that there was no intention to insult or bully his wife as the neighbour had never thought such a boulder could be lying underneath the ground. The patient then accused her husband of having fallen for the offending neighbour, who was much younger and prettier than herself.

The physician, Professor Hao thought that he had better go and inspect this offending boulder, which he did. It was indeed very large, but at the same time very beautiful. He asked about the history of the site and was told that in the Qing dynasty it was the back garden of some very high official at the Qing court. He suggested that with the help of some strong young arms, the boulder could be shifted aside a bit, so that it would no longer block the entrance to the patient's house. He got the helpers to scrub it clean, and then suggested that some nice plants be grown around it – this would make a wonderfully lovely new feature just outside her house. The physician said that he would make a return visit in the next few months to admire the new landscape.

A few months later, the woman returned to his consultation room, looking the picture of health. When asked how she slept, she said very well indeed. She said that the new feature was truly pretty, so much so that she was reluctant to close the front door in the evening. Hao described the situation as *qujing tong you chu*/曲径通幽处 meaning to reach a tranquil spot by taking by-ways. After Hao had elicited the information (the technique of asking, *wen*/问) from the patient, he must have decided that her condition could be overcome not necessarily through the use of medicinals and/or other standard forms of treatment. He might also have concluded that the offending boulder would be no ordinary unsightly rock, given the location of the site. Hence, he offered to visit the patient's home. In Chinese garden-landscaping, many boulders which look fine and beautiful or curious are incorporated as special features. The high Qing official would have sought out such a boulder when constructing his garden but when his residence fell into neglect, ruin and eventual demolition, such a boulder became buried, only to be accidentally uncovered when the neighbour of the patient dug the ground to build her own kitchen. The physician, in this instance, transformed himself into a landscape designer in order to cure his patient.[26]

The Colonised Mind-set and The Axiom of Respecting the Identity and Integrity of The Medical Other/ ARIIMO

TC*M-Zhongyi* scientists who advocate "modernising" their *medicine* in order to bring it "up to scratch" under Bm-Mark II embody the mind-set of The Colonised which commits them to the view that their *medicine* must be authenticated by the standards embodied in the latest model of Scientificity endorsed by The Coloniser, whatever that standard might be. The Colonised Mind-set also seems to imply that whatever is shared and in common between the two medicines should be ignored; differences alone condemn the Medical Other to the status of The Inferior/The Backward. For such a reason, they fail to appreciate the irony involved in the *volte-face* between Bm-Mark I and Bm-Mark II (Text Boxes 7.1a and 7.1b) in relation to Zhongyi (whether as TC*M-Zhongyi* or CC*M-Zhongyi*).

When Bm had only Mark I to offer, such scientists did not dare to say outright that *Zhongyi*'s model of illness is correct, that of Bm flawed; in that sense *Zhongyi* is superior and Bm inferior. Instead, they dared only to murmur *sotto voce* that *Zhongyi*'s different approach provided an alternative in cases where Bm had failed to cure the patient.[27] This

[25] Told in *Hao 2012. Hao Wanshan 郝万山 is a distinguished CC*M-Zhongyi* practitioner in China and an authority on Zhang Zhongjing 张仲景 (150-219 CE) whose writing is considered as a classic, taking its honoured place only behind that of *The Neijing*.

[26] This example in Lee 2018 is used to explicate the notion of psycho-somatic illnesses, that every illness according to CC*M-Zhongyi* has a psychosomatic dimension to it, given its account of person-hood as explored in Chapter Eight of this book.

[27] This is often expressed by saying that *Zhongyi*'s domain of excellence lies in treating chronic illnesses and Bm's in urgent ones – see Karchmer 2015. This gives rise to the myth that CC*M-Zhongyi* in its history is incapable of coping with non-chronic

attitude presupposes that for any rational person, Bm must be the medicine of choice and of the first instance and *Zhongyi*, at most, a second best which one might be forced to fall back upon should Bm fail. **This is because they, The Coloniser and The Colonised, appeared/appear to define "inferiority" in terms of any aspect/characteristic in which The Medical Other differs from that of The Coloniser** (in this instance, failure to reach the RCT Gold-standard). **This definition is at the bottom of The Colonial Mind-set**.[28] (Call this DFCM for short: Definition of "Failure" as endorsed by The Colonial Mind-set.)

Under Bm-Mark I, DFCM permits The Coloniser to disregard whatever commonalities might be shared between the two medicines. To remind the reader, yet again, these include:

> Both agree on the nature of illnesses as natural phenomena caused by certain adverse natural forces in the environment (whether internal or external)
> Both agree that different people have different genetic endowments
> They appear each to have their own successes in diagnosing and treating patients
> Both go beyond symptoms to signs
> Their respective theoretical claims enable them to derive predictions/explanations for certain conditions which are amenable to empirical checking
> Each has built up a substantial and systematic body of knowledge for successful diagnosis and treatment in its respective domain of excellence

In turn, The Colonised themselves accept with no question asked that commonalities are not significant, only differences are. Hence under Mark I, both The Coloniser and The Colonised concentrate on upbraiding *Zhongyi* as a failed *medicine* because it cannot satisfy the Gold Standard of the RCT. The concept of RCT is designed by Bm-Mark I. Apart from embracing The Reductionist Approach, Bm-Mark I is also premised on the Axiom of Homogeneity; without that axiom, RCTs make neither logical nor empirical sense.[29] In contrast, *Zhongyi* is premised on the Axiom of Heterogeneity; as such, it makes no sense to require that it carry out RCTs. DFCM, however, seizes on this "flaw", allowing both The Coloniser and The Colonised to consign *Zhongyi* to the class of The Inferior Other. (Furthermore, neither The Coloniser nor The Colonised appears to have noticed that the concept of RCT is incompatible with Bm-Mark II and in any case, Bm-Mark II renders it superfluous – for details of this argument see Lee forthcomingb).

In the same spirit, DFCM under Bm-Mark II permits The Colonised as well as The Coloniser to continue to ignore the marked similarities between the two medicines (as both now share The Integrated Systems Approach) and to dismiss *Zhongyi* as being "flawed" because of the tremendous differences which exist between them in terms of the techniques and technologies used in their diagnosis and their treatment of patients – they both may have their respective P4 Medicine/*P4 Medicine*, but CC*M-Zhongyi* sticks to its low-tech or indeed no-tech procedure of diagnosing and treating patients and their illnesses.[30] Hence, the TC*M-Zhongyi* scientists are clamouring to have the *medicine* "upgraded" and "modernised" to high-tech platforms in order to "keep up with the Joneses".

In other words, The Colonial Mind-set is an expression of Essentialism of Method or Methodological Exceptionalism, namely, there is only one correct and permitted way of doing Science/Medicine, and that is the method endorsed by The Coloniser, **whatever it be at any moment of its historical development**.

DFCM is not compatible with pluralities and diversities of methods in undertaking an activity; it even seems to rule out any possibility of bridge-building between the two medicines. However, the conception of bridge-building invoked here is not the same as the conception of bridge-building implied by some TC*M-Zhongyi* scientists like those cited earlier who are shown to be advocates of "modernising" *Zhongyi* in order to render it respectable as "science". They appear to envisage a situation where the two become "one" in which, admittedly the distinction between The Coloniser and The Colonised no longer makes sense or obtains as The Colonised have become so assimilated to the Coloniser that the two different systems of medicine no longer exists, only one, that of the Coloniser.[31] TC*M-Zhongyi*

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illnesses. Take excessive bleeding in a limb or some external part of the body caused by an accident – a *shanggong* 上工 could stem the flow of blood successfully by manipulating the relevant *jingmai* 经脉 of the *Jingluo* Network.经络. (See Chapter Ten of this book for a discussion of these notions; they are deliberately left untranslated.) A patient in a car accident who had been "sucked" underneath the car and dragged along by it for a hundred yards or more before it could stop, say, suffered damage to some internal organs, but very seriously to the spleen in particular. The patient under such circumstances in the care of Bm would be required to undergo an operation to remove the damaged part of the organ, if not the whole organ. A *shanggong* would prescribe medicinals to expel the clotted blood in the spleen and then to heal the organ or help the organ to heal itself.

[28] These two sentences have been "enboldened".

[29] See Lee 2017b in Bluhm, Chapter 9; Lee 2018, Chapter 7.

[30] Metabolites in body fluids which can be measured and quantified via NMR and MS in P4 Medicine act as the latest biomarker in Bm-Mark II; in CC*M-Zhongyi*, the major analogous *biomarker* relied on remains the tech-free technique of ascertaining the *mai* in a patient before and after diagnosis and treatment. The difference is perceived by some TC*M-Zhongyi* medical scientists to be that of cheese and chalk

[31] A political analogue would look like this: imagine a territory occupied by two groups of people. They looked more or less alike, with straight blond hair, blue eyes, similar height, size and shape, worshipped a god/God in the same way. It just

at the end of this process of AM would look remarkably like Bm-Mark II and CC*M-Zhongyi* which refuses to surrender its identity and integrity would either be no more or languishing in the quiet backwaters of the world history of medicines. This does not appear to be a case of bridge-building.

To conceive of Bm-Mark II as a genuine bridge-builder, one would have to envisage a different scenario altogether. To see what that scenario is like, one would have to return to *Pinyin* and the role it actually plays in China today, as an adjunct to help specific groups in the country to learn the Chinese language itself. Chapter One has identified two such groups: foreigners, say, from the West living in China who have to come to terms with the Chinese language which appears so different from the languages they are familiar with at home, using alphabetic scripts and Chinese children learning to read and write their mother tongue. The analogous group who could be helped in coping with CC*M-Zhongyi* include two sub-groups: Non-Chinese peoples to whom CC*M-Zhongyi* seems unfamiliar as it is so different from Bm and those Chinese people (with the mind-set of The Colonised) who are sceptical about CC*M-Zhongyi*, writing it off as superstition or pseudo-science. The bridge-building exercise can expect a degree of success, although success cannot be guaranteed, by exploiting a certain psychological disposition in human beings. One is more likely to communicate with others more effectively by using their language initially which you happen to know instead of insisting that they use your language about which they have little or no command.

Imagine a CC*M-Zhongyi* practitioner who is thoroughly informed about Bm,[32] someone like Zhang Xichun 张锡纯 (1860-1933)[33] who taught himself the new Western knowledge such as biology, physiology, even mathematics. In other words, he learnt the foreign language in order to "communicate" with foreigners – that is, he built a bridge between his own *medicine* and that of the foreigner. He did not perceive his own *medicine* either as The Coloniser or The Colonised with respect to the foreign medicine; he simply learnt the latter in order to see where the commonalities and differences lie and to find out if his own indigenous *medicine* could be enriched or enhanced in any way. He identified such an area, in pharmacology; as a result, he incorporated quinine and aspirin into the Chinese *Materia Medica*, using them in treating patients, within the theoretical and methodological framework of *Zhongyi* (that is, what this book calls CC*M-Zhongyi*). Zhang Xichun, unlike some TC*M-Zhongyi* scientists today, did not regard his project of learning from the other as a project of "modernising" his own, the indigenous *medicine*.

Instead, he used his knowledge of the foreign medicine as foreigners in China would learn *Pinyin* to enable them to increase and improve their navigation of Chinese space as well as to lead them to a better understanding of the nature of a non-alphabetical script such as is used in Chinese writing, and in that sense, to enrich their own appreciation of Chinese culture and, in turn, their own.

In like manner, foreigners who do not know or understand CC*M-Zhongyi* as well as those who uphold The Colonised mind-set regarding CC*M-Zhongyi* amongst the Chinese people could be led to a better understanding of The Medical Other via new biomarkers such as metabolites made available under Bm-Mark II. Psychologically, it helps to approach these two sceptical groups via a language with which they not only are familiar but also has faith in, namely, the language of Bm-Mark II. The language of the *mai* implying that the *mai* is a *biomarker* in CC*M-Zhongyi* before and after diagnosis and treatment of patients would not impress such sceptics. A more effective strategy is to use the language of the medicine in which they have faith to convince them that CC*M-Zhongyi* and Bm-Mark II may be talking the same talk though perhaps in different speeches. This would amount to a case in translation – speakers of Language A and Language B cannot communicate with each other; a translator who knows both languages can translate sentences in Language A into Language B. Evidence in the form of metabolites under Bm-Mark II acts as a translated sentence in Language A into Language B. Language A uses *mai* talk which speakers of Language B find to be incomprehensible; if *mai* talk can be translated into talk about metabolites, this would act as a

happened that they spoke different tongues. It turned out that Group A speaking Language A lived predominantly in towns and Group B speaking Language B in the countryside. Technological and economic developments, as they happened, appeared to have favoured the townies. However, the rural lot realised that their livelihoods would improve by leaving the countryside for the towns. As the townies had already well-established schools, using Language A, the children of the rural newcomers joined those schools and learned Language A as well. Over many years, children who spoke language B only at home tended to be less enthusiastic about continuing to use Language B even among themselves as children. Furthermore, the men speaking Language B also preferred to marry women who spoke Language A – the families of such mixed linguistic heritages tended to speak Language A letting Language B lapse. Over an extended period of time, the original two groups became one – you could say that Group B had become assimilated to Group A; both became simply "one large happy family", linguistically. Outsiders could no longer distinguish between them; nor could they themselves without delving into their family genealogies. One could say there is loss (in linguistic diversity) and gain (societal adhesion) in this instance of assimilation. See Chapter Five of this book for an account of the Jewish Emancipation (the Haskalah movement) in certain countries of Western Europe (namely, France and Germany) as an instance of AM where, too, there was loss and gain.

[32] In theory, all TC*M-Zhongyi* practitioners who are graduates of Chinese Medical Colleges in China can be said to know the two medicines, although in reality, critics maintain that their combined curriculum for five years of training are insufficient for such graduates to have a thorough command of both. There just is insufficient time, quite apart from the fact that what they learn about *Zhongyi* is not CC*M-Zhongyi* but I*M*.

[33] He was a very distinguished scholar-physician of the late Qing and early Republican periods – see Chapter Five of this book for an assessment of his attempt at Integrated *Medicine* (I*M*), a project which turns out to be very different from that of TC*M-Zhongyi* as I*M*.

bridge which speakers of Language B would find meaningful and intelligible. Analogously, the sceptics and doubters of CC*M-Zhongyi* may come to conclude that The Medical Other makes sense after all and to respect it in its own right, abandoning The Colonial Mind-set, embracing ARIIMO instead.

This would be a bridge built neither for conquest nor for surrender but for promoting mutual understanding and respect, to emphasise commonalities rather than mere differences. This spirit is very different from that displayed by some TC*M-Zhongyi* scientists who embody the mind-set of The Colonised under Bm-Mark II. Let us look at Z. Wang *et al*. 2011 to illustrate this spirit in their account of submitting a well-known *Zhongyi* patent *medicine* called *liuweidihuang wan* 六味地黄丸. It is a 方剂 *fangji*/ formula which was developed during the Northern Song dynasty in 1119. However, before looking at their account from the vantage point of "modernising" *Zhongyi* (or TC*M-Zhongyi*) using the technology and standard of Scientificity under Bm-Mark II, let us first come to grips with the *fangji* as presented and understood by CC*M-Zhongyi*.[34] It is composed of six medicinals:

1. *Radix Rehmanniae Preparata*	熟地黄 *shudihhuang* (*san bu*: Sovereign Medicinal)
2. *Fructus Corni*	山茱萸 *shanzhuyu* (*san bu*: Ministerial Medicinal)
3. *Rhizoma Discoreae*	山药 *shanyao* (*san bu*: Ministerial Medicinal)
4. *Rhizoma Alismatis*	泽泻 *zexie* (*san xie*: Assistant Medicinal)
5. *Cortex Moutan Radicis*	牡丹皮 *mudanpi* (*san xie*: Assistant Medicinal)
6. *Poria*	茯苓 *fuling* (*san xie*: Assistant Medicinal)

This *fangji* is used (and has been used down the centuries) when patients are diagnosed of the kidney *yin* deficiency syndrome, a condition which commonly obtains in the elderly, but today, increasingly, even in younger people, owing to their stressful lifestyles. Such patients may complain of dizziness, tinnitus, weakness and soreness of the loins and limbs, sweating and emission. It is also used today in treating patients with high blood pressure, diabetes, diabetes insipidus, chronic nephritis, tuberculosis of the lungs, malfunctioning of the thyroid gland, not to mention in gynaecological disorders as well as in paediatrics.

The *fangji* speaks of six flavours (六味 *liuwei*) found in its component medicinals: 酸 *suan*/sour; 苦 *ku*/bitter; 甘 *gan*/sweet[35]; 辛 *xin*/acrid，咸 *xian* /salty，淡 *dan*/bland. In particular, Medicinal 1 is associated with being sour, 3 with being sweet and 6 with being bland.

This *fangji* focuses primarily on the *Kidneys* but it also addresses itself to the *Liver* as in CC*M-Zhongyi*, the *Kidneys* and the *Liver* are intimately related; while it concentrates on tonifying/supplementing (补 *bu*) the former, it also nourishes the *yin* of the latter. The *Spleen* is also associated with these two organs and is affected by the *bu yao* in the *fangji*.

According to CC*M-Zhongyi*, the *Kidneys* are regarded as the organ which holds the root/capital/foundation resources which a person is endowed with at birth (先天之本 *xiantian zhi ben*).[36] The *Kidneys* in the developmental history of the individual are responsible for bone formation; bone contains and grows bone marrow. In turn, bone marrow and the brain are intimately linked. *The Lingshu* (the second part of *The Neijing*), Chapter 33 (《灵枢.海伦) refers to the brain acting as the "sea of bone marrow" (脑为髓之海 *nao wei sui zhi hai*) and that, if bone marrow is insufficient in a child, the child's development would be held back, and in an adult, if the *Kidneys* are working under par, would lead to the various conditions already mentioned above. In males, the *Kidneys* play a key role in generating sperms for the reproductive process. Given this brief outline of the complex causal-functional inter-relationships between the various *organs* in the person-body, it is not a wonder that a *fangji* which was recorded as emerging from a book on paediatrics should also be used to treat adults who exhibit certain conditions associated with weak kidney functioning.

The medicinals in this *fangji* may be divided into two groups: 1-3 constitute the tonifiers (三补 *san bu*), while 4-6 constitute the "reducers" (三泻 *san xie*). As 1 is the Sovereign Medicinal, in at least today's manufacturing practice of the pills, it constitutes roughly a third of the total weight of all the ingredients. It is directed at the *Kidneys* to tonify them in a gentle way by nourishing its *yin*, assisting in blood formation as well as in the male to protect and nourish *essence* (sperm-producing function).

Medicinals 2 and 3 belong to the Ministerial Category which help the Sovereign Medicinal to augment its intended functions. As such, each constitutes a sixth of the total ingredients in the manufacture of the pill. All three then together constitute *san bu* involving the three *organs, Liver, Spleen and Kidneys*. In other words, to rectify the *yin*

[34] See *Li and Wang 2015; *Luo 2015; **Shendu jiexi liuweidihuang wan de gongxiao yu zuoyong* 2020.
[35] Here, the flavour should not be identified with sugar, being "sugar sweet". As the character itself indicates, it is a flavour which is so pleasant that one would want to savour it and hold it back for as long as possible in one's mouth – for its linguistic deconstruction, see Lee 2008/2018, 116-118.
[36] For instance, in a woman, the number of eggs in her ovaries are already in place at the time of birth. Today Bm says that a baby girl when she is born has between 1 and 2 million eggs.

deficiency of the *Kidneys*, the three medicinals act in such a way as to tonify both *Spleen* and *Liver* which when strengthened would in turn be able to help tonify the *Kidneys*, to rectify their *yin* deficiency.

A point worth mentioning which Medicinal 3 plays in the *san bu* group concerns its role in strengthening *Spleen* which plays a critical role in human flourishing. Just as the *Kidneys* may be said to play a key role in the constitutional endowment of the individual at birth, the *Spleen* is the *organ* which plays a key role in the flourishing of the individual after birth, throughout life. It is the *organ* which is concerned with digestion, with what one eats and how the food we eat is processed metabolically, so that ultimately the digestive system (in CC*M-Zhongyi*, this is the *piwei* 脾胃 /*Spleen-Stomach* organ-system)[37] is successful in absorbing the nutrients required for sustaining and maintaining the person-body, sending them on via *qi*xue 气血/*qi*-and-blood to all parts of the person-body, while expelling solid waste through the *Large Intestines*.

The second group – Medicinals 4, 5 and 6 – is called *san xie* 三泻 – classified as Assistant Medicinals (*zuoyao* 佐药). As such, they each constitute approximately an eighth of the total ingredients in the pill. In what way do they assist the Sovereign and Ministerial Medicinals? What is the exact relationship between *san bu* and *san xie*?

The group of san xie as a group is required in order to solve possible iatragenic disorders caused by use, especially the long-term use, of *san bu*. The tonifying properties of *san bu* medicinals could induce stagnation, the slowing down of certain *physiological* processes; also, as they are intended for use over extended periods of time, one should design the pill with built-in components which slow down the effects of *san bu*. Medicinal 4 of *san xie*, in particular, assists *san bu* in yet another way by enabling the *Kidneys* to get rid of waste liquid (urine) more readily. Medicinal 5 operates through the *jingmai* of the *Heart, Liver* and *Spleen*; it can cool the blood, clear heat, and is especially effective in treating patients with heat in the blood, not to mention in the *Liver*. Medicinal 6 operates through the *jingmai* of the *Heart, Lungs* and *Spleen*. It can strengthen *piwei*, calm the *Heart* and spirit as well as make the urinary processes function smoothly. It complements well Medicinal 3, which if used over an extended period of time could cause *qi* stagnation in the *piwei* organ-system.

To reinforce the above account about the pharmacological logic of this *fangji* within the theoretical framework of CC*M-Zhongyi*, we turn to its history. A young prince of the imperial family in the Song capital of the time suffered from a disorder but was unsuccessfully treated by the resident palace medical staff. Instead, in 1079, a lowly and humble physician amongst the people cured the prince, upon which the emperor showered gifts and honour upon him. This induced respect on the part of some court physicians but also jealousy in others. The latter group was determined to show that his success was due to pure luck and that he lacked scholarship which they prided themselves on possessing. One of them tried to trap him through quizzing him thus: "Your *fangji* consists only of six medicinals, whereas Zhang Zhongjing's[38] famous *fangji* has eight medicinals. Yours has left out two, namely, *fuzi* 附子 (*Radix Aconiti*/common monkshood) and *rougui* 肉桂 (*Cortex Cinnanomi*/cassia or cinnamon bark). You have forgotten these." The physician smiled in spite of the provocation and replied without hesitation: "I did not forget about them, I deliberately left them out. This is because Zhang Zhongjing's *fangji* is intended for adult patients. This patient is a child; a child's constitution is such that it could not withstand the heat-intensifying properties of *fuzi* and *rougui* and would have been overwhelmed by them. Would you not agree that I have done right?" The court physician at this point withdrew, admitting that the man he had hoped to humiliate was indeed an excellent physician with deep understanding of the subject.

The reader could additionally be reminded that in this instance, he was distinctly practising *Personalised Medicine* by intelligently and flexibly editing an extant *fangji* to deal with the specific conditions and needs of the patient under consultation. One could say definitely that he was no *xiagong*. The physician was Qian Yi 钱乙 (1032- 1113 CE); his disciple (Yan Xiaozhong 阎孝忠) heard his master give the explanation above and quickly noted it down. This was later published in a book entitled 《小儿药证直诀》*Xiaoer yaozheng zhijue*/ *Paediatrics: A quick guide to diagnosis and treatment*. Qian Yi had used the edited *fangji* to treat a child suffering from what today we call developmental (or global development) delay[39] and had not anticipated that eventually it would be used down the centuries to treat, in the main, the kidney *yin* deficiency syndrome. However, as already shown, the logic of his *fangji* is in keeping with its later widespread use; it is relevant not merely to treating children showing signs of developmental delay but also to adults diagnosed with the *Kidney yin* deficiency syndrome, exhibiting very different signs and symptoms of illnesses, such as dizziness, tinnitus, excessive sweating (even when lying still in bed), emission (in the case of males) and so forth.

Having set out the *fangji* in some detail within the context of CC*M-Zhongyi*, let us now return to Z. Wang et al. 2011 to see what they have to say about it in the light of Bm-Mark II. As far as can be made out, this is what they have done, as shown in the quotation below:

[37] For a detailed discussion of the inter-relatedness of the organ-systems in the person-body, see Lee 2018, Chapter 4.
[38] For an account of his importance in the history of CC*M-Zhongyi* and the fate of his writing after his death, see Lee 2018, Appendix Two.
[39] This means that such a child, compared with her/his peers, is lagging behind in walking, talking, acquiring movement skills, learning new things as well as interacting with others socially and emotionally.

> Wang et al. adopted ultra-performance liquid chromatography-mass spectrometry (UPLC-MS) to investigate the metabolic profiling of rats with kidney yin deficiency induced by thyroxine and reserpine. It could been (sic) shown that the changes in metabolic profiling were restored to their baseline values after treatment with LW according to the PCA (Principal component analysis) score plots (Fig.2), indicating 20 ions (8 in the positive mode, 14 in the negative mode and 2 in both) as "differentiating metabolites" (Fig.3). PCA score plots separated urine samples into different blocks, and samples subjected to the same treatment were located on the same trajectory, indicating that treatments have greatly disturbed the normal urine metabolic profiles of rats.

From above, they conclude with the following remarks:

> Adoption of metabolomic approach would do much help for exploring the scientific connotation and intrinsic quality of CMS as well as differentiation of syndrome, especially deepen the evaluation of the therapeutic effects of TCM. There is good reason to think that metabolomics will find particular utility in CMS investigation, which may inform us new information on pathways and processes involved in these responses.

This set of TC*M-Zhongyi* scientists appear to have overlooked yet another rich irony in their project of "modernisation". The experiment cited above is conducted on rodents; this is to say that they used an animal model to test a *fangji* which emerged nine hundred years ago to treat human beings diagnosed with certain problems in the functioning of their person-bodies!! The historical records of *Zhongyi*, extant today, speak of no health and safety issues arising from its use over nearly a millennium. So why the need to run an experiment using rodents? Why not just run a RCT based on real patients suffering from real problems? That would have been more to the point. Instead, they have to induce an analogue to the *Kidney yin* deficiency syndrome in the animals through chemical means.

In Bm's pharmacological methodology, drugs, newly minted in laboratories, are an unknown factor as far as their toxicity is concerned. So, it makes good sense to test them first on animals (as animals *apropos* humans are The Colonised, and humans The Coloniser). This is the Pre-clinical phase of a drug trial and may be numbered Phase 0. If no negative effects are reported in the animal trials, then the new drug would be tested in humans, a process which involves four phases with Phase 1 (small number of participants lasting a week) to Phase IV (several thousand or even hundreds of thousands of participants in long term clinical studies after the release of the drug on the market).[40] In other words, *liuweidihuang wan* has long passed the test of Phase IV, yet Wang *et al.*2011 propose to do a Phase 0, pre-clinical trial of the drug!

This absurdity apart, it is also the case that they have overlooked an important fact: even Bm-Mark II may not have uncovered all the biomarkers that could be discovered eventually by, say, Bm-Mark III or Bm-Mark IV. Using Bm-Mark II, then, to assess the scientificity of *Zhongyi* could mean that CC*M-Zhongyi*'s suit of treatments could be producing positive effects which escape the methods of Bm-Mark II. In these aspects, then CC*M-Zhongyi* would have to be written off as beyond the pale, as a piece of charlatanism or pseudo-science just as CC*M-Zhongyi* was condemned to The Inferior Category under Bm-Mark I because it could not attain the paradigm of Scientificity upheld by RCTs.

Conclusion

1. The appearance of the Integrated Systems Approach in Human Biology promises well for ARIIMO; for the first time an alternative to the dominant Reductionist Approach in Clinical Medicine exists. TC*M-Zhongyi* was about to celebrate that at long last *Zhongyi* could be set-free from the dog house to which it has been assigned as The Colonised by Bm, The Coloniser. *Zhongyi* by standing still for more than two thousand years had suddenly found fashion coming round to it; so, surely, it could no longer be condemned as failing to reach the Paradigm of Scientificity upheld under Bm-Mark I as that paradigm itself is overtaken by its opposite paradigm under Bm-Mark II?

2. Alas, that euphoria could not have lasted long, as Bm-Mark II shows that there are several stings to its tail.

3. Bm-Mark II as represented by that conception of Systems Biology advocated by the ISB is Big-Data Science, backed up by the most sophisticated and advanced technology platforms thrown up initially by the HGP.[41]

[40] See The Four Phases of Clinical Trials 2020.

[41] Due care has been taken to distinguish between the Integrated Systems Approach in Human Biology and that particular vision of Systems Biology advocated by the ISB for Clinical Medicine. Noble 2006 celebrates the former but as far as can be ascertained not the latter. This book is in agreement with Noble's approach.

4. The HGP has spawned four 'omics' domains of research and technological developments. It turns out that the most significant for TC*M-Zhongyi* is metabolomics/metabonomics, and its analytical techniques, NMR and MS.

5. TC*M-Zhongyi* fell for its allure in a big way, seeing the ability to measure and quantify metabolites as the way to legitimise itself so that it would no longer be looked down upon as The Colonised/The Inferior. It regards the study of metabolites as throwing up a bridge to enable it to cross over to scientific respectability. TC*M-Zhongyi* can pull itself up with its own bootstrap by "modernising" itself.

6. However, TC*M-Zhongyi* scientists who advocate this way forward have overlooked the fact that Bm as The Coloniser gets to set up and uphold what it sees fit to call the Paradigm of Scientificity. Bm practises Essentialism of Method/Methodological Exceptionalism as well as DFCM which follows from it.

7. As such, The Coloniser sees fit to overlook the commonalities, no matter how profound these may be, between itself and The Medical Other and to erect Methodological Exceptionalism, relying on DFCM, upon whatever differences exist between itself and the Medical Other.

8. Differences will always exist as the very distinction between Self and Other presupposes that there are two separate and diverse things/domains of activities in existence – this leaves room for Methodological Exceptionalism/ Essentialism of Method to operate.

9. Upholding Methodological Exceptionalism at all cost embodies The Colonial Mind-set as is obvious under DFCM.

10. Failure to realise above is reason why TC*M-Zhongyi* scientists walk into the trap laid by The Coloniser for its victim, The Colonised. As earlier observed, Bm-Mark II is not a bridge which leads to ARIIMO, but a bridge thrown up so that The Colonised could walk over to surrender to The Coloniser. It is not a friendship bridge but a bridge which upholds The Colonial Mind-set. It is not the limited strategy of *Pinyin*, but outright Latinisation/ alphabetisation which involves the supersession of the traditional Chinese script.

Part V

Irreconcilable Differences in Two Domains

Chapter Eight

Body-Mind Relationship: Dualism and Dyadic *Yinyang Wholism*

Bm	Biomedicine
CCD*P*	Classical Chinese Daoist *Philosophy* (*Daojia*)
CC*M-Zhongyi*	Classical Chinese *Medicine*
C*P*T	Chinese *Philosophy* Tradition
Em-ism	*Qi* is neither simply *energy* nor simply *matter*, but both, as *Energy*-cum-*Matter*
MCD	Monogenic Conception of Disease (as disease-entity)
MWPT	Modern Western Philosophy Tradition
MWM	Modern Western Medicine
RCT	Randomised Controlled Trial
SNRI	Serotonin-Norepinephrine Reuptake Inhibitor
SSRI	Selective Serotonin Reuptake Inhibitor
TCA	Tricyclic antidepressants
WPT	Western Philosophy Tradition

Introduction

The **Mind-Body/Body-Mind** problem is part of standard philosophy courses today in MWPT, playing a singularly crucial role in the sub-discipline, the Philosophy of Mind. In MWPT, the relationship between Mind and Body is presented and understood within the framework of Dualism; in C*P*T-CCD*P*, it is presented and understood within the framework of Dyadism embedded in *Daoist philosophy*/*Daojia* 道家 (CCD*P*). However, as we shall see, C*P*T did entertain a version of Dualism which became the core of *Rujia* thinking in moral/social/political *philosophy* from the Han dynasty onwards – the reader should, nevertheless, bear in mind that *Rujia* thinking had confined itself, in the main, to what may be called the "value" branches of *philosophy* and did not stray unduly into the domain of *Science* and its *Philosophy of Science* which were important concerns of *Daojia*/Daoist *philosophy*.

Dualism (first articulated by Descartes) and its related problem of **Reductionism** vs **Wholism/Emergentism** are part of MWPT's core curriculum. Furthermore, the **Body-Mind Dualism**, flowing from it, penetrates beyond academic philosophy to affect modern Western medicine (MWM)/Biomedicine (Bm), where Dualism is interpreted as Body being privileged over Mind – witness, therefore, Bm's Gold Standard of the RCT, dedicated to the elimination of the placebo effect in clinical trials to determine the efficacy of a drug/treatment.[1]

The *Daojia* texts which can profitably be explored to show how the Chinese understand the Mind-*Body* problem include *The Neijing*,[2] which exhibits the impact of *Daoist philosophy* on the theory and practice of (Classical) Chinese *Medicine*/CC*M-Zhongyi.* Such an exploration shows that this *philosophical* tradition (implicitly) rejects Dualism, embodies the **Contextual-dyadic Mode of Thinking**, embracing a *Wholism* of the mental and the physical. This *Wholism* is but the application of the paradigmatic ***Yinyang Wholism***, in which the polar contrasts, *yin and yang*, are inextricably entwined. Conceptually, *epistemologically* and *ontologically*, *yin* makes no sense and cannot exist without *yang* and vice versa. The concept of *personhood* may, therefore, be said to be a primitive one. As a result, the term ***shenti*/身体** should not be translated as "body" but as "**person-body**" [3] to demonstrate that the *Person* is a Mind-*Body*/*Body*-Mind *Wholism*: the mental cannot be dissociated from the physical, nor the physical from the mental. *Shenti* is, therefore, not the mere physical body of the RCT. The person-body in *The Neijing* and other *Daojia* texts embodies what may be called **Person *Wholism*.**

To understand more fully how C*P*T-CCD*P* regards the concept of *personhood*, one needs to understand how C*P*T-CCD*P* takes its fundamental ontological category of ***Qi*** to exist in two modes (as raised already in some detail in Chapter Four of this book: ***Qi*-in-concentrating mode** (气聚 *qi ju*, which is *Thing-ontology*) and ***Qi*-in-dissipating mode** (气散 *qi san*, which is *Process-ontology*) as well as the relationship between these two modes.

This shows that while both Dualist and Dyadic Modes of Thinking involve pairs of polar contrasts, they respectively understand this pairing very differently, leading therefore to very different conceptions of personhood,

[1] See Lee 2017a.
[2] For a discussion of other *Daojia* texts, such as *The Yijing* (*I Ching*) 《易经》, *The Laozi*《老子》, *The Zhuangzi* 《庄子》, *The Hanfeizi* 《韩非子》, *The Shanghanzabinglun* 《伤寒杂病论》, see Lee 2018.
[3] Zhang, Y. 2007 and this author are in agreement, but she uses the term "body-person".

whose implications have great significance, as noted already above, not only for academic philosophy but also for psychology, medicine and other domains.

The chapter will also look at the clearest enunciation of what this book calls Contextual-dyadism and its rejection of Dualism in C*P*T-CCD*P* in its analysis of the *Mind-Body* relationship. The *philosopher* in question is Fan Zhen 范缜; his essay is 《神灭论》 *The Shenmielun* usually translated in English as *The Annihilation of the Soul*. He wrote it in 507 CE, in the context of attempting to refute the Buddhist conception of re-incarnation.

Modern Western Philosophy Tradition and Dualism

Descartes and various forms of dualism

René Descartes (1596–1650), one of the intellectual giants who ushered in the Age of Modernity in Western Europe, was the first to articulate the doctrine of Dualism. Put simplistically, Dualism holds that in any domain which postulates two different, contrasting entities/things, one is superior to the other.[4] For instance, Abrahamic theology postulates there is God on the one hand, and there is Satan on the other; in humankind, there are men on the one hand, and women on the other; in the greater environment, there is (human) culture on the one hand and (non-human) nature on the other. In each pairing, the first mentioned entity is privileged over the second mentioned entity.

Table 8.1[5] sets out some of these historically celebrated dualisms in MWPT and in Modern Western Society. Note however that it is crucial to distinguish between two understandings of Dualism: (a) one is simply the general doctrine set out above; (b) the others are the variations of Descartes's original version of general Dualism, namely, Soul-Body Dualism[6] which have developed historically to take the form of Mind-Body Dualism, and then of Body-Mind Dualism. (b) is perfectly compatible with (a), as (b) simply selects a different item for elevation to the superior/privileged status.

Next, one needs to say something about general Dualism as an overarching doctrine. Plumwood 1993, 49-52 (who was primarily interested in the Man-Woman and Culture-Nature Dualisms) said that it invokes the strategy of "hyperseparation" or "radical exclusion".

> For distinctness, for non-identity or otherness, there need be only a single characteristic which is different, possessed by the one but not the other, in order to guarantee distinctions according to the usual treatment of identity (e.g., in Leibniz's Law). Where items are constructed or construed according to dualistic relationships, however, the master tries to magnify, to emphasise and to maximise the number and importance of differences and to eliminate or treat as inessential shared qualities, and hence to achieve a maximum separation. … denial or minimisation of continuity is important in eliminating identification and sympathy between members of the dominating class and the dominated, and in eliminating possible confusion between powerful and powerless … A major aim of dualistic construction is polarisation, to maximise distance or separation between the dualised spheres and to prevent their being seen as continuous or contiguous. … A further important feature of dualistically construed opposition is that the underside of a dualistically conceived pair is defined in relation to the upperside as a lack, a negativity.

In other words, the Dualist Mode of Thinking is essentially hierarchical, with a Master/Officer class and a Slave/Subaltern class.

[4] Note that not all philosophers and/or writers on the subject use/define the term "dualism" in exactly the same way. See O'Leary 2020 for one such account. If one has not misunderstood her, she claims to be a "naturalistic dualist", rejecting "reductive holism" (a contradiction in terms), advocating "nonreductive holism" instead. This author, following Plumwood 1993, uses the term "dualism" to refer to the understanding of polar contrasts in terms of a rigid hierarchical structure between superior and inferior classes of things/beings/states of affairs; furthermore, this author opposes the Dualist Mode of Thinking with the Contextual-dyadic Mode of Thinking. Note, too, that O'Leary contends that Descartes was a methodological reductionist though not an ontological one; this author contends that Descartes was methodologically an interactionist.

[5] Note that in this Table, the author has introduced a new term "patriarchism". This is because the extant term "patriarchy", in the opinion of this author simply refers to a social institution or practice, under which the male invariably dominates the female. However, the concept as such does not imply that patriarchy rests on a philosophy of Dualism.

[6] In invoking this specific version of Dualism, Descartes reconciled two aims, which appeared at first sight to be irreconcilable: (i) to do justice to Christian theology, (ii) to usher in the Age of Modern Science. By elevating Soul over Body, he bowed to religion, but at the same time, he released the inferior Body for objective/measurable/quantifiable (scientific) investigation.

Soul-Body	Soul is superior/more important than Body	Descartes invoked this version of Dualism in terms of two different substances	Methodologically, it relies on Interactionism[a]
Mind-Body	Mind replaces Soul as the superior item	A more secular version of Cartesian Dualism	Methodologically, it entails Reductionism, reducing Body to Mind; ontologically, it is a form of Idealism
Body-Mind	Inversion of secular Cartesian Dualism with Body being the superior item	Secularisation advances hand in hand with the development of Modern Science; the latter advocates that organisms are machines, including the human organism. This enables MWM/Bm to hold that the body of the patient is the objective site of all medical phenomena which can be determined/measured/quantified	Methodologically, it entails Reductionism but this time reducing Mind to Body; ontologically, it is a form of Materialism
Man-Woman	Ushers in patriarchism[7] in MWPT/MWS beginning in the 17th century	One prominent provenance is Kant – see *Physical Geography*; the *Sublime and the Beautiful*[b]	It turns Dualism into an explicit political power relationship
White-NonWhite	Ushers in Racism in MWPT/ MWS also in the 17th century	One prominent provenance is Kant, a pioneer of scientific racism – see *Physical*; the *Sublime and the Beautiful*[b]	It turns Dualism into an explicit political power relationship
Human Culture-Nature	Embodies Anthropocentrism	Descartes, a pioneer: Nature is to be controlled via Science/Technology for the benefit of humankind who is the Master and Nature its Slave	A celebration of Human superiority via Dualism
Western Philosophy/ Mathematics/Science-NonWestern *Philosophy/ Mathematics/ Science*	This version goes beyond the dualisms mentioned above as it even denies the very possibility and, therefore, existence of the second mentioned item in the pair of contrasts	In MWPT, this may be traced initially to Kant; the mantra is then taken up by Hegel, Husserl, Heidegger, Ryle, Derrida, regard-*CPT*-CCD*P*	This version of Dualism asserts that powers of reasoning (Rationality) and abstraction are unique to White peoples and their civilisation. Non-White peoples either lack such powers altogether or lack sufficient degree of such powers, as possession of Rationality and its degree depends entirely on the degree of skin pigmentation. In other words, it presupposes a racist hierarchy at least as far as Kant was concerned
Reason/Cognitive-Passions/Emotions/ Values	Factual matters are objective and are epistemologically elevated/privileged over/ above expressions of emotions/values/sentiments	This may be traced to Hume and later reinforced by Positivism (Comte followed by the Logical Positivists)	This version renders all non-factual matters irrational at worst, non-rational at best, on a similar footing as expressions of mere personal preference, such as liking apples, disliking oranges. Reason is confined to instrumental reasoning/ rationality of means to an end but no rationality of ends.

Table 8.1 Historically celebrated dualisms in MWPT and MWS
[a] See Robinson 2016; [b] See Lee forthcoming, Chapter 2.

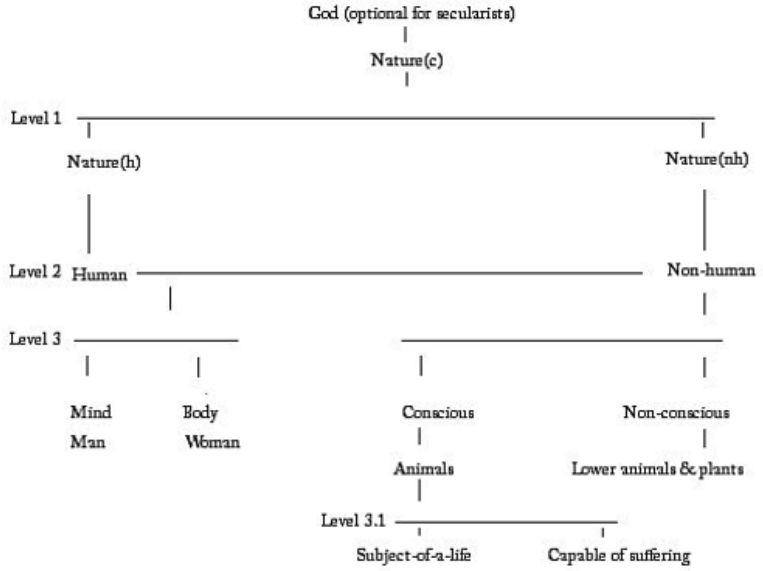
Let us examine a particular version of Dualist Thinking, namely, the Human Culture-Nature binary opposition in Environmental Philosophy (Table 8.2 below). The aim is to draw out some general, but more detailed, conclusions about the nature of such a perspective, as well as to act as a foil to Contextual-dyadic Thinking which will be set out in a later section in this chapter.

This representation of Dualistic Thinking implies the following theses:

1. What is to the right is inferior and subordinate to what is on the left at each level.

[7] In this Table, the author has introduced a new term "patriarchism". The extant term "patriarchy", in the opinion of this author, simply refers to a social institution or practice, under which the male invariably dominates the female. However, the concept as such does not imply that patriarchy rests necessarily on a philosophy of Dualism.

2. Each level is subordinate to the level above it, such that ultimately all levels are subordinate to God in the religious/Christian version, although in the secular version, God drops out of the scheme.



Nature (c):	Nature in the cosmological sense – the universe which came into existence after the Big Bang and what has evolved since the Big Bang
Nature (h):	That part of Nature which refers to humans and their unique type of consciousness; it is also referred to as Culture (that is, human culture and civilisation)
Nature (nh):	That part of Nature which is excluded by Nature (h)/Culture
Subject-of-a-life:	Higher animals, in particular mammals, such as chimpanzees, lions, tigers, elephants, and so on. Such animals, though they do not possess the kind of sophisticated language humans possess which makes possible abstract thinking, are held, nevertheless, to have memories, capable of forward planning (in a non-linguistic manner); in some cases they even possess a sense of the self.
Capable of suffering:	Animals which though not capable of what chimpanzees and elephants can do, nevertheless, are like them (and us humans) sentient and hence are capable of feeling pain. The lower animals and plants are not capable of suffering pain as they lack the kind of nervous system possessed by humans and the higher animals.

Table 8.2 Thinking dualistically at different levels, adapted from Lee 1999

3. What is on the right at each level either has less or no value in itself (no intrinsic value).

4. The religious as well as the secular versions are both compatible with extreme anthropocentricism (the view that only humans have intrinsic value and non-humans only have instrumental value for humans (see Lee 1999 for details).

5. In other words, 1-4 above imply that Dualistic Thinking as hierarchical thinking is ideological thinking writ large, either designed intentionally or co-opted wittingly/unwittingly to entrench a political (in the wider sense of the term) order, celebrating unequal power relationships. In such pairings, the higher/superior class denigrates the "Other"; the two categories are not purely factual or empirical in character, but are heavily impregnated with moral/social meaning and significance – for instance, the human male is not simply a human being born with a certain kind of reproductive organ system, just as the female is not simply a human being born with a different kind of reproductive organ system.

6. It is Reductionist Thinking – the inferior member of the pair is but an appendage, a mere shadow of the superior member. Furthermore, the latter enjoys the status of being the epistemological/methodological authority, laying down criteria for what constitutes a "proper" specimen of the former. Feminism complains bitterly on these two fronts as demonstrated by Plumwood 1993. Historically, in the Soul/Mind and/or Mind/Body pairing, the former was privileged over the latter. This held true in Christian theology; in Descartes's view, this remained true, thereby releasing the Body as inert Matter, fit for scientific investigation while retaining the Soul/Mind for higher things beyond, escaping empirical/scientific probing. However, after Descartes, Materialism, the new metaphysics, began to undermine the original Cartesian accommodation, turning the relationship upside down, with Body as Matter becoming the superior category while Mind was/is to be reduced to Matter. In Bm, the human being is even

conceived as machine, as artefact, no longer a naturally occurring organism.[8] Dualism in this sense is the rival of Monism which may take the form of either Materialism (when Mind is reduced to Body) or Idealism (Body/Matter is reduced to Mind).

7. It is embedded within the framework of entity- or Thing-ontology. Earlier, the term "Thing-ontology" is used as the context makes it appropriate to do so. In this section, it may be more appropriate to use the term "Entity-ontology", as God/Devil, Mind/Soul are not physical things but non-physical entities. (In other words, the class of entities is larger than that of things, as things – physical objects – are a special sub-set of entities.)

Body-Mind Dualism, Biomedicine and the Placebo Effect

We next look briefly at the Body-Mind problem, which underpins Bm under MWPT. In this version, the purely physical Body is privileged over Mind. As Table 8.1 indicates, under MWPT/MWS the view that the human organism is Machine took centre stage with the publication of *L'homme machine* in 1747[9] by de La Mettrie (1709-1751), the French physician and philosopher setting out his relentless Materialism. Admittedly, MWPT/Bm did not buy it totally unedited but its orientation sanctifies measurement and quantification of all medical phenomena, rendering MWPT/Bm an objective, Newtonian Science whose object of study is the Body. In contrast, mental/ psychological properties/attributes, being subjective, are considered to be beyond the Pale of Science. Under such a dispensation, the truly meaningful foundation is Matter affecting Matter: for instance, antibiotics (bit of Matter such as streptomycin[10]) can kill other bits of Matter, the Tubercle bacillus, which is said to be the cause of tuberculosis (under MCD: one cause-one disease[11]).

Such an orientation tolerates at best epiphenomenalism,[12] that is, while Matter/physical event can produce mental effects, it rules out that mental events can produce physical effects; that physical/biochemical events in the brain can generate mental events, but mental events produce no effects in the physical world. Epiphenomenalism does not deny that there is conscious awareness, immediately known to the subject, but that this conscious content is not 'substantial', as it cannot exist alone but is solely dependent on the brain (Matter) with which it is co-extensive.[13]

Epiphenomenalism makes it possible for Bm to treat psychiatric illnesses via psychotropic drugs – for instance, SSRIs, SNRIs, TCAs (amongst others) are used to treat patients suffering depression.[14] Such drugs (containing bits of Matter) alter chemical levels in the brain (other bits of Matter), leading to change of mood/emotions and behaviour (physical events).

Biomedical Pharmacology (as shown in Chapter Six of this book) carries out Materialism to even more refined heights. For instance, in testing the efficacy of a plant-based item as potential drug, the whole plant is irrelevant; what is relevant and enters the trial is only its active ingredient. Bm-RCTs are then designed with the aim of determining whether the active ingredient (constituting the drug) is efficacious in eliminating/ameliorating the condition/disease in question. In the control arm of the trial, the standard Matter to use is the placebo pill/ equivalent, which contains only inert Matter (such as flour but made to look like the experimental pill in all other ways, *ex hypothesi* containing no active ingredient of any kind). In an ideal test situation, triple blinding occurs (neither participants nor personnel administering the drug, nor the medical personnel assessing the outcome of the test) would know which is the experimental arm (the real pill) and which the control arm (dummy pill). Allocation, via randomization of participants to either arm, would be done algorithmically via a computer operated by yet others not otherwise involved with the test. As inert Matter cannot produce any effect, at the end of the experiment, the participants in the control arm are expected to show no change, while those in the experimental arm are expected to demonstrate a change in the condition under study. If the results in the experimental arm are better than those in the control arm (the difference must satisfy statistical significance), then the FDA in the USA/equivalents elsewhere in the world would approve the drug for marketing.

On this model of experimental logic, the biggest threat to scientific integrity is the pollution of the test situation via the placebo effect. Human consciousness seems to be perverse, as once a subject comes to believe that the pill, they are swallowing is the veritable active-ingredient pill, even if objectively it is but a dummy pill, this might produce an ameliorating/eliminating effect on the condition under study. Objectively, inert Matter can produce no such effect but alas, an objectively inaccurate belief can, nevertheless, produce a subjective effect. Science, however, must hold

[8] On this ontological *volte-face*, see Lee 2012b.
[9] For an English translation, see URL = https://www.earlymoderntexts.com/assets/pdfs/lamettrie1748.pdf ..
[10] To-day, a single drug is no longer used but a combination antimicrobial therapy is invoked, given drug resistance of the bacillus.
[11] See Lee 2012b, Chapter 9 for a detailed critical discussion of MCD in Bm.
[12] See Robinson 2015.
[13] See Churchland 1986 for one strident stance and Kim 2005 for a more muted approach; for a critique, see Clayton 2004.
[14] See Depression 2018.

subjectivities at arm's length; hence, eternal vigilance must be exercised to prevent subjectivities from corrupting objective data. Materialism must be strictly adhered to; what is mental/subjective must be reduced to what is physical/objective. What cannot be thus reduced must be eliminated from the scientific domain.

Daoist *Philosophy* (C*P*T-CCD*P*) and Contextual-dyadism

Contextual-dyadic Mode of Think**ing**

This section will examine Dyadic Thinking, embedded within Contextual Thinking as Contextual-dyadic Thinking, which could be said to be fundamental to C*P*T-CCD*P*.[15] C*P*T-CCD*P* is not simply either Contextual Thinking or Dyadic Thinking *simpliciter* but both.

Contextual-dyadic Thinking may be spelt out as follows:

1. Strictly speaking, a term implies its opposite. For instance, "cat" implies the class of "non-cat". An oppositional pair may then be drawn out, namely, cat and non-cat.

2. However, in the real world beyond that of Formal Logic,[16] the class of non-cat is not a helpful category as it is a very large class indeed. It includes dogs, buttercups, humans, water, and fire, indeed, virtually everything else in the universe other than cats.

3. In the real world, therefore, depending on the context, that other category is delimited to say dogs, such as when we are talking about a cat show as opposed to a dog show, or when we discuss the merits of keeping cats as opposed to dogs as pets. Hence how we pick out "the other category" or class depends on the context; Contextualism, in turn, means that the oppositional pair created is not a Dualism but a Dyadism.

4. Dualism implies permanence, as it is context-independent – hence under Dualism, men are (in all contexts) superior to women, Mind or Soul is superior to Body (or Body is more fundamental than Mind in Bm), humans are superior to non-humans, and so on. Under Dyadic Thinking, as it is context-dependent, men are superior to women in certain contexts such as, in general, possessing greater physical strength, while women, in general, are superior to men, for example, in grasping nuances in emotional relationships; women can bear children but men cannot, and in this sense, men may be said to be "inferior" to women. Inherent inferiority or inherent superiority is not part and parcel of Dyadic but only of Dualistic Thinking.

5. In Dyadic Thinking, the two terms in opposition in any one pair – "men"/ "women" or "mind"/ "body" – simply refer to different conglomerations of characteristics or functions in any one given context. The difference(s) focussed on would not necessarily be carried over to other contexts. For example, a cat can catch mice, a dog cannot; so, in the context of exterminating vermin, cats are opposed to dogs and are superior to dogs in this respect. A dog can bark at and bite intruding strangers on its owner's premises, a cat cannot. However, in the context of animals as pets, dogs and cats are both pets which live with their owners inside the owners' home and so are different from and, therefore, opposed to dairy cattle or egg-laying chickens, which are bred for the table or the market and live outdoors in the fields or in the barnyard.

6. All oppositional terms, according to Dyadism, involve Contextualism but some also involve Perspectivism, in particular, terms such as "big"/ "small", "above"/ "below", "tall"/ "short". Relative to y, a is big, tall or above, but relative to z, a is small, short or below. Relative to a chicken, a human is large but relative to an elephant, the human is small. Relative to an ant, a two-inch high mound of earth is a big obstacle lying in its path, relative to a cat, it is not even a real obstacle, as with one paw, the cat can flatten it, and get on its way. Relative to a bird, it is above the worm poking its head out of the grass, but relative to an aeroplane, the bird is below the flying machine. What is above or below, big or small depends on the position of the viewer and the kind of viewer it is, on the distance between the viewer and the viewed, on the value standpoint of the viewer.

Many of the examples found in *The Zhuangzi* are instances of Perspectivism. *The Laozi* is also full of similar pairings such as big and small, up and down, inside and outside, flat and sloping and many others. R. Smith 2008, 24 observes, "the line texts are peppered with dozens of rhythmic two-character juxtapositions…"

[15] For a like-minded account, see *Zhang 2008.

[16] C*P*T implicitly rejected Formal Logic as understood in WPT which is bi-valent logic. Lee 2017a argues that it has an implicit *logic* which may be called *Yinyang/Yao-gua* Implicit *Logic*, a multi-valent *logic*, an analogue of today's Fuzzy Logic – see Lee 2017a, Chapter 9 or Lee 2021 (Open Access), Chapter 4 for a detailed account.

7. Perspectivism emphasises that there is a conceptual link between the contrasting terms in the pair – that the concept inside (x) implies that of outside (y), of far that of near, of tall that of short, of beautiful that of ugly. The concept x could only be properly grasped/understood by relating it to its conceptual contrast y.

8. However, not all oppositional terms involve Perspectivism as outlined at 7 above. Other pairings such as sweet/bitter or hot/cold may be more suitably categorised under general Contextualism than Perspectivism. For instance, if the person first eats a very sweet piece of milk chocolate, then a piece of dark chocolate (with a very high cocoa content), the bitter item would taste even more bitter than if it were taken on its own without first having eaten the sweet item; if you first plunge your hand in cold water followed by plunging it into hot water, the hot water would feel less hot than it would otherwise be. Take weeping/laughing: we associate weeping with something sad or tragic and laughing with something funny, entertaining, joyful – yet sometimes the most tragic of circumstances would elicit not weeping but laughing, and the laughing is to be understood as weeping but in another mode. This simply confirms the claim that all contrastive pairings are context-dependent; hence, the significance of Contextualism in the Chinese Mode of Thinking, that is, the Contextual-dyadic Mode. A passage from *The Laozi* which illustrates both Perspectivism in particular as well as Contextualism in general may be found in Chapter 2 of that book.

> 天下皆知美之為美，斯惡已。皆知善之為善，斯不善已。故有無相生，難易相成，長短相較，高下相傾，音聲相和，前後相隨。是以聖人處無為之事，行不言之教；萬物作焉而不辭，生而不有。為而不恃，功成而弗居。夫唯弗居，是以不去。

Legge's translation is as follows:

> All in the world know the beauty of the beautiful, and in doing this they have (the idea of) what ugliness is; they all know the skill of the skilful, and in doing this they have (the idea of) what the want of skill is. So it is that existence and non-existence give birth the one to (the idea of) the other; that difficulty and ease produce the one (the idea of) the other; that length and shortness fashion out the one the figure of the other; that (the ideas of) height and lowness arise from the contrast of the one with the other; that the musical notes and tones become harmonious through the relation of one with another; and that being before and behind give the idea of one following another. Therefore, the sage manages affairs without doing anything, and conveys his instructions without the use of speech. All things spring up, and there is not one which declines to show itself; they grow, and there is no claim made for their ownership; they go through their processes, and there is no expectation (of a reward for the results). The work is accomplished, and there is no resting in it (as an achievement).The work is done, but how no one can see; 'Tis this that makes the power not cease to be.

9. One of the most familiar pairings in C*P*T-CCD*P* is the *Yinyang* pairing as it is also the most crucial in Chinese *philosophy/science*/culture, and it is paradigmatically Contextual-dyadic. However, R. Smith 2008, 24 may be correct in observing that:

> (t)hese (perspectival) contrasts suggest a major source of inspiration for, if not the actual origins of the pervasive notions of yin and yang. These concepts are not articulated as such in the earliest strata of the *Yi*, but they are manifest in the late Zhou dynasty commentaries that became known as the Ten Wings.[17]

10. The *Yinyang* pairing also serves to bring out more strongly than other pairings that the relationship between *yin* and *yang* goes beyond a mere conceptual relationship; empirically, causally and *ontologically*, they are inextricably entwined with each other, acting as a harmonious *Whole* (*Yinyang Wholism*) as will be demonstrated in a later section in this chapter. The pairing and the harmonious *Whole* are empirically based because processes in Nature exhibit them – day is followed by night, night by day, Winter by Summer, Summer by Winter, heat by cold, cold by heat, life by death, death by life. *Yuzhou* 宇宙 (Universe) and *wanwu* 万物 (all things, especially organisms in the world) repeat this cycle in an enduring manner. The pairing is *ontologically* grounded because the fundamental category in *yuzhou* is *Qi* and *Qi* exists and operates in two modes (*Qi Wholism*), namely, *Qi*-in-dissipating mode (*Process-ontology*) and *Qi*-in-concentrating mode (*Thing-ontology*) – together they form a harmonious *Whole* as *Em*-ism, neither only as *Energy* nor only as *Matter* (to use modern language) as Chapter Four (this book) has argued. The pairing functions causally in terms of *xiangsheng* 相生/Mutually Engendering or Promoting on the one hand, and *xiangke* 相克, /Mutually Controlling on the other. (In the language of Science today, the pair may be said to illustrate negative and positive feedback mechanisms at work. This aspect has already been looked at in Chapter Four of this book.) The passage to follow may be cited as evidence in support of this analysis. *Yinyang* does not merely refer to concrete things set in stone but also to relationships in any given context – for instance that in the

[17] *The Ten Wings* 《十翼》is said to be a work by philosophers of the Han dynasty. It together with the original *Yijing* came to be called *The Zhouyi* 《周易》.

night/day 昼夜 sequence, relative to night, day is *yang* and night is *yin*, but relative to day itself, the first half is *yang-in-yang* 阳中之阳, and the latter part of the day when sun gets weaker, it is *yin-in-yang* 阳中之阴. Relative to night itself, the first half is *yin-in-yin* 阴中之阴, and the second half is *yang-in-yin* 阴中之阳. (See *Liu 1981, 48.)

> 《素问· 金匮言论》：阴中有阴，阳中有阳。平旦至日中，天之阳，阳中之阳也；日中至黄昏，天之阳，阳中之阴也；合夜至鸡鸣，天之阴，阴中之阴也；鸡鸣至平旦，天之阴，阴中之阳也。
> In *yin* there is *yin*, in *yang* there is *yang*. From sunrise to noon, the *yang* of the sky (in the environment around us) is *yang*-in-*yang*; from noon to sunset, the *yang* of the sky is *yin*-in-*yang*; from midnight to dawn (when the cocks crow), the *yin* of the sky is *yin*-in-*yin*; from dawn to sunrise, the *yin* of the sky is *yin*-in-*yang*.[18] (*The Neijing: Suwen*: Chapter 4)

Another example comes from the *Yinyang/Yao-gua* Implicit *Logic* embedded in *The Yijing* 《易经》as set out in Lee 2017a, Chapter 9; see also Chapter Five of this book, Figures 5.1 and 5.2 of the *Xiantiantu* 先天图 (Former or Earlier Heaven Configuration of the Trigrams) and *Houtiantu* 后天图 (Later Heaven Configuration of the Trigrams) respectively. The *Xiantian* (Former-Heaven) arrangement shows the trigrams as polar contrasts with the *Qian gua* 乾卦 occupying South and the *Kun gua* 坤卦 occupying North; the *Li gua* 离卦 occupying East and the *Kan gua* 坎卦 occupying West; the *Zhen gua* 震卦 occupying Northeast and the *Xun gua* 巽卦 occupying Southwest; the *Dui gua* 兑卦 occupying Southeast and the *Gen gua* 艮卦 occupying Northwest. The *Houtian* arrangement shows the trigrams differently positioned. Here, the *Li gua* now occupies due South and its polar contrast the *Kan gua* occupies due North; the *Zhen gua* occupies due East and its contrast the *Dui gua* occupies due West; the *Gen gua* occupies Northeast and its contrast the *Kun gua* occupies Southwest; the *Xun gua* occupies Southeast and its contrast the *Qian gua* occupies Northwest. In other words, the trigrams could be differently arranged depending on the context of their application; they could occupy different positions in terms of *Timespace* – for instance, a different *gua* other than the *Qian gua*, namely, the *Li gua* could be used to stand for East/Summer/Heat/*Yang* depending on context.

As already strenuously emphasised, ancient Chinese thinking is embedded within the over-arching Contextual Mode of Thinking. Hence, its account of polar-contrast pairings is Dyadic, not Dualist as according to the Dualist Mode of Thinking, the respective status of the superior/the privileged/the dominating and that of the inferior/the non-privileged/the dominated half of the pairing remained hierarchically unchanged, set in stone. In contrast, the Contextual-dyadic Mode of Thinking of C*P*T-CCD*P*, where the pairings form a harmonious *Whole* could, therefore, be argued to be a distinctive form of thinking, indeed, even unique to that civilisation and its culture.

11. Let us now reinforce the analysis above, surprisingly, by looking at an image of the pro-creation myth in Chinese folklore. The first image which appeared in Chinese history could be dated to the Han dynasty (although the one reproduced below is a much later version); the myth itself in its various forms has been found in texts between the Warring States period and the Han dynasty.[19] Furthermore, the concepts it represents are in accordance with foundational texts such as *The Yijing* as well as *The Ten Wings* of *The Zhouyi*, *The Laozi/Daodejing*, *The Zhuangzi*. This is the myth about Fuxi 伏羲 and Nüwa 女娲, the first parents of the Chinese, so to speak. The image looks like this:

[18] The quotation is from *The Neijing, Suwen*; this Daoist text is the foundational text of CC*M*. (The translation given here is by this author.)

[19] See Legends of Fuxi and Nüwa 2019 (for a quick account of the myth in English).

Figure 8.1 The Fuxi and Nüwa pro-creation myth

In keeping with the Contextual-dyadic Mode of Thinking, note the following:

1. Fuxi is not consistently *yang* and Nűwa is not consistently *yin*.

2. Processes in *ziran* 自然/Nature are simply never purely *yang* or purely *yin* – these are constantly changing in the configuration of *yin* and *yang*.

3. Both *yin* and *yang* are necessarily present in generating order and life in the world.

4. Fuxi and Nűwa form a *Whole*; they are pictured with the top half of their bodies separate while their bottom halves intertwine to form a spiral.

5. Polarities are inter-dependent, mutually supportive and inter-acting in producing an outcome which is spiral in nature. The spiral form may be said to be significant in an additional way: to indicate that processes in Nature/*ziran* 自然, in *wanwu* repeat and replicate themselves but not in an exactly identical manner each time – Summer which had just gone would come round again the next year, but the summer of the past years would not be identical with the summer of this year, or with the summers of years to come. Cyclical reversions 周而复始 / *zhou er fu shi* occur but each cycle proceeds somewhat differently and achieves a slightly different equilibrium.

6. The above exemplifies *Process-ontology* cum *Thing-ontology* at work (*Qi Wholism*).

7. We can also analyse the image in terms of different levels:
   Level 1: Fuxi, being male, is *yang*, while Nűwa, being female, is *yin* – the *jing* 精/sperm of the male and the egg/uterus of the female are required for procreation.[20]
   Level 2: Fuxi is pictured holding a set-square. The set-square, an instrument used by carpenters, is the symbol of Earth/*Di* – in this sense, Fuxi is no longer *yang* but *yin* and, therefore, embodies *Yinyang*. Nűwa is shown

[20] The details in the myth about their first act of sexual intercourse, the first such act in human history, according to Chinese folklore are as follows: Fuxi and Nűwa were brother and sister. However, they realised if they were to have progeny (in order to perpetuate the human race), they must copulate. Yet they hesitated to do so initially, but later gave in to this desire under a specific condition. If Heaven were to see their act of sexual intercourse as a worthy act, it would send clouds to shield them, giving them the privacy, they needed while they engaged in it. (At least, this was so according to one version of the myth.) They duly ascended a mountain; lo and behold, the clouds descended covering them and the mountain top. They knew then that Heaven had granted permission for this primeval act of intimacy and pro-creation. However, Nűwa played more than one role in Chinese mythology – she was portrayed not only as pro-creator in the reproductive process, but also as creator of human beings (this time literally making humans out of mud and breathing life into the clay models), as goddess, empress, mother and sister – she was a multi-tasking, multi-role figure.

holding a pair of compasses. That instrument is used to draw a perfect circle which is the symbol of Heaven/*Tian/yang* (as astronomical phenomena such as day/night, the four seasons are cyclical in nature). Hence, Nűwa too, is not simply *yin* but is also *yang* and embodies *Yinyang*.

Level 3: Fuxi's set-square is no longer associated with something *yin*, such as the carpenter's tool but now stands for something *yang*, as in this context, the instrument stands for kingship which is *yang*. Nűwa's pair of compasses, in this context, is associated with *yin*, with bringing about ordered space following the chaos caused by the flood of mythology – see Lewis 2006, 125-127; R. Wang 2012,101.

(i) In generating cosmic order, *yin* and *yang* must co-exist and inter-act as *Yinyang*; as such the set-square and the pair of compasses stand for *Tiandi*/Heaven and Earth, that is, the universe (or our Solar System). Furthermore, *Tian* is about time and *Di* is about space; hence *Tiandi* is about *Timespace*. [21]

(ii) In generating political order, Fuxi holds the set-square, which is the symbol of kingship. The Chinese character for this instrument is *ju* 矩. Nűwa holds the set of compasses which may be read as standing for natural order on Earth (by clearing up the mess caused by the primeval flood).[22] The Chinese character for this instrument is 规. The two instruments themselves, since the Warring States Period (475-221 BCE) have stood for rules and standards "that impose order on unruly matter" – R. Wang 2012, 101. The two respective characters for the set-square and the compasses are combined to form the word *guiju* 规矩, which refers to any rule or convention for setting up and maintaining order in society/ community/organisation. The Eastern Han dynasty historian and scholar, Ban Gu 班固 (32-92) in *Hanshu* 《汉书》explicitly identified these two implements with *Yinyang*. He wrote:

> The compass is used to standardize circles so they attain their *lei*; the square is used to standardize squares so that they do not lose their form. The compass and square are mutually dependent. When *yinyang* are in order and position, the circle and square will be completed. (Ban Gu, *Hanshu* (*The Book of Han*), Beijing: Chinese Press, 1955, as translated and cited by R. Wang 2012, 102.)

The primitive concept of *person*, of *shenti*/person-body[23]

To approach this concept, take a look first at the two-character word *shenti*/身体 or the single-character word *shen*/身. In one sense, either, *shen* or *ti*, could simplistically be translated as "body" in English. However, this would be a mistake, for such a translation would distort the *philosophical*/*ontological* nature of *shen* or *shenti* in C*P*T-CCD*P*. We have been at pains to point out above that C*P*T-CCD*P* is not Dualist but Dyadic, that it is not based on *Thing-ontology simpliciter* or on *Process-ontology simpliciter* but on *Process-ontology cum Thing-ontology* (*Qi Wholism*). It is therefore more appropriate either to leave the term untranslated or to attempt to translate it as "person-*body*".[24] Though inelegant, this term has the virtue of making it clear that in C*P*T-CCD*P* and Chinese culture in general, and CC*M-Zhongyi* in particular, one cannot talk about "the body" without putting it into the context of the *person* as a primitive concept. *Ti/shenti* is not Body, in the way that MWPT and Bm understand Body. Either term refers, at once, to both the physical aspects (whether as thing such as the *person*'s broken leg or as process such as the *person* shivering with cold), as well as the mental aspects (such as the person being sad or elated, suffering from hallucinations or delusions, talking total gibberish). The *person* with the broken leg may also be a *person* feeling depressed, lethargic or excited. The physician, in diagnosing their condition, will be addressing the broken leg, but at the same time would also take in the fact that the *person* is, say, excited or in a very agitated state, and would try to ascertain, if the state of excitement might not have something to do with their breaking the leg.

Shenti, therefore, implies that *personhood* is a primitive concept – that is to say, the mental and physical aspects of a human being are inextricably intertwined and cannot be separated out. This means that *personhood* constitutes a form of *Wholism*.[25] The *person* is neither Body over Mind, nor Mind over Body; the *person* neither thinks only

[21] For a detailed exploration of this concept/theme, see Lee 2017a, Chapter 10.

[22] According to at least one version of the myth, the gods in the sky above quarrelled and fought one another viciously. As a result, the pillar supporting Heaven collapsed and Earth was in disorder and chaos. Nűwa repaired the damage by cutting off the feet of the tortoise to support the four corners, and to use seven different colour stones to patch up the holes in the sky. Note that in this myth, those who caused damage were male and the individual who restored order was female. This could be read to reinforce the analysis pursued in this book, that the Chinese Mode of Thinking even when embodied in myths is not a Dualist but Dyadic one.

[23] For a discussion, which is close to the view held by this author in English, see Y. Zhang 2007, Chapter III.

[24] Y. Zhang 2007 has translated it as "body-person"; this author has no strong objection to it.

[25] *Wholism* in C*P*T as well as Wholism in MWPT are incompatible with Reductionism as the *Whole*/Whole is more than the sum of its component parts. (To remind the reader, italicisation draws attention to the Chinese context in which this *philosophical* term is used.)

rationally nor makes preferences only in the light of Passion. On the contrary, the *person* is a *Whole*; to grasp such a *Whole*, one must grasp both Body and Mind, both Reason and Passion. To be a (living) human being is to be a *person*;[26] to be a *person* is to be a being, whose physical and mental characteristics are so entwined that one would not be able to separate them, and if *per impossibile*, one could, each could not exist or endure separately and independently of each other. It is like the *Yinyang* pairing. *Yin* and *yang* are inextricably linked, *yin* cannot endure without *yang* just as *yang* cannot endure without *yin*; they exist as *Yinyang Wholism*. (We'll be returning to this discussion in detail later.) In the same spirit, *Mind* cannot exist without *Body*, nor can *Body* exist without *Mind*. Analogous to *Yinyang Wholism*, one can call this *Mind-Body* (or for that matter *Body-Mind*) *Wholism* or *Person Wholism*. This then is what is meant by saying that the concept of *person* is a primitive concept,[27] as it is an embodiment of *Wholist philosophy*. Figure 8.2 attempts to make this point clear.

Figure 8.2: Superposing *Person Wholism* upon *Yinyang Wholism*
Shen/神 (person-spirit) is *yang*; *shen*/身 (person-body) is *yin*

The character 身 is short, so to speak for *shenti*/身体. Strictly speaking, *shen* (first tone)/身 belongs to the *yin*/dark side of the *Liangyitaijitu* 两仪太极图/*Yinyang* symbol, standing for the *physical/body* aspect of the *person*. Its polar counterpart is *shen* (second tone)/神, the left-hand bright side of the *Yinyang* symbol; it stands for *the spirit/the mental aspect* of the *person*. But note, on both sides of the symbol, you can see that each embraces an aspect of the other. The dark side/fish incorporates a bright spot (the fish eye) which is *yang*, while correspondingly, the bright side/fish incorporates a dark spot (the eye) which is *yin*. This clearly shows that in *yin* there is *yang*, in *yang* there is *yin*, one does not exist without the other, and is unintelligible in isolation from each other. Each side of the symbol on its own constitutes a *Whole*. Furthermore, the two halves/fishes themselves constitute a bigger *Whole*. This means the relationship between *yin* and *yang* are doubly *Wholist* in character. It follows that *shenti* cannot and does not simply refer to Body as understood in MWPT/Bm (Thing-ontology). When Chinese physicians talk about the patient's *shenti*, they bear in mind that the mental and the physical aspects of the individual are held tightly together when diagnosing the condition of the patient, when prescribing an appropriate treatment for the condition, even if the physician is examining seemingly a case of a broken leg.

Therefore, CC*M-Zhongyi* considers all illnesses to be psychosomatic, to a lesser or greater extent. (In Bm, officially and formally, the recognition of a distinct branch of medicine called Psychosomatic Medicine occurred only in 2003,[28] as it is, strictly speaking, an aberration from the dominant model of MCD (illness conceived of in terms of

[26] The truly dead human, according to C*P*T, is not someone who has just this minute breathed her last; it is the cadaver lying in the coffin hours/days after death or on a shelf in the pathology laboratory, long after the Spirit/mental attributes have totally dissipated and disappeared. This view is in keeping with empirical evidence which rarely obtains but which is not faked – see *New York Post*, 23 April 2020 for a case of a woman pronounced dead by doctors and had been "bagged up" coming back to life.

[27] Peter Strawson (1919-2006) 1959, a leading analytical philosopher of the last century, had also put forward arguments for the concept of person as a primitive one. However, the approach pursued here is dissimilar to his.

[28] In March 2003, the American Board of Medical Specialities approved certification in psychosomatic medicine, unanimously recognising it as a sub-speciality of psychiatry and neurology – see Psychosomatic Medicine 2010.

It is fitting here to draw attention to the work of the neurologist (Irish, now working in London), Suzanne O'Sullivan who has written extensively in an accessible manner to popularise the notion of psychosomatic medicine to the public at large. See O'Sullivan 2016, 2018, 2021. In her latest publication, she describes the condition of a ten-year-old girl called Nola whom she visited in Sweden who had fallen into a coma, and yet medical investigations (including blood tests and scans) failed to find anything (physically) wrong with her. Her brain showed up no organic abnormalities. Doctors in Sweden invited the neurologist to examine the patient in the hope that she would be able to give them an answer which (in the language of this author, not Dr O'Sullivan's) would fall into the ontological domain of the body (physical), a domain which Bm would be comfortable with. Instead, O'Sullivan came up with what she has called "the resignation syndrome" in which the child had given up all hope and hence had resorted to withdrawal from the world of reality and into self-insulation and self-isolation, as it were. In other words, the cause is not physical but mental – the physical condition of being in a coma is real and physical

a single disease-entity, falling into the domain of Thing-ontology.) If the mental cannot be detached from the physical aspect of a *person* (nor the physical from the mental for that matter), then subjectivities must be taken into account, and cannot be eliminated. The placebo effect is not a bug bear as it is with Bm – on the contrary, such effects may helpfully be harnessed to help patients to recover from their ailments. The patients' beliefs/emotions (so-called subjectivities), paradoxically are part of the empirically given and hence must be taken into account in a therapeutic situation.[29] An experienced and brilliant physician inspires confidence in patients as a result of which they would come to believe that they would get better through the treatment prescribed. The extra bit of good effects would simply enhance the good effects from the accurate diagnosis/treatment. To the CC*M* physician, the Bm-kind of RCTs would make no sense and be totally irrelevant. (See Lee 2017a and Lee 2018, Chapter 6.)

Let us next quickly note how Chinese culture normally understands the role of Reason and whether, within it, the dichotomy between Reason and Passion (desire/emotion), so clearly made under value scepticism in WPT since modernity, occurs. Look at the two-character word in contemporary Chinese for "sense"[30] – it is 情理 *qingli*. The second character *li* on its own means "reason" or "principle". Why then is there a need to add another character in front of it? One superficial way of answering the question is to say that in its long history of development and evolution, the Chinese language has a tendency to use increasingly two-character rather than one-character words (see Lee 2008). This may, at best, be a partial explanation, as in this case, the use of *qing* is telling. 情 means "feeling", "sentiment", "affection". In other words, the word 情理/*qingli* may be construed as perfect evidence that Chinese culture does not recognise the Dualist Mode of Thinking so characteristic of modern Western culture, which, since Hume, distinguishes between Reason, on the one hand and Passion, on the other. Instead, Chinese *philosophy* and culture recognises that Reason is informed by appropriate and/or appropriate degree of Passion (as the context dictates), that Reason and Passion are not in conflict, though contrasting, but, nevertheless, are seen to form a harmonious *Whole*.

Hume (*Treatise on Human Nature*, Part 3, Section 3) held that:

> Reason is, and ought only to be the slave to passions, and can never pretend to any other office than to serve and obey them. [31]

This, then, downgrades Reason to that of instrumental reasoning only – whatever end/goal the agent cares to adopt, the only role that Reason can play is confined to what is called means/end reasoning. You wish to die as martyr for your faith, your chosen end. What is the most efficient means you can adopt to achieve it? Leaving home to join a jihadist organisation would be one obvious way forward, but choosing to lie on the family couch simply to watch news reports about the activities of jihadists is not. In other words, according to Hume, there is rationality of means but not of ends. Reason cannot inform you whether it is rational to become a jihadist or to be a non-violent proclaimer of the universal brotherhood of men. Once the role of Reason has been downgraded in this way, it follows that Passion plays the key role in life.

Hume also said (in the same work) that:

> 'Tis not contrary to reason to prefer the destruction of the whole world to the scratching of my finger.

According to C*P*T-CCD*P*, Hume would definitely be acting "contrary to reason"; Hume would be acting unreasonably/irrationally if he were to choose in the way he had set out. A *person* making such a choice would be

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but the cause is also real but mental. Nola was not the only child in Sweden suffering in the way described at the time of O'Sullivan's visit. It turned out that she was a refugee, having arrived in Sweden to seek asylum after traumatic experiences in her country of origin. Her family's application to be granted asylum had been turned down by the Swedish government on more than one occasion. Having exhausted the process, the family was threatened with deportation. At that stage, Nola developed the resignation syndrome. It is not surprising that when finally, the family was granted permission to stay in Sweden, Nola started slowly to recover. Her "cure" did not consist of swallowing pills, having drugs injected into her, electric shocks to the brain or whatever other known forms of treatment provided by Bm in coping with its normal understanding of disease in terms of disease-entity, malformed structure, disordered organic functioning. Again, not using Dr Sullivan's own language but the language of this author, once the illness is contextualised within its appropriate psychological and social contexts, which understand medicine as Ecosystem Science (see Chapters Three and Four, in particular Figures 3.2 and 4.5 of this book), as well as in terms of Mind-Body *Wholism*, the nature of Nola's coma becomes clear. (Note that the term "*Wholism*" is in italics; for the simple reason that while CCM-*Zhongyi* has since its inception upheld the concept of Mind-Body *Wholism*, in mainstream Bm, the concept is not recognised and endorsed as this chapter attempts to make clear.)

[29] On this point, it is heartening to note that there has of late been a radical shift amongst some doctors and medical scientists in Bm towards the incorporation of the placebo effect into the therapeutic situation. For instance, there is now a society called SIPS (Society for Interdisciplinary Placebo Studies) which has to date held three international conferences: 2-7 April 2017 in Leiden, 7-9 July 2019 in Leiden, 16-28 May 2021 in Baltimore. For the work of a psychologist and neuroscientist, see Fox 2008, 2013.

[30] "Sense" refers to a context when what someone has said or done is sensible or reasonable – the Chinese would then say it is *he qin he li* 合情合理/in accordance with (appropriate) emotion or sentiment as well as with reason.

[31] See Cohon 2018, for a brief account of Hume's moral philosophy.

profoundly unbalanced, unhinged, and would suffer from mental illness of some description, at the very least, if not be a total moral monster. Conduct this thought experiment: suppose a very powerful politician in the world, with his finger on the nuclear button, is about to press it to detonate the bomb in a certain part of the world, killing people in hundreds of thousands, and devastating the global environment, because his little finger suffers from some slight discomfort, if he did not press that button. Would you "buy" Hume's argument, or would you and others overpower him, to prevent him from carrying it out? Would he not be considered to be unhinged, and therefore unfit for office? If this were your response, could it be more than merely your subjective preference for reason as well as compassion over mild personal discomfort?

However, for Hume, Reason is totally divorced from feeling/sentiment/affection; for the Chinese, feelings/sentiments/affection are built into their understanding of Reason. The former is Dualist, the latter Dyadic.

Chinese culture does not "buy" the down-graded role played by Reason in the Humean account, that it is confined only to means-end/instrumental rationality. The person, in Hume's thought experiment, could be said to exemplify instrumental rationality in his preference for pressing the nuclear button in order to relieve the slight discomfort in his little finger. Common sense, as well as some forms of Western moral philosophy, which reject the Humean account, as well as the Chinese view appear to agree that there is not merely rationality of means to ends but rationality of ends themselves. Of course, such a claim is highly contentious and constitutes a central debate in the history of modern moral philosophy in WPT, since its beginning and remains so, today. However, this is not the place to address this controversial issue save to point out that the controversy exists and is a deep-seated one.

The reader must also bear in mind that the CC*M-Zhongyi* account of the primitive concept of *personhood* as *Person Wholism* is itself embedded within a nest of *Ecosystems* (refer back to Chapter Three in this volume). A physician, in diagnosing and determining treatment in its light, could be carrying in their mind these various *Ecosystems*, the smaller one nesting within its bigger neighbour until the largest is reached. An *ecosystem* in this context may be said to stand for the concept of *chang*/场 in Chinese Thinking (which can be translated as "field"). The former notion in the context of Ecology may be said to include everything – biotic, abiotic and the relationships between them at all levels of organisations such as that between individual and individual, community and community, individual and community. Analogously, the latter notion may be said to be equally comprehensive, as it includes *Body*/*Mind*, Reason/Passion, whenever something happens to a *person* and they react to it. Consider this scenario – a *person* is sitting quietly in a room, drinking a cup of tea, when a huge violent gust of wind suddenly bangs the door shut, startling the *person*, who then drops the cup in the hand to the floor, shattering it. This scenario constitutes a *chang* which, to C*P*T-CCD*P*, is only comprehensible when grasped as a *Whole*: in its entirety, within a certain context. It would be unintelligible and futile to separate out which part of the *person*'s behaviour is due to Reason and which to Passion, as the two are intimately entwined. MWPT might read the situation as one exhibiting Passion at work, as the person is startled by the unexpected noise. Is this, however, the whole truth? In one sense, to hear an unexpected very loud noise, to feel frightened by it, and then become so agitated as to drop the cup in the hand is all eminently reasonable as a form of behaviour. In contrast, should the wind be a very gentle one, closing the door not with a loud bang, but a quiet, barely audible sound, it would then not be reasonable to react with fright. Should a *person* do so, such a *person* could be said to be unreasonably/abnormally nervous. In daily life, we discriminate all the time between different behaviours displayed at different times and places by different individuals, implicitly invoking the concept of Context/*chang*.[32]

Dualist Thinking in CPT: Dong Zhongshu

Some readers may be surprised to find this theme being raised here. This is because it is undeniably true that Dualist Thinking had indeed taken a specific grip of a particular domain of C*P*T, that occupied by the *Rujia* moral/social/political *philosophy* since early Han times.

Contextual-dyadic Thinking is endemic to the *Daojia* tradition in C*P*T (and to pre-Han *Rujia* texts, as will be shown). *Daojia* is said to constitute a "naturalist" tendency in contrast to the *Rujia* tradition, which is humanistic. Confucius/Kongzi (and his disciples) were only concerned with one fundamental theme: How to be a good ruler? How to educate princes to be good rulers? Their *dao* is the *dao* of rulership, not the Dao underlying the workings of Nature, of understanding natural processes at work in the cosmos.

However, it would be wise to bear in mind that for centuries in Chinese history *Rujia* teaching was not well received by the rulers of the land. Its moment of ascendency only came, centuries after the death of Kongzi, with the establishment of the Han dynasty which succeeded the short-lived Qin Empire (221-206BCE). Qinshihuangdi, like the rulers of the many states (which appeared following the weakening and fragmentation of central Zhou dynastic

[32] Harking back to *Yinyang/Yao-gua* Implicit *Logic* mentioned earlier, in the same way, one could say that each *gua* in the *Yao-gua* Model (whether as trigram or hexagram), when applied to human affairs is a *chang*, which includes the Dyadic (not Dualist) relationship between Time and Space (as Timespace), *Body* and *Mind* (as *shenti*/person-body), Reason and Passion (as *qingli*).

rule 周朝 since the Spring and Autumn period) relied in the main on Legalist *philosophy* [33] to inform its statecraft. However, the swift demise of the Qin empire prompted a re-think on the part of the early Han rulers, the most important of which was Han Wudi 汉武帝 (156-87 BCE). He faced two challenges: on the one hand, he felt he had to overcome the Xiongnu 匈奴 (a nomadic tribe from the north who persistently raided Chinese territory, disturbing the peace of 中原 *Zhongyuan*/the heartland of the Chinese people) through military campaigns in order to ensure the stability of the new dynasty. On the other, he wanted to consolidate internally the Han empire so that it would not suffer the fate of the preceding short-lived Qin empire. So, at long last *Rujia* thought/values came in from the cold and were co-opted to construct a new ideology to underpin Han imperial rule. The *Ruists* appropriated *The Yijing* by adding *The Ten Wings*, thereby creating the text which the Chinese called/call *The Zhouyi*《周易》 – *Tian* was no longer simply Heaven, and *Di* was no longer simply Earth but became that supremely important pair of polar contrasts called *Qiankun* 乾坤, which then bore the heavy weight of supporting what came later to be the ideology of feudal values, seemingly derived from *Rujia* teaching. For instance, from *Qiankun* one could derive the five following relationships to illustrate the *Dualist* spirit at work:

Emperor	His Officials
Officials	Common People
Husband	Wife
Father	Son
Older Brother	Younger Brother

This chapter a little earlier has already referred to today's critique of feminism as pioneered by philosophers like Plumwood 1993. It is obvious that the above schema would embody patriarchy and patriarchism in its paradigmatic expression as all those with power were consistently Male; hence its polar contrast Female would consistently be the under-privileged and the oppressed.[34] According to feudalistic values down the centuries of Chinese history, since Han times, a woman when born must first obey her father; when she grew up and married, she must obey her husband; if and when the husband died, she must obey her eldest son. Emperor/Official/Male (Husband/ Father/Son/Brother) were categorised as *Qian*; Officials (*vis-à-vis* Emperor), the Common People (*vis-à-vis* Emperor/Officials), Offspring (*vis-à-vis* Father), Younger Brother (*vis-à-vis* Older Brother) were all *yin* or *Kun*. The Female alone was consistently *Kun* in all contexts. In this way, *Qiankun* in the Han-*Rujia* context took on Dualist significance, with *Qian* standing for "all things bright and powerful" and *Kun* for "the powerless", especially regarding that half of humanity who were women. Male and Female were no longer about the mere division of labour, about different roles each played in human existence though forming a complementary harmonious *Whole* based on equal but different contributions to the *Whole*. Instead, it came, by and large, to stand for an unequal power relationship between men and women, and should unity result it would be based on the female acceptance of the unequal relationship imposed on it through acculturation, education, which strenuously instilled in women and men their respective different roles and statuses

[33] See Lee 2021 (Open Access), Chapter 7 and Lee 1975 on the jurisprudence of Legalism.

[34] However, one should, nevertheless, point out that "patriarchism" is so deep-seated that it continues today in spite of the demise of grand feudal structures in the majority of countries world-wide some time ago. It persists in many forms not normally associated with obvious political power structures in society. These more invisible forms exist today as indicated by some books recently published: Criado Perez 2019, Jackson 2019, Dusenbery 2018 which point out that women occupy a world theorised, designed and executed by men for men. Criado Perez cites statistics to show, for example, that women work in office space with a temperature five degrees too cold for their metabolism, because the temperature set, is the temperature for the metabolic resting rate of a man aged 40, weighing 70kg, thereby blatantly ignoring the basic biological fact that female metabolism is slower than that of the male. Cars are also designed for the "Reference Man", such that in collisions women are almost 50% more likely to be seriously injured. In other words, algorithms are built on data provided by the "Reference Man". She also points out that in Britain, women are more than 50% likely to be misdiagnosed should they suffer a heart attack. Jackson 2019 takes up this theme of ignoring sexual differences in medical theory and practice. She reminds us that down the centuries, female bodies were perceived as inferior to those of males, that lack of real knowledge about female physiology is made up for by postulating that women possess hysterical personalities and/or are irrational; that medical research not only by and large exclude women, but that research is conducted around male biology doing duty for female biology. In the same vein, Jackson 2019, 296, citing Dusenbery 2018, 25 mentions two shocking instances: (a) involving a trial, whose aim is to investigate whether supplementation with the hormone oestrogen would help women faced with problems after their menopause, absurdly enrolled 8,341 men but no women in such a trial! (b) a pilot study mounted by Rockefeller University and supported by the National Institutes of Health to study how obesity affected breast and uterine cancer, nevertheless, did not recruit a single woman. This is equally absurd and ridiculous.

An example of dualistic bias may be found this time in the context of COVID-19 pandemic with regard to a device called the pulse oximeter designed to test the severity of the infection in a person using light to detect the level of blood oxygen. Unfortunately, as the skin of people with darker pigmentation absorbs more light, less light as a result will get through to the device, yielding a reading which makes the person less seriously ill with the disease than is really the case. As a result, lives of people with dark skin pigmentation are at risk of being misdiagnosed, leading in some cases to death owing to delay in proper treatment – see Mundell and Murez 2021.

within a clearly defined hierarchical structure of their existence. In Dyadic thought, men and women were different but equal; in *Dualist* thought, men and women were different and therefore unequal.

When the *Dualist* mode replaced the Dyadic mode in the context of social/political/moral relationships in the history of C*P*T, it was significant that another character with the same sound but different meaning, namely, (*he* 合), replaced the term for harmony (*he* 和). *He* 合 as a verb could mean, "to put things together" and as a noun "unity" but a unity, which is deliberately obtained amongst different (disparate) things through human intervention (through organisational arrangement). The meaning of this *he* 合 is, therefore, *ontologically* of a different kind from that *he*, which was based on polar contrasts being complementary to each other, thereby forming a harmonious *Whole*. However, this Dyadic tendency was displaced and replaced by Dualist Thinking in the political/social domain in *Rujia* Thinking since the Han dynasty.

To be fair, the schema constructed above was not the officially sanctioned famous five relationships bearing out so-called *Rujia* values (in the political/social domain). These are:

Emperor/King/Ruler	The Ruled/the Common People
Husband	Wife
Father	Son
Older Brother	Younger Brother
Friend	Friend

It is immediately obvious, however, under the re-interpretation, four of the five (that is with the exception of the last) were intended to involve unequal power relationships and hence embodied *Dualist* rather than Dyadic Thinking.

The introduction of *Qiankun* in *The Ten Wings* could be said to constitute a *volte-face* from Dyadic to *Dualist* Thinking, executed by the *philosopher*, Dong Zhongshu 董仲舒 (179-104 BCE), the leading Ruist of Han Jingdi (汉景帝 who ruled from 157-41 BCE) and Han Wudi. He could be said to be the main architect of *Dualist* Ruism as the official ruling ideology.[35] First, politically, as minister to the Emperor, he persuaded the emperor to get rid of all non-Confucian scholars from government – this policy was 独尊儒术，罢黜百家 which could be rendered as "only honour the Confucian arts, eliminate all other schools of thought"; to establish an imperial college of learning (太学 *Taixue*) trained in Confucian thought (as interpreted and understood by himself) from which appointments to government posts would be selected (later this became the famous civil service examination system).

From the point of view of this study, Dong Zhongshu's most striking *philosophical* contribution was his attempt to turn the Dyadic Mode into the *Dualist* Mode of Thinking. In other words, he abandoned what this study calls Contextual-dyadic Thinking, a mode of thinking which is distinctive and unique to Chinese culture and civilisation. Instead, he used the *Dualist* Mode of Thinking to construct an ideology, which was intended to underpin the new Han imperial rule. According to Dong, society was divided into two major categories, the category of superior and that of inferior persons, each containing three sets as members. The first included Ruler, Father, Man – these constituted the superior people; the second included Ruled, Son, and Woman which constituted the inferior persons *vis-à-vis* the first category. They could be sorted out in terms of three pairings: Ruler and Minister (Officials), Father and Son, Husband and Wife. As they were intended to be *Dualist* pairings, the first mentioned member in each pair was the privileged/dominating member, and the second the non-privileged/dominated member. As such, the respective inferior member simply owed loyalty, filial piety, obedience/subservience to the respective superior member of the pairing. These three unequal power relationships were what Dong Zhongshu called *sangang* 三纲, the three bonds of norms and relationships between the category of superior persons and that of inferior persons. A later work entitled *Comprehensive Discussions in the White Tiger Hall* 《白虎通议·三纲六纪》by the Han historian, Ban Gu 班固 made clear the reference of the term *sangang* (three bonds): 三纲者，何谓也？君臣、父子、夫妇也 which is rendered (by this author) as: What does *sangang* refer to or mean? It refers to three contrasting pairs, Ruler/official, Father/son, Husband/wife. The passage continues to read:

> 君臣、父子、夫妇。六人也。所以称三纲何。一阴一阳谓之道。阳得阴而成。 阴得阳而序。刚柔相配。 故六人为三纲

[35] For a discussion especially bearing on the theme of gender identity, see R. Wang 2005; on Dong Zhongshu in general see Loewe 2011 and the view of Major (another distinguished sinologist who disagreed with Loewe on his assessment of Dong Zhongshu) in his review of Loewe's book – see Major, Review 2012. The interpretation and analysis of Dong Zhongshu's concepts explored here have nothing to do with Major's critique of Loewe or for that matter even with Loewe's account of Dong Zhongshu in the main. The interpretation pursued here hangs upon claiming that Dong Zhongshu had introduced Dualist Thinking into C*P*T, that Dualist Thinking is profoundly different from Dyadic Thinking which up to then had prevailed in C*P*T-CCD*P* which was adhered to by Kongzi himself, as he thought that the most important and therefore foundational text in Chinese culture was *The Yijing/I Ching*; *The Yijing* is a text of CCDP. As Kongzi lived many centuries before Dong Zhongshu, Kongzi himself was, therefore, not a *Dualist* but a Dyadic thinker.

> Ruler/Minister, Father/Son, Husband/Wife involve six people. Why call them the three bonds? That is because in each contrasting pair one is *yin* and the other *yang*, thereby instantiating the Dao. When *yang* partners *yin*, completion occurs; when *yin* partners *yang*, order ensues. These happen because the hard (*yang*) and the soft (*yin*) match (and complement) each other. (Translation rendered by this author)

In other words, Dong Zhongshu had appropriated the concepts of *yin*, *yang* as well as that of *Yinyang* for his project of constructing a new ideology for the Han emperors. In his hand, the concept of *yang* was simply to be equated with the superior member and that of *yin* with the inferior member of his three *Dualist* pairings (*sangang*). In this sense, it is justifiable to claim that Dong Zhongshu could be said to have replaced the Contextual-dyadic Mode with the *Dualist* Mode of Thinking (in the domain of moral/political/social-*philosophical* domain).

At the same time, necessarily he embraced an extreme form of Essentialism, in which the status of *yang* was bestowed on the superior member, irrespective of whether the person exhibited behaviour in accordance with the meaning of *yang* as "bright", "warm", "noble" "external/manifest". Correspondingly, the status of *yin* was bestowed on the inferior member irrespective of whether the person exhibited behaviour in accordance with the meaning of *yin* as "dark", "cold", "internal/hidden or latent", "ignoble". Indeed, this was what he said at least with regard to the Husband (Man) / wife (woman) pairing:

> 丈夫虽贱皆为阳，妇人虽贵皆为阴。《春秋繁露·阳尊阴卑 第四十三章》
> (*Chunqiu fanlu*, Chapter 43 is conspicuously entitled "Venerating *Yang* and Disdaining *Yin*".)
> Even if the husband behaves in a base manner, he is still *yang*, even if the wife behaves nobly, she is still *yin*.
> (Translation rendered by this author)

This standpoint is precisely that which one finds in racism: a person's superior or inferior status in society is determined by something the person is born with, such as a lighter or a darker skin pigmentation (of which Kant is accused of in Lee forthcoming, Chapter 2). Moral/political categories of superiority/inferiority under the hierarchical *Dualist* Mode are simply imposed on phenomena, which are part of the natural processes of life on Earth.

In the same text, he continued in the same vein in another chapter, Chapter 49:

> 天地之常，一阴一阳，阳者，天制之德 也阴者，天之 刑也。。。《春秋繁露·阴阳义 第四十九章 》
> Heaven and earth are constant and there is one *yin* and one *yang*. *Yang* is *tian*'s virtue (*tiande* 天德) and *yin* is *tian*'s punishment (*tianxing* 天刑). Here *tian/yang* was said to involve virtue (that is, what is good) while *yin* to involve punishment – *tian* that which was virtuous/good/*yang*/bright had the task of meting out what was bad (punishment), identifying it with *yin*.[36] (Translation by R. Wang 2005)

Here in this chapter, he actually repeated what he said in the earlier Chapter 43 as can be seen especially in the first part of the quotation:

> 在善恶，恶之属尽为阴，善之属尽为阳，阳为德，阴为刑。。。阳，天之德，阴，天之刑也，阳气暖而阴气寒，阳气予而阴气夺，阳气仁而阴气戾，阳气宽而阴气急，阳气爱而阴气恶，阳气生而阴气杀。。。。贵阳而贱阴也。《春秋繁露·阴阳义 第四十三章》
> In the benevolent/malevolent contrasting pair, malevolence is *yin* and benevolence is *yang*; *yang* aims at virtue while *yin* at punishment. … *Yang* is *Tian*'s virtue and *yin* is *Tian*'s punishment. *Yang qi* is warm while *yin qi* is cold; the former gives, the latter grabs. *Yang qi* embodies *benevolence* while *yin qi malevolence*; the former is generous and relaxed, the latter harassing. *Yang qi* radiates love while *yin qi* emanates hate; the former is life-giving and life-enhancing, the latter life-denying, death-foreboding. … (Hence) yang is valued and *yin* disvalued. (Translation rendered by this author)

This brief discussion should leave one in no doubt that Dong Zhongshu had systematically transformed the Contextual-dyadic Thinking into *Dualist* Thinking. The true impact of his *philosophy* as far as patriarchism was concerned was profound, reaching new heights by the time of the Song dynasty when physical restrictions increasingly were ordained to constrain and contain female existence (at least upper-class females) to the domestic sphere alone.

His turning to the *Dualist* hierarchical mode in turn raises a question, which, though not germane to the pre-occupation of this book, must be briefly raised. Was Dong Zhongshu a disciple of Kongzi, strictly speaking? What he had written as expostulated above appeared not to be in accordance with texts such as *The Analects* and *The Mengzi* 《孟子》. For instance, if one were to follow the logic as laid down by the *Dualist* Husband (Man)/Wife (Woman),

[36] Note that the character *xing* 刑 in *tianxing* 天刑 is not the same *xing* 形 when its meaning is "shape/form", although they share the same sound and the same tone (second). Traditionally, natural processes of change in *yang qi* and *yin qi* regulated Chinese life, particularly, during the four seasons with the former in ascendance from Spring to Summer and the latter beginning to increase corresponding with the decline of the former. Therefore, it was felt more fitting to execute criminals in the Autumn rather than during Spring and Summer. Hence, the Will of Heaven, so to speak, in meting out punishment to those who deserved it, would not be carried out in the first half of the year.

pairing as commented upon above, then it would imply that the Ruler in the Ruler/Official pairing would always be *yang*. This would be in virtue of the privileged role assigned to the Ruler, irrespective of how vile, vicious and ignoble his conduct would be towards the Common People. The Official under Dong Zhongshu's *Dualist* Mode would simply be the inferior other; as such, they would have only unswerving obligations to obey the Ruler's will, regardless of the nature of his conduct in discharging his duties embodied as part of his rule.[37] However, this implication would be incompatible with either *The Analects* or *The Mengzi*; hence from this perspective, there should be at least one very big question mark against the claim that Dong Zhongshu was a proper distant disciple of Kongzi.[38] Furthermore, as already mentioned, Kongzi himself and generations of disciples up to the time of Dong Zhongshu did not step over the boundary from the Contextual-dyadic Mode to the *Dualist* Mode of Thinking.

Contextual-dyadic Thinking Re-asserted: Fan Zhen

The (Eastern) Han dynasty ended in 220 CE. This was succeeded by the short-lived Three Kingdoms Period 三国时代 (220-265 CE) which in turn was succeeded by a series of relatively short-lived regimes until the emergence of the Tang dynasty in 618 CE. One of these periods is called the Period of the Northern and Southern Dynasties 南北朝 (420 – 581 CE); there lived a scholar-official in the Southern Qi 南齐 dynasty (c 450 – 515 CE) called Fan Zhen 范缜. Although he was descended from an ancestor who was a general, his own childhood was one of poverty. He studied hard and reached several high-ranking positions. He was a *philosopher* by disposition. At that time, Buddhism which had entered China during the Han dynasty was on the ascendant. Buddhism in its religious manifestation taught re-incarnation. Fan Zhen felt the need to refute this doctrine. He set out his arguments in an essay called 《神灭论》 *The Shenmielun*, published in 507 CE, which has been translated as *The Annihilation of the Soul* (or, in the opinion of this author, perhaps, more accurately as *The Refutation of the Soul as a Substance Independent of the Body*). He argued that if the Soul cannot survive the death of the Body, it would make no sense to talk of re-incarnation of the Soul in another life in another body.[39] However, such a view was considered to be scandalous and heretical, stirring

[37] In Mengzi's view, assassinating a tyrant was morally correct, as the tyrant did not embody the virtues of a proper ruler and so deserved no moral/political allegiance.

[38] Some sinologists have recently cast doubt of their own on this matter – see Loewe 2011. It could simply be that Dong Zhongshu appropriated the concepts of *Yinyang* (and *Wuxing* 五行/the five transformative phases of *Qi*) as well as concepts from the *Rujia* canonical texts such as *wuchang* 五常 to create a special blend, based on his transforming polar contrasts from the **Dyadic** into the ***Dualist*** Mode of Thought, which later became known as the official Han (Confucian) ideology. But as this author is not in a position here to enter the details of this issue, the matter is simply raised here but left to rest. In any case, this large topic is beyond the remit of this book and would have to await further research and reflection.

[39] He could not be said to be entirely original as earlier philosophers such as Huan Tan 桓谭 (43 BCE-28 CE) and Wang Chong 王充 (27-100 CE) had argued along similar lines, although their thoughts on the matter were brushed aside at that time. Wang Chong published 《论衡》*Lun heng/ Discourses Weighed in the Balance* in 80 CE in which he raised the theme via a discussion whether ghosts existed – Chapter 62, entitled Discoursing Death 论死篇第六十二:

> 世谓人死为鬼，有知，能害人。试以物类验之，死人不为鬼， 不能害人。何以验之？ 验之以物。 人， 物也；
> 物以物也。物死不为鬼，人死何故独能为鬼。。。
> 人之所以生者， 精气也，死而精气灭。 能为精气者，血脉也。
> 人死血竭，竭而精气灭，灭而形体朽， 朽而成灰土， 何用为鬼？。。。

The above passage may be rendered as follows: It is commonly believed that when people die, they become ghosts; ghosts are beings with consciousness and can harm us. However, when people die, they cannot and do not become ghosts to harm us, as dead people have no consciousness and cannot, therefore, form intentions. What evidence have we got for saying so? Evidence rests on the fact that human beings are material things, just as non-human beings are also things. When non-human beings die, they do not become ghosts; so, why single out human beings who are also material in substance and make an exception of them? … How can one characterise a living human being? Such a being (the *person*) possesses both Essence 精 and *Qi* 气. When the *person* dies, Essence and *Qi* perish with her/him. A *person* with Essence and *Qi* intact is also a *person* with an intact functioning system of *xuemai* (blood in blood vessels and *Qi* in the *Jingluo* Network 经络). When death occurs, the *xuemai* ceases to function; as a result, Essence and *Qi* also dissipate. Such dissipation in turn means that the Body in terms of its shape and form also disintegrates; the process of disintegration eventually returns the Body to dust, to soil, to earth. What room is there for talk of ghosts? …

Note that what is within round brackets in the translation is inserted as clarification by this author and not part of the text. Note also that even from these brief quotations cited above, it would be a mistake simply to call Wang Chong's worldview Materialism *simpliciter*. What he implied is something more nuanced: without *Body*, there can be no consciousness (hence the concept of ghost is unintelligible and incoherent as it presupposes that consciousness could be free floating without the *Body*). However, the living human being who has consciousness not only possesses a body (in the way a worm possesses a

up a fierce controversy which did not please Emperor Wu of Liang 梁武帝 (464-549 CE), who was keen to protect and promote Buddhism. He issued an imperial decree (敕答臣下神灭论) to criticise the thesis, ordering sixty-four members of Court and other members of the intelligentsia to refute the author. As a result, seventy-five pamphlets were produced. In spite of such extensive efforts, none of them seemed to have succeeded in refuting Fan Zhen's arguments. Another ploy used by a well-meaning person to get him to back down and recant was to dangle before him the prospect of even higher office. Fan Zeng did not succumb to such blandishment and laughed. He said: if he were someone who was prepared to compromise his intellectual integrity; he would have long ago reached the highest office in the land. One of those who undertook to undermine Fan Zhen and his thesis thought himself very clever. He was not merely a fervent Buddhist but enjoyed the prestige of being an authority on the subject; nevertheless, he saw fit to borrow *Rujia* teaching to sneer at him: "Isn't it pathetic that you don't even know where your ancestors are?" Fan Zhen retorted quick as a shot: "Being so much smarter, I suppose you know where your ancestors are. So why don't you kill yourself to join them straightaway out of filial piety!" The smart-arse in question was left dumbfounded. In exasperation, the court finally exiled and banished him to the wilderness, to Guangdong 广东, which in ancient times, was indeed regarded as a place beyond the civilised world. His other writings have been lost in the course of history but, fortunately, this particular controversial essay survived, perhaps because there was a sufficient number of people who admired his moral courage in the face of coercion and suppression.[40]

The main thrust of Fan Zhen's arguments may be summarised (from the vantage point of this author) as follows:

1. He rejected the *Dualist* Thinking of Dong Zhongshu, which has been earlier argued, is a version of Cartesian Dualism. Cartesian Dualism regarded the individual as the combination of two very different substances, Soul and Body; under Dualism, Soul is superior to Body. Body cannot survive death; Soul could and hence the Soul was immortal. Such a philosophy suited Christian thinking well; furthermore, Cartesian Dualism while serving theology and religion, also served Science well (the new up and coming form of knowledge under the Age of Modernity), as the Body, being an inferior substance may be studied carefully and the results quantified. Descartes's genius lay in his ability to serve too very different masters. Fan Zeng did not go down this route and so was exiled. Instead, he re-asserted what this author has called Contextual-dyadism, a *philosophical* outlook which may even be said to be unique to Chinese culture and *philosophy*. To labour yet again an oft repeated point, such a type of *philosophy* is paradigmatically represented by *Yinyang Wholism*. *Yin* and *yang* are a pair of polar contrasts which co-exist harmoniously entwined as a *Whole* (*he* 和); *yang* is not superior to *yin*, and *yin* is not inferior to *yang*. They are different but equal.

2. Contextual-dyadism also implies the harmonious co-existence of *Thing-ontology* and *Process-ontology* (*Qi Wholism*). No-one would want to deny that bodies exist, as macro-sized objects which one can directly encounter and observe. However, Soul does not exist as a separate substance from *Body* as a mere thing; so, to explain the phenomenon of human consciousness, Contextual-dyadism talks instead of the Mind/Spirit 神 *shen*. *Shen* falls under *Process-ontology*. Body is about *anatomy* and structure and *shen* is about *physiological* processes and functioning of a living individual. However, as in the case of a living individual, one cannot talk about structure without talking about function, the living individual in reality refers to a *Body* which embodies inextricably structure/*anatomy* on the one hand and function/*physiology*, on the other. Hence, it is best to cast the term in an italicised form, in order to mark the difference between Body (which falls under Thing-ontology alone) and *Body* (which falls under *Thing-ontology cum Process-ontology*, that is, *Qi Wholism*).

3. As long as the individual is alive, *shen* (Mind/Spirit) cannot be separated from *Body*; nor can *Body* be separated from *shen* (Spirit/Mind), just as *yin* cannot be separated from *yang* and vice versa. Where *yin* is, there is *yang*; where *yang* is, there is *yin*. Similarly, in a living individual, where *Body* is, *shen* (Spirit/Mind) is; where *shen* (Spirit/Mind) is, *Body* is.

4. The two are no longer inextricably entwined when the individual dies – what is left is the cadaver, a thing which is lifeless and inert and would soon decay and return to the earth. *Shen* (Spirit/Mind) cannot be found in a cadaver (the Body) which can then be equated with a mere thing, as understood under Thing-ontology. However, the *Body* of a living individual, a *person*, as it is inextricably entwined with *shen* (which falls under *Process-ontology*) must be differently understood. In other words, the *Body* of a living individual is not a mere thing but a cadaver is –

body, something with shape and size) but that *Body* is informed by Essence and *Qi* (*jing qi*) which, on the other hand, cannot independently exist outside the *Body* when it refers to a living human being. Apart from the living *person*, in the rest of Nature and *Wanwu* 万物, *jingqi* does not engender the kind of consciousness we find in humankind which ultimately enables humans to develop very abstract languages, to postulate abstract entities such as that there are gods/devils/ghosts.

We shall see in a moment that Fan Zhen takes up this theme and explores it further.

[40] See Fung 2018.

what we look at laid out in a coffin or on the table of the pathology lab is something who has already lost its *shen*/神.

5. May be to make oneself absolutely clear, one should distinguish between two senses of Body (a distinction which we have so far marked by writing the Dualist version as "Body" and the Dyadic version in italics as "*Body*"): *Body L* (short for Living) to refer to that which is part of the living individual where *shen* (Spirit/Mind) is, and Body C (short for Cadaver) to refer to that thing lying in a coffin. From the restrictive standpoint of scientific quantification and measurement, Body L and Body C (immediately after the occurrence of death) are the same. However, we know that while Body L can breathe,[41] think, feel pain if jabbed by something sharp, and move of its own will, Body C cannot. Biology aims to study Body L, not Body C; Ecology aims to study both; Medicine/*Medicine* (whether Bm or *Zhongyi*) diagnoses and treats **Body L/*Body L***, not Body C. However, Bm as a system of medicine is heavily focussed on Body C, as it prioritises Thing-ontology over Process-ontology, structure over function, anatomy over physiology. On the other hand, CC*M-Zhongyi* adheres to *Qi Wholism*, to both *Thing-ontology* (*Qi*-in-concentrating mode/气聚) and *Process-ontology* (*Qi*-in-dissipating mode/气散), to structure/*anatomy*/*Thing-ontology* entwined with function/*physiology*/*Process-ontology*. *Body L* (*shenti* 身体) as proposed earlier should be translated as "person-body".

Here are some passages from Fan Zhen's text rendered in translation by this author to support the account above.[42]

或问予云：神灭， 何以知其灭也？答曰：神即形也，形即神也。是以形存 则神在， 形谢则神灭也。
Inquiry: When Spirit/Soul disappears, how does one know this to be so?
Reply: Spirit/Soul is the *Body* (Shape and Size 形 *xing*); the *Body* is Spirit/Soul/Mind (神 *shen*). This is because Spirit/Soul/Mind can only persist when *Body* persists; when the *Body* withers away, Spirit/Soul/Mind also withers and disappears.

问曰： 形者无知之称，神者有知之名， 知与无知， 即事有异， 神之与形，理不容一，形神相即，非所闻也。
答曰：形者神之质，神者形之用， 是则形称其质，神言其用，形之与神， 不得相异也。
Inquiry: We call something without consciousness a body and call that with consciousness Mind/Soul/Spirit. Hence, there is a difference. One cannot equate Mind/Soul/Spirit with *Body*, making them one. One has never heard of such a view.
Reply: The *Body* is the material substratum of Mind/Soul/Spirit; Mind/Soul/Spirit is the functioning of the *Body*. Hence, one can speak of Structure-cum-Function in the context of the *Body*-Mind/Soul/Spirit relationship. It follows that one cannot talk about the one without talking about the other.

问曰： 神故非质，形故非用，不得为一，其义安在？
答曰： 名殊而体一也。
Inquiry: This view that Mind/Soul/Spirit is not the mere material substratum/structure and that what has shape and size is not function, what does it mean exactly?
Reply: Mind/Soul/Spirit and *Body* form a *Whole*; we give these two inextricably entwined items different names. That's all.

问曰：名即已殊，体何得一？
答曰：神之于质， 犹利之于刃，形之于用， 犹刃之于利，利之名非刃也，刃之名非利也。然而舍利无刃， 未闻刃没而利在，岂容形亡而神在.
Inquiry: If the names are different, how can you say that what the names refer to is a *Whole*?
Reply: The relationship between Mind/Soul/Spirit and its material substratum may be clarified in terms of the following analogy. The relationship is like that which holds between sharpness and the blade of a knife. The term "sharpness" is not the same as the term "blade of a knife" and vice versa. However, the concepts standing behind the terms are entwined: it makes no sense to talk about sharpness without at the same time talking about the blade of the knife. Also, in the world of reality, no one has ever heard of the blade of a knife having disintegrated and yet able to retain its sharpness. Analogously, how can the Mind/Soul/Spirit continue to exist/function after the disintegration of the *Body*? (It just cannot be, nor does it make sense to say that it can.)

问曰： 刃之于利， 或如来说， 形之与神，其义不然。何以言之？木之质无知也，人之质有知也，人既有如木之质，而有异木之知，岂非木有其一，人有其二邪？
答曰：异哉言乎！ 人若有木之质以为形， 又有异木之知以为神，则何如来论也。今人之质，质有知也，木之质，质无知也，人之质非木质也，木之质非人质也。安在有如木质而复有异木之知哉！

[41] *Body L* can breathe in two ways: as a function of the autonomous nervous system without any conscious cognition or effort on the part of the individual; as the result of conscious cognition and effort.
[42] The Chinese version of the text in full are found in numerous websites.

Inquiry: What you say about the relationship between sharpness and the blade of a knife does not accord with what the Buddhist scripture of the future says about the relationship between Body and Soul. They are different. Look at piece of wood and a human being. Wood as matter has no consciousness; the material substratum of a human being embodies consciousness. A human being not only is matter as wood is matter, but it also is the matter of a being with consciousness. Unlike wood which has only one kind of matter, is it not the case that a human is extraordinary as it appears to have not only matter but matter with consciousness, whereas the matter of wood exhibits no consciousness?

Reply: Now that is curious. If a human being possesses matter in the way a piece of wood does, then s/he would be a thing only; if a human being possesses matter with consciousness unlike wood which does not, then s/he would possess Mind/Soul/Spirit. The world of Reality is not like what the Buddhist scripture of the future says. Right now, human beings possess *matter* which embodies consciousness, while wood possesses matter with no consciousness. The *matter* possessed by human beings is different from the matter possessed by wood, and vice versa. Rest assured that there cannot be an extraordinary kind of wood which possesses *matter* exhibiting consciousness and a more normal kind which does not.

…

问曰：死者之骨骼，非生者之形骸邪？

答曰：生形之非死形，死形之非生形，区已革矣。安有生人之形骸，非有死人之形骸，非有死人之骨骼哉？

Inquiry: The anatomical structure of a dead person and that of the living person are not the same – is that so?

Reply: The body shape of the dead is not the same as the body shape of the living. There is a radical difference between them. Rest assured that the body shape of the living is not the same as that of the dead, nor is the anatomical structure the same, surely?

问曰：生者之形虽变为死者之骨骼，岂不因生而死，则知死体犹生体也。

答曰：如因荣木变枯木，枯木之质，宁是荣木之体！。

Inquiry: The body shape of the living becomes the anatomical structure of the dead. From the living comes the dead; hence, one knows that a cadaver comes from a living body and is therefore like it.

Reply: Yes, dead wood was once a living tree; in that sense the matter of the dead wood does come from the matter of the once living tree.

问曰：荣体变为枯体，枯体即是荣体；丝体变为了缕体，缕体即是丝体，有何别焉？

答问：若枯即是荣，荣即是枯，应荣时凋零，枯时结实也，又荣木不应变为枯木，以荣即枯，无所复变也，荣枯是一，何不先枯后荣？要先荣后枯，何也？丝缕之义，一同此破。

Inquiry: Living wood becomes dead wood, so dead wood has the structure of living wood. The silk from the silkworm eventually becomes myriads of silk threads – as far as their underlying matter is concerned, what difference is there between them?

Reply: Indeed, in one obvious sense, dead wood is no different from living wood, and living wood is but dead wood; however, in another aspect they are different. Dead wood starts to lose its moisture, but in losing moisture, it becomes stronger. When the wood/tree is living, it does not dry out to become dead wood. The process of change is one-directional – from flourishing and being alive to becoming dead and dried out; once dead, the wood cannot change back to being alive. The process is never the other direction, from being dead and dried out to becoming alive; the process is always from being alive then to being dead and dried out. The temporal relationship between the silk from the silkworm and the myriads of silk threads from it is analogously the same – from the latter, one cannot transform it back into the former.

Conclusion

1. In MWPT, Descartes introduced **Dualist Thinking** whose central feature is to elevate/privilege one half of a pair of polar contrasts as superior in order to denominate the other half as inferior and to dominate it. In other words, it is essentially a hierarchical power structure.

2.The general doctrine of **Dualism** should be distinguished from the particular versions of it favoured by Descartes himself (Soul/Mind over Body) from that of later adherents in Bm, who elevated Body over Mind, advocating a **Reductionism** of mental attributes to physical attributes.

3.Endemic in C*P*T-CCD*P* is **Contextual-dyadism**, found more explicitly, in the main, in *Daojia* texts but also hinted at in *Rujia* thinking (with the exception of Dong Zhongshu), and is instantiated in the image and legend of **Fuxi and Nüwa** (the Chinese "Adam and Eve", so to speak). Contextual-dyadism stands on two struts. One emphasises the centrality of **Context** in appraising the truth or falsity of any assertion; hence, as argued in Lee forthcoming, Chapter 4 (or Lee 2017a, Chapter 9), C*P*T did not, would not and cannot endorse Formal Logic as understood by WPT where logic is both context- and content-free. This chapter focuses on the second strut, the role played by **Dyadism** in Contextual-dyadic Thinking and its implied rejection of Dualism/***Dualism*.**

4. With regard to the *Mind*/*Body* or *Body*/Mind problem, C*P*T-CCD*P* and CC*M-Zhongyi* adhered/adhere to ***Person Wholism*** under which the concept of *person* is a primitive one.[43] This is to say that ***shenti*** 身体 was/is not understood to be about Body (in Bm's understanding of Body, as a thing, falling under Thing-ontology) but about a harmony of the mental and physical attributes of the *person* which constitutes a *Whole*. As such, it should be translated as "person-body". (Alternatively, but less effectively, we can mark the distinction by *Body L* or *Body* on the one hand and Body C or Body on the other.) It is an instantiation of the ***Yinyang*** **Dyadic pairing** in the context where *shenti* is primarily concerned with ***Qi*-in-concentrating mode**, while *shen* 神 is primarily concerned with ***Qi*-in-dissipating mode**. Figure 8.2 best illustrates the complexities of this instantiation of ***Yinyang Wholism***, the ***Wholism* of *Process-ontology cum Thing-Ontology*** (or ***Em*-ism**), that is, of ***Qi Wholism*** (the *Wholism* of *Qi*-in-dissipating and *Qi*-in-concentrating modes).

5. However, rather surprisingly, C*P*T also harboured ***Dualist*** **Thinking** since early Han times. The pioneer of this was the *philosopher*/ideologue, Dong Zhongshu who transformed Contextual-dyadic Thinking to become *Dualist* Thinking in order to provide an ideological underpinning for Han feudalism. He appropriated the political/social/cultural space for his ideological project; so successful was the project that the *Rujia* tradition from the Han dynasty was basically an expression of *Dualism*. This then raised an issue worth pondering in its own right – is this version of the *Rujia* tradition faithful to the teaching of Kongzi himself and other pre-Han texts, such as *The Mengzi* or even *The Xunzi*? Fortunately, Dong Zhongshu was not interested in other domains, such as *medicine*, *science*, engineering, arts and crafts and many others. Hence, these were spared and people were left to practise and theorise their activities within the framework of Contextual-dyadism, of *Yinyang Wholism* and *Qi Wholism*, of *you* 有 and *wool* 无. CC*M-Zhongyi*, today, best preserves Chinese *Science* operating within such Dyadic *philosophical* boundaries.

6. However, after Dong Zhongshu, the ascendance of Buddhism (first introduced into China during the Han dynasty) prompted Fan Zhen (said to belong to the *Daojia* tradition) in 5-6 CE to challenge Buddhist theology, if not its philosophy, especially its doctrine of re-incarnation which presupposed the survival of a substance called Soul; hence the title of his essay, *The Shenmielun* which scandalised the ruling class of the time. Unlike other *Daojia* texts in the past which contain evidence as to how they looked at the Mind/Body problem, particularly *The Neijing*, no text or *philosopher* had devoted exclusive attention to the problem as he had done.

The account given above of Fan Zhen's project claims that (a) he was determined to refute the specific Buddhist thesis that Soul/*shen* was a substance which could exist independently of the living human being/*person*, which could survive after death and could be re-incarnated; (b) he did it by relying on what this author calls Contextual-dyadism, using it to critique Dualism. If (b) holds, then it would be a mistake to call Fan Zhen (as well as Wang Chong, a *philosopher* who preceded him) adherents of Materialism *simpliciter*. Fan Zhen would agree with crude Materialists that indeed when one died, that would be the end of existence. However, put baldly thus, it would be misleading as it would turn him into a Dualist which he was not (if the account given here is plausible and survives critical scrutiny). A Dualist who is a Materialist *simpliciter* would say that Body is superior to Mind, and would reduce Mind to Body (as does Clinical Medicine in Bm). Contextual-dyadism is committed to arguing, as Fan Zhen appeared to do, that under *Wholism*, polar contrasts are different but equal in status, simply forming an inextricably entwining pair (just like *Yinyang*). Fan Zhen did not claim Body (Thing-ontology) to be superior to Mind or vice versa; he simply claimed that to grasp and understand a living human being, one had to grasp that s/he is a harmonious *Whole*, displaying both mental and physical characteristics. He did give the impression of implicitly leaning heavily on the distinction between *anatomy* (structure) and *physiology* (function) but invoked a dyadic pairing common in C*P*T-CCD*P*, that between *ti* 体 (structure) and *yong* 用(function). However, he also focused on consciousness/lack of consciousness; clearly consciousness is about mental attributes, not merely physiological ones like breathing which require no conscious intervention on the part of the individual.

If one must call him a Materialist, then one must call him a *Wholist* Materialist, a theorist who, in the language of today's philosophical discourse, upholds the claim that mental attributes cannot be reduced to what happens at the chemical-physical level of the synapses in the cells of the brain and are emergent properties of the Whole living person.

[43] For a recent account, which claims that Chinese Thinking construes the *Mind-Body* relationship in Dualist/*Dualist* terms rather than involving Dyadic *Wholism*, see Slingerland 2018; for a critique of Slingerland, see Sellman 2019.

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Chapter Nine

Qi: Is It Beyond Testing in CC*M-Zhongyi*?

ARIIMO	Axiom of Respecting the Identity and Integrity of the Medical Other
Bm	Biomedicine
BMI	Body Mass Index
C*P*T	Chinese *Philosophy* Tradition
C*P*T-CCD*P*	Chinese *Philosophy* Tradition-Classical Chinese Daoist *Philosophy*
CC*M-Zhongyi*	Classical Chinese *Medicine*
Em-ism	*Qi* as *Energy*-cum-*Matter*
HBP	high blood pressure
HCG	Human Chorionic Gonadotropin
H-D/*H-D* Model	Hypothetico-Deductive Model
HF/*HF*	An empirical claim which is in principle falsifiable
H~F/*H~F*	An originally empirical claim falsifiable in principle but which has become a claim no longer falsifiable
IC	Statement(s) of Initial Condition(s)
MMHG or mmHG	"millimetres of mercury", unit used in the measurement of blood pressure in Bm
MPCR	Methodological Postulate for Causal Realism (in MWS and *Science* embodied/implied in *Zhongyi*)
MPQBP	*Zhongyi*'s Methodological Postulate of *Qi* Blockage Generating Pain and Unblocking *Qi* to Relieve Pain
MRI	magnetic resonance imaging
MS	mass spectrometry
MWS	Modern Western Science
NMR	nuclear magnetic resonance spectroscopy
PET	positron emission tomography
QH	The *Qi-Hypothesis*
WIMPS	Weakly interacting massive particles
WPT	Western Philosophy Tradition

Introduction

This chapter looks at the notion of *Qi* which is fundamental to CC*M-Zhongyi* in its theory as well as in all its various forms of treatment. This is to say that CC*M-Zhongyi* when it claims its treatments to be efficacious must be doing so because they are addressed to the blockage of *Qi* in the patient's person-body as we shall see in a moment. The main therapies in CC*M-Zhongyi* include: acupuncture (针疗 *zhenliao*), decoction (汤药 *tangyao*), massage (推拿 *tuina*), moxibustion (灸疗 *jiuliao*, the burning of 艾 *ai*) and cupping[1] (拔火罐 *bahuoguan*). The chapter critically assesses the possibility of whether a concept, such as *Qi*, which looks so unfamiliar and nebulous from the vantage point of Bm and MWS is capable of being tested in any meaningful sense of the term (endogenously) within CC*M-Zhongyi* itself. If within *CCM-Zhongyi*, there is no provision for testing and no well-formulated procedure for testing it, then one can dismiss its claim to be systematic and *scientific* immediately and out of hand. The exploration here will demonstrate that the *Medicine* can readily meet this criterion of *scientificity*. However, it is imperative readers bear in mind that as CC*M-Zhongyi* and Bm are radically different systems of Medicine/*Medicine*, one must expect that the techniques the former uses would be very different from those used by the latter and hence should not judge it to be sub-standard/inferior on that count. To do so would simply amount to an application of The Colonial Mind-set.

As acupuncture and decoction are the dominant forms of therapy in CC*M-Zhongyi*, this chapter will focus on and use them as illustrations of how testing is possible and is done in the *Medicine*. It will also discuss to a limited extent 气功 *qigong* as it seems to embody the notion of *Qi* in its most "provocative" form from the vantage point of WPT and Bm. It will also touch on another context in Chinese culture in which *Qi* occurs prominently, 轻功 *qinggong*. It is left to the chapter which follows, Chapter Ten to investigate the possibility of testing CC*M-Zhongyi* via its concept of the *Jingluo*

[1] Cupping is not unique to *Zhongyi* (that system of *Medicine* indigenous to China and has existed for more than two thousand years); its use could be found in an Egyptian papyrus, was mentioned by Hippocrates, amongst others.

Network 经络 using biophysical tools, and discussing what should be the correct conclusion to draw from such a kind of (exogenous) investigation.

This chapter will also discuss in general the validity or otherwise of invoking an entity which is said to be invisible, is neither directly nor indirectly observable but nevertheless has effects/consequences which are testable or calculable. Under this perspective, the chapter will look at both CC*M-Zhongyi*'s *Qi* and Newton's gravity. It will also consider how they both fare (but, in particular, CC*M-Zhongyi*) under Popper's falsifiability as the criterion of demarcation between science and pseudo-science. Furthermore, it will look at the search for dark matter in physics in the last five decades or so as well as consider what may be called the Methodological Postulate for Causal Realism in the contexts of gravity and dark matter on the one hand and *Qi* on the other.

What is *Qi*?

This is a vast topic about which one cannot do justice within a few paragraphs. However, for the more defined and specific issue, here, at hand, it suffices to remind readers of what earlier chapters have said regarding the concept and its related clusters of concepts (Chapters Four and Eight of this book). These chapters have dealt with some key theses, of which the following are just a reminder:

(a) *Qi* exists in two modes: *Qi*-in-concentrating mode and *Qi*-in-dissipating mode, according to *The Zhuangzi* – Chapter Four.

(b) *Qi*-in-concentrating mode is *Thing-ontology*; *Qi*-in-dissipating mode is *Process-ontology*.

(c) Unlike WPT which historically rests on Thing-ontology, C*P*T-CCD*P* is *Thing-ontology* cum *Process-ontology* which may be called *Qi Wholism*.

(d) *Qi Wholism* means that the fundamental stuff of the universe (or at least that portion of it which concerns Earth and its Sun) is neither *Matter* nor *Energy simpliciter*; it is both, as *Em*-ism.

(e) Notwithstanding, one can argue that C*P*T-CCD*P* implies that *Qi*-in-dissipating mode is *primus inter pares* under *Em*-ism, as all things in the universe would have begun with *Qi*-in-dissipating mode (the analogue of the Big Bang theory in Chinese cosmology) before the appearance of "the myriad things" (*wanwu* 万物) under *Qi*-in-concentrating mode. Extant *wanwu* will eventually decay, releasing the *qi* locked up under *Qi*-in-concentrating mode to become *Qi*-in-dissipating mode once again (the Chinese analogue of the First Law of Thermodynamics).

Chapter Four of this book has raised a related concept which *Qi* as the fundamental *ontological* category in Chinese *philosophy/science/medicine* also upholds, namely, Macro-Micro-cosmic *Wholism*/*Tianren-xiangying*[2]– hence, *Qi*-in-dissipating mode in "Nature" out there (the Macrocosm) has a counterpart in us, living human beings (the Microcosm). The ancient Chinese said:

> 人之生也，气之聚 也， 聚则为生， 散 则为死

rendered as:

> The human being, when alive, is but the embodiment of *Qi*-in-concentrating mode; death occurs when *Qi*-in-concentrating mode transforms itself back into *Qi*-in-dissipating mode.

In the human being, *Qi* plays a very significant role in its *physiology*, in the functioning of the whole living human being. *The Nanjing*/《难经·八难》says:[3]

> 气者， 人之根本也，根绝则茎叶枯矣

rendered as:

[2] In some C*P*T texts, the term used is 天人合一 Tianren-*heyi.*

[3] The bibliographical details of this work are not clear. Before the Tang dynasty, the work was attributed to the Yellow Emperor, but since, it has been attributed to Bian Que. (See Lee 2018, Appendix Four regarding Bian Que.) Chinese scholars appear to agree that whoever the author(s) might be, its content addresses some difficult/unclear aspects of themes raised by *The Neijing*. It advocates a specific method of feeling the *mai*, at the *cunkou*/寸口, on the wrist – see Figure 9.3 in this chapter. See also Unschuld 1986b; * "*Nanjing*" 2015.

Qi is the root of human life; when the roots of a plant wither so do its leaves.

This is endorsed by Zhang Jingyue/ 张景岳:[4] "人之所生， 全赖此气" rendered as: "Being alive depends entirely on *Qi*."

Qi-in-dissipating mode flows through the *jingmai*; hence, life and the *jingmai* (through the *Jingluo* Network) invariably go together (see Chapter Ten to follow for further exploration).

(f) Unlike WPT which rests in the main on Dualism (different versions of Cartesian dualism), C*P*T-CCD*P* invokes what this author calls Contextual-dyadism. Dyadism means that the polar terms in a pair of contrasting terms are regarded as harmoniously entwined and not mutually exclusive. This is *Yinyang Wholism* and is clearly instantiated in the iconic *Yinyang symbol*, the white "fish" with the black eye and the black "fish" with the white eye which in CC*M-Zhongyi* is called the *Liangyitaijitu*. (See Figure 4.1 in this book.)

In WPT, its logic presupposes that the truth and falsity of assertions are both content- and context-independent. In contrast, C*P*T-CCD*P* holds/implies that the truth and falsity of assertions are context-dependent, and therefore, also content-dependent; in turn, it implies that it cannot and does not recognise a domain of philosophy in WPT called Formal Logic. It is, however, compatible with an implicit *logic* which may be called the *Yinyang/Yao-gua* Implicit *Logic* embedded in the trigrams of *The Yijing.*

(On points (a) -(f) above, see in addition Lee 2021 (Open Access), Chapters 3 and 4.)

(g) Contextual-dyadism as deployed in CC*M-Zhongyi* leads to that *Medicine* as an instantiation of what this author calls Ecosystem *Science* or *Ecosystem-nesting* – see, in particular, Figure 4.5 of this book.

(h) *Qi-Wholism*, *Yinyang Wholism* and Contextual-dyadism together lay down the boundaries within which are found the theoretical/*ontological* core of CC*M-Zhongyi*, the methodological implications derived from that core which entail the conception of treatment under CC*M-Zhongyi*.

(i) That conception includes *Preventive Medicine*, *Predictive Medicine*, *Personalised Medicine* and *Participatory Medicine* – see Chapter Seven of this book for a detailed discussion.

(On points (g) – (i) above, for further detailed exploration, see Lee 2018, Chapters 4, 5 and 7.)

_Qi_ and The Methodological Postulate of CC*M-Zhongyi* Therapy: _Qi_ Blockage Generating Pain and Unblocking Qi to Relieve Pain (MPQBP)

We turn now to explore what is a key insight underlying all forms of treatment in CC*M-Zhongyi*. Indeed, one may be so bold even to call it the key Methodological Postulate in theory cum practice whose impetus arises from CC*M-Zhongyi*'s predication of *Qi* as the fundamental *ontological* category, especially as *Qi*-in-dissipating mode. Pain on the part of patients is ultimately caused by the blockage of *Qi* in their person-bodies: 通则不痛, 痛则不通 *tong ze bu tong, tong ze bu tong*: when 气血 *Qixue* /*Qi*-blood is not blocked and is flowing smoothly, there will be no pain; conversely, when there is pain, this means that there is *Qi* blockage. (The first "tong" 通 may be translated as "unhindered passage"; the second as "pain" 痛. The Postulate may, therefore, be formally translated as: whenever there is unhindered passage (of *Qi*), there is no pain; whenever there is pain, it means that passage is no longer unhindered.)

It is true that this postulate, as thus formulated, cannot be found in *The Neijing*.[5] However, this adage is perfectly compatible with what this and other CC*M-Zhongyi* texts say about the notion of *Qi*. According to CC*M-Zhongyi* scholars,

[4] He was an outstanding and very influential physician-scholar of the late Ming dynasty (1563-1640), a representative figure of the "Warm Disease" School/ 温补学派. As a clinician, he favoured the Eight Rubric Framework of diagnosis/八纲辨证 . See *"Zhang Jingyue" 2015; Hanson 2011.

[5] *The Neijing*, of course, is regarded as the foundational text of CC*M-Zhongyi*. Neither is the postulate mentioned directly in *The Shanghanzabinglun* 《伤寒杂病论》 by Zhang Zhongjing/张仲景 of the late Han dynasty, regarded as one of the greatest physicians in the history of CC*M-Zhongyi*. (For a detailed discussion of these two texts, see Lee 2018, Chapter 10, Appendices One and Two.) However, Lee 2018, Chapter 10 also shows that in Chinese culture, CC*M-Zhongyi* is also known as *Yidaoyi* 易道医, that is to say, it is that *medicine* founded on *The Yijing* and *The Laozi/Daodejing/I Ching* 《老子》/《道德经》. *The Yijing* and *The Laozi* are *Daojia* texts. In other words, CC*M-Zhongyi* is a product of C*P*T-CCD*P*. *The Yijing* is commonly understood to be a book about divination; however, it is, beneath a superficial reading of it, a book about change and the nature of change as

the actual wording of this postulate, as it stands today, appeared only in the early Ming dynasty. The Ming physician-scholar in question is called Li Zhongzi 李中梓 (1588-1655) who wrote in his 《医宗必读心腹诸痛》*Yi zong bidu xinfu zhu tong*/ *Authoritative Account of Pain in Organ-systems*: "近世治病有以诸痛属实. 痛无补法者； 有以**通则不痛，痛则不通**者； 有以痛随利减者，互相传授，以为不易之发." (See Q. Zhang 2017.) Very generally rendered, the quotation amounts to saying: "Of late some physicians hold that the pain arising from illnesses diagnosed as *yang* excess should not use the technique of supplementing (*bu*). Others hold that **if the *Jingmai* Network is not blocked, there would be no pain as pain is but the result of the *Jingmai* Network being hindered/blocked. Still others hold one could lessen pain using acupuncture and/or medicinals to unblock the *Qi* mechanism.** Yet others hold a specifically limited view that loosening the bowels would diminish pain. In any case, we should learn from and help one another to understand the matter, consider all aspects and interpretations, and that is really the principle underlying diagnosis/treatment which does not change." (The "enboldening" is not in the original quotation but introduced by this author to draw the reader's attention to it; the word "enboldening" itself is a new coinage also on the part of this author – see Chapter Seven, Note 18 of this book.)

It could, undoubtedly, be said to have been distilled from the foundational texts, capturing the spirit at the core of the *Medicine*. For instance, there are echoes of it in certain passages of *The Neijing*:

(a) In *Suwen* of *The Neijing*, Chapter 39 (举痛论篇), one reads:

> 经脉流行不止，环周不休， 寒气入经而稽迟。 泣而不行，客于脉外，则血少，客于脉中则气不通，故卒然而痛

Its meaning and message may be rendered briefly and generally as follows: *Qixue* circulates ceaselessly in our person-body without rupture. However, if cold (a pathogenic factor) gets into our *jingmai* 经脉, the circulation of *Qixue* in our *jingmai* will become tardy and will not flow unhindered as it is meant to do. If pathogenic cold does not succeed in penetrating our *jingmai* but only attacks and affects it on the outside, it does cause tardiness in *Qixue* circulation which in turn lessens the flow of blood (to the various organ-systems);[6] if pathogenic cold really penetrates our *jingmai*, this would even stop *Qixue* circulation in its track altogether; when this happens, we will feel pain.

(b) In *Lingshu* of *The Neijing*, one reads:

> 经脉者， 所以能决死生，处百病，调虚实，不可不通"（Chapter 10, 经脉 *Jingmai*）

and

> 经脉者，所以行血气而营阴阳，濡筋骨，利关节者也". (Chapter 47, 本脏 *The Organ-systems, their conditions, relating to different illnesses*)

The general meaning of these two passages may be rendered as follows[7]: Always remember that everything depends on one's understanding of the *Jingluo* Network and its *jingmai* and their proper functioning – whether a person lives or dies, how to diagnose and treat all the illnesses which afflict us, how to manipulate cases of deficiency and excess, to nourish *Yinyang*, to ensure that *Qixue* flows smoothly through the person-body, how to prevent the muscles and tendons of our

---

reflected in its trigrams and hexagrams which reflect changes in the relationship between *yin* and *yang*. Hence, the book may be considered as constructing a set of diagnostic-analytical tools to study changes in both natural and social phenomena; furthermore, Lee 2017a, Chapter 9 has argued that the trigrams are an analogue of Fuzzy Logic developed in WPT in the 20th century. *The Yijing* has been considered by the Chinese down the centuries to constitute a foundational text of their culture, in all domains of intellectual/cultural activity, be it *philosophy*, *medicine*, painting, martial arts, rulership and so forth. Hence, it is not surprising that this Methodological Postulate could be traced back to *The Yijing*. Let us study this aspect by looking in particular at two hexagrams, the *Tai gua* 泰卦 and the *Pi gua* 否卦, a pair of polar contrasting *gua*, looking like this side by side: ䷊ ䷋ . The *Tai gua* on the left is the auspicious *gua*, because the three *yang yao* (three unbroken "lines"/ the *Qian gua* 乾卦) which refer to *Tian*/Heaven are on top; the three *yang yao* show that *yang* has reached its maximum and so must begin to descend in accordance with the *Chinese Laws of Nature* (as explored in Chapter Four of this book). The three *yin yao* (three broken "lines"/*Kun gua* 坤卦) which refer to *Di*/Earth are below the *Qian gua*; the three *yin yao* show that *yin* has reached its maximum and so must begin to ascend in accordance with the *Chinese Laws of Nature*. While *yang* descends and *yin ascends*, *yang/Tian* meets *yin/Di* forming a harmonious *Whole/Yinyang Wholism*. In contrast, the *Pi gua* has the three *yin yao* above the three *yang yao* which means that *yin qi* continues to ascend and *yang qi* continues to descend and never the twain would meet – a recipe for disharmony, disequilibrium, disorder with organic life as well as social life unable to thrive and to flourish. That is why *The Zhouyi* 《周易》/*The Yijing* as developed during the Han dynasty maintains: 穷则变，变则通，通则久 which may be rendered as: what has reached its limits brings about change, change brings about unhindered passage, when passage is unhindered, life and other phenomena can be lasting and sustainable.

[6] This is because cold causes tissues to shrink and in so doing causes the passage of the smaller branch *jingmai* to narrow.

[7] In the Appendix of this book, there will be occasion to return to *The Lingshu* in support of MPQBP.

limbs from going stiff, ensuring they stay supple. In our person-body, *Qixue* ceaselessly circulates day and night through our organ-systems, our muscles, our tissues; to remain alive, therefore, means that this circulation must not meet with obstacles and blockages. When we feel pain in our person-body, this alerts us to the fact that *Qixue* is blocked, that we must unblock it straightaway and not wait till the circulation of *Qixue* worsens, with death beckoning us on our door step.

With the background of this Methodological Postulate, MPQBP, clarified, it is plausible to infer from its provenance that the central goal of *CCM-Zhongyi* therapy is to clear *Qi* blockage in the patient. The choice of treatment depends on the diagnosis of the specific conditions of the individual patient by the physician, but whether the selected treatment to suit the context is decoction of medicinals (*tangyao*), needling (in acupuncture), or massaging (*tuina*) or indeed, even in some circumstances all three combined, the ultimate goal is to remove *Qi* blockage. In that way patients can either be cured or if not, their painful condition could be ameliorated and controlled – this is the postulate deployed in *Personalised Medicine*. This chapter will show how such treatments work and that whether they work or not can be subjected to testing procedures as sanctioned by CC*M-Zhongyi* itself.

The postulate, MPQBP, is also deployed in *Preventive Medicine* which CC*M-Zhongyi* regards as an important goal and that a physician who could prevent people from falling ill in the first instance is the *shanggong* 上工, the truly excellent physician – see Chapter Seven of this book. Health means more than simply the absence of illness; it also means pursuing the wider goal of human flourishing in a *Wholistic* fashion. This means that in our daily activities and personal lifestyles (including our diet), we should not indulge in activities which could bring on eventual *Qi* blockage, such as (today) eating too much processed or junk food, not sleeping and resting enough but spending long hours of the night in front of our computer screen, indulging excessively in smoking, drinking, sexual activities and so forth.

Diet and lifestyle apart, everyone can do something to prevent *Qi* blockage. This requires the person to have some minimal grasp of the *Jingluo* Network, and where the various needling points are along a certain *jingmai*.[8] In the next chapter, Chapter Ten, we have occasion to talk of a particular form of *Preventive Medicine*, advocated by the chief investigator of the *Jingluo* Network using biophysical methods.

Testing the Hypothesis of Unblocking *Qi* (MPQBP) in CC*M-Zhongyi* Therapy

This discussion is prefaced by reminding readers that a detailed exploration of the *diagnostic* and *treatment* methods of CC*M-Zhongyi* (in terms of *zheng* 证 and *fang* 方) is found in Lee 2018, Chapter 8 which provides the background and context to understand the theme at hand here.

One would further like to remind readers that *Qi*-in-dissipating mode, coursing through the *jingmai* in the *Jingluo* Network, historically, has been postulated as a set of processes on several grounds:

I. Cosmological/*philosophical* via the concept of Macro-Micro-cosmic *Wholism* (*Tianren-xiangying*)
II. Theoretical as *Qi* is the fundamental *ontological* category, the basis of all life (from which it follows that the mal-functioning of *Qi* in the human individual leads to illnesses and even death, if not properly treated)
III. Explanatory to account for the discoverable effects which certain treatments such as decoctions as well as needling can and do bring about.

Qi-in-dissipating mode, coursing through the (living) human being *via* the *Jingluo* Network, *ex hypothesi*, as we know, is neither visible nor touchable in the way that *Qi*-in-concentrating mode is visible and touchable as *Thing*. However, it could be said to have characteristics which are discoverable (if not quantifiable in the way that data under MWS can be quantified in terms of mathematical equations). Although, it is *xingershang* 形而上/what is above shape and size,[9] yet it is not incapable of producing an effect in the realm of *xingerxia*,[10] at the level of *Thing*. This bears witness to that unique mode of Chinese thinking, Dyadic Thinking under which two contrasting/opposing features may happily co-exist, such as in *yin* there is *yang*, in *yang*, there is *yin*/阴中有阳， 阳中有阴 *yin zhong you yang, yang zhong you yin* – see Lee 2017a, Figures 6.4 and 7.1. Hence *Qi*-in-dissipating mode which belongs to the domain of *xingershang* is perfectly compatible with the observation that it can/does have discoverable effects in the realm of *xingerxia*. As such, they must have causes, where the postulated cause belongs not to *xingerxia*, but to *xingershang*. This may at first sight appear problematic; however, if one is not prepared to give up the axiom that effects have causes, then whatever effect obtains would lead one to infer that the cause (though it itself is not observable or detectable by means of ordinary instruments in the way blood pressure is detectable by means of a blood-pressure measuring machine) must, nevertheless, be held to exist, and that it is the business of Science/*Science* to discover the cause.

[8] The term "jingmai" is usually translated as "meridian" or "channel" and "jingluo" as "meridians/channels and their collaterals". This author prefers to leave them untranslated – see Chapter Ten which follows for a detailed discussion.
[9] For this reason, some scholars have used the term as a translation of "metaphysics". This author simply prefers to use the term in a literal sense of the phrase.
[10] This refers to "that domain with shapes and forms."

Today, Bm Mark II is primed to invoke biomarkers in the form of metabolites which can be harvested, measured and quantified through analytical tools such as NMR and MS as discussed in Chapter Seven of this book. As observed, the concept of biomarkers is not new, though the term is, and Bm Mark II has discovered a brand-new type, if not several new types of biomarkers, while under Bm Mark I, biomarkers do also exist such as blood pressure, hCG (the pregnancy hormone used in testing urine samples for pregnancy[11]), cardiographs monitoring patients with heart disease and so forth. These are objectively determinable, with the first two using, from the vantage point of today's technologies low-tech tools and techniques while the last is (relatively) high-tech in character.

Does CC*M-Zhongyi* have its own peculiar *biomarkers*, which are the analogues of biomarkers invoked under Bm Mark I or Mark II? If such can be shown to exist, they would be very different from those used in Bm – always bear in mind that CC*M-Zhongyi* and Bm are radically different systems of Medicine/*Medicine* in spite of their commonalities. Let us explore this possibility via cases of treating patients using decoction or needling or a combination of both techniques.

Needling and Decoction

Let us start off citing an instance from acupuncture treatment, in particular, to clarify III mentioned above. It is a somewhat "spectacular" incident, recounted by *Hao 2012, Lecture 10 (Hao Wanshan 郝万山 is an acknowledged authority in China today on Zhang Zhongjing 张仲景 and his *Shanghanlun*/《伤寒论》). The occasion happened when he was on a European lecture tour sometime before he delivered this set of lectures. A journalist sent to cover it happened to be so stressed that he had a headache and felt that his head was swollen. The systolic reading of his blood pressure was 180 mm Hg and a diastolic reading of 110 mmHG or higher which made his case in Bm terms one of hypertensive crisis, amounting to hypertensive urgency. Although the normal Bm treatment could lower his blood pressure, yet it also produced some undesirable side effects for him in that it left him feeling weak and without energy for at least a week following treatment. In desperation, he offered himself as a guinea pig to see if the physician could do something for him. Hao used nothing more than the standard technique for treating what Bm calls HBP, yet to the European audience, it was something "astounding" and "spectacular". That technique consists of needling and bleeding the pointy top of the ear/耳尖方血. First rub the ear until it becomes hot, soft and red, sterilise with alcohol the pointy top, then needle that spot. Blood will immediately flow; clean with sterilised cotton. When the bleeding has stopped entirely, do similar to the other ear. Normally, with patients in China, the amount of blood shed is not great, coming out in drips and drops, but in this particular instance, a much larger amount flowed continuously which required three large balls of sterilised cotton wool to soak up. Hao interpreted this as a sign that excellent results would follow. After both ears had been done, the patient reported he immediately felt better (his head and neck felt warm, his head no longer felt swollen) and he also felt that his blood pressure had become normal (he said that he always felt a peculiar sensation when his blood pressure rose).

These, of course, were merely subjective reports and in the eyes of Bm scientists would not count for much. However, more objective data were immediately forthcoming – when the patient's blood pressure was measured it was 120 at the top end and 80 at the low end, a reading considered to be normal blood pressure. (However, the sceptic can still put down such data to the placebo effect, or to spontaneous remission, except that in this case, the discoverable effect may be too close in time for the latter argument to hold – see Lee 2018, Chapter 8 for further exploration of this point.) According to Hao, this technique is not only effective for HBP, but also for acute headaches, a condition called pink eye/红眼病, conjunctivitis/结膜炎, or sty/麦粒肿. He is quick, however, to point out that such a spectacular result from an excessively high reading to a reading considered to be normal for blood pressure is not achieved in every case of such treatment – it is more often the case to find that the pressure had lowered, rather than rendered normal, all within a few minutes.[12]

This example is an appropriate one to use in this context of discussion for the following reasons:

(a) The CC*M-Zhongyi* practitioner knew precisely how to treat the patient and carried it out with immediate effects as predicted.

(b) The expected results occurred so quickly that there was no room for any other factor to intervene to which the results could be attributed other than to the needling intervention.

(c)The patient had Bm records with objective data regarding his condition.

[11] HCG (as a test) is also used as biomarker for cancer of the ovaries or testicles.

[12] This kind of technique works because the bleeding is said to stimulate the patient's own self-adjusting functioning/自调机能 of his/her *Qixue*. A longer term, but also extremely simple technique (from the standpoint of *Preventive Medicine*) via the stimulation of such self-adjusting functioning of *Qixue* is that of slapping/拍打 or rubbing/搓揉 spots which feel painful – the latter method means that the individual does not even need to know the *xuewei* on the various *jingmai*, but needs only be guided by pain/以痛为输法 *yi tong wei shu fa*. Such spots are called *Ah-shi xue*/ 啊是穴 or *Tianying xue*/天应穴.

(d) In the light of the CC*M-Zhongyi* intervention, the patient also obtained Bm objective data to back up his own subjective accounts of feeling much better.

(e) The existence of the Biomedical data, before and atter the CC*M-Zhongyi* intervention acts as biomarkers which can be used to critically assess the efficacy of the treatment. These biomarkers are the very ones which were used by the patient's own Bm doctors in the past to monitor his condition.

(f) However, it is important to emphasise the Bm biomarkers mentioned above are relied upon by the patient himself in order to convince himself and fellow European sceptics that the improvement he reports are backed up by objective, measurable data. The CC*M-Zhongyi* practitioner uses CC*M-Zhongyi*'s own *biomarkers* which include at least two (there are more to be cited later):
(i) The prediction that the patient's ear would bleed upon being needled.
(ii) The prediction that the bleeding would lead to the patient feeling better after the treatment.
The former is something which is directly and objectively observable, though it is not recordable in the way a machine such as the gadget for measuring blood pressure can record objectively measurable data. It is the analogue to metabolites, the latest category of biomarkers, which can be found in a sample of body fluids, as envisaged in Bm Mark II. At least it constitutes a sign and signs are objective. However, the patient claiming that he is feeling better after treatment is not a sign, but a mere symptom, a subjective matter. As CC*M-Zhongyi* does not regard the placebo effect to be anathema to its theoretical-methodological reasoning, even if the patient's subjective feeling of improvement is attributed in large part to no more than the placebo phenomenon, such a *Medicine* is not necessarily perturbed. The real problem is being posed to Bm, not CC*M-Zhongyi*, as Bm is confronted by this teaser: why does this "mumbo-jumbo" treatment work while one's own medicine which embodies the Paradigm of Scientificity does not and cannot induce in the patient similar subjective reports of feeling better without side effects? In the case of this particular patient, he said that while the Bm intervention objectively lowered his blood pressure, nevertheless, he suffered a week's worth of feeling weak and without energy following treatment. This teaser is not posed because The Colonial Mind-set prevents it, in general, from being posed.

Hao also referred to another matter, namely, how different needling techniques lead to very different discoverable effects or ensuing consequences. His father, who was also a physician, treated two patients at which he was present as a child. Patient A (male) with **Stomach** pain/胃痛 said that his **Stomach** felt like a lump of ice. He was then needled at the *zusanli xuewei* 穴位 (see Figure 10.5 in this book) but also given a prescription for a decoction to be taken later. Following a few minutes of needling, the patient said he felt a current of warm *qi* rise slowly from the leg to the stomach; after ten minutes, he reported that the lump of ice in his stomach had gone, as if it had melted away. The particular technique used is called the 烧山火/*shaoshanhuo*/the "burning mountain fire" technique. Patient B (female) presented with a boil in a part of the leg which made it very difficult for her to walk as it felt both hot and very painful. The physician used the 透天凉/*toutianliang*/the "heaven-penetrating cooling" technique. After a few minutes of needling, the patient reported that the part of the leg where the boil/疖 *jie* was, no longer felt hot, and the pain had diminished.

The difference between the two techniques is explained as follows:
Every *xuewei* is divided into three layers, analogous to the three *yao*/爻 in a trigram/卦 *gua* which are also said to constitute the notion of *sancai*/三才[13]–the top layer is called 天, the middle 人, the lowest 地.[14] This may be represented as shown below based on the *Qian gua*/乾卦:

Figure 9.1 The *Qian* Trigram and *Sancai*

In the *shaoshanhuo* technique, when the needle is inserted into the skin, the physician pushes it down till it reaches the top *Tian* level, turns the needle, then pushes further to the next *Ren* level, turns/twists the needle again, then pushes it further down to the lowest *Di* level, turning the needle, using pressure. On the return journey, so to speak, gently lift the needle until it reaches the skin surface but without removing the needle at all, do the whole process several times over.

[13] See Lee 2017a, Chapter 2 which has touched on the notion of *sancai* and Chapter 6 for a detailed exploration of the *Yao-gua* 爻卦 model as a form of *Wholism*.
[14] The trigrams and the hexagrams constitute the subject matter of *The I Ching/The Yijing*/《易经》, a foundational text of Chinese culture in general as well as of CC*M-Zhongyi*, in particular. On the latter, see Lee 2018, Chapter 10.

This action affects the affected part, generating 热气/hot *qi* which made the patient feel better. In the case of the *toutianliang* technique, the procedure is the reverse of the first technique – insert the needle straightaway right down to the lowest *Di* level, and twist/捻转 the needle, then lift the needle three times from the *Di* level, to the middle *Ren* level and finally to the top *Tian* level till needle reaches the skin surface. However, one must not pull out/remove the needle, but repeat the procedure. When the physician has done this several times, a current of cold *qi* would be generated reaching the affected part of the body.

A puzzle arises. The two procedures are the mirror images of each other; but why should doing one produce a felt current of hot *qi* and the other way round a current of cold *qi*? They just do, as a matter of fact. Professor Hao reports that the following experiment to convince the sceptic has been performed to demonstrate the above at work. It involves a volume measuring instrument used in physiology experiments which looks a bit like a tub with water inside. On the outside is a glass tube (connected to the water in the tub), and on the tube is a scale whose function is to register the changes in the volume of water in the tube. The experimental subject immerses his elbow/arm into the tub and an experienced acupuncturist would insert a needle into the relevant *xuewei* on the other arm of the experimental subject. If the acupuncturist uses the *shaoshanhuo* technique, then one would observe the water rising in the glass tube, which demonstrates the volume has increased. Why does this happen? The needling has caused the capillaries to expand, thereby increasing the blood circulation. When such a chain of effects occurs, those people who are particularly sensitive would respond by saying that they feel a sensation of heat. When the *toutianliang* technique was used in an analogous experimental situation, the water in the glass tube falls – this shows that the capillaries in the relevant blood vessels affected by the needling have contracted, reducing blood circulation, which leads to the fall in the volume in the tube. The scientist (not Hao himself) demonstrating these two experiments offers the following explanation: the *shaoshanhuo* technique relies in the main on (downward) pressure whereas the *toutianliang* technique relies on pulling. This experiment and explanation may or may not be of interest or significance to CC*M-Zhongyi* theorists-cum-practitioners, but it appears to go some way to satisfying some critics of CC*M-Zhongyi* (in China) who demand that a satisfactory explanation must invoke phenomena which are measurable and quantifiable.

Let us take one more instance, this time to illustrate the phenomenon that acupuncture treatments can alter the *mai* 脉 of the patient.[15] The physician in diagnosing a patient's condition uses a suite of diagnostic tools, of which feeling the patient's *mai* is considered to be very significant. When the *diagnosis* is completed and a suitable *treatment* has been formulated, the physician, say, would needle in a particular manner along a particular *jingmai* (the *toutianliang* and the *shaoshanhuo* techniques are just two out of innumerable others which acupuncturists have used down the ages). After the needling session, the patient's *mai* could again be felt, and the *mai* would be found to have altered. The details of the case mentioned below are taken from *Yu and Zheng 2011, 207-208: Male, aged 30 years. One evening, around 8pm, this young man felt a pain in the left side of his chest, a pain which was a sharp one, difficult to bear. He immediately swallowed some Bm patent medicine for the heart, rushed to the local hospital which performed an electrocardiogram on him but which turned up nothing abnormal. From the hospital, he then rushed over to consult the *Zhongyi* practitioner. At the time of the consultation, the patient's complexion was deadly white, his right hand clutching the left side of his chest. He was not coughing, nor was he coughing up phlegm. Neither did he complain of stomach pain, nor did he suffer from nausea, nor from back ache. His *mai* profile/脉象 *mai xiang* read: 右寸浮实， 左关郁涩， 左寸沉细 which may be rendered as: "The *mai* at the *cun* position of the right hand is floating but full, that at the *guan* position of the left hand is depressed and rough (an indication that *Qi* is being blocked), that at the *cun* position of the left hand is sunken and fine". The physician diagnosed injury to the *Jingluo* Network because of the intense heat which had invaded his **Lung** *Jingmai*; as a result of this – *Qi* in the *jingmai*, being blocked – he felt pain in the right side of his chest. The physician immediately needled the patient on the wrist at the *guan* position to get rid of the blockage; he needled the 阳陵泉穴位/*yanglingquan xuewei* in order to ensure the free flow of *Qi* in the **Gallbladder** *Jingmai*. (See Figure 9.2 below.) Finally, he used a three-edged needle on the right hand at the *shaoshang xuewei* (see Figure 10.2 in this book) to enable the **Lung** *Jingmai* to eliminate the heat in it and to get rid of whatever clotted blood which had accumulated. He then performed the same on the other side of the person-body. Three minutes after the acupuncture session ended, the patient reported that the pain had greatly abated; his complexion had improved, although he also reported that when he coughed, he still felt some mild pain. When his *mai* was taken again, its profile had changed – 左寸已不沉/which may be translated as: "The *mai* at the *cun* position of the left hand is no longer sunken". (See Figures 9.2 and 9.3).

[15] This author holds that *mai* should not be translated as pulse; for a detailed discussion, see Lee 2018, Chapter 8 which also explores in some detail the notion of *mai*.

Figure 9.2: The *yanglingquan xuewei*/阳陵泉 (GB34) on the Foot *Shaoyang* Gallbladder *Jingmai*

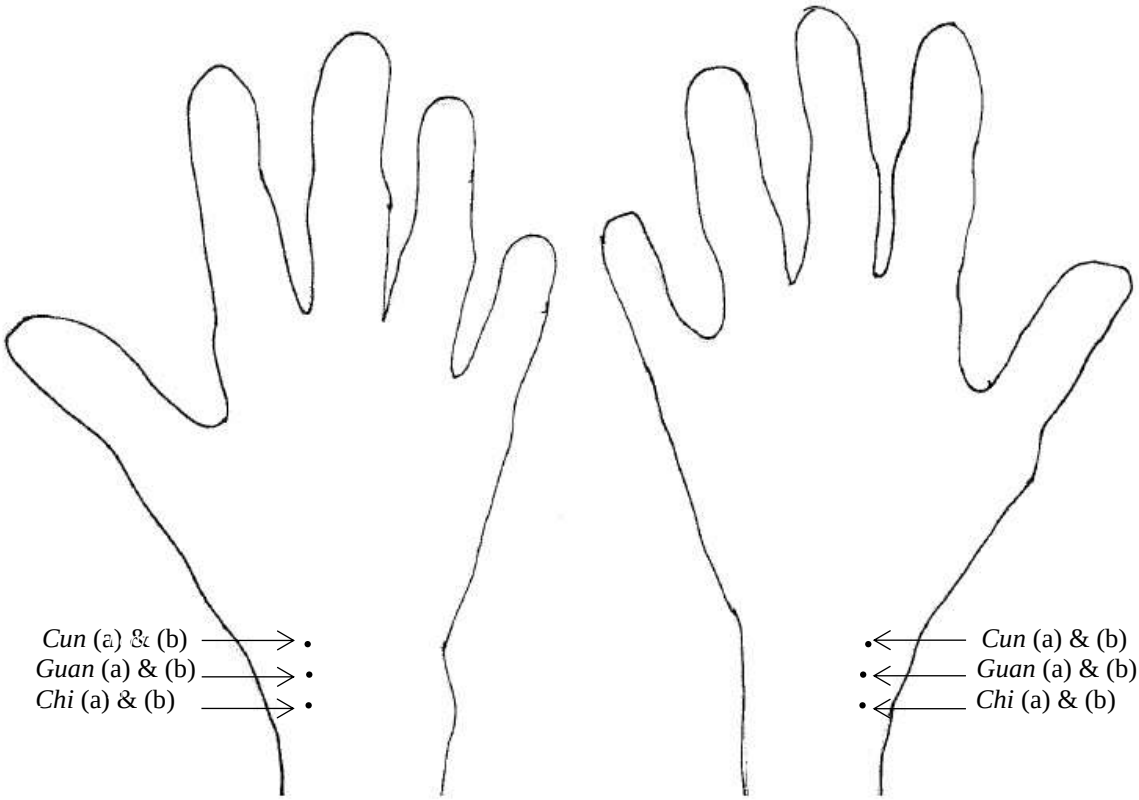


Figure 9.3
The *Mai* Profile at the Wrist in terms of its Link with *Wuzang-liufu* 五脏六腑 (Organ-systems)
(Adapted from Kuriyama, 1999: 26-27)

Left Palm	Cun/寸	(a) Floating: Small Intestine;	(b) Sunken: Heart
	Guan/关	(a) Floating: Gall Bladder;	(b) Sunken: Liver
	Chi/尺	(a) Floating: Bladder;	(b) Sunken: Kidneys
Right Palm	Cun/Inch	(a) Floating: Large Intestines;	(b) Sunken: Lungs
	Guan/Bar	(a) Floating: Stomach;	(b) Sunken: Spleen
	Chi/Cubit	(a) Floating: Triple Burners;	(b) Sunken: Pericardium

However, to get rid for good the remaining mild pain the patient felt upon coughing, he was straightaway given three medicinals in powdered form to be dissolved in room-temperature boiled water and then swallowed:

Ligustici Rhizoma (川芎细粉)10g
Corydalis Tuber (延胡 索细粉) 5g
Toosendan Fructus (川楝子) 5g

After five minutes, the patient reported that he no longer felt pain of any kind, and when his *mai* was checked again, the profile was as follows: 右 寸 柔和， 左关已无郁涩感，左寸 和缓有力/“the *cun* position on the right hand was soft

and gentle, that at the *guan* position of the left hand no longer gave the impression of being depressed or that *Qi* was blocked, that at the *cun* position of the left hand the *mai* was gentle but had strength". The patient was then sent home. The *mai* profile had changed before and after t*reatment*. The change in this case was quite immediate; as such, the postulated cause-effect chain is too short for another extraneous factor to intervene (although it is logically possible for such a factor to occur). In this kind of case, the sceptic is likely to fall back simplistically on the placebo effect.

The case above is intended to illustrate that CC*M-Zhongyi* uses the *mai* as a *biomarker*, which can be checked before and after treatment. This *biomarker* is also used to monitor the health of patients over time. We need to pause here to consider in what way the *mai* is a reliable *biomarker*. If it is objective, in what sense exactly is it objective? Let us distinguish between the following senses and contexts:

(a) It is a sign, not a symptom. Symptoms are entirely subjective ("I'm depressed/sad/anxious/exhausted/have a headache/my back aches"). A sign, in contrast, can be said to be objective (the foot of patient is swollen to twice its normal size/patient is coughing up very sticky yellow catarrh/the patient cannot keep food down and is sick immediately after eating/the patient has lost a third of his body weight).

(b) However, is the *mai*, though not a symptom, exactly like a sign on the same footing as the other signs mentioned above? It appears not. The *mai* cannot be observed directly using the naked eye. Ascertaining the *mai* profile is a kinaesthetic skill which one has to learn; such learning is, naturally, theory-laden. One has to grasp the theoretical core of CC*M-Zhongyi* before it makes sense to "feel" and "read" the *mai*. One could perhaps say that though not objective in the sense of being able to see it at a glance (call this sense (a)), it is objective in the sense of being "intersubjective" – the community of CC*M-Zhongyi* physicians could agree on what the *mai* profile of an individual patient is (sense (b)). This would be analogous to the community of radiologists and Bm doctors being able to read an x-ray of the patient's lung and agree on what the dark spots on the photo could mean. This, too, is an instance of inter-subjectivity in the light of theory, but nobody seems to mind saying simply that the x-ray photo is objective evidence of the state of the patient's lung(s).

(c) Signs in sense (a) are not objective either, really. A patient may be looking pale, his body may be doubled up in pain, he might not be able to move without the help of a stick and then only very slowly. Such observations may, however, be compatible with the possibility that the patient is an excellent actor who is putting on a convincing show in order to get himself certified as being ill. All of us, not only doctors, have to live with such a possibility. Barring unscrupulous deception on some rare occasions, nevertheless, we do not doubt that the signs of pain, suffering, stress, trauma are genuine and authentic which the trained medical eye can observe before treatment and the changed signs of improvement after treatment. CC*M-Zhongyi* physicians do rely on observing a whole suite of *signs*[16] including the *mai* profile, relying on it more than on the others on the grounds that the *mai* does not lie. This is to say that while a good actor can put on a convincing act of being at death's door, ascertaining the *mai* would tell the physician whether the patient is play-acting or not – the *mai* is beyond the manipulation of a mere good actor.[17]

Look at another case, this time, dealing with *Qi* stagnation causing pain, also from *Yu and Zheng 2011, 207-208: Female, aged 40 years. This case reinforces the Methodological Postulate (MPQBP) that blocked *Qi* is a fundamental cause of pain discussed in the section above. In 2007, during an accident at work, a heavy object knocked against her chest. She felt a powerful pain; and when she breathed or even lightly coughed, she also felt pain. She did not cough blood, nor did she suffer from a sensation of being stifled. Neither did any bruises show up. The X-rays of her chest showed up nothing untoward. After the accident, she self-prescribed some Chinese pills (*dieda wan*/跌打丸) meant for external injuries, such as bruises and swellings. This was to no effect, so she consulted the physician recommended to her by friends. Following *diagnosis*, the physician concluded that hers was a case of *Qi* disturbance following injury to the *jingmai*/撞伤岔气. (As her condition had nothing to do with bruises and swellings, naturally, the *dieda wan* was not efficacious as it was not relevant to her condition). The *prescription* contained the following:

1.红藤	*Sargentodoxa Cuneata*	4.穿山甲	*Manis Pangolin*
2.香附子	*Cyperus Rotundus L*	5.地龙/蚯蚓	*Pheretima* (Earthworm)
3.三七粉	*Panax Pseudo-ginseng*	6.砂仁	*Fructus amomi*

[16] It is said that a small number of distinguished and experienced CC*M-Zhongyi* physicians in the main rely on the technique of wang 望 /looking at the complexion rather than on ascertaining the *mai* profile for their diagnosis. See *Liu 2003, 131, 185-186; see also Lee 2018, Chapter 5.

[17] However, this is not to say that in Chinese history in general there have not been instances of people whose control of *Qi* was/is so good that they could/can render their *mai* to be so minimal and so weak as to pass off as being at death's door.

Medicinal 1 is the Sovereign Medicinal as apart from its general property of livening blood and stopping pain/活血止痛, it can also unblock the *jingmai* in question when the blockage and damage are caused by an external factor such as in the case of this patient. Medicinal 5 hastens the process of damage repair, so that *Qi* would stop stagnating – the earthworm is well-known for its ability to regenerate itself as when chopped into two halves, each half becomes a whole earthworm. As such, it is used as a medicinal in cases of the *Jingluo* Network being impeded/经络不利. Medicinals 2 and 3 are commonly used in illnesses involving *Qi* (caused through injuries inflicted by external factors). Medicinal 2 courses[18] the **Liver**, eliminates stagnating *Qi*, rectifies *Qi*, regulates the *jingmai*, and in the process reduces pain/疏肝郁气，理气宽中，调经止痛, while Medicinal 3 enters the **Liver**, **Stomach**, **Large Intestines *Jingmai***. In this context, 2, 3 and 5 are used to disperse clotting and to stop pain. Medicinal 4 enters the **Liver, Stomach *Jingmai*** to ensure the free flow of *Qi* and blood by invigorating the latter and eliminating binds in the former/活血散结. Medicinal 6 ensures that stagnation of *Qi* would no longer continue – in particular, it involves the **Spleen, Stomach and Kidney *Jingmai***.

The patient recovered. This *prescription* has been found to be efficacious in similar cases of *Qi* blockage and *Qi* stagnation down the ages, incurred through difficulties caused by external factors. To CC*M-Zhongyi*, this kind of *treatment* would provide "objective" evidence that the following obtain:

(a) *Qi* stagnation can occur (in the circumstances described) thereby causing certain symptoms and signs such as in this case pain in the chest, pain when coughing and sneezing (when bruises and swellings have been eliminated as the obvious cause of the pain) – whenever there is blockage and stagnation of *Qi* or *Qixue*, CC*M-Zhongyi* upholds the key Methodological Postulate (MPQBP) of *tong ze bu tong, tong ze bu tong.*
(b) Certain *treatment*(s) can get rid of the illness by unblocking *Qi*, eliminating the stagnation and inducing *Qi* to function properly in the relevant *jingmai*.

We will be returning to the theme of *Qi* manipulation in the sections after the next.

Shezhen 舌诊/Tongue Diagnosis

It is true that the *mai* does not lie; however, what it can reveal about the state of the patient's person-body is, of course, subject to the skill of the physician in ascertaining the *mai* profile – mastering it appears not to be a simple matter of a few short lessons. To prevent mediocre physicians from mis-diagnosing patients based on insufficient mastery and lack of experience, it is listed as the fourth and the last technique of *diagnosis* in the history of CC*M-Zhongyi*. The less than expert physician of the *mai* should not let his findings based on it over-ride the information he has gathered using the other three *diagnostic* methods, namely, 问 *wen*/to ask (patient and family for history as well as character of the illness), 闻 *wen*/listen and smell (a patient may be breathing heavily, making croaking noises, speaking very softly or barking out loud, patient may give off a body odour related to his/her medical condition), 望 *wang* / look (observe the patient's complexion, posture, manner of walking and so forth) – see *Luo 2011, 134; Lee 2018, Chapter 8. The subtleties and complexities of mastering the *mai* had, therefore, led physicians to try to find additional reliable methods less difficult to acquire. One additional method is tongue *diagnosis*. During the Yuan dynasty, the first publication on the subject appeared by someone called Ao/敖, with the title 《敖氏伤寒金镜录》/*Ao shi shanghan jinjing lu/The Bronze Mirror Record on Shanghan by Mr Ao*. Unfortunately, this book has long been lost. By the Ming dynasty (during the reign of the Jiajing emperor, if not before), this technique was well-established at least in the repertoire of physicians at the cutting edge of their profession. Today, it is routine for the physician to ask the patient to show the tongue. Strictly speaking, since Yuan times, this very important sub-technique has been introduced into *sizhen* 四诊/four *diagnostic* techniques as looking at the fur of the tongue can be subsumed under the *wang* technique. The fur of the tongue (*shetai*/舌苔) could be black, very red, white (all abnormal), there could be cracks along the side (which may indicate ***Heart*** problems). The shape of the tongue is also relevant to the *diagnosing* process. If one is ever in doubt about one's reading of the *mai*, then checking against the findings of *shezhen* should help to confirm one's reading of the *mai* profile. (*Shezhen* is a vast subject in its own right.[19])

The history of CC*M-Zhongyi* shows that many mediocre practitioners had mis-diagnosed and caused their patients great grief, even death sometimes. They claimed that the patient's *zheng* is that of *shi*/实 (excess/repletion), when in reality it is a case of *xu*/虚/deficiency. They claim that the patient is suffering from *rezheng*/热证 when the patient is suffering from the very opposite, *hanzheng* 寒证. *Rezheng* involves an excess of heat/*yang*; an appropriate *fangzi* 方子/*prescription* would contain medicinals which are heat-clearing. In contrast, *hanzheng* involves a deficiency of heat/*yang*, an excess of cold/*yin*; an appropriate *fangzi* would contain medicinals with potent *bu* 补/supplementing properties against cold deficiency in the person-body/大补寒药/*dabuhan yao*. It is therefore imperative to get the *diagnosis* right as the

[18] It eliminates "evil", that is the pathogenic factor/邪 *xie* which prevents the **Liver** from functioning properly.
[19] For a text in English, see Maciocia 1989.

diagnosis entails the appropriate *treatment*. The less than excellent physician on the *mai* front would be encouraged to examine the patient's tongue. If, for instance, the fur of the tongue/*shetai* is utterly black, he would know without hesitation that the patient's *zheng* is *shi*/实/*rezheng*/热证/excess *yang* and should therefore use the *xie*/泻/draining, not the *bu*/supplementing technique. In contrast, the *shetai* in *hanzheng* would be white, not black; white would indicate the cold state of the person-body/身体大寒 *shenti dahan*/*yin* excess, *yang* deficiency.

In other words, *shezhen* is a technique which is much less complex and in an obvious sense can be said to be an objective (not simply inter-subjective) *biomarker*. Black and white are colours which are readily distinguishable and so are shapes like being fat or flat/relaxed as opposed to being slender or tight. As *biomarker*, its simplicity recommends itself highly, especially when used as a technique to back up that of ascertaining the *mai* profile. *Shezhen*, given today's technology can help, in the first instance to *diagnose* a patient who cannot for one reason or another straightaway get to see a physician. A smart phone with a built-in camera is a common gadget carried by nearly everyone, especially in China. A (coloured) photo of the tongue can be taken by such a phone and immediately sent off as an email to a physician who together with other information about the patient can tell the patient what to do and how to cope. It is no real substitute for ascertaining the *mai* profile, but it can be very useful under specific circumstances.

Acupuncture anaesthesia

One publication in the West in English, involving a video now still accessible online, has drawn attention to TC*M-Zhongyi* deploying needling together with Western drugs to induce anaesthesia[20] during a surgical operation which took place in the 1990s in The Temple of Heaven Hospital (a neurological hospital) in Beijing. The author (Moyers 1993) was a witness to the actual operation. The details briefly are: a youngish woman patient was operated upon to remove a very large tumour by her pituitary gland. Naturally, her skull had to be cut open. The hospital opted to use acupuncture anaesthesia combined with Western drugs which, however, were used at only half the normal dosage. As a result, the patient remained conscious throughout the operation. Moyers ascertained that she was fully conscious, not simply by observing her face and appearance, but also by asking her a series of questions which included whether she knew where she was, why she was there, what was happening to her exactly, whether she felt any pain and so forth. He was convinced the operation was not faked; the patient remaining conscious throughout the operation and her reporting that she felt no pain was not faked either. To Moyers and Eisenberg (the co-witness), it was obvious that such phenomena would fly in the face of the Paradigm of Scientificity upheld by Bm and MWS. Bm and MWS could invoke the placebo effect or hypnosis by way of explaining the phenomenon of acupuncture anaesthesia.[21]

Acupuncture works by removing *Qi* blockage in the *jingmai* when patients report pain in their person-body; as acupuncture anaesthesia is related to normal acupuncture it, too, consists of manipulating *Qi* in the *Jingluo* Network in such a way, this time, as to prevent the patient from feeling pain while retaining consciousness. It induces numbness or dullness. One could say that being pain-free and remaining conscious are *biomarkers* which are observable by third parties and, in that sense (sense (a)), objectively ascertainable. This technique is especially relevant to treating patients who for medical reasons cannot tolerate too large a dose of Western anaesthetic drugs which would induce total loss of consciousness.

Qigong 气功

As far as this author can ascertain, there is no direct translation in English for the term q*igong*; however, the notion may be explicated in a nutshell as follows: it is the skill involved in the use and control of *Qi*-in-dissipating mode. The subject is vast; however, it still needs a brief discussion here as it appears to raise some problems considered to be particularly vexing to sceptics regarding CC*M-Zhongyi* in particular and *CPT*-CCD*P*'s avowal of *Qi*-in-dissipating mode in general.

Let's look at the easy bit first – *qigong* as part of CC*M-Zhongyi*. At its simplest, it is a form of exercise which consists basically of controlling the breath, keeping the mind clear and uncluttered (as in meditation) and undertaking very gentle movements. *Taijiquan* is a cousin. Both are conceived as part of *Preventive Medicine* to ensure that the practitioners of such a type of exercise maintain good health. It is called *yangshen* 养身. CC*M-Zhongyi* is not Bm; as such, naturally, it conducts no RCTs. Its evidence for its efficacy as a form of *Preventive Medicine* consists of three kinds:

(a) Reports of its efficacy on the part of its practitioners down the centuries – these are entirely subjective data as practitioners simply said/say they felt/feel better.

(b) Anecdotal data relating to rough negative correlation between *yangshen* on the one hand and mortality and/or morbidity on the other, based on observations by people in the community with an interest in CC*M-Zhongyi* and its

[20] Other much earlier documentation in English exists – see for instance, Dimond 1971, and Li 2018 which mentions more.
[21] See Li 2018 for some details about other hypotheses invoked. However, as acupuncture can deal with a very wide range of phenomena, from acute to chronic conditions, from tooth ache to neuro-surgery, no single hypothesis acceptable to Bm and MWS appears to be available.

concept of *yangshen* including the practitioners of the exercise themselves. This type of data, though objective in one sense may be said to be flawed in another, as it could be subject to bias, even if systematically collected.

(c) Of late, in China, there appears another kind of data (see Chapter Ten for some detail): those who turn to this form of *yangshen* could hold Bm records of poor health and illnesses; they find that Bm appears unable to help them overcome the problems they face and so are motivated to join such *yangshen* classes. Such participants report that the exercise has improved their health; some of them, on the prompting of anxious friends and relatives might have gone back for Biomedical check-ups to back their subjective reports of improvement – their former high blood pressure, arrythmias, high level of "bad" cholesterol relative to "good" cholesterol and so forth having been reduced, if not eliminated totally, post *yangshen*.

Some sceptics of CC*M-Zhongyi* should find this kind of evidence relevant as the pre- and post-*yangshen* Biomedical data would be the biomarkers they could be looking for. However, this author does not know of such evidence being systematically collected and published. Severe sceptics might not accept such evidence, as it would have been collected and analysed outside the RCT framework.

Qigong in this context is similar to, yet different from acupuncture. Needling requires the insertion of something sharp in a *xuewei* along a particular *jingmai*. In some contexts of needling, blood may appear. Needles and blood at least are things which we can see with our eyes unaided even by instruments, high- or low- tech. Furthermore, needles are inserted into the person-body which consists of *tissues*, *organs* and organ-systems, which are all things in the familiar sense of something being a thing – such components of the person-body are *anatomically grounded*.[22] The process of needling, in CC*M-Zhongyi*, however, is aimed at unblocking *Qi* as we have seen, which is *Qi*-in dissipating mode. *Qigong* goes one further from this point of view than acupuncture, as it involves neither the use of "things" nor the contact of one "thing" with another "thing". All that we have is the person trying to control the way s/he breathes, keep the mind clear and uncluttered, concentrating on the "spiritual", not merely the "physical" dimension of the person-body.

How could preventing the person-body from *Qi*-blockage be achieved not through decoction or needling but just through control of *Qi*-in-dissipating mode so that it will keep circulating unhindered in the *Jingluo* Network running through the person-body? The earlier sections of this chapter have attempted a partial answer, that CC*M-Zhongyi* has its own *biomarkers* to validate its own treatments. This author has so far not yet come across a study conducted as follows: in principle, it is possible to approach beginners of *Qigong* (or *Taijiquan)* to permit a CC*M-Zhongyi* physician to ascertain their *mai* profile before and after the session every day for say six months; one could also do a *shezhen* as further good measure. At the end of the project, the experts in the field could study the data collected to see if a pattern emerges, and if one does, how to interpret it in the light of CC*M-Zhongyi*'s theory and practice. Such a study would be conducted endogenously within the CC*M-Zhongyi* framework itself, that is, using its own *biomarkers*. Without compromising the ARIIMO, it is even possible to incorporate some features of RCT into his endogenous project of tying down effects to causes via *biomarkers* – for instance, prior to embarking on the *Qigong* programme, a CC*M-Zhongyi* physician could ascertain and record the participant's *mai* profile, state of the tongue and other signs of health, sub-health and/or explicit illnesses. At the end of the programme, another assessment would be undertaken but not by the first CC*M-Zhongyi* physician but by another equally qualified one who would have no knowledge of the participants' records at the beginning of the programme or indeed, even of the fact that the person has participated in any *Qigong* programme. A third CC*M-Zhongyi* physician or even a panel of them could compare the two sets of records, interpret the data and write up the final report about the whole extended study to see what good effects, if any, participation in *Qigong* could produce.

The pursuit of longevity may be considered as part of the larger project of *yangshen*; Daoist recluses and hermits, in the past, seriously practised what is called *neixiu* 内修. Chapter One of this book has looked briefly at one such recluse, Sun Simiao, an exceptionally distinguished scholar-physician of the Sui-Tang period who towards the end of his life opted to retreat to a cave to practise *neixiu*. He died at the advanced age of a hundred and two. Did he live as long as he did because of his *neixiu*? Or would he have lived to such a ripe old age even if he never practised *neixiu* as he possessed longevity genes? Or perhaps, what seems very likely that it is the result of *neixiu* and his genetic endowment interacting

[22] Readers should bear in mind that "being anatomically grounded" does not mean one and the same thing in CC*M-Zhongyi* and in Bm. The latter understands anatomy fundamentally from dissection of cadavers, the former from *physiology* of the living person-body. Hence, Bm regards the heart as a distinct organ occupying a certain portion of space in the human body (with its own specific function of pumping blood through the body), the lungs another distinct organ, the intestines, large and small are two distinct organs and so forth. CC*M-Zhongyi* regards *organs* differently (see Lee 2018, Chapter 4): (a) It uses two basic categories in terms of *Yinyang* to classify them – five *yin* visceral *organs* (*Liver, Heart, Spleen, Lungs and Kidneys*) called *zang* 脏, and five *yang* visceral *organs* called *fu* 腑 (*Gallbladder, Small Intestines, Stomach, Large Intestines, Bladder*). (b) The *yin* and *yang organs* are matched up to form *Yinyang* pairings: *Liver-Gallbladder, Heart-Small Intestines, Spleen-Stomach, Lungs-Large Intestines, Kidneys-Bladder*. (c) These form organ-systems, the *zangfu* 脏腑, which are not "anatomically grounded" in the Bm sense of the term but may be said to be "physiologically grounded", as CC*M-Zhongyi* is grounded in its *Principles of Physiology* – see Chapter Five of this book; Lee 2018, Chapter 9.

with each other in a complex manner over time which led to the outcome – see Figure 7.1 in this book illustrating this model of causality.

Let us look at *Qigong*, this time, not in the context of *Preventive Medicine* but of *Clinical Medicine*, as *Curative Medicine* in the form of external *Qigong*. Physicians who are particularly interested in this aspect of CC*M-Zhongyi* work hard at *Qigong* and when sufficiently skilled, they would be able to impart their *Qi* to patients to cure them of their various ailments. Moyers 1993 reports that one such physician called Dr Zang treated in this manner 27 cases of women with fibrocystic breast disease. Dr Zang said he completely cured 11, could do nothing in the case of 2 patients, and of the remaining 14 cases, he managed to reduce their lumps. *Ex hypothesi*, external *Qigong* means that there is no direct physical contact between physician and patient – the former simply stands over the latter (without touching) to perform his *treatment*.

We now leave the context of *Qigong* in CC*M-Zhongyi* altogether to consider it in other contexts such as its role in the general cultural life of the Chinese people down the ages. Some practitioners seek out *Qigong* masters who are acknowledged to be authorities to become their disciples. Such authorities can readily demonstrate how they use their control of *Qi* to throw the trainees either singly or repel their combined efforts to throw him, all without the use of physical force, the kind of force people use in fisticuffs, in punching others and so forth. Sometimes there is minimal physical contact between master and pupil – the pupil may put his closed fist against the master's open palm. However, such minimal physical contact is not necessary as the same effect could take place even in its absence. The critical thing is that the *Qigong* master can use his/her *Qi* to cause the other to move in a direction s/he intends, irrespective of whether the other wants to or not.[23] One such trainee (as reported in Moyers 1993) said that he felt like a marionette on the string of a puppeteer; he said that there was nothing he could do, as the more he resisted using physical force (which he was capable of exerting as he was also trained in the hard martial arts), the more physical damage he caused himself, as the *Qi* of the master would just simply push back the violence upon himself.

That physical contact is neither a necessary nor a sufficient condition for a demonstration of external *Qigong* is shown by the case reported in Eisenberg 1985 where such a master used his *Qi* to turn on an electric light bulb in a room isolated from himself in terms of distance as well as measures to prevent contact and communication in any form known to everyday life as well as more importantly to MWS. This experiment was mounted by the approved authorities in response to a request by Eisenberg – this would rule out fraudulence and fakery as, if and when such scams were exposed to the world at large, what conceivable good would it do the Chinese authorities, at any level of government?[24] Indeed, the Chinese government and its people at large are proud of such unique cultural skills and talents – when it was fashionable for the PRC to send state circuses on goodwill tours round the world, their circus bills would include an item or two of a *Qigong* master and his team demonstrating their expertise which could include breaking a brick with a "*qi* chop", so to speak, with two people supporting a huge concrete slap on their heads and the master breaking the block into two, but with no damage done to the two male caryatids,[25] so to speak, supporting "the capital" on their heads. Sometimes, on the eve of the Spring Festival/Chinese New Year, the Chinese State Television (CCTV) would incorporate such displays during their programme celebrating the festive season.

An important conclusion to remind the reader which can be drawn from the discussion above is that external *Qigong* (whether in *Clinical Medicine* as a form of therapy or in the various forms of martial arts today) is actually an instantiation of *action-at-a-distance* in CT*P*-CCD*P* and CC*M-Zhongyi*. The concept of action-at-a-distance in WPT and MWS appearing fully in Newton's notion of gravity will be explored in a later section to see what similarities if any there is between *Qi* on the one hand and gravity on the other.

[23] This author experienced it a few years ago when a friend (who knew *Qigong* to an extent but is no master) demonstrated it. Indeed, I felt I had no choice but to move in the direction her *qi* directed me to go.

[24] It is, perhaps, relevant to mention something similar and analogous about the suspicion on the part of Westerners when they confront a situation in China which appears to them impossible according to Western understanding, experience and history. This concerns a visit by a group of foreign archaeologists and related experts to the Hunan Provincial Museum in Changsha which houses the artefacts from the early Han tombs at Mawangdui, excavated in the early 1970s. The artefacts which troubled these visitors most of all are the textiles, the most spectacular of which is the painted silk funereal banner draped over a coffin in one of the three tombs found on the site. Its colours are so well preserved that the object does not look like one which has been buried for more than two thousand years. Such visitors kept expressing their doubts to the curator of the museum about the authenticity of the textile and the other tomb goods on display. The curator did his best several times to quell their doubts but to no avail. Western archaeologists are used to well-preserved mummies but these were embalmed. Painted textiles and their colours are something else. Could the Chinese have faked it all? Some people would remain sceptical whatever evidence is mounted to overcome it. So, this author would not even begin to try except to remind those with such sceptical tendencies to bear in mind that it makes no sense for the PRC to mount such fakery, as the risk of being exposed as fakers and fraudsters would be high and the political damage of being thus exposed would be astronomical.

[25] Female caryatids are today better known than male ones, although these did exist. The most famous extant female caryatids illustrating this particular aspect of ancient Greek architecture are found still standing on the Acropolis in Athens as well as in The British Museum.

Another cultural context in which *Qigong* occurs is that of the martial arts which, today, are of course not undertaken as they had been historically but more as exercise and as an art of self-defence. There is an aspect which is of interest to us here called *Qinggong* 轻功; this term, too, has no translation in English as far as this author can ascertain.[26] However, one may attempt an explication of the concept simplistically, in a nutshell, as follows: it is the skill which enables a person to move lightly and swiftly over space.[27] Some of these movements are graphically captured in phrases, such as 飞簷走壁 *fei yan zou bi* /flying over eaves and striding up walls or 踏雪无痕 *ta xue wu hen*/ treading snow but leaving no marks. Whatever the historical truth might be, sceptics claim that, today, such an ability as *Qinggong* is but the product of martial arts novels and the martial arts films/videos based on them using camera and other stuntmen tricks to achieve spectacular effects. That may be the reality of the cinematic world; however, whole sale scepticism and cynicism beyond it may be unjustified. Indeed, even today there are adepts but not in plentiful supply for the simple reason that it is an extremely difficult genre of the martial arts to acquire. Trainees have to start young (10 is considered a good age, just pre-puberty) and be obsessively committed to learning and practising it over the years or indeed for life to maintain it once acquired. At Wudangshan 武当山 (a famous Daoist mountain in Hubei province), today, there is such a champion, a Daoist priest called Chen Shixing 陈师行 whose skills and expertise can be seen in videos available online. For instance, his mastery of *Qinggong* enables him to "walk up" walls 4 metres (13.12 feet) high, to leap from a cragg 13 metres (42.7 feet) high, in three stages; he can walk 2 kilometres of a mountainous path in 5 minutes. It is difficult to imagine that the Wudangshan Temple Authority would permit him to participate in such videos and to send him as ambassador around the world as an expression of Chinese soft power if Chen Shixing's mastery of *Qinggong* is not as it is claimed.

Unlike parkour, *Qinggong is* not about mere physical movements deployed in overcoming obstacles analogous to those laid out in an assault course. It is about the control of *Qi*, focussing on the lower limb, co-ordinating movements of leg-foot so that the person-body could move about much faster than is normally the case (such as walking 2 kms in five minutes), fine-tune movements so that one could move through space not considered normally possible (leaping over eaves and "walking up" vertical spaces), move over objects which normally cannot bear the weight of a person-body, such as over snow without leaving any visible signs of having done so. It is lightly and swiftly treading in space – the normal person in relative terms would tread heavily and slowly, the full-weight of their body landing on the objects trodden upon, often denting or damaging them in some way visibly and immediately in certain contexts.[28] Treading lightly and swiftly would prevent damage to objects which would occur should the tread be slow and ponderous – for instance, the *Qinggong* expert can skim the backs of a row of bent-over people without causing any damage or injury to their spine.

Qinggong is not about the practitioner losing body-weight although it is fair to say that people with a large BMI are unlikely to be successful in acquiring it. It is about moving lightly and swiftly through controlling *Qi* which involves concentrating on what CC*M-Zhongyi* calls: *shen* 身 (person-body), *shen* 神 (the mental-spiritual) and *xin* 心 (which is not simply the anatomical organ in Bm, but that *organ* which can feel emotions, both positive and negative, such as grief or joy within the understanding laid down by the cosmological-*philosophical* framework of C*P*T-CCD*P* and CC*M-Zhongyi* – see Chapters Four and Eight of this book for detailed exploration, especially of the concept of *Wuxing* 五行 as well as Macro-Micro-cosmic *Wholism*/*Tianren-xiangying*).

Assuming that the demonstrations of the skill of a *Qinggong* expert are real as in the case of the Wudangshan Daoist priest, Chen Shixing, and not faked, those outside the C*P*T-CCD*P* framework would find such a skill puzzling and mysterious. Clearly one cannot explain *Qinggong* within WPT which rests on Thing-ontology. Thing-ontology which underpins MWS can explain a vast range of phenomena, though not every phenomenon under the sun, so to speak.

It is apt here to remind readers of the scene in Shakespeare's *Hamlet*, I.5. Hamlet has met and talked with his father's ghost and learnt how his uncle, Claudius, has murdered his father, married his mother, usurped the Danish throne. Hamlet has recounted the encounter with his dead father to his friend, Horatio, who has responded by calling it "wondrous

[26] Its nearest equivalent is parkour, a physical activity developed in the 1990s in the outskirts of Paris by one called David Belle who says he was inspired by his father and his movements as a firefighter. Belle could also have been influenced by Eastern martial arts (or perhaps martial arts films), army assault courses (the French army in which his father served in Vietnam before he became a Parisian firefighter). In an official looking website, the term "parkour" is defined as "acrobatics meets with assault courses". The idea is to do so without the aid of tools or equipment, just using one's own body and its movements. Belle is listed professionally as a stunt co-ordinator.

[27] As we shall see in a moment, this account relying on the verb "move" is too bland to do justice to all the activities which a *Qinggong* expert can perform. As these activities are very diverse and may vary from leaping (horizontal space), to mounting walls (vertical space), to covering distances on the ground in super-fast time and so forth, the specificities of these movements are lost. Blandness in this translation buys breadth of coverage but not depth.

[28] Sometimes, the effect of damage would not be immediate or visible. For instance, when we tread on grass, no visible damage is caused to it, but in reality, we have damaged it to an invisibly small extent. Provided this damage is not augmented by frequent and regular treading on the part of others, the grass would recover. However, if sufficient numbers of people tread the grass, the damage would become visible and permanent, as the grass would not have been able to regenerate itself.

strange". Hamlet then says: "And therefore as a stranger give it welcome. There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy".[29]

We shall see in the next section that Newton, too, discovered something "wondrous strange", namely, gravity which defies his own Three Laws of Motion. The concept of *Qi* may appear to be "wondrous strange" analogously as gravity. However, *Qi* is not "wondrous strange" as C*P*T-CCD*P* does not rest on *Thing-ontology*, but on a whole suite of cosmological/*philosophical*/methodological theses which collectively may be called the *Qi-Hypothesis* (or *QH*, for short) – see section to follow. And that section will show how *QH* can adequately explain *Qigong*, *Qinggong* not to mention other CC*M-Zhongyi* notions within its own terms. To insist that it cannot is to subscribe to the Colonial Mind-set and to Essentialism of Method.

Qi: Popper's Falsifiability, Newton's Gravity and the Methodological Postulate of Causal Realism (MPCR)

Qi as we have seen is a vexing concept because it is not visible, nor is it directly or indirectly observable (with the help of an instrument such as a magnifying glass or microscope). Yet C*P*T-CCD*P* and CC*M-Zhongyi* appear not to be concerned, much to the puzzlement, if not annoyance, of people outside that tradition.

This chapter will try to test CC*M-Zhongyi*'s concept of *Qi* against two yardsticks, prominent in the history and philosophy of MWS – one recent (post WWII), the other at the dawn of MWS itself. Popper published *The Logic of Scientific Discovery* in 1959[30] which heralds his attempt to solve the problem of demarcating science from pseudo-science in terms of his principle of falsifiability or falsificationism.[31] By1687,[32] Newton had published his definitive thoughts and work on gravity, invoking the notion of action-at-a distance – gravity as a force keeps the planets in our Solar system revolving in the way they do in the heavens above.[33]

Popper's Falsifiability and *Qi*

Let us start the discussion with Popper's falsifiability which may be considered under two aspects: (i) when a perfectly empirical claim (let us call this "hypothesisF" (HF for short) which can readily be subjected to testing, nevertheless, in the hands of the methodologically naïve, careless or "unscrupulous" be transformed to become one which is no longer falsifiable – let us call this "hypothesis~F" (H~F for short), thereby robbing the original HF of its status of being scientific; (ii) as an exercise in deductive reasoning which Popper calls the Hypothetico-Deductive (H-D) Model. As these aspects are related, they may be discussed together, but for ease of exposition, let us begin with the H-D Model, which sets out scientific reasoning cast in the form of syllogistic reasoning in Classical Logic as pioneered by Aristotle. A syllogism consists of two premises: major and minor. The terms of a syllogism must also be distributed in a certain manner in the two premises before the argument can be considered to be valid.[34] One well-known mode is called Barbara with its equally well-known example:

Major Premise:	All men are mortal
Minor Premise:	Socrates is a man
Conclusion:	Socrates is mortal

[29] The term "philosophy" here could be referring to science in Shakespeare's day. However, as this book is predicated on the premise that a close link exists between philosophy and science, this observation, far from damaging is, on the contrary, welcoming. Even more pedantically, one can point out that "your" ought to be equated with "the". In other words, Hamlet is not criticising Horatio for his friend's personal limitations in his knowledge about the world, but drawing attention to the general problem of limitations inherent in all epistemologies (philosophy and science).

[30] See also Popper 1963.

[31] For one account of Popper, see Thornton 2019.

[32] Newton's Law of Universal gravitation – $F_g = G (m_1 m_2)/ r^2$ – is the inverse square law published in his *Philosophiae Naturalis Principia Mathematica*. Although Newton's law has been strictly speaking superseded by Einstein's general relativity, it remains true that in non-relativistic physics, his law is still used as it is simpler to handle and is sufficiently accurate for the purpose in hand.

[33] See Hall 2020; Mann 2020.

[34] Classical Logic which is Formal Logic in WPT distinguishes between validity and truth; it is only interested in the former, not the latter. For instance, the following syllogism is valid but the premises are false and so therefore is the conclusion: All pigs can/could fly, Socrates was a pig, therefore Socrates could fly. In contrast C*P*T is not compatible with Formal Logic thus understood as it holds that *reasoning* is neither context-free nor content-free – hence it upholds Contextual-dyadism. For more details on this topic of Formal Logic in WPT and its lack in C*P*T, see Chapter Eight of this book; Lee 2021 (Open Access), Chapter 4.

This is valid not merely because it has two premises but also because the term they share in common "men/man", the middle term is distributed, that is to say, that in the Major Premise, "men" functions as a subject term and "man" in the Minor Premise functions as a predicate term.[35]

In Popper's borrowing of syllogistic reasoning which he calls the H-D Model, the scientific hypothesis under test would be the Major Premise; what he calls Statements about Initial Conditions (IC) would be the Minor Premise(s); the Prediction would be the Conclusion. For example:

Hypothesis (HF):	Water freezes at 0 degree C
Statements of Initial Conditions:	This is a bucket of water
(IC)	This bucket of water is left outdoors over night in the depth of winter at 8pm on 00/00/0000
	The thermometer to ascertain the temperature outdoors at the time already reads 0 degree C …
Prediction:	This water will be frozen to ice by next morning

HF+ IC entail the Conclusion/Prediction

The experimenters set up the experiment above. They check the bucket the following morning. If the thermometer registers a temperature at 0 degree C or below, and if water in the bucket is frozen, then HF has survived falsification and is true.

Popperian methodology in terms of the H-D Model of reasoning is considered to be very powerful for the following reasons:

(a) In deductive reasoning, there is no logical gap between the premises and the conclusion – granting that both the Major and Minor Premises properly obtain, they entail the Conclusion. In other words, one would logically contradict oneself should one grant that the Premises obtain but go on to deny the Conclusion. In contrast, inductive reasoning permits one to accept the premises and yet to deny the conclusion without committing a contradiction. Take the conclusion "Fire burns human flesh" (A). The evidence we can cite is very long indeed stretching back to the discovery of fire by humans, whether that be dated to a mere 400,000 years ago or even a million years ago. Note that A invokes the logical operator "all" – the scope of its reference covers the past, the present and extends into the indefinite future. (A) predicts that yet to be observed cases will confirm its truth. Now the probability of that prediction would be so high that no-one in their right mind would lose sleep worrying that, in the future, (A) might not obtain. Probability, however high, is not logical certainty. Hence between the evidence (no matter how impressively long) for (A), one can say without contradiction that while the evidence for (A) to date is undeniably correct, it is not logically impossible that the next instance in some indefinite future or near future might not confirm that (A) is true. That is why Popper holds the H-D Model but mistrusts inductive logic or reasoning, seeing it as flawed.

(b) If a deductive argument is valid (the Conclusion following logically from the Premises) and if the Premises (as empirical claims are true), then the Conclusion derived from the Premises will also be true.

(c) In the H-D Model, HF and IC are empirical claims held to be true for the purpose of testing HF. If the Prediction derived from HF and IC turns out to be true, then HF (and IC) could be said to be true.

Suppose another scenario obtains: the thermometer registers 0 degree C or below but water in the bucket is not frozen. Next imagine the experimenters back-tracking, contending that HF, nevertheless, is correct. What is wrong is that the thermometer is not a properly functioning instrument and its reading cannot be taken to be correct. This is an *ad hoc* hypothesis which is in danger of being used as part of an attempt to avoid the falsification of HF. Suppose to settle the controversy, one uses another thermometer agreed by all to be reliable and it reads 0 degree C or below. Instead of admitting defeat at this stage of the game, the experimenters go on to invoke yet another *ad hoc* hypothesis to explain away the non-occurrence of the predicted outcome, such as, the water in the bucket is not pure water, that someone mischievously has added salt to it. Suppose a lab test carried out on a sample of water from the bucket finds no salt in it. Again, the experimenters continue to refuse to accept that their HF has been falsified, by invoking yet another *ad hoc* hypothesis. This then is what Popper means by saying that falsifiability is the hallmark of the scientific status of a hypothesis – when the logically derived prediction fails to occur at the end of the experiment, one should simply accept that the hypothesis in question is just a false claim with, however, its status as a scientific one remaining intact.[36] No HF should be turned into H~F.

[35] See Smith 2020 (Fall Edition).

[36] Popper seem to imply that the cut-off point between falsifiability and non-falsifiability is a clear-cut business. Others contend it is not. For some details of this controversy, see Kuhn 1962, Lakatos and Musgrave 1970, Lakatos 1978, Lee 1984.

We next confront this interesting question: can one find evidence in CC*M-Zhongyi* analogous to the attempts to avoid falsification as the experimenters in our imagined scenario above do? The short answer appears to be in the negative. However, before we can give detailed arguments, we need first to sort out the hypothesis or hypotheses which the CC*M-Zhongyi* experimenters subject to testing in the deconstruction to follow. They may be said to invoke the unobservable/undetectable theoretical "entity"[37] called *Qi*-in-dissipating mode in the living human being initially for three reasons, as observed in an earlier section, two of which are: the cosmological/*philosophical* reason of *Tianren-xiangying* and the theoretical one that *Qi* is the fundamental *ontological* category. These lead to the formulation of perhaps a series of hypotheses, which may be set out hierarchically with the highest first mentioned. This in some ways overlaps with the list given in the earlier section on "What is *Qi*?", but it includes important additional theses:

1. *Qi* in *yuzhou* 宇宙/the Universe exists in two modes: *Qi*-in-concentrating mode and *Qi*-in-dissipating mode – a *philosophical*/cosmological hypothesis in C*P*T-CCD*P*: *Em-ism*.

2. *Qi* in *yuzhou* exemplifies *Thing-ontology cum Process-ontology*: *Qi Wholism*.

3. C*P*T in general and CCD*P* in particular adhere to the Dyadic or more specifically Contextual-dyadic Mode of Thinking. Polar contrasts are not dualistically but dyadically related – as such they form a pair which is a *Whole*: Contextual-dyadism.

4. C*P*T-CCD*P* consider that the most significant polar contrasting pair is *yin* and *yang*, which are inextricably entwined and are not mutually exclusive: *Yinyang Wholism*.

5. *Wanwu* ("the myriad things" in *yuzhou* including humans) embody *Em-ism*, *Qi Wholism*, Contextual-dyadism and *Yinyang Wholism*.

6. As such, humans exemplify *Tianren-xiangying*: Macro-Micro-cosmic *Wholism*.

7. As such, human beings also exemplify *Mind-Body* or *Body-Mind Wholism*.

8. CC*M-Zhongyi* – its theory and practice, *diagnosis* and *therapy* – takes place within the ontological/ epistemological/methodological boundaries implicitly set out in C*P*T-CCD*P*.

9. CC*M-Zhongyi*, therefore, contends that *Qi* exists in the individual person-body both as *Qi*-in-concentrating mode as well as *Qi*-in-dissipating mode. When *Qi*-in-dissipating mode is functioning properly, flowing smoothly, unhindered in the person-body, the individual may be said to be well and flourishing. When it is hindered, the person may be said to be ill; often people only realise that they are ill because they suffer pain in their person-body

10. *Qi* when blocked in the person-body leads to illness: the key Methodological Postulate (MPQBP) which says that *tong ze bu tong, tong ze bu tong*. *Diagnosis* in CC*M-Zhongyi* lies in finding out where exactly the blockage is located and treatment consists of using various means such as decocting medicinals, needling, burning *ai*, massaging, using *qigong* and so on to unblock that *qi* blockage.

For our purpose here of de-constructing CC*M-Zhongyi*'s theory and *therapy*, let us collectively call this the *Qi-Hypothesis* (or *QH*, for short).

Analogously, then, on behalf of CC*M-Zhongyi*, one could construct the following *H-D* Model:

HF (under test):	*QH*
Statements of Initial Conditions (IC):	The *mai* profile of this patient is a The tongue profile is b Complexion is c The patient reports pain (chest, stomach or…) The patient can only move slowly with difficulty …
Diagnosis-Prediction-*Treatment*	This patient is suffering from *rezheng* S/he is suffering *Qi* blockage along the **Liver** *Jingmai* This patient requires heat-clearing medicinals to eliminate that blockage

[37] The word "entity" here is used in a technical sense, simply to stand for that which the term "*Qi*-in-dissipating mode" refers to, and is not to be understood as a thing under *Thing-ontology* which belongs to *xingerxia*.

After *treatment*, the *mai* profile and tongue profiles of patient will alter from (a, b) to ~(a, b)
After *treatment*, s/he would no longer feel pain, discomfort, be unwell in the way s/he did at the time of presentation

QH + IC entail the Conclusion which in this context is the *Diagnosis*-Prediction-*Treatment*

The *diagnosis*/prediction/*treatment* can be put to the test. At *diagnosis*, the patient's condition is ascertained according to the usual four techniques of *diagnosis*, including looking at the tongue and taking the *mai*. *Diagnosis* entails *treatment*. Apply *treatment*. After *treatment*, ascertain again state of patient using the usual techniques including checking the *mai* and the tongue. The *mai* and the tongue profiles play key roles as the *mai* does not lie (as previously noted), nor does the tongue for that matter. Post-*treatment*, these may be regarded by CCM-*Zhongyi* as *biomarkers* for the efficacy or otherwise of the *treatment*. Suppose these *biomarkers* indicate that the patient has got worse instead of better, then the *diagnosis*/prediction/*treatment* would have been falsified. As the *H-D* Model shows, the falsification need not be traced to *QH* but to one or more of the IC. To see if this is where the trouble lies, another CC*M-Zhongyi* could be asked to examine the patient, to see if the second assessment agrees with the first. Suppose the second physician *diagnoses* that this is not a *rezheng* but a *hanzheng*, *prescribes* supplementing medicinals instead of heat-clearing ones, and predicts that the patient would improve. Suppose indeed, the *biomarkers* after the second *treatment* bear out success. This means that CC*M-Zhongyi* cast into the *H-D* Model of reasoning is falsifiable (falsified under the first assessment of the patient but survives falsification under the second assessment of the patient).

However, what would and could render CC*M-Zhongyi* unfalsifiable, thereby earning the damning label of being pseudo-scientific from the vantage point of Popperian methodology? CC*M-Zhongyi* would be in danger of rendering itself unfalsifiable in a fashion analogous to our imagined experimenters regarding the Water-freezing Hypothesis under the following circumstances: when its physicians and theorists invoke *biomarkers* to bear out the efficacy of their *treatments*, these invariably fail to do so; and yet in the face of persistent and systematic failure, the physicians and theorists would, nevertheless, continue to uphold *QH*. In other words, even if all the empirical evidence is against *QH*, they stubbornly cling on to it. The history of CC*M-Zhongyi* does not bear out such a tale of failure; over the millennia and the centuries, they would have had both successes and failures. Instances of some failures could be explained away in terms of an ad hoc hypothesis that the physician is incompetent, has mis-*diagnosed* and hence mis-*prescribed* the treatment for the patients which not only has made their condition worse but would even kill them in a worst-case scenario. Incompetent doctors and physicians do exist whatever system of Medicine/*Medicine* one is talking about. This kind of attempt to explain failure, however, deals no mortal blow *per se* to the system itself, as other competent colleagues could remedy the mistake. So long as mistakes can be remedied in this fashion, the ad hoc hypothesis need not be a fatal one. In other words, not all ad hoc hypotheses are in principle bad; whether they fall into Popper's damning category depends entirely on the context of invoking them. One can define "bad" or "damning" ad hoc hypotheses as follows: when the predicted result fails to turn up, the experimenters then invoke a further hypothesis to explain away why the prediction has failed to take place; however, there is no independent evidence to back up this further hypothesis. The key thing to look out for is whether there is independent evidence for an ad hoc hypothesis and whether the independent evidence in turn survives falsification.

In other words, if the above procedure for testing CC*M-Zhongyi* against the Popperian *H-D* model survives critical scrutiny, then the *Medicine* cannot be condemned to be "pseudo-scientific"; to do so, would be to invoke the Colonial Mind-set.

Notwithstanding that such arguments as presented above are available to defend CC*M-Zhongyi*, sceptical voices appear to remain strident. *Clinical evidence* as reported by CC*M-Zhongyi* practitioners regarding the efficacy of needling certain *xuewei* along certain *jingmai* for certain patients naturally fall short of the Paradigm of Scientificity endorsed by Bm by long shots: it is not the results of RCTs, it is not laboratory based, above all, the *Jingluo* Network upon which their needling successes are predicated appears to be bereft of any empirical data which can remotely be said to be real and scientific as recognised by MWS/Bm. As already mentioned, it was to quell such scepticism that a medical scientist was tasked to see if such data could be found for the *Jingluo* Network, as the Chinese government and TC*M-Zhongyi* believed/believe that this is the only way to rescue *Zhongyi* from the lowly status of being The Colonised/Inferior. Chapter Ten which follows looks at this cluster of issues.

Newton's Gravity and *Qi*

In the meanwhile, we next look at the *QH* of CC*M-Zhongyi* in the context of discussing Newton's concept of Gravity. Just a quick reminder to the reader: *Qi*-in-dissipating mode as the key concept in the former is considered to be vexing as it seems to refer to something which has no shape or form, is not impenetrable, is neither directly nor indirectly observable with the help of instruments (low- or high-tech); nevertheless, it claims ultimately to be able to produce good therapeutic consequences or effects. Such characteristics render it suspect in the eyes of Bm and MWS. Yet Newton's concept of Gravity is also invisible, neither directly nor indirectly observable with the help of instruments. Although his concept of

action-at-a-distance has been said to be "spooky", nevertheless, it is accepted as one of the greatest discoveries of MWS. Can one square the circle?

To deal with this conundrum, we need to say something in general about the role played by entities which possess such characteristics in scientific theories both in the philosophy and the history of MWS. Conveniently, Chakravratty 2007, 15 can be shown below in Text Boxes 9.1a, 9.1b and 9.1c.

Scientific Entities and Processes

Observables	**Unobservables**
Entities and processes that one can, under favourable conditions, see/taste/touch/hear/smell with the unaided senses	Entities and processes that are not observable

Detectables	Undetectables
Entities and processes that are not observable, but detectable using instruments	Entities and processes that are neither observable nor detectable but existence of which is posited for theoretical/ explanatory reasons

Test Box 9.1a: Observables and Unobservables, Detectables and Undetectables

Things

Observables to unobservables gradation

What one can see/touch/smell/taste hear *via* the bare senses, such as a tractor, a mountain which are paradigmatic instances of (impenetrable) Matter	What one can feel, hear only such as the wind, which is penetrable, but whose presence is detectable via the bare senses and/or instruments	What cannot be seen/felt/heard/tasted/ touched/smelled but are posited for theoretical/explanatory reasons, such as the undetected Higgs boson (up to 2012)

Text Box 9.1b Unobservables becoming Observables through Detection via Instruments[38]

Unobservables whose existence is posited for theoretical/explanatory reasons

Respectable science (RS) detected by sophisticated instruments, such as viruses (since the invention of the electron microscope in the 1930s), the Higgs boson (since 2012)	Suspended status as RS (SRS) such as the Higgs boson before 2012 when "true believers" blamed the Large Hadron Collider as being not powerful enough, a view which sceptics of the time regarded as mere special pleading. Gravitational waves fell into this category until 2016	Discarded as pseudo- such as the aether, phlogiston

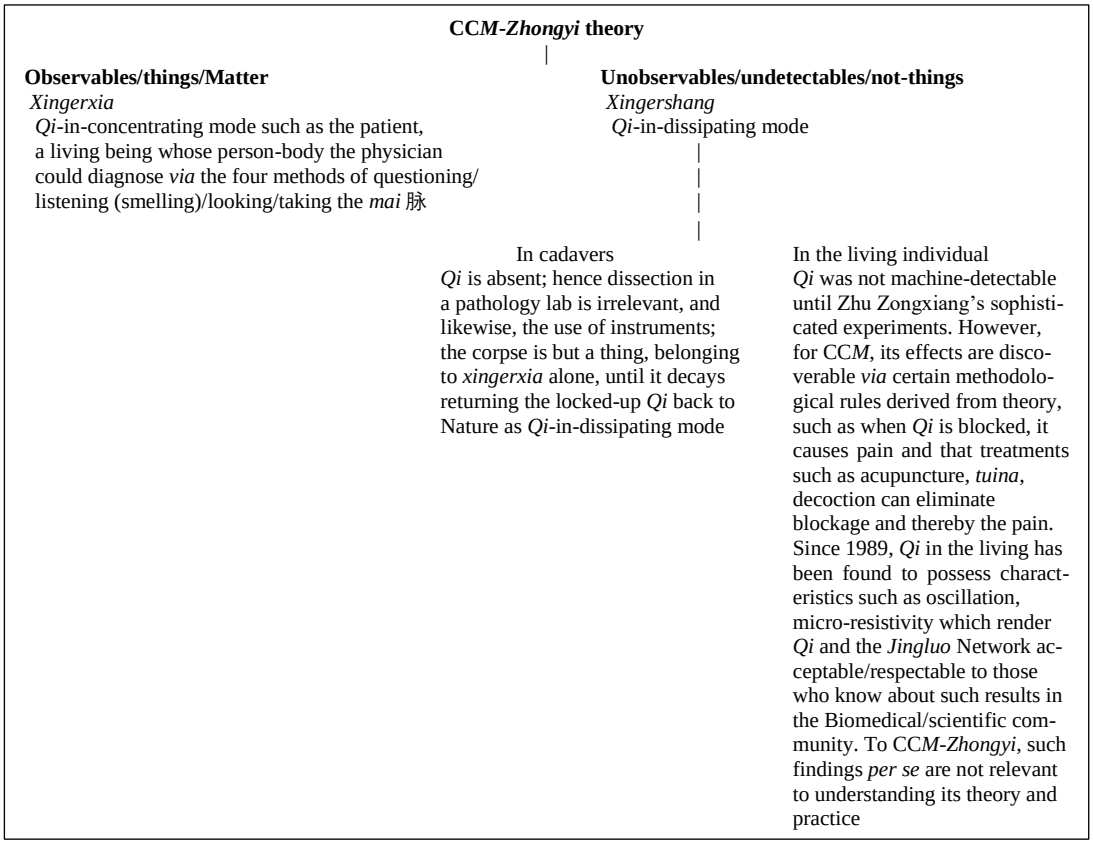
Text Box 9.1c Fate of Unobservables in the History of Science

[38] The Higgs boson is mentioned in Text Boxes 9.1b and 9.1c. What is it? It is an elementary particle in the Standard model of particle physics; a sub-atomic particle predicted by the theory unifying the weak and electromagnetic interactions. However, its actual existence eluded the experimentalists working at CERN in Geneva for about four decades till 2012. See Sample 2013.

Ether and phlogiston have been consigned to the dustbin of MWS together with other theoretical entities such as black bile and yellow bile. Phlogiston was invoked by early modern chemistry to explain what happened when something burnt. Combustible substances were held to contain a fire-like element which was released when burnt – this was phlogiston. In the case of a piece of wood, the burning released the phlogiston leaving the ashes behind in the grate. This theory held sway for more than a century. In 1774, when Joseph Priestley discovered what today we call oxygen, he called it "dephlogisticated air" – see Tingle 2014. Unlike the Higgs boson, phlogiston was superannuated and forgotten except as a footnote in the history of science when the new chemical revolution pioneered by Lavoisier emerged in which oxygen played a key role. Lavoisier was guillotined in 1794 by the French revolutionaries primarily for his role as farmer-general of taxes. (See Antoine-Laurent Lavoisier 2017).

Ether/aether, before 20th century physics, was held as a universal entity/substance believed to act as the medium for the transmission of electromagnetic waves (such as X-rays and light rays, in the same way as sound waves are transmitted by medium such as air.) Newton explicitly suggested the existence of an aether in the Third Book of *Opticks* 1704/1718), as we shall see, invoked it to explain gravitational forces. In the late 1800s, a so-called crucial experiment was conducted, the Michelson-Morley experiment, which failed to find the substance. Apparently, that is not the end of the story about the ether, although we must leave it here.

Now let us next look at how CC*M-Zhongyi* tries to capture an analogous set of issues in Text Box 9.2 below:



Text Box 9.2 *Qi* in its Two Modes in the (Human) Individual When Alive[39] and When Dead

Newton had posited Gravity as a force, invisible, neither directly nor indirectly observable. Nor, as he admitted, had he "assigned the cause of this power". In his 1687 *Philosophiae Naturalis Principia Mathematica*, in its original English translation of 1729, Newton wrote:

> Hitherto we have explained the phenomena of the heavens and of our sea by the power of gravity but have not yet assigned the cause of this power … I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypotheses [*hypotheses non fingo*]; for whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy… To us it is enough that gravity does really exist, and acts according to the laws which we have explained, and abundantly serves to account for all the motions of the celestial bodies, and of our sea.[40]

The passage cited mentions his famous or infamous phrase "hypotheses non fingo" which has provoked endless controversies; as these are of no real concern to our purpose in hand, let us simply accept, as suggested by Carey 2012, that Newton was solely concerned with his ability to provide posterity with his famous inverse square law to calculate and measure the force of gravity, thereby enabling him to sidestep tiresome discussion about "the nature" of Gravity which he implied could be inexhaustibly draining and not fruitful in experimental terms. Having said so, all the same, it did not prevent him, as we shall see, from hinting, if not directly offering such "not fruitful" hypotheses.

Note, too, that Gravity is not compatible with his Three Laws of Motion which conform to what may be called the Billiard-ball Model of cause and effect where motion is generated by the actual impact of one body/thing upon another body/thing, just as one billiard ball hits another billiard ball, imparting motion to the second ball. Gravity does not work according to that model of causality; instead, Newton distinctly violated it by arguing that the force of attraction called Gravity holds between bodies which are not in spatial contact with one another as, for instance, the heavenly bodies are light years away from one another in terms of distance. As already observed, to many, action-at-a-distance is "spooky"

[39] It is pertinent here to remind the reader that CC*M-Zhongyi* does not ever depart from the axiom that the patient is a *person* in which the physical and mental aspects of *personhood* are inextricably entwined. In other words, *personhood* is a primitive concept in CC*M-Zhongyi* – see Chapter Eight of this book; Lee 2021 (Open Access), Chapter 5. This, however, does not mean that the *Medicine* denies that the living *person* as patient possesses a *body* (*Qi*-in-concentrating mode).
[40] See Carey 2012. It must be pointed out that in Newton's days, what today we call "physics" was called "natural philosophy".

in spite of the fact that Newton through his inverse square law permitted precise calculation to be made. Philosophers and other thinkers since Newton have/had expressed views about the concept. Here are some, set out below:

(a) Some thinkers/philosophers simply ignore it, but retain Newton's mathematical framework merely as a useful calculating device to predict how bodies move in relation to one another – the view of the British empiricist, Berkeley (1685-1753). This may be called Instrumentalism in the Philosophy of Science and was famously invoked even before Newton's discovery of Gravity in the controversy between heliocentrism and geocentrism (also called Copernican versus Ptolemaic astronomy). Simplistically put, it says that the worth of a scientific hypothesis/theory/notion lies not in whether it gives us a truer or more real picture of the world but in its powers of prediction/calculation in the world of phenomena.

(b) Others say that it has no counterpart in "reality" as it is nothing more than a projection of the human mind – this view is sometimes attributed to another empiricist, David Hume (1711-1776). This is in line with the Humean strategy of being grounded in experience and that anything which is not directly experienced can be explained away as a mere "projection of the human mind". This is how Hume explains the notion of cause: it is nothing but the uniformity of sequence or constant conjunction of events. Cause is not "a power" standing behind such events bringing them about; there is no necessity to cause. To claim that it does is no more than a habit of our mind: whenever x happens (putting one's hand in the fire), we expect y to follow (the hand to get burnt) because we have observed it to happen invariably before. We then express this habit of mind by projecting it on to Nature, claiming that there is necessity in Nature, that fire causes hands to burn.

(c) It is a consequence of the workings of aether – a view which Newton himself is sometimes said to hold.

(d) It is the working of God's will – a view which is also attributed to Newton himself.

(e) It is something which God had added to matter at the time of its creation – a view held by some of Newton's contemporaries.

(f) It is a primary quality of a body – a view endorsed it is said by Kant.

(g) It is a relational, non-intrinsic quality of matter generated by "the conspiring nature" of the bodies in any interaction – a view, Schliesser 2012 claims is found in the writings of William Gilbert (1544-1603) which could have influenced Newton himself.

(h) It is real but, as a matter of fact, we know nothing more about it except that it does have consequences/effects which we can discover/calculate/measure. See Schliesser 2012.

Of the eight views listed above, (h) appears nearest to what Newton says about Gravity in the passage cited above. If we must use the word "real" then Gravity is real in the sense that it has discoverable and calculable effects. It is also the sense of real which this chapter in general is upholding; furthermore, it argues that this sense obtains not only in the case of Newton's Gravity but also of *Qi* in CC*M-Zhongyi*. Let us call this the **Methodological Postulate for Causal Realism** (MPCR). Needless to say, having admitted this methodological commonality, one must straightaway remind readers that C*P*T-CCD*P* and CC*M-Zhongyi* are totally different systems from WPT, WMS and Bm. While Newton formulated his inverse square law in the case of Gravity, CC*M-Zhongyi* offers non-quantifiable *clinical data* by way of endogenous *biomarkers* such as the *mai* profile and/or the tongue profile of patients before and after treatment. To ask for quantification as a badge of scientificity is to adhere to the Colonial Mind-set, assigning the Medical *Other* to the status of The Colonised.

The Methodological Postulate for Causal Realism (MPCR), Dark Matter and *Qi*

Let us turn our attention to another more recent episode in the history of physics, which illustrates that MWS does not hesitate to invoke the MPCR There is this mysterious thing which astrophysicists call dark matter,[41] which has been calculated to occupy 25 or 26% of the universe. Dark matter is invisible as it does not absorb, emit or reflect light. However, it does interact with Gravity. In 1933, the Swiss physicist, Fritz Zwicky noticed that the galaxies in the Coma Cluster were going too fast to remain gravitationally bound to the Cluster; he discovered that the mass in all the stars in the galaxies of the Cluster amounted to only 1% of the mass needed to keep the Cluster together. So, he postulated the

[41] Frankly, it does not matter what name is given to it; it could even be called Elephant or Pussy Cat, although more seriously, some have said it should be called "invisible matter" or indeed, even "transparent matter", so transparent like water in a glass full of it so that one can no longer see it and only see the glass itself, although the water does produce optical distortions by deflecting the light which hits it.

existence of dark matter (*dunkle Materie* in German), exerting gravitational effects which held the Cluster together. In this way, he could then account for the data observed. In other words, he had no more evidence for the existence of dark matter than that it had effects which could account for the observed facts.[42] Of course, no body took him seriously for several decades.

The hunt for dark matter began in earnest only in the 1970s when another astrophysicist, Vera Ruben discovered that the known mass of some spiral galaxies could not account for their actual rotational rate, which was so fast that it would have thrown them apart unless some exotic substance, such as dark matter was present to exert gravitational effects upon them. The race to find dark matter has intensified over the decades, but so far, no evidence has been forthcoming, for instance:

(a) The Large Hadron Collider (LHC) under Geneva sponsored by CERN (Centre for European Nuclear Research), the world's largest particle accelerator, during its second run failed to find it, although it found the Higgs boson in 2012.[43] It is scheduled to begin the third run in Spring 2021 after revamping. Who knows what the outcome would be? The LHC is capable of acceleration close to that of the speed of light in order to boost protons colliding with other protons, and in the process, produce massive particles such as the Higgs boson and top quarks. This kind of experiment mounted by the LHC amounts to attempts to create dark matter particles.
(b) Another type of experiment attempts to observe dark matter under favourable conditions deep down in former mines such as SNOLAB (former nickel mine) in Ontario, Canada or in Dakota (former silver mine). The former has tried to find it using superheated liquid to detect interactions (the PICASSO Experiment), or liquid argon as a detector (the MiniCLEAN experiment). Extremely sensitive detectors are used. This, however, is a journey into the unknown, as scientists do not know how sensitive is "sensitive", given the opacity surrounding dark matter itself. Some physicists thought that the candidate they ought to be looking for are WIMPS (weakly interacting massive particles) which are 100 times more massive than protons created in the Big Bang, so dense that their total density today could account for the dark matter in the universe. So far, WIMPS too have not been found.
(c) In March 2018, the *Astrophysical Journal Letters* announced that a team at Yale University led by Pieter van Dokkum had discovered 2 ghostly galaxies (for short, DF2 and DF4 which belong to a class of galaxies called ultra-diffuse galaxies) with very little or no dark matter to them. This claim is controversial. However, there is one interesting interpretation of the phenomenon if the claim is accepted to be correct, namely, that the very existence of two such ghostly galaxies without dark matter may be equivalent to proof that dark matter exists. The reasoning runs as follows: very simplistically put, it shows that dark matter is independent of what is coupled with normal matter[44] as both have been found separately.[45]
(d) In March 2020, nuclear physicists at the University of York claimed that they have found a new candidate, a particle they have discovered called the d-star hexaquark. It is too early to say anything about the fate of this new candidate for dark matter.

The Standard Model of Quantum Mechanics is said to be able to do the job of accounting for every known experiment ever conducted in Modern Science[46] – see Figure 9.4 below.

[42] For a detailed discussion of what these effects are and how they can be tracked and measured, see Bauer 2018. Gravitational lensing is one of them. As a matter of fact, Zwicky had already discovered it decades ago – astrophysicists find that the gravity of massive galaxy clusters with dark matter bends and distorts the light emanating from yet more distant galaxies situated behind such clusters.
[43] This provides powerful confirmation of the so-called Standard Model in Quantum Mechanics, a particle which Peter Higgs (amongst other physicists, such as François Englert with whom he shared the Nobel Prize in 2013) had predicted in 1964. The Higgs boson enjoys the nickname of "the God particle" as it is the particle which gives other particles their mass.
[44] Sometimes normal matter (atoms, molecules, people, planets and galaxies) may appear dark to our eyes because it absorbs light.
[45] See Keck Observatory, posted 27/03/2019; No Dark Matter = Proof of Dark Matter? 2019.
[46] See Tong 2017.

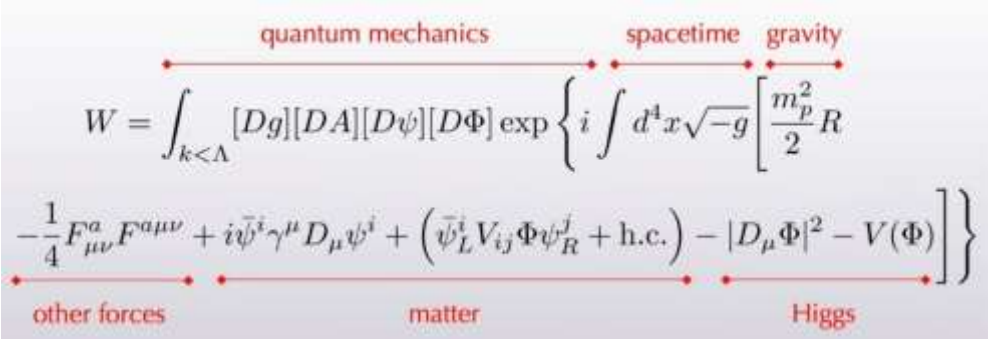


Figure 9.4 Equation for the Standard Model in Quantum Mechanics

However, it excludes dark matter. Scientists are adhering to MPCR in spite of the failures to find dark matter so far. So, the equation above, for the moment, cannot be said to be the equation for everything, but for almost everything in the universe.

The dilemma facing astrophysicists and particle physicists appears to be this:

(a) Make the data (such as from gravitational lensing) fit extant theory by modifying it. Such attempts are called MONDs – Modifying Newtonian Dynamics which have, so far, not been successful. MONDs, if successfully carried out, would challenge Einstein's General Relativity, too.

(b) Live with the Standard Model in spite of its limitations and its flaws and hope for the best that something else would turn up sooner or later to take us to the next leap forward in the Scientific Quest for understanding the universe.

Particle physicists imply that dark matter belongs to the realm of Thing-ontology, that is to *Qi*-in-concentrating mode rather than *Qi*-in-dissipating mode, in the light of the interpretation proffered by this author of *The Zhuangzi'*s distinction between *qi ju* and *qi san* (see Chapter Four of this book). Hence, they feel that MPCR is not enough, that they ought to go beyond it to search for dark matter itself, something which is over and above the effects they produce. MPCR, on its own, could be seen to be adequate as a criterion for "reality" and "existence" if the domain of enquiry does not concern things or stuff, such as Gravity – as Newton had indicated, gravity is not some stuff which is over and above the effects observed. In other words, Newton's usage of "real" and "existence" implies a deflationist rather than an inflationist understanding of MPCR. In the hands of the inflationist tendency, such as that endorsed by particle physicists, MPCR is a signpost used to lead the researchers eventually to the cause (the stuff) which produces the observed effects. In the hands of the deflationist tendency, such as Newton with regard to Gravity, MPCR leads it, so to speak, to its journey's end – once the effects have been correctly ascertained, one's task is completed and there is nothing more which needs to be said.

We have seen that MPCR, whether in the hands of the inflationist tendency or deflationist tendency, plays a significant role in scientific reasoning enabling Newton to give us the concept of Gravity, to provide impulse for particle physics to push understanding the universe possibly beyond the Standard Model of Quantum Mechanics. However, humankind has invoked MPCR far longer than MWS has existed – the phenomenon whose existence humankind has known down the millennia, in the absence of MWS is, of course, wind. Wind is invisible to us humans, yet its effects are readily observable. Branches of trees and grasses sway, swaying more violently as the winds grow more intense; trees may even be uprooted, buildings fall, topple and shatter. We can even harness its powers such as in windmills to do work for us. Though invisible, no one has doubted/doubts its existence, whether one is thinking of the era of MWS or prior to that era.

If MPCR is a respectable form of scientific thinking in MWS, why should *Zhongyi* which also leans on it be stigmatised as unscientific, sub-standard, unintelligible, even superstitious (when it invokes *Qi*-in-dissipating mode over and above *Qi*-in-concentrating mode in its *diagnosis* and *treatment*)? Is it not time to abandon the Colonial Mind-set when that Mind-set takes the form of plain prejudice to denigrate the Medical *Other* even when it does not appear to differ from its "Superior" counterpart in this specific context of the MPCR? The prejudice is as gross as in this imagined case of the academic assessment of two children by teachers: there is nothing to distinguish between Child A and Child B in their formal exam results, in their continuous assessments outside of formal tests, in their oral performance in the classroom, yet their teachers privilege Child A over Child B, give a prize to the former but deny the honour to be shared with the latter.

Conclusion

1. *Qi* is the fundamental *ontological* concept in C*P*T-CCD*P* and, therefore, in CC*M-Zhongyi*. However, to people outside that tradition, it is a vexing and exasperating notion, as *Qi*-in-dissipating mode is something invisible, and neither directly nor indirectly observable even with the help of instruments. Hence, how can CC*M-Zhongyi* claim that *Qi* is

real and expect such a claim to be taken seriously? CC*M-Zhongyi*, said to possess such a fundamental epistemological flaw must then be condemned to be unscientific, if not to being a piece of plain charlatanism?

2. Is the allegation of charlatanism justified? It is justified only if CC*M-Zhongyi* has no provision within its own theoretical-*clinical* framework to test its hypothesis about *Qi*-in-dissipating mode. It has; it invokes what may be called its key **Methodological Postulate, MPQBP**, the postulate which says that pain occurs because *Qi* is blocked, and correspondingly, unblocking *Qi* eliminates/diminishes pain. *Diagnosis* consists of locating where the blockage is, in which *jingmai* in the person-body and *treatment* consists of unblocking *Qi* (by medicinals, needling, massaging, burning *ai*/moxibustion, *qigong* or by a combination of more than one such forms of treatment). In Chinese, MPQBP reads: *tong ze bu tong, tong ze bu tong*.

   This Methodological Postulate is invoked not only in *Clinical Medicine* as curative *medicine* but also as *Preventive Medicine* using *Qigong* in some form or other to enhance the well-being of the person-body, to promote longevity and so forth.

3. In other words, CC*M-Zhongyi* invokes a term such as *Qi*-in-dissipating mode at its highest level of theory which appears itself to be neither directly nor indirectly observable. This chapter calls this hierarchal structure of *Qi* level, *QH*. However, through a complicated and long chain of deductive reasoning, it is possible to show that *Qi*, even at the highest level of theoretical pronouncement may ultimately lead to propositions which are testable. In that sense, it seems to satisfy at least the Popperian criterion of falsifiability via its H-D Model of scientific reasoning, as a badge of doing science. One must immediately add that as CC*M-Zhongyi* is a different system of *Medicine* from Bm, the testing cannot be done via RCTs but by its own endogenous means of *hypothesis-testing* such as via ascertaining the *mai* profile, examining the fur on the tongue/shape and size of the tongue and other diagnostic measures before and after treatment.

4. Furthermore, this study attempts to show that Newton's Gravity in modern physics is also invisible, neither directly nor indirectly observable. It appears to be in an analogously parlous ontological-epistemological predicament as *Qi* in C*P*T-CCD*P* and CC*M-Zhongyi*. Newton's Gravity is an instantiation of action-at-a-distance; so is *Qi*-in-dissipating mode in CC*M-Zhongyi* and other general Chinese cultural contexts, such as the various forms of Chinese martial arts, an instantiation of *action-at-a-distance*. Newton in the context of Gravity opted to sidestep the issue about the reality of Gravity as a theoretical entity by offering quantification via his inverse square law, implying that if one must talk about Gravity being real, then it is real in so far as it entails effects which can be calculated, measured and quantified. Calculation and quantification are built into MWS and its Paradigm of Scientificity. CC*M-Zhongyi* does not offer quantifiability as part of its *Paradigm of Scientificity*, but analogous to Newton's move, it claims (implicitly) that *QH* entails effects/consequences which are *testable*, though not quantifiable. In that sense, *Qi* (including *Qi*-in dissipating mode) is real, even if it is invisible and is neither directly nor indirectly observable via instruments, such as low-tech optical microscope or high-tech electron microscope, or advanced scanning machines (PET, MRI). CC*M-Zhongyi*'s claim to **scientificity** rests on four related pillars in the account proposed here:

   (a) *QH* + IC entail testable *predictions* (*diagnosis* and *treatment*).
   (b) When *predictions* are tested, in general, these survive the process of falsification, that is, they are true.
   (c) In contexts where specific *predictions* turn out not to survive falsification and are false, CC*M-Zhongyi* appears not to have indulged in systematic, wholesale attempts to evade falsification by introducing "bad" ad hoc hypotheses, that is, sub-hypotheses for which there is no independent evidence but are introduced with the sole aim of saving the main hypothesis from being falsified. Such a procedure violates Popper's demarcation criterion between science and pseudo-science.
   (d) In specific contexts when a *prediction* turns out to be false, CC*M-Zhongyi* appears to imply an ad hoc hypothesis for which, however, there is independent evidence. For instance, it blames one of its IC, namely, that the physician in question has mis-*diagnosed* and hence, has *prescribed* the wrong *treatment* for the patient in question, which has led to the patient becoming more ill instead of less. A second physician then *diagnoses* differently, *prescribes* differently but this time the *diagnosis-treatment* yields success.

5. If the arguments mounted in this chapter survive critical scrutiny, then one may conclude regarding the status of *Q*i, the fundamental *ontological* category in CC*M-Zhongyi* that it is analogous to Newton's notion of Gravity (a corner-stone of Newtonian physics and MWS), in the following respects:
   (a) Both are "spooky" as they instantiate the notion of *action-at-distance*/action at a distance.
   (b) Gravity's spookiness is overlooked as Newton renders it "real" via its consequences/effects in terms of the inverse square law.

   Analogously, *Qi* can be pronounced to be "real" as from its *QH* may be derived *predictions* in *diagnosis* and *treatment* which are HF (empirical claims falsifiable in principle) and which often survive falsification. In some contexts when the *prediction* in *diagnosis-cum-treatment* turns out to be falsified, CC*M-Zhongyi* appears not to

exhibit the tendency to avoid falsification by importing ad hoc hypotheses, for which there is no independent evidence to explain away the falsified *prediction*. In other words, *QH* remains *HF* and is not transformed to become *H~F*.

6. The above shows that CC*M-Zhongyi* appears to have come out on the right side of Popper's demarcation principle between science and pseudo-science.[47]

7. However, as CC*M-Zhongyi* is a radically different system of *Medicine* from Bm in its *philosophical* and theoretical core, its procedures for testing the consequences and effects of its *diagnosis-cum-treatment* are different from those which obtain in Bm or MWS. One should not fall into the trap set by Essentialism of Method /Methodological Exceptionalism to assign the role of The Colonised/The Inferior to CC*M-Zhongyi* because its *biomarkers* are different from those of Bm either Mark I or Mark II. It implicitly upholds its own *Paradigm of Scientificity* and therefore should not be judged defective or sub-standard against the Paradigm of Scientificity invoked by Bm. Invoking the Colonial Mind-set would be as absurd as judging a cat show by the standards relevant to judging dogs at a dog show.

8. If the notion of *Qi* is "spooky", so is Newton's notion of Gravity. If gravity is real because of the inverse square law which allows one to measure and quantify the force of attraction, then analogously so is *Qi* real, as CC*M-Zhongyi* has its own procedures and *biomarkers* for testing the "reality" of *Qi* in the patient's person-body before *diagnosis-treatmen*t and after *treatment*. It is possible to test *QH* (together with Statements of Initial Conditions) by deriving from them consequences which are testable.

9. Furthermore, CC*M-Zhongyi* appears to share with MWS what this study calls the **Methodological Postulate for Causal Realism** (MPCR), invoked in the case of Newton's Gravity (the deflationist wing of MPCR) as well as in the postulation of the existence of dark matter in particle physics (the inflationist wing of MPCR) in the last five decades in MWS. MPCR says that something is real and exists if it has consequences/effects which are discoverable/observable even if that "something" is not visible or directly observable. Unless its existence is postulated, the discoverable/observable effects cannot be accounted for.

   Outside the *clinical* experience/context narrowly understood, in Chinese culture in general, there are forms of acquiring control of *Qi* (*Qi*-in-dissipating mode) such as in *Qigong*, both internal and external as well as in *Qinggong*. External *Qigong* and *Qinggong* do have consequences and effects which are palpable and objectively ascertainable, unless these phenomena in the name of the Colonial Mind-set are *ex hypothesi* written off as fakery.

10. Ironically and curiously, acupuncture appears to have found a surer space to practise in Western societies than other forms of *Zhongyi treatment*, such as decoction of medicinals (*tangyao*); yet acupuncture very clearly is a neat attempt at manipulating *Qi*-in-dissipating mode, a very "spooky" notion indeed to sceptics of *Zhongyi*, but real if one adheres to MPCR.

[47] There are other aspects of Popper's philosophy of science relevant to CC*M-Zhongyi* theorising which will not be raised here; see Lee 2018, Chapter 3.

Part VI

The Axiom of Respecting the Identity and Integrity of the Medical Other: A Possibility

Chapter Ten

Biophysical Investigation of the *Jingluo* Network/ 经络

Is the *Jingluo* Network Real or Fictional?

BCS	Blood Circulatory System
Bm	Biomedicine
CC*M-Zhongyi*	Classical Chinese Medicine
CNS	Central Nervous System
D	Defendant
Em-ism	*Qi* as *Energy*-cum-*Matter*
HGP	high blood pressure
I*M*	Integrated *Medicine*
LIP	Low Impedance Point
LPSC	Latent Propagated Sensation along the Channels
NPY	Neuropeptide Y
PAP	Percussion Active Point
PI	Presumption of Innocence
PP	Public Prosecutor
PSC	Propagation of Sensation along the Channels
RCT	Randomised Controlled Trial
TCM	Traditional Chinese *Medicine*
TC*M-Zhongyi*	Traditional Chinese *Medicine*
WPT	Western Philosophy Tradition

Introduction

To begin with, it is fitting here to remind the reader that, earlier on, Chapter Four has argued for the intelligibility of *Wuxing* as part of the identity of CC*M-Zhongyi* against those who suspect the concept, regarding it as "metaphysical" in the abusive sense of the term, and hence are keen to exclude it under TC*M* as I*M*. Such a theoretical framework can only admit material which approximates as much as it is possible to the Paradigm of Scientificity endorsed by Modern Science/Bm. One can see then the spirit of The Colonised at work as it appears to regard Bm as the Superior Class (体 *ti*/笨 *ben*) and *Zhongyi* as the Subordinate Class (用 *yong*).

Jing 经 is generally translated as "meridians" or "channels" in which *Qi* operates in the living human being; the *jingluo* 经络 is then conceived of as "the system of channels and its tributaries"/the *Jingluo* Network, so to speak. We shall see, a little later, that these translations in terms of "channels" or "meridians" have severe flaws and drawbacks. For the moment, let us leave such matters aside.

This study has left this topic to the last chapter for exploration and discussion for the following reasons:

1. Any adequate and appropriate examination of this concept presupposes an adequate and appropriate grasp of that cluster of core theoretical concepts in that tradition of Chinese *philosophy*/*science* resting on the *Daojia* tradition of *Qi* as the fundamental ontological category (in its two modes of operation, exhibiting *Thing-ontology-cum-Process-ontology*, the thesis of *Qi Wholism*), Non-linear causal modality, *Yinyang Wholism* which collectively constitute a specific articulation of Chinese *Science* as *Ecosystem Science*. (See Chapters Two, Three and Four in particular of this volume; for more detailed exploration of Chapter Four, see Lee 2017a, 2018, 2019.)

2. The *Jingluo* Network concept is the interface *par excellence* between Chinese *philosophy*/cosmology, on the one hand, and Chinese *Science* in the guise of CC*M-Zhongyi* on the other. This is to say that it is the concept in which theory and practice significantly meet and are entwined.

3. As such, it raises methodological issues of which the principal related ones are: is such a theoretical concept capable of empirical testing? Does it exist and if so in what manner of existence? Does it have discoverable or discernible manifestations? Can these manifestations be objectively demonstrated (or at least inter-subjectively ascertainable), not simply subjectively felt by the patient?

4. It is a matter of crucial importance to address the set of issues identified above for, at least, three reasons:

(a) Their investigation may give us a clue how to understand the notion of first formulating and then testing hypotheses in general in CC*M-Zhongyi* (already explored in Chapters Four and Nine but will be looked at here from another related aspect).
(b) If the *Jingluo* Network cannot be said to be determinable and ascertainable in some meaningful sense(s) of these two terms, then CC*M-Zhongyi* cannot qualify to be "scientific" in the most basic sense of that term, meaning that its theoretical concepts must be capable of being empirically ascertainable under certain conditions *via* the consequences they imply.
(c) The concept of the *Jingluo* Network is embedded crucially in all the therapies of CC*M-Zhongyi*, whether acupuncture/*zhenfa*/针法, moxibustion/*jiuliao*/灸疗, massage/*tuina*/推拿, deep breathing/*qigong*/气功, internal medication *via* decoction of herbs and other medicinals/*tangyao*/汤药 or *caoyao* 草药[1]. *Jing* is often referred to as *jingmai*/经脉; this is highly significant as it shows that feeling the *mai*/脉 which is one of the four important techniques used by the physician in diagnosing a patient's condition involves ascertaining *Qixue* /气血 (*Qi*-blood) coursing through the *Jingluo* Network. (On this latter point, see Lee 2018, Chapter 8 for further detailed discussion.[2]) Sometimes, it is thought, but mistakenly, that the *Jingluo* Network is peculiar to acupuncture and not relevant to internal medication, or the other treatments. In other words, if the *Jingluo* Network cannot be authenticated at (b) above, then the status of the whole of CC*M-Zhongyi* could be said to be jeopardized in terms of any claim it wants to make as a "scientific" *medicine*.

Brief History and Account of The *Jingluo* Network

The term *jingluo* first appeared in *The Neijing*. Just to remind the reader the book contains two parts, *Suwen*《素问》/ *Basic Questions* and *Lingshu*《灵枢》/*The Spiritual Pivot* with more than sixty passages referring to it.[3] As already observed, in sinology literature, the term *jing* is translated as either "channels" or meridians"; the term *luo* as "collaterals" Neither version is really satisfactory; the former makes it sound like a system of irrigation canals, the latter lacks physical connotations, as meridians – longitude and latitude – constitute a grid system imposed by us upon Earth simply to facilitate our purpose of identifying locations. *Jing* in Chinese means "warp", like the warp in weaving silk, the vertical threads on a loom running through the entire length of the fabric.[4] The word *luo* literally means "net-like", but in the discourse of the *Jingluo*, it means a branch of the *jing*, or a small *jing*. It is, perhaps, best to refer to it as "the *Jingluo* Network".

Two further observations must immediately be made. What does this Network do in the human individual? In CC*M-Zhongyi* terms, it is said to carry *Qi* to the *yin* visceral *organs* and *yang* visceral *organs* which together make up the *Yinyang* visceral organ-systems (*zangfu*/脏腑) of the person-body to keep them functioning properly. To modern ears, attuned to the Biomedical world-view, this is extremely problematic, as *qi* is *Qi*-in-dissipating mode in this context, not *Qi*-in-concentrating mode which is Matter, something visible and touchable such as blood. The *Jingluo* Network is about *Qi*-in-dissipating mode in the living human being, as in accordance with the concept of t*ianren-xiangying* 天人相应,[5] if *Qi*-in-dissipating mode occurs in greater Nature (the Macrocosm), then it must also be present in the human being (the Micrososm) – this author calls this Macro-Micro-cosmic *Wholism*. (See Chapter Nine of this book and for more details, see Lee 2017a, Chapter 10.) If the *Jingluo* Network is about the circulation of *Qi* in the human individual, then it also follows from the concept of *tianren-xiangying* that it is an open system, connected with both *zangfu*/脏腑) which surround it and from which it draws sustenance. Humans and greater Nature form a *Whole*, which constitutes Ecosystem *Wholism* – see *ibid*.

[1] In English, *caoyao* is translated as "herbal medicine". Note, however, that not all the medicinals in a prescription are herbs as some may be animal parts or minerals, although the majority are plants. However, it is customary to refer to them simplistically and collectively as *caoyao*.
[2] It also looks at the relationship between the *Jingluo* Network and *fang* 方/prescription when it gives examples of how a specific prescription/*fang* is drawn up by the physician and how the medicinals in it are expected to work on the patient *via* the *Jingluo* Network.
[3] For further details about its dating, the methods of dating the text and other related matters, see Lee 2018, Appendix One.
[4] See Lee 2008, 237-239 for a more detailed discussion.
[5] The concept, *tianren-xiangying*/天人相应 or *tianren-heyi*/天人合一/Macro-Micro-cosmic *Wholism*, comes from the Daoist *philosophical/Daojia*/道家 concept of human-kind following *ziran*/自然/"Nature" (discussed in detail in Lee 2017a, Chapters 3, 4 and 7). In sinology literature, following A.C. Graham 1986, it is translated as "Correlative Thinking".

We have briefly raised in Chapter Nine of this book the concepts of *xingerxia* and *xingershang*[6] – that *Qi*-in-concentrating mode belongs to the domain of *xingerxia*/形而下 (the domain of things which have shape and form, of macro-objects which in modern physics are said to obey Newton's Three Laws of Nature) while *Qi*-in-dissipating mode belongs to that of *xingershang*/形而上 (the domain of existence which is above shape and form). The latter may be translated in some contexts appropriately as "energy". We need to say something straightaway briefly about x*ing* 形 (what has shape and form), that it may be divided into two sub-categories:

(a) That which is both touchable and visible/有质有形, something with substance, paradigmatically a thing (a macro-sized object celebrated in the Newtonian sciences, which is the basis of Thing-ontology). This refers to *Qi*-in-concentrating mode/*Thing-ontology*.
(b) That which is visible but not touchable, such as the reflection of the moon in water or a mirror.

However, what then is *Qi*-in-dissipating mode? It looks at first sight that it is, *ex hypothesi*, neither visible nor touchable. If so, it counts as a totally non-empirical construct. Yet such a construct appears to be incompatible with what Chinese *medical* discourse happily says about it; for instance, it talks about *qi* and *xue* in the same breath and on the whole is loath to separate them, yet it recognises all the same that they are not identical. This becomes clear, especially, in the context of acupuncture as therapy (though not necessarily as theoretical discourse) when *Qi* (that is, Qi-in-dissipating mode) alone is involved. For instance, when a needle is inserted at a particular point or location/*xuewei*/穴位 with the patient reporting that s/he feels a certain sensation, such as *suan*/酸/sore and achy, *ma*/麻/ numb, *zhang*/胀/distended or bloated, *zhong*/重/heavy, this is said to be a case of *deqi*/得气, which shows that the needling has achieved its desired reaction.[7] As a non-empirical concept, it seems all the same to produce effects through needling which are not obviously hallucinatory on the part of the therapist[8] and/or the patient. Also, if *Qi* could be separated out from blood in the context of acupuncture, then it is obviously not carried in the blood stream as *xue* is; according to CC*M-Zhongyi*, it is carried by the *Jingluo* Network. Yet what evidence is there that such a network exists in the individual? These are some puzzling issues which the exploration in this chapter hopes to throw light upon and even perhaps to dissolve.

The Chinese had been looking for the *Jingluo* Network for a long time. In the Eastern Han dynasty, an uprising occurred led by a usurper to the throne called Wang Mang/王莽 (45 BCE- 23 CE) who, upon killing an enemy called Wang Sunqing/王孙庆, ordered his corpse to be dissected. He could have many motives for doing so; a more intellectually respectable one was to see if the *Jingluo* Network could be found as indicated in *The Neijing*. The forensic investigators of the time introduced bamboo strips into the blood vessels/血管 *xueguan* but then concluded that blood vessels and the *Jingluo* Network were not one and the same thing. This dissection was the first recorded event in Chinese history looking for the elusive *Jingluo* Network. The Chinese realised that dissection of cadavers would not reveal it; *Qi, ex hypothesi*, is something which only living beings possess as *Qi*-in-dissipating mode. The ancient Chinese lacked sophisticated measuring instruments but since the 20th century Bm has invented many. So, some Chinese and non-Chinese investigators have since employed high-powered instruments relying on technologies using sound, light as well as isotopes to probe, but all without an adequately satisfactory outcome. Must one conclude that the *Jingluo* Network does not exist after all, and that *The Neijing* is incorrect in claiming that it is not an empty term referring to nothing?

Before continuing with this line of inquiry, let us back-track a little to give a very brief account of the number of *jing* the human person is said to possess by *The Neijing*. There are twelve main *jing*, also called the *zhengjing*/正经; these are divided into three *yang jing* 阳经 and three *yin jing* 阴经 which in turn are divided into the hand or upper limb *yin* and *yang jing* and the foot or lower limb *yin* and *yang jing.* See Table 10.1 below.

[6] For more detailed discussion, see Lee 2017a, Chapter 3.
[7] *See W. Zhang 2015.
[8] The acupuncturist as well as the patient feels the phenomenon referred to as *deqi*; the former feels it through the needling process. The physician asks the patient for corroboration.

***Yin jing* of the hand**	***Yang jing* of the hand**
手太阴肺经/ *taiyin* **Lung**	手阳明大肠经/ *yangming* **Large Intestines**
手厥阴心包经/ *jueyin* **Pericardium**	手少阳三焦经/ *shaoyang* ***Sanjiao*/Triple Burners**
手少阴心经/ *shaoyin* **Heart**	手太阳小肠经/ *taiyang* **Small Intestines**
***Yin jing* of the foot**	***Yang jing* of the foot**
足太阴脾经/ *taiyin* **Spleen**	足阳明胃经/ *yangming* **Stomach**
足厥阴肝经/ *jueyin* **Liver**	足少阳胆经/ *shaoyang* **Gallbladder**
足少阴肾经/ *shaoyin* **Kidney**	足太阳膀胱经/ *taiyang* **Bladder**

Table 10.1: The twelve *zhengjing* and their associated *zangfu*

Those which govern the six *fu-organs*/腑 are *yang* in character; those which govern the *zang-organs*/藏 are *yin* in character; the former run on the outside of the limbs and the latter on the inside.

On top of these twelve main *jing*[9] and their *luo*, there are also eight others which are often referred to as *qi jing ba mai*/奇经八脉/"the Eight Extraordinary *Jingmai*" of which four are often cited: *Du mai*/督脉/Governing *Mai*; *Ren mai*/任脉/Directing *Mai*; *Chong mai*/冲脉/Penetrating *Mai*; *Dai mai*/带脉/Belt-constraining *Mai*. The spatial relationship between the twelve *Zhengmai* and these eight Extraordinary *Jingmai* is as follows:

> 奇经八脉 的分布规律：奇经八脉 的分布部位与十二经脉纵横交互。 八脉中的督脉、任脉、冲脉起胞中，同出于会阴， 其中督脉行于背正中线；任脉行于前正中线；冲脉行于腹部会于足少阴经；带脉横行于腰部。

This may be rendered thus:

> According to the distribution rule of the *qi jing ba mai*, these and the twelve *Zhengmai* are inter-connected, intersecting perpendically and horizontally. Amongst the eight Extraordinary *Jingmai*, the *Du*, *Ren* and *Chong mai* start from the *Baozhong* location, all coming from the *Huiyin xuewei* (which is located between the pubic region and the anus – Figure 10.2).[10] The *Du mai* goes right down the middle of the back, the *Ren mai* the middle of the front, while the *Chong mai* goes along the belly and ends in meeting with the *Zhushaoying jingmai*. The *Dai mai* goes along the waist.

These Extraordinary *Jingmai* have two general functions:

(a) Through liaising with the twelve *Zhengjing*, forming a dense network for *Qi* to circulate, maintaining a balance between *Yinyang* in the individual person-body;
(b) To act as a kind of "reservoir" for the *Qi* of the twelve *Zhengjing* which could be said to be like the water flowing through mighty and not so mighty rivers.[11]

The two sets together form an entire network linking the *zangfu* in the interior of the 身体/*shenti* (which this author translates as person-body – see Chapter Eight of this book) and on the exterior with the flesh and muscles/筋肉/*jinrou* as well as with the skin/皮肤/*pifu* to form the *Whole* person-body.

[9] The images of the *jingmai* shown in this chapter are by and large adapted from those which can be found at the website http://wenku.baidu.com/link.
[10] What is within round brackets is the author's own interpolation.
[11] For images of the twelve *Zhengjing* and the eight Extraordinary *Jingmai*, see **Jingluo* 2015.

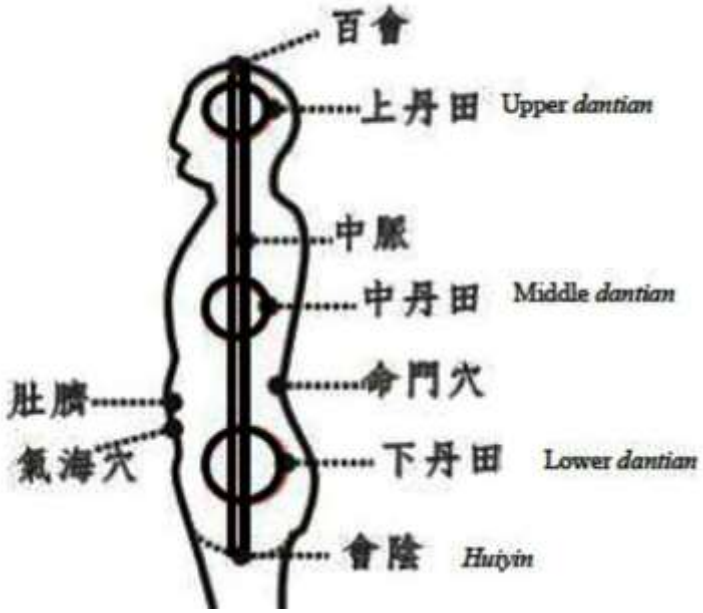


Figure 10.1: *Dantian*/丹田[12] and the *Huiyin xuewei*

From the account, one may make three points:

(a) The *Jingluo* Network may be construed as an *ecosystem*, call it ***Ecosystem A***.
(b) One must remind the reader of the following very important point, namely, that the relationship between the *zang* and the *fu organs* complement each other as a *Yinyang* pairing, with the former being *yin* (outside/表/*biao*) and the latter *yang* (inside/里/*li*), thereby creating in the language of Chapter Four (of this book), a *Yinyang ecosystem* (based on the dyadic contrasts of *yin*/*yang*, *biao*/*li*). This may be called ***Ecosystem B***.
(c) One should point out that "super-imposed", so to speak, on this *zangfu*/visceral organ-systems/**Ecosystem B** is the *Jingluo* Network ***Ecosystem A*** such that the "脏脉络于腑，腑脉络于脏", which may be rendered as "The *Jingmai* of the *zang* (the *yin* visceral-organs) connects with the *fu* (the *yang* visceral-organs)". In other words, the *zangfu* system and the *Jingluo* Network are inter-twined, forming in the language of Chapter Four, another more complex *ecosystem* – call it ***Ecosystem C***.

Lingshu, Chapter 2/《灵枢·本输》makes the above very clear. The Yellow Emperor knows that in needling, one must know the precise starting and end points of the *jingmai*, the locations of the *zangfu* in respect of the *jingmai*, the nature of the *Qi*-in-dissipating mode circulating the *zangfu* and the *Jingluo* Network at different seasons of the year and so on. Qibo[13] then goes on to provide further details about the relationship between the *zangfu* ***Ecosystem B*** and the *Jingluo* Network ***Ecosystem A***, so to speak – one reads:

> 请言其次也。肺出于少商。。。手太阴经也

Passage may be rendered generally as:

> Let me elaborate on the order. The *Qi* of **Lung *Jingmai*** issues from the *Shaoshang xuewei*, which is on the inward facing flank of the thumb and is called *Jingmu*. From here, Q*i* flows into the *Yuji xuewei* which is located in the fleshy part of the palm at the base of the thumb (the thenar) and pertains to a kind of *xue*/穴 called *jing*.[14] From here, *Qi* flows into the *Taiyuan xuewei* which is a depression one (Chinese) inch behind the *Yuji xuewei*, pertaining to a kind of *xue* called *Shu*. From here, *Qi* flows on to the *Jingqu xueiwei*, which is at the *Cunkou* where the *Taiyin Jingmai* pulsates continuously, and

[12] This is a very important concept in theory and practice for many domains of activities such as *qigong*, martial arts and voice projection such as in singing and speaking.
[13] Qibo 岐伯 in fact was the teacher giving lessons to Huangdi (the Yellow Emperor); however, given the political relationship between them, the lowly teacher could not be credited for his intellectual labour. Hence, the text was called *The Huangdi neijing* instead, as if Huangdi was its author.
[14] Note that this is not a *xuewei*, a specific acupuncture point but is one of five kinds of xue/穴 which every *jingmai* possesses, four of which are mentioned in the passage cited here.

pertains to a kind of *xue* called *Jing*. From here, *Qi* flows into the *Chize xuewei*, where the *mai* runs through the elbow, and pertains to a kind of *xue* called *he*. These are the five *xuewei* of the Hand *Taiyin* ***Lung Jingmai***.

On these points see Figure 10.2 below.

Figure 10.2: The Hand Taiyin **Lung *Jingmai*** and its *xuewei*/手太阴肺经穴

The passage selected and translated is but a small part of this Chapter in *Lingshu*; its purpose here is simply to make the specific point about the inter-twining of the *zangfu* with the *Jingluo* Network, and not to set out all the details involved in the entire *zangfu*-*Jingluo* Network, ***Ecosystem C***.

Is the *Jingluo* Network other than fictional?

This question has posed itself, in spite of the fact that as observed above, CC*M-Zhongyi* has never doubted that it is real and exists. Nevertheless, plenty of sceptics exist both inside and outside China; it is to quell such doubts and to attempt to answer the question that this section will explore.

Up to 1989, the sceptic would say, "yes, it is fictional"; on the other hand, the "true believer" (CC*M-Zhongyi* physician) would say, "no, it is not fictional", although it cannot be said to make its presence felt in the way that rocks, trees, stomach or the Blood Circulatory System (BCS) can be said to exist. When pressed further, the upholders of CC*M-Zhongyi* would tend to say that using the concept of the *Jingluo* Network enables physicians to effect cures or at least amelioration of the patient's condition(s) *via* its treatments, which, as observed above, all explicitly or implicitly invoke the hypothesis that it does hold true. However, this answer is not enough to satisfy the sceptic, especially the sceptic wedded to the Bm world-view for a variety of reasons, two most pertinent being:

(a) In any case, the good effects could be nothing more than the placebo effect (see Chapter Eight of this book as well as Lee 2018, Chapter 6 regarding its relevance to assessing the efficacy of CC*M-Zhongyi* therapies).
(b) On the surface, it looks like a piece of circular reasoning – the so-called positive consequences of CC*M-Zhongyi* treatments (q) are justified in terms of the *Jingluo* Network (p) yet the *Jingluo* Network itself (p) is justified in terms of these consequences (q). In other words, p justifies q, but q is used to justify p in turn. (Discussion later in this chapter will show that no circularity is involved.)

To settle this kind of controversy, amongst others, which surround the notion of the *Jingluo* Network, a particular Chinese scientist, Zhu Zongxiang/祝总骧 (1923-) was tasked by Zhou Enlai (the then premier of China) to investigate the matter.[15] Zhu was trained as a chemist, worked for a petroleum company, but then in 1947, became a lecturer in

[15] A reporter of the New York Times, James Reston, visited China in 1971, during which he fell ill with appendicitis. He was duly operated upon using standard Biomedical techniques. However, he suffered severe post-operative pain. The Chinese doctors looking after him did not prescribe him the usual pain killers; they gave him acupuncture treatment instead. He found, to his amazement, that it worked, his pain had gone. Reston was an acquaintance of Henry Kissinger and told him this story; Kissinger mentioned it to President Nixon (his boss) who was so impressed by it that he established an exchange programme in which TC*M-Zhongyi* physicians went to the USA to teach the subject while US doctors went to China to learn acupuncture.

physiology at the Peking (Beijng) Union Medical College Hospital. In 1956, he became interested in the physiology of the heart and its related problem of high blood pressure which led him to turn to the study of the *Jingluo* Network, of which he became, later, an acknowledged authority. In 1973, he joined the *Jingluo* Network research group established at the Institute of Biophysics, under the aegis of the Chinese Academy of Sciences. His work and that of his research team, after many years of intensive effort since 1973, eventually issued in the publication of a work in 1989 entitled *《针灸经络生物物理学: 中国第一大发明的科学验证》which may be translated as *The Biophysics of the Jingluo Network Behind Acumoxa: The Experimental Evidence for a Great Chinese Scientific Discovery*. To arrive at experimental results which could be said to satisfy the criteria of "good" science as endorsed by today's global science, in general, and Bm, in particular, Zhu and his team worked within the framework of biochemistry, biology, biophysics, morphology, electronics, acoustics and other scientific disciplines, adapting their techniques and technologies to accommodate and facilitate the study of the subject matter in hand.[16]

The work of the team could be roughly reconstructed in terms of several stages:[17]

1. It recruited people who were identified as being very sensitive in parts of their person-body at points traditionally referred to as the *xuewei*/acupuncture points along a particular *jingmai*. For instance, if pressure were applied on a *xuewei* on their finger, they would report that they feel a particular sensation (sore and achy, numb or whatever), as well as something like an electric current going right up their arm, to their heart. When pressed at certain points along the arm, they would feel something moving up a line which is best described as pathway of the *jing*/经路线. The team called this phenomenon 循经感传现象/ *xunjingganchuan xianxiang* – the Propagation of Sensation along the Channels (PSC) line. The significant thing which emerged in the case of these subjects was when certain points were pressed/massaged, they not only reported that they felt a sensation, but also that the line of sensation appeared to correspond to the "route" taken by the 心包经 *xinbaojing*/**Pericardium *Jingmai***. This *jingmai* begins with the *xuewei* called 中冲/*zhongchong*, at the tip of the middle finger on the palm side of the hand, then up the arm and across the chest to the heart with a total of nine *xuewei*. See Figure 10.3. When illness affects this *Jingmai*, the patient will feel pain in *Heart, Stomach*, fuzziness in the head and other symptoms.

2. This kind of sensitivity, unfortunately, is confined to a relatively small portion of the populace (in China at least), namely 1: 100; the not sensitive worked out to be 80% while the rest was something in between these two extremes – see *Zhu and Hao 1998, 155-162. These data left the team with a problem; they reasoned that there must be many more people, who though not said to be obviously sensitive, would, all the same, be sensitive to some extent (whose limited sensitivity could be detected with a bit of help along the way). The key issue then was to find out how many people in the population would possess this much more limited sensitivity without which, the team reckoned, acupuncture, in particular, and CC*M-Zhongyi* in general, would not have endured for more than two thousand years. From this they inferred that the *Jingluo* Network must be presumed to be present not simply in a tiny minority of people, but in the ordinary person. (Let us, here, say that the team was invoking as default axiom, resting on the principle of charity, that the subject matter under investigation at hand must be postulated heuristically to be correct, for the purpose of investigating it – this chapter will deal with this point in greater detail later.)

In that sense, it is commonly said that the take-off of acupuncture in the USA at least, if not in the West, was because of President Nixon. However, this should not be understood to mean that acupuncture for the first time set foot on American soil in the 1970s; it arrived when Chinese labour was hired (even press-ganged) to build the railroads in the 19th century. As they were "coolies" (the transliteration of 苦力 *kuli*, meaning those who earned their sustenance through heavy, back-breaking physical labour), and migrant labourers to boot, they belonged to the lowest of the low in the host society; their cultural baggage, including their knowledge and practice of acupuncture never left their ghetto until President Nixon permitted it to come into "the bright and sunny drawing rooms" of White professional American homes, so to speak. It is another episode about The Coloniser and The Colonised, the Superior and the Inferior.

[16] For a further assessment, see Chapter Five of this book.

[17] This follows closely **The Neijing: explaining and revealing its secrets* 2011, Lecture 3; *Zhu and Hao 1998; however, this author alone is responsible for the reconstruction.

Figure 10.3: **Pericardium *Jingmai*** and its *xuewei*/手厥阴心包经穴

3. So the team worked on the more ordinary non-sensitive persons, to see if they could find the *jingmai* and the *Jingluo* Network in them. They attached to the 中冲/*zhongchong xuewei* of the experimental subject some small electrodes/小电极 (see Figure 10.3, marked (P9)). When a very weak electric current was passed through the *xuewei*, the finger of the subject displayed suddenly an unexpected reaction. Following this, the team used a little leather hammer to strike the arm of the patient at points along the line indicated by the traditional account of the *jingmai*. The subject at each point, following the striking of the hammer, reported the sensation of being sore and achy, numb, swollen or bloated, the same sensation as reported by a sensitive subject when acupuncture needles are inserted into the nine *xuewei*. Furthermore, the subjects also reported that they felt a feeling of movement along the arm, going up the arm (not simply only as a sensation at an isolated point) from the finger-tip upwards. Such a set of results was very similar to what the team has found at 1 above, when working with very sensitive subjects. The team marked the points with blue ink as the subject reported the felt sensation. They repeated the experiment several times to make sure that they had recorded the reactions correctly. When the team finally linked up these marks, the line produced conformed with that of the line produced by the exceptionally sensitive subjects.

   It looked as if that with ordinary people who are not so sensitive majority, these sensations were only felt with the help of a small electric charge and a small hammer – see *Zhu and Hao 1998, 172-175. In the case of the very sensitive minority, once the needle was inserted, they would report that they felt the movement. In this way, the investigators found that more than 95% of the population produced similar response to that of the sensitive minority of one in a hundred people in the population – see *Zhu and Hao 1998,178-179. The team called this line 隐性循经感传线/*yinxing xunjingganchuan xian*, the LPSC (Latent Propagated Sensation along the Channels[18]) line.

4. It was obvious to the team that the result above would be insufficient to satisfy the criteria of "good science", as the response of the subjects were entirely subjective in character, nothing more than reports of their sensations. Scientific data are required to be objective and measurable/quantifiable. Furthermore, those within the framework of Bm would claim that in so far as the *Jingluo* Network existed at all, it would be no more than the Central Nervous System (CNS). Is that so? Given that their pathways as well as their functions are different, Zhu Zongxiang inferred that these are two very different systems. However, the onus was on the team to show that the *Jingluo* Network is not identical with the CNS. How could this be demonstrated?

   The team resorted to an ordinary device used in measuring electrical resistance. For this stage of the experiment, they worked on the 大肠经络线 *dachang jingluoxian*/ **Large Intestines *Jingmai***, with twenty *xuewei* as shown below. This *jingmai*, according to CC*M-Zhongyi* is the *yangmingmai*, and hence is a *jingmai* richly endowed with *Qi*; it can help the individual to strengthen *yang qi* or to expel excess *huo qi*/火气/*qi* arising from anger. A malfunctioning of this *jingmai* could lead to stomach aches, constipation, dysentery and other sorts of illnesses. Figure 10.4 below shows this *jingmai*.

[18] See also "Biophysical Approach" 2015.

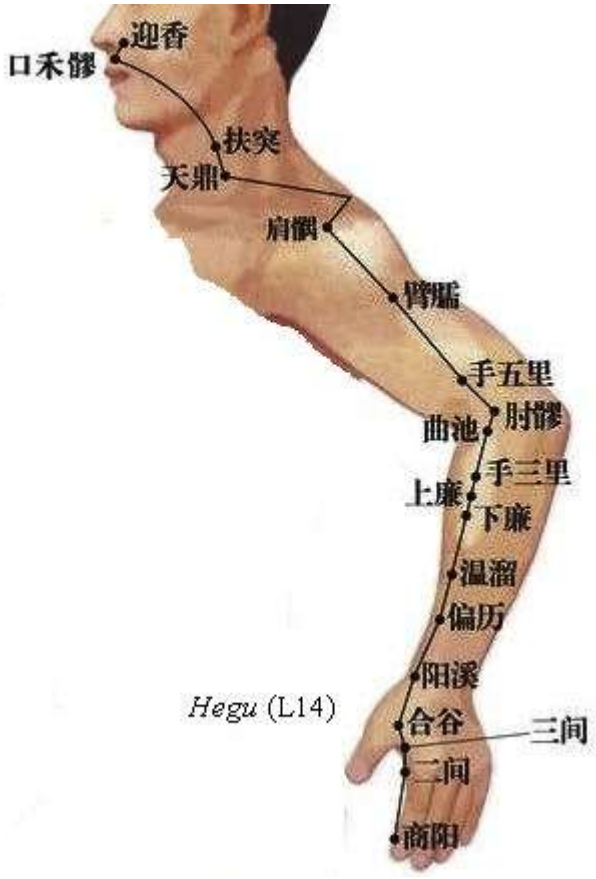


Figure 10.4: Hand *Yangming* **Large Intestines *Jingmai***/手阳明大肠经穴
(L14 is the fourth *xuewei* from the index finger.)

The team found that when the hand-held end of the device scanned the person-body along the *jingmai* in question, the needle of the device began to swing widely; in other words, the device had detected micro-resistivity which caused the electric current suddenly to decrease, indicating a low impedance[19] point – the team calls this the LIP (Low Impedance Point) line. The results indicated that a whole line consisting of low impedance points was involved. The experimental set-up also included another instrument capable of registering and recording these points *via* graphs shown on the screen which manifested a regular pattern. As the experiment progressed, the team marked on the subject's person-body with a red pen the points which showed up resistance. At the end of the experiment, they linked them all up and when they compared this experimental line with the 手阳明大肠经 *shouyangming dachang jing/* Hand *Yangming* **Large Intestines *Jingmai***, they found that the two were identical. Up to then, other scientists in Japan and France (and elsewhere in the West)[20] had already demonstrated that low impedance points existed; however, their experiments had not shown that by linking them together, they could produce a line which coincided with the *jingmai*. This finding accords with the claim in *The Neijing* that the *Jingluo* Network appears to have flow properties.

5. The team did not stop at this stage. They went on to further investigate a phenomenon which they had noticed already when experimenting with sensitive subjects earlier. They recalled that when a small hammer was used to strike at certain points along the *jingmai* of these subjects, the striking produced an unfamiliar sound which could be heard once magnified by a special device. The team wondered if such sounds were real and if so, why should they occur in the way they did. For this investigation, they concentrated once more on the **Pericardium *Jingmai***. At first the results were not encouraging as the team members did not hear any significant difference in the sounds

[19] "Impedance" is defined in dictionaries as follows: "the total resistance of electrical equipment to alternating currents".

[20] An experiment conducted in the USA also appears to corroborate the results of the Zhu's team in this respect – see Becker, Reichmanis et al. 1976. Although this experiment was not carried out for the entire *Jingluo* Network, it, nevertheless concluded thus: "Electrical correlates have been established for a portion of the acupuncture system and indicate that it does have an objective basis in reality. Thus far, the data are supportive to our general theory of the action of the acupuncture technique as influencing a primitive data transmission and control system." (1976, 111)

reported by the machine between the *xuewei* locations and non-*xuewei* locations along that *jingmai*. However, when the instrument was adjusted and fine-tuned, they did hear differences as the hammer moved nearer the *xuewei* along the *jingmai*, from weaker to stronger. This could be said to demonstrate oscillation of the *Jingluo* Network.

6. The team in the light of data obtained at 4 and 5 above has named this line 高振动声线/*gaozhen dongsheng xian*/Percussion Active Point (PAP) line.

7. Zhu and his team had succeeded in providing objective evidence for the presence of the *Jingluo* Network in the (living) human being as given below in the abstract, in their own words in English ("Biophysical Approach" 2015):

> Using three biophysical methods which are … (LPSC), … (LIP) and … (PAP) method (sic) to locate three hand Yin meridians holographically in the skin region, we found that the three biophysical lines overlapped each other within 1mm in width and correspond intimately to the classical three Yin meridians of hand respectively. It was also found that there are collaterals branched from the main channels with similar biophysical character…

8. The above objective evidence also permits the team to conclude that the *Jingluo* Network is not identical with the CNS (or the BCS) but is an independent network through which *Qi* courses through the (living) human being.

9. According to Duan Xiangqun/段向群 in the (1989) Preface to *Zhu and Hao 1998, 4-5, the investigations of the team have yielded objective evidence for the presence of the *Jingluo* Network as they satisfy the following five criteria:

(a) The data are in accordance with CCM's understanding of the *Jingluo* system, namely, that each *Jingmai* follows a flow pattern and together all the *Jingmai* and their *luo* form a network covering the whole individual being.
(b) The phenomena which obtain in the experiments display a uniform continuity with no rupture.
(c) The phenomena which obtain in the experiments are repeatable in two senses, namely (i) they obtain in all the *Jingmai*, not only in the case of one or two, and (ii) all the *Jingmai* have manifested the same phenomena when studied on several, different occasions, not only on a one-off basis.
(d) The phenomena are found to obtain in the subjects studied whether these be human beings or non-human living organisms.[21] In the former, they can be male or female, young or old; in the latter, they can be animals or even plants. In other words, they satisfy the criterion of being universal or at least being widespread.
(e) The phenomena found to obtain remain stable (given that they satisfy repeatability).

10. This study has also clarified an issue of long historical standing amongst scholars of the *jingmai*, who are, on the whole, divided into two main camps. The first is sub-divided into two, those who say that:

(1a) There are no *jingmai* only *xuewei* on the grounds that if there were *jingmai*, then why were they not found in anatomical terms, such as in a dissection of the cadaver, or today by means of various scanning devices?
(1b) There are no *xuewei* only *jingmai*. However, the anomaly for this view is that, if there are no *xuewei*, then how could one achieve effects by needling such points?

The second big camp says there are *jingmai* and there are *xuewei*. The study seems to support the second position but with this further clarification – Professor Zhu has concluded that historically people would have first discovered the *xuewei*, especially as one knows that very sensitive people exist(ed), (and probably after many years of reported sensations and therapeutic interventions from Stone Age times beginning with the use of stone needles[22]), the *xuewei* were joined up and the various *jingmai* emerged. This, however, would not amount to denying that the *Jingluo* Network which eventually emerged as a mature system and concept in the history of CC*M-Zhongyi* is not the result of a very close relationship between theory on the one hand and *clinical* experience on the other; the latter shaping the former, and the former guiding the latter.

11. Apart from investigating the *Jingluo* Network in (living) human beings, the research team also did work on other mammals (such as the rat/*dashu*, the domesticated rabbit), on plants even (such as the Hami melon, the banana, the water melon, the cucumber) and has concluded that the *Jingluo* Network, in one form or other, is also present in them. This then, appears to show that it is probably the case that living organisms share this characteristic – caution here is needed because given the large numbers of species of animals and plants (even barring bacteria,

[21] On the latter, see point 11 below.
[22] This part of the reasoning is added by this author. On the subject of the use of stone needles in antiquity, see Lee 2018, Appendix One.

fungi and so on), more work would have to be done before one can be totally confident of making such a claim, although the theoretical grounds for it are clear and strong.

It may be fitting here to make some comments of a personal nature about Professor Zhu himself. When the Chinese government asked him to undertake the investigation in 1973, he thought then he would be simply wasting his time; indeed, he admitted later that he was determined to show once and for all that the whole subject was a piece of pseudo-science. So, his actual eventual findings even surprised himself; he concluded, using his own words (as cited by *Hao 2012, Lecture 11):

> 经络是生命基本特征之一，只要有生命就有经络

This could be rendered as:

> The *Jingluo* Network is a special basic characteristic of life itself; where there is life, the *Jingluo* Network is present.

Just over thirty years ago, Professor Zhu, then sixty years old, did not enjoy good health;[23] he suffered from insomnia, memory lapses, indigestion, reflux, lack of appetite but with no feeling of hunger and if not told to eat, would not bother to do so at all, and generally was lacking in energy. He had tried many Bm doctors and Biomedical drugs but nothing much had helped. When he finished his investigation, it suddenly dawned on him that he should use his newly acquired understanding of the *jingmai* and the *Jingluo* Network to treat himself. His method, he says, is extremely simple; he has called it the "312" method,[24] which will be discussed briefly later.

Professor Zhu by following this regimen (given above with the barest outline), found his health has improved; in 2012, at the age of eighty-nine or thereabouts, he still cycled daily to his research institute from outside Beijing into the city, a distance each way of 15 kms. One could sum up the significance of the research team led by Zhu in establishing that the *Jingluo* Network is not a piece of pseudo-science, using the criterion of Scientificity endorsed by modern, global science. It is present in the living human being, as claimed in *The Neijing*; here is a relevant passage from *Lingshu*, Chapter 11/《灵枢·经别》:

> 夫十二经脉者，人之所以生，病之所以成，人之所以治，病之所以起，学之所始，工之所止也

This may be rendered as:

> The importance of the twelve (main) *Jingmai* in the human individual lies in the fact that life itself and health depend on their proper functioning, that all illnesses and their causes come from their mal-functioning, and likewise treating illness lies in restoring them to proper functioning order. In other words, the study of medicine must begin and end with the *Jingmai*; to determine how good a physician really is, one must look at his command of the *Jingmai*, that is, his knowledge of them as well as the ability to apply such knowledge in diagnosing and treating illness.

However, this author wishes to end this section by insisting that one should resist, at all cost, the temptation to draw from the investigation above which confirms the presence of the *Jingluo* Network, a specific conclusion, namely, that *Qi* in the network is Matter *simpliciter* and that, therefore, CC*M-Zhongyi* /Chinese cosmology/ *philosophy* is nothing but an expression of Materialism. Lee 2017a, Chapter 3 has attempted to clarify this issue. Readers are reminded to refer back to it for details, that *Qi* involves Dyadic pairing of polar contrasts, that *Qi*-in-concentrating mode (*Thing-ontology*) and *Qi*-in-dissipating mode (*Process-ontology*) which this author calls *Qi Wholism*; *faute de mieux*, it may also be referred to as *Em*-ism, not perhaps an elegant coinage but at least, this author feels, it does better justice to what the ancient Chinese had to say about *Qi*.

Some Methodological Comments

Assuming that the experiments of Zhu and his research team stand up to critical scrutiny in the long run, what general methodological comments could one make from the philosophy of science standpoint? Let us begin by referring briefly to a notion called the null hypothesis in the statistical testing of hypotheses, a technique used by many scientists including the vast majority of biologists.

> It involves testing a null hypothesis by comparing the data you observe in your experiment with the predictions of the null hypothesis. You estimate what the probability would be of obtaining the observed results if the null hypothesis were true.

[23] The following account follows closely that of *Hao 2012.
[24] See *Zhu 2016.

> If this estimated probability (the P value)[25] is small enough (below the significance value), then you conclude that it is unlikely that the null hypothesis is true; you reject the null hypothesis (H_0) and accept an alternative hypothesis (H_1) (McDonald 2014).[26]

In general, H_0 holds what is commonly accepted to be correct or what is in accordance with (standard/orthodox) theoretical expectations; H_1, by contrast, holds that things are different from such a theoretical expectation. If the experimental findings are not compatible with H_0 this means rejecting it and entertaining H_1 instead as a potentially correct hypothesis; when this happens, it would make the scientific community sit up and take notice, as it may imply some exciting new discovery. McDonald 2014 gives the hypothetical example about feeding chocolate to a group of chickens to see if that makes any difference to the sex ratio in their offspring. H_0 postulates that the sex ratio would be equal to the theoretical expectation of 1:1. Now if the results, instead, show (in terms of the p-value) that upon feeding them with chocolates, there are, as a matter of fact, more females than males in their offspring, upsetting the 1.1 ratio in a big way, H_0 would be rejected or nullified, and H_1 would imply that something new could have been discovered about the mechanism of sex determination in chickens – as female chicks are more valuable than male ones amongst the egg-laying breeds, this would make the discovery exciting both for science and the chicken industry. One could say that in general the null hypothesis is boring (as it simply reflects extant theoretical understanding) and the alternative hypothesis is potentially interesting/exciting (as it appears to challenge extant theoretical understanding). However, one should make it very clear that accepting H_0 does not mean that it is true just as rejecting it does not prove H_1.

Let us also pause to make clear that Zhu and Hao 1998 do not mention the null hypothesis either in the text or the index – invoking H_0 is entirely this author's own initiative; furthermore, it is merely invoked as an analogy in order to cast some light on their investigation of the *Jingluo* Network and not that the investigators were trying to determine its p-values as standardly understood in statistics. Hence, H_0 and H_1 in this context will be put within double quotation marks. If one were to cast part (especially the earlier stages) of the series of experiments in the light suggested above, then their "H_0" would simply reflect the view of the Biomedical community that the *Jingluo* Network does not exist and crudely put, that it is, straightforwardly, a piece of pseudo-science. "H_1", crudely put, simply says that the *Jingluo* Network is real and does exist. (We shall later give more nuanced formulations of "H_0" and "H_1".)

The team's experimental findings at the conclusion of stage 3 appear to support the rejection of their "H_0", but what about then of "H_1"? As already observed, rejecting "H_0" and accepting "H_1" do not automatically render it correct. The team must move on, should they wish to establish that "H_1" has scientific validity according to the standards of modern science/Bm. To do this, the team must provide evidence that:

(a) The sensations felt and reported go beyond mere reports of such sensations by the experimental subjects.
(b) They involve variables which are objective and measurable/quantifiable in terms, for instance, of electrical resistance, of sonic oscillations particularly at the *xuewei* but not at other points along a particular *jingmai*.

By using three biophysical methods (LPSC, LIP and PAP), the team managed to record objective, measurable and quantifiable data which could be registered by machines and then plotted by graphs. Based on such findings, the team concluded that the *Jingluo* Network does appear to operate in a way which accords with the account of it found in *The Neijing*. In turn, they provide evidence for saying that the *Jingluo* Network is separate and distinct from either the BCS or the CNS, systems well established in Bm and Human Biology.[27]

We now end this proffered account of Zhu's investigation by setting out in greater detail the team's implied "H_0" and "H_1".

"H_0" can be understood in three formulations, from the crude to the more refined.

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[25] Rumsay 2016:

> The p-value is a number between 0 and 1 and interpreted in the following way:
>
> (a) A small p-value (typically ≤ 0.05) indicates strong evidence against the null hypothesis, so you reject the null hypothesis.
> (b) a large p-value (≥ 0.05) indicates weak evidence against the null hypothesis, so you fail to reject the null hypothesis.
> (c) p-values very close to the cutoff (0.05) are considered to be marginal (could go either way).

See also Null hypothesis 2015.

[26] What is within brackets is this author's interpolation.

[27] Of late, Biomedical explanation of acupuncture and its effects focuses on brain functions as regulated by chemical messengers such as neurotransmitters and neuropeptides, stimulation of which in specific frequencies at certain sites (such as the *xuewei*) produces the release of specific neuropeptides in the CNS. Such release can bring about pain control (in the case of opioid peptides) and other physiological effects such as appetite modulation in the case of Neuropeptide Y (NPY). See Han 2003, 2004; see also Zhang *et al*. 2016.

(a) According to the expectation of the community of Biomedical scientists, the *Jingluo* Network simply does not exist; it is a pseudo-scientific claim.
(b) When subjected to the three biophysical tests, it is not expected that experimental subjects would report that they feel any particular sensation when the tests are applied, say, at certain points along the arm, moving up a line which is best described as the pathway of the **Pericardium *Jingmai***.
(c) Nor is it expected that these subjective reports of sensation could and would be corroborated in measurable and quantifiable terms.

"H_1" can also be understood in three formulations, from the crude to the more refined.

(a) Contrary to the expectation of the community of Biomedical scientists, the *Jingluo* Network is real and does exist.
(b) When subjected to the three biophysical tests, contrary to expectation, the experimental subjects report that they feel a particular sensation when the tests are applied, say, at certain points along the arm, and that the line of sensation would appear to correspond to the "route" taken by the **Pericardium *Jingmai***.
(c) Contrary to expectation, these subjective reports of sensation are corroborated by measurable and quantifiable data.

We have so far glossed the experiments of Zhu's team from the standpoint of standard scientific/medical discourse. We think we can also cast some light from the vantage point of another discourse, namely that of jurisprudence. This would make the exercise analogous to what takes place in another more familiar discourse, namely, the principles governing a criminal trial, such as a murder trial. In terms of jurisprudential thinking, a criminal trial, whether serious or relatively light, in principle is conducted on the so-called **Presumption of Innocence (PI)**, namely, that the defendant (D) in the dock is presumed to be innocent until proved guilty, that is, beyond reasonable doubt. The analogy between PI and the null hypothesis may be worked out as follows, confining oneself to the inquisitorial framework for ease of illustration:[28]

1. In the inquisitorial system which is common in civil law countries (as opposed to the adversarial system which obtains in the common law jurisdictions), the goal is to get at the truth of the subject matter before the court by undertaking extensive investigation and examination of all relevant evidence. (In the common law system, the preferred method for getting at the truth is through open competition between the prosecution counsel and the defence counsel, each trying to make the best case for the brief in hand, or in the words of its critics, to try to outwit the other by all rhetorical and forensic means at their command).

2. The procedure is said to be in three stages: the investigative, the examining and the trial. In the first, the Public Prosecutor (PP) with usually the help of the police would set about collecting evidence to see if a charge is justified, submitting the evidence collected to a judge. The next phase is when the judge examines the evidence submitted; he may conclude that the case should proceed to trial. His review and conclusion are then made available to both prosecution and defence well in advance of the trial. The goal of the trial, the third stage, is to present the case to the trial judge (and sometimes the jury) in public. While cross examination or re-examination of witnesses is not permitted, witnesses are still questioned and challenged. After the procedure has been completed, the trial judge would then come to a decision (as juries are not necessarily part of the trial).

3. Given PI, "D is not guilty of murder" is the analogue of H_0 for the court and trial, "D is guilty of murder" that of H_1. For "H_0" to be nullified and "H_1" adopted instead, the trial judge must ensure that the evidence is assessed to be compelling and over-whelming, so to speak, which would be analogous to a small P-value in the case of testing a null hypothesis. In the language of common law jurisprudence, this amounts to saying that the verdict of guilty must be "beyond a reasonable doubt". A definition found in legal dictionaries reads as follows:

> The standard that must be met by the prosecution's evidence in a criminal prosecution: that no other logical explanation can be derived from the facts except that the defendant committed the crime, thereby overcoming the presumption that a person is innocent until proven guilty".[29]

Admittedly, this definition is somewhat over the top as it invokes the phrase "no other logical explanation"; barring that, if the conditions of the definition are satisfied, the verdict of guilty follows, meaning that if any doubts which remain are unreasonable, they should be ignored. Courts are not looking for absolute certainty, only that no reasonable doubt exists to a reasonable person that the defendant is guilty given the weight of the evidence.

[28] See Presumption of Innocence 2015. PI, however, must not be equated simplistically with the adversarial system – for brief accounts of the distinction between the two systems, see Perkins 2015.
[29] URL = http://legal-dictionary.thefreedictionary.com/beyond +a+reasonable+ doubt .

We have already said that Zhu's team nowhere mentioned that they were following either the methodology of the null hypothesis or jurisprudential thinking. All the same, their project appears to be compatible with both of these methodologies and so it could be illuminating to cast the team's thinking in such terms. According to Biomedical understanding and expectation, the *Jingluo* Network does not exist; Zhu would have accepted this as background for the team's "H_0". However, in accordance with the methodological requirement of the null hypothesis, his team would do their best to mount rigorous and robust attempts to establish evidence which could enable them (and others) to decide whether either to accept or reject "H_0". Then when these experimental attempts have been mounted and data collected, his team found to their amazement that the quality and quantity of the evidence established point to a rejection of "H_0" which in turn means adopting "H_1", namely, that the *Jingluo* Network could function in the way set out under "H_1". Analogously, in jurisprudential terms, Zhu's team implies that "D" ("Defendant"), given the evidence, is found "beyond reasonable doubt" "Not Guilty" of the charge alleged against it by "PP".

Professor Zhu has admitted that personally as far as he himself was concerned, undertaking such a project would amount to a waste of his time; however, his professional duty required him to collect as much evidence as it was within his ability (given the technologies then available to his team) to mount tests which were as rigorous and robust as they could manage to defeat "H_0". When they had done so, to their surprise, they found that the evidence against "H_0" was such that in their role as "trial judge" they had no choice but to deliver the verdict that "H_0" had been nullified and so must be rejected and that "H_1" be accepted instead.

Exiting the Colonial Mind-set

As things turn out, Zhu's biophysical findings for the *Jingluo* Network did/do not quell the strident chorus of sceptical voices.

On a personal level, he even found the funding for his work at the Biophysical Institute removed from him. On the cognitive level, the sceptics seized on his claim based on his findings that the *Jingluo* Network cannot be identified with the CNS (nor with the BCS). In other words, his claim that it is an independent system amounts to saying that it is not anatomically grounded. As a result, the sceptics move their goal-post – fine that his research has produced biophysical data but it has ruled out any anatomical grounding. In other words, as the Paradigm of Scientificity endorsed by Bm recognises only systems which are anatomically grounded (Thing-ontology), the *Jingluo* Network remains outside the pale of Science, and so it is fitting that it continues to be assigned the status of The Colonised/Inferior.[30]

Chapter One of this book has referred to Gu 2013 who has cited even, in the second decade of this century, voices in China itself denouncing, not simply the Jingluo Network but *Zhongyi* itself (whether TC*M-Zhongyi* or CC*M-Zhongyi*).

In the West, Longhurst 2010 which reviews the various types of evidence cited in publications, such as anatomical structure studies, imaging or skin resistance studies, has found them all wanting in one way or another. Instead, he argues that the best hypothesis on offer to account for the claim that the *Jingluo* Network exists would be the neural hypothesis and that it can explain the effects of needling such as *deqi* 得气. He implies that the *Jingluo* Network is really no more than the neural pathway which, of course, is fully anatomically grounded – see his Figure 1. In other words, anatomical grounding is what he upholds as the key feature of the Paradigm of Scientificity endorsed by Bm.

Another type of assessment in the West implies that it is a mistake to think of *Qi* and the *Jingluo* Network as "scientific", as these concepts are best understood simply as metaphors. Such a view may be found in Lake 2007, 13-14. Furthermore, Lake holds that *qigong* 气功 (a technique for "concentrating qi" in order to use the power of *Qi* to perform healing and other tasks[31]) belongs to the lowest possible category of clinical medical approaches which he calls the "intuitive approach": "By definition, intuitive clinical medical approaches are not susceptible to analysis or verification using available empirical methods" (Lake 2007, 58; see also 62-63).

What does the above really show? It shows that it is Bm which defines Scientificity. The status of Scientificity is bestowed on a certain domain if and only if it conforms to the requirements that the experiments designed to ascertain its existence are repeatable, measurable and quantifiable, *via* biophysical mechanisms, mechanisms endorsed by Western science in general and Bm in particular. Professor Zhu's experiments appear to satisfy these requirements. It is critical to remind readers once again that to say a hypothesis is scientific is not to say that the hypothesis is true – its truth or falsity depends on the outcome of the experiment which attempts to test the hypothesis in question. Should it turn out that little or no evidence is generally forthcoming with regard to the hypothesis that the *Jingluo* Network exists via testing it in various proposed ways, then one would be entitled to conclude that the hypothesis is a false one. However, to see that it is false does not equate to saying it is pseudo-scientific; it is scientific, though false.

[30] For a detailed exploration of the central role played by anatomy in Bm and the history of its development, see Lee 2012b, Chapters 6. 7 and 8.

[31] Chapter Nine of this book has discussed this aspect of *qigong* in CC*M-Zhongyi*.

The main point of this book is not to emphasise this point about scientific methodology, important though it is, but to focus on another feature of the Paradigm of Scientificity endorsed by Bm which, as this discussion shows, goes beyond requiring that the method be repeatable, measurable and quantifiable, but also that the hypothesis in question be also anatomically grounded. Zhu's findings may then be said to be inadequate or even irrelevant, as his findings amount to claiming explicitly that the *Jingluo* Network is distinct and different from any anatomically-grounded system as sanctioned by Bm's understanding of the human body. In other words, it is to say that the Colonial Mind-set is at play: Bm is X (*ti/ben* 体/本)/The Coloniser/Superior or Officer Class and CC*M-Zhongyi* is Y, The Colonised/Inferior or Subaltern Class, which is permitted to serve, at best, as handmaiden to Bm, and hence falls into the category of *yong* 用 rather than of *ti/ben*. In other words, *au fond*, this Paradigm of Scientificity does not so much approximate to Zhang Xichun's project as lean towards that of the artemisinin type of project.

However, as the personal journey of Zhu Zongxiang shows, one does not need to embrace the logic of the Colonial Mind-set. Recall that Zhu started off the project from the vantage point of The Colonised; he was irritated to be told to waste his time and energy on something he was convinced was outright superstition or pseudo-science. Yet, as things turned out, he found that he was faced with a set of findings which was incompatible with "H_0" the very hypothesis underpinning his project. So, he dropped "H_0" in favour "H_1". To labour an important point which this chapter emphasises, this does not entail that "H_1" is (empirically) correct – only that as "H_1" and "H_0" are logically incompatible, dropping the latter would commit one to accepting the former. Accepting "H_1" as a mere entailment does not establish that it is empirically correct. One must in turn find evidence of an empirical kind to support it as a true claim. However, its mere logical possibility was sufficient to liberate Zhu from The Colonial Mind-set, from playing the role of The Colonised with regard to CC*M-Zhongyi*.

His next move implied that he was committed to finding empirical evidence (endogenously) for "H_1"; he devised a set of exercises based on his understanding of the *Jingluo* Network which he had grasped in the course of carrying out the project he was tasked with in the 1970s. He has called this set of exercises "312" as has been referred to *en passant*.[32] He used himself as the first guinea pig; his health had been poor for many years, he could not sleep or eat properly, he was thin and lacking in energy. Bm and its drugs had not helped him and he had just lived with those debilitating and frustrating conditions. Upon undertaking 312, he found that he had improved – he felt hungry, could eat, could sleep and even found energy to ride a bike to and from work every day. He then decided to share 312 with others to see if they too could be helped.

Simplistically put, the exercises and their theoretical underpinning run as follows:
"3" refers to three acupressure/acupuncture points (*xuewei*) selected because they are located on certain *jingmai* 经脉 so that between them, *Qi* throughout the person-body would then be stimulated:

(a) The *hegu xue*/合谷穴 which is in the dip between the thumb and index finger – the fourth point from the index finger of **Large Intestines *Jingmai*** 大肠经/LI4 – see Figure 10.4 to locate this *xuewei*. Any illness in any place along the trajectory of this *jingmai* may be treated by deploying this *xuewei*, such as headaches, eye trouble, nose inflammation, toothache, throat problem, abscess in the mouth, shoulder pains, lung problems, including coughs, wheezing, stomach problems, bowel problems such as diarrhoea, constipation, and so on. Furthermore, Zhu is of the opinion that this *xuewei* if needled or pressed can prevent stroke.

(b) The *neiguan xue*/内关穴 P6 is the fourth point from the index finger along the **Pericardium *Jingmai*** 心包经 – see Figure 10.3. Any illness which occurs along this *jingmai*, involving the chest, the abdominal area and so on, for instance, giving rise to lung/throat/or stomach problems would improve through pressing this point. Furthermore, Zhu is of the opinion that pressing/needling this *xuewei* is effective in people with heart conditions, or suffering from asthma.

(c) The *zusanli xue*/足三里穴 is the eleventh point (counting from the toe) along the **Foot *Yangming* Stomach *Jingmai*** 足阳明胃经 *zuyangming weijing* ST36 – see Figure 10.5 This a powerful point located as it is on a *jingmai* which runs right through the length of the whole person-body, from the nape of the neck at the back right over to the front of head, all the way down to the toe. Any illness along its pathway can be treated by the *zusanli xuewei;* this *xuewei* is so powerful that it is called the "point of longevity" as well as "the point of a hundred diseases".[33]

[32] In English, it is called the 312 Meridian Exercise. In Chinese, it is simply called "san yao er". A Chinese video which explains it may be found at https://www.youtube.com/watch?v=mx7vqom9dMo&list=PLz-ouiw1sNS7kyt9x0WHYcsGWzPiWc4se .

[33] In a village in China noted for people with longevity, those over eighty years of age, on the day of the Winter Solstice, would burn seven small pieces of 艾/*ai/moxa* at *zusanli*. With each piece, light, then extinguish and re-light three times. Continue in this way till all seven bits are burned up. This method of *Preventive Medicine* is called 瘢痕灸方法/scarring *ai*-burning method. At the end of the session, a second degree of burn would have been produced, the skin would have hardened and there would be some oozing. Do not wash the area for a few days, until the skin has become normal again. What is involved is a process of stimulation which encourages the body of the person to increase its own powers of overseeing the proper functioning of the

"1" refers to stomach breathing（腹式呼吸 *fushihuxi*) – a form of breathing which has nothing to do with normal breathing involving the lungs. It is a simplified version of breathing in *qigong* 气功.

"2" refers to squatting down, then rising up.

The 312 Exercises have attracted a following not only in China, especially Beijing itself, but also amongst the Chinese diaspora such as in Singapore and Malaysia. By 2016, Zhu had formally trained through his workshops over 10,000 people who claim that their health has improved markedly by following the exercises; many of their original conditions were chronic and included arthritis, asthma, diabetes, hypertension, coronary heart disease. It is true that Zhu has conducted no RCTs; however, those who claimed they benefitted all have Bm doctors certifying that they did suffer from their medical conditions and the extent to which they did so. Some of them could have gone back for a Bm check after they felt their conditions had improved.[34] Regarding the latter category, the evidence for improvement has gone beyond the mere subjective reports by the "patients"[35] themselves how much better and stronger they now feel. It is possible, though not probable, that the good effects could simply be placebo effects. While the placebo effect is anathema to Bm, let us remind the reader yet again that to CC*M-Zhongyi*, such an effect, is entirely in keeping with the logic of the person-body being a primitive concept, as demonstrated in Chapter Eight of this book – under Contextual-dyadic Thinking, the mental and the physical are inextricably entwined, the mental can and does produce effects on the physical, and that in a *medical* context, such a possibility should be harnessed to the task of healing the patient.

system, as the person-body responds by repairing the damage caused by the inflammation induced by the burning of the *ai* – in so doing, it stimulates the powers of self-healing on the part of the person-body, so that the individual reaches a better level of healthy functioning.

[34] This is a fairly common phenomenon, not because the beneficiaries of CC*M-Zhongyi* treatment themselves wanted such "proof", but friends and relatives imbued with the spirit of The Colonised insist that they do, to make sure that the condition has indeed been eliminated or ameliorated as authenticated by Bm. Should the "proof" confirm the improvement, the truly die-hard amongst The Colonised would then mutter under their breath: "placebo effect, spontaneous remission or plain fluke."

[35] The word "patients" is put within quotation marks. This is because Zhu Zongxiang does not claim himself to be a qualified CC*M-Zhongyi* practitioner; he gives no consultation, he neither diagnoses nor prescribes. He simply holds classes and workshops open to those who think that what his exercises have to offer would help them overcome whatever medical condition they have already been diagnosed of by qualified practitioners whether Bm, TC*M-Zhongyi* or CC*M-Zhongyi*. (The majority appears to have been diagnosed by Bm doctors.)

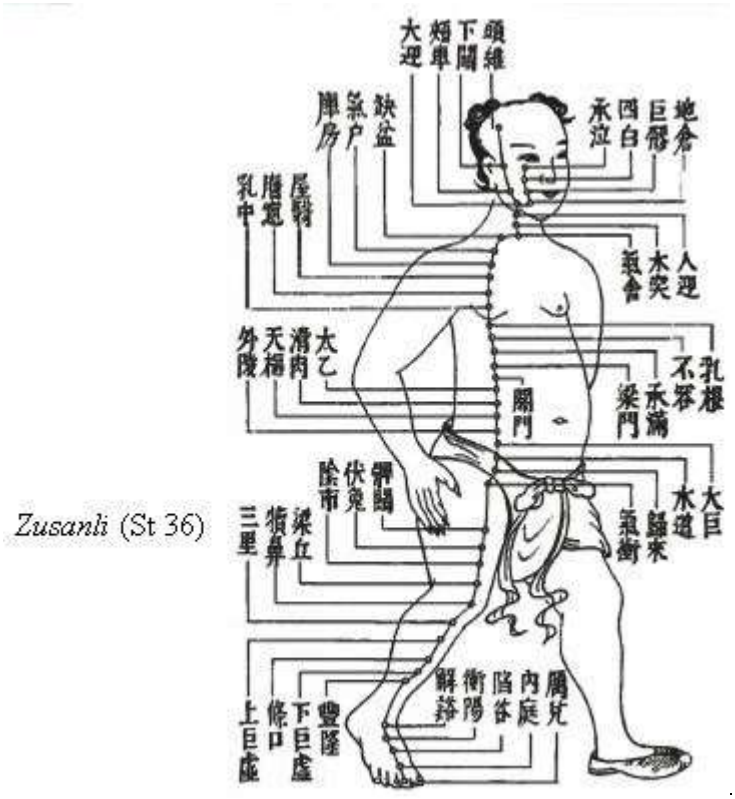

Figure 10.5 The Foot *Yangming* **Stomach** *Jingmai*/足阳明胃经脉
(This image is included to give readers an idea how traditionally the Chinese had represented the *Jingmai*.)

Conclusion

Only three points will be made as summary.

1. The main point is that the *Jingluo* Network, contrary to the expectation of those occupying the vantage point of Bm and MWS (including the chief investigator himself, Zhu Zongxiang at the start of the investigation), is susceptible to being investigated using biophysical methods, just as the BCS or the CNS can be similarly investigated using whatever methods are the prevailing ones available to the dominant global model of doing Bm and MWS today. The chapter has shown that it is plausible to de-construct Zhu's methodology in terms of designing and testing a null hypothesis. The null hypothesis may, in a nut-shell, be defined as the hypothesis the scientific team is attempting to discredit or to disprove.

   Furthermore, not only is the hypothesis about the *Jingluo* Network capable of being discredited in principle via testing, it has even survived the process of falsification, and so give some good (though not sufficient) grounds for expecting it to be empirically correct.

2. However, the work of Professor Zhu and his team is capable of being read in at least two very different ways:

   (a) It has not succeeded in challenging the status of CC*M-Zhongyi* as The Colonised/Inferior. Bm retains the role of The Coloniser as Zhu's biophysical methods of investigating the *Jingluo* Network clearly relied on the Paradigm of Scientificity endorsed by Bm/Modern Science. As a result, that paradigm has merely authenticated CC*M-Zhongyi* and bestowed upon it a minimal degree of respectability in the following manner – if Zhu's findings have been thoroughly compatible with "H_0" then, logically, repudiating CC*M-Zhongyi* as pseudo-science, unintelligible gibberish, superstition would follow. The sceptics of CC*M-Zhongyi* may be prepared to accept that Zhu's findings have pulled this particular rug from under their feet, but they would stand firm on the ground that CC*M-Zhongyi* needs to be brought up to scratch, to be "modernised" in accordance with the Paradigm of Scientificity endorsed by Bm, The Coloniser, as shown in Chapter Seven. This call for modernisation would be in keeping with TC*M-Zhongyi* as I*M*, but not in keeping with CC*M-Zhongyi.* As Chapters Five and Six argue, TC*M-Zhongyi* as I*M* is

the junior partner at best, playing the role of the inferior Subaltern Class to Bm's Officer/Superior Class. In other words, The Colonial Mind-set remains intact.

(b) The personal trajectory of Professor Zhu himself shows another way. He appears to have liberated himself from the Colonial Mind-set altogether, by accepting CC*M-Zhongyi* in its own right in general and the *Jingluo* Network in particular. His "312" method of exercises is entirely in accordance with CC*M-Zhongyi* texts, theory and praxis. He does not call for the "modernisation" of CC*M-Zhongyi*; instead, he appears to have joined the ranks of those who defend CC*M-Zhongyi*, that although it is a radically different system of *Medicine* from Bm, it is a coherent system capable of alleviating if not totally eliminating many conditions of pain and suffering in ill people and promoting the health of the population at large who are not obviously ill, as *Preventive Medicine*.[36] In other words, he has embraced ARIIMO.

In other words, unlike the TC*M-Zhongyi* scientists assessed in Chapter Seven who simple-mindedly urge that TC*M-Zhongyi* be further immediately "modernised" in order not to be seen as "backward" and worse, as "unscientific", Zhu regards the biophysical data obtained in his investigation to act as a bridge of respect between the two systems of Medicine/*Medicine*, Bm and CC*M-Zhongyi*, which is each valid in its own right. His biophysical investigation acts as an analogue to *Pinyin* which plays two crucial roles as identified in Chapter One: (i) Chinese children are taught it as a pedagogical tool to help them ultimately to acquire reading and writing in their mother language and is not intended as outright Latinisation of the Chinese language; (ii) foreigners living and working in China have to learn to negotiate Chinese space through street names and signs in *Pinyin* which may be regarded as a friendly tool and which may, in some instances, even lead to a desire to go beyond *Pinyin* to master Chinese reading and writing as well as to appreciate Chinese culture in respect of its language with its unique characteristics. *Pinyin*, in this context, is a friendship bridge, not an embodiment of The Colonial Mind-set.

3. This chapter has also with regard to *Qi*-in-dissipating mode in the *Jingluo* Network of the living human being presented sufficient evidence to make a case for not rejecting/dismissing it out of hand as "mumbo jumbo"/"pseudo-science"/ "unscientific". From the theory or concept of the *Jingluo* Network in CC*M-Zhongyi*, one could derive conclusions which are testable. These could be and have been subjected to tests in the long history of CC*M-Zhongyi*. Such testing appears, then, to be no different from the most basic methodological requirement of Respectable Science, and Respectable Philosophy of Science/Medicine. In the two systems of Medicine/*Medicine*, it is true that their theoretical cores are radically different, but this does not necessarily mean that CC*M-Zhongyi* is incompatible with the basic, meta-methodological demand that its core theoretical hypotheses be within the pale of testability.

The term and concept "basic, meta-methodological requirement" is significant, as it focuses on the claim that any thesis/hypothesis (regardless of its content) can only begin to lay claim to being scientific if and only if from it, one can derive conclusions which are testable in principle. This author claims that *CCM-Zhongyi* satisfies this basic requirement (as shown in Chapter Nine of this book). Adherence to the Colonial Mind-set might have prevented The Coloniser and The Colonised from grasping and recognising this point.

However, beyond satisfying this basic, meta-methodological criterion, it remains correct to maintain that while Bm hypotheses in some contexts can be subjected to RCT-type of testing or testing using high-tech instrumentation, *CCM-Zhongyi* relies on "no-tech" diagnostic methods such as ascertaining the *mai* profile and the tongue profile. Bm should not and cannot insist that RCTs apply to the testing of specific hypotheses in CC*M-Zhongyi*. Such insistence commits Essentialism of Method/Methodological Exceptionalism and is an expression of the Colonial Mind-set; to judge CC*M-Zhongyi* as The Colonised/Inferior is as absurd as to judge a cat to be an inferior dog, using the standards of goodness relevant to a dog-show, as a cat is just not a dog. To say that a cat is an inferior dog is, as Chapter One has argued, to commit a category mistake.[37]

Nor does it appear methodologically unsound to argue from the discoverable/discernible effects which follow upon a treatment to their putative unobservable cause – bear in mind, the outstanding case of Newton's notion of gravitational attraction in the history of modern science.

Admittedly, to quell all possible doubts of a determined sceptic, one would have to work a lot harder than outlined in this chapter, but account(s) so far given here and in earlier chapters of this book could be said to be a step in the right direction to give CC*M-Zhongyi* and its theories a fair hearing.

[36] See Chapter Nine of this book as well as Lee 2018, Chapter 5 for a detailed exploration of *Preventive Medicine*.

[37] This absurdity apart, it makes no sense to demand that CC*M-Zhongyi* deploy RCTs as RCT in Bm is premised on the Axiom of Homogeneity while CC*M-Zhongyi* is predicated on the Axiom of Heterogeneity – see Lee Chapter Five of this book; Lee 2017b.

Chapter Eleven

Conclusion

ARIILO	Axiom Respecting the Identity and Integrity of the Linguistic Other
ARIIMO	Axiom Respecting the Identity and Integrity of the Medical Other
Bm	Biomedicine
CCD*P*	Classical Chinese Daoist *Philosophy*
CM	Clinical Medicine (Bm)
CM	*Clinical Medicine* (CC*M-Zhongyi*)
CC*M-Zhongyi*	Classical Chinese *Medicine*
C*P*T	Chinese *Philosophy* Tradition
Em-ism	*Qi* as *Energy*-cum-*Matter*
MCD	Monogenic Conception of Disease
MPQBP	*Zhongyi's* Methodological Postulate of *Qi* Blockage Generating Pain and Unblocking *Qi* to Relieve Pain
WPT	Western Philosophy Tradition

Main Theses Identified and Explored

1. Bm and CC*M-Zhongyi* are two different systems of medicine/*medicine*, each understood and conducted within its own respective philosophical/*philosophical* framework (WPT and C*P*T-CCD*P*).

   However, each can claim to be able to satisfy the "basic, meta-methodological" requirement that their respective core hypotheses are capable of being testable in principle. In the case of CC*M-Zhongyi*, *Qi* is a core hypothesis; from this hypothesis and a crucial Methodological Postulate – MPQBP – (if *Qi* is blocked, pain is caused and felt) can be derived conclusions which are testable. One testable outcome in a particular context of *diagnosis* may be illustrated as follows: *Qi*-in-dissipating mode in this particular *jingmai* and/or that particular *jingmai* in the patient has been blocked, hence, the patient feels pain in say the chest; unblock the *Qi*, either needling at certain acupuncture points or prescribing certain medicinals (or both) which can do the job of unblocking the blocked *Qi*. Should *treatment* be administered, the predicted outcome is the elimination of the pain. Administer the *treatment*, the pain disappears. Predicted outcome is confirmed or has survived falsification Administer the *treatment*, pain remains or even get worse. The predicted outcome has been falsified and is false. In other words, the *diagnosis* is incorrect and hence, the *treatment* fails.

   Bear in mind that accepting falsification is a sign of methodological virtue (at least according to the generally accepted Popperian account of Scientific Method) that the hypothesis is scientific, not pseudo-scientific.

2. Their theoretical/philosophical cores are different and so are their presupposed causal models. These differences imply in turn different implications for understanding the nature of disease or illness, how to diagnose patients and what treatments to prescribe.

3. 1 and 2 above entail different Paradigms of Scientificity/*Paradigm of Scientificity*.

4. It follows that it would be absurd to evaluate one medicine/*medicine* using the Paradigm of Scientificity/*Scientificity* inherent in the other; the absurdity is analogous to that of judging cats in a cat-show in terms of the standards appropriate to dogs in a dog-show.

5. The method of reasoning implicit in such an absurdity may be called **Methodological Exceptionalism** or **Essentialism of Method**.

6. Essentialism of Method or Methodological Exceptionalism:
   (a) Is inherent in what this book calls **The Colonial Mind-set** which embraces two classes or categories of attitudes – **The Coloniser** and **The Colonised**. In this pairing of polar contrasts, the former is Superior and the latter Inferior.[1]

[1] Gu 2013 calls this Sinologization and Sinologism.

(b) Implies a philosophical doctrine called **Dualism** which invokes two categories, one Superior, the other Inferior, with the Dualised Other being necessarily inferior. Dualism is amply demonstrated by Plumwood 1993 in her critique of Male Superiority over Female Inferiority and of Human Superiority over Non-human Inferiority (in the Human Culture vs Non-human Nature debate).

7. The Colonised comes to accept that being the Inferior Other constitutes its identity. In the history of Male Superiority, women come to accept that they are indeed inferior in the Man-Woman Dualist pairing. In the history of the two medicines – Bm and *Zhongyi* – the Colonised (amongst the Chinese) have come to accept that *Zhongyi* (Chinese *Medicine* in all its forms) is indeed inferior and should, therefore, be voluntarily abandoned, if not be consciously suppressed/eliminated by societal/governmental measures.

8. Western Medicine, today called Bm, unlike CC*M-Zhongyi*, in its history, has undergone several ruptures in its philosophical-theoretical core: it abandoned the Humour Theory for so-called "Solid Medicine" initiated under the Golden Age of Bacteriology with disease understood as "disease-entity" together with its **Linear Monofactorial Model of Causality** – one disease-entity, one disease (the **Monogenic Conception of Disease**/, MCD).[2]

9. An alternative development (even if one were to contend that it does not amount to a rupture) took place in the 19th century when **Epidemiology** emerged to challenge implicitly MCD in Clinical Medicine/CM. This was pioneered by John Snow in 1854 during the cholera epidemic which hit London at that time. Epidemiology took time to establish itself as a distinct and distinctive branch of Bm, as its theoretical core as well as its Causal Model are different from what CM endorses. Epidemiology is primarily about disease patterns in a population or populations, invoking a more complex system of causal relations than CM, including feedback loops and may be called the **Non-linear Multi-factorial Model of Causality**.

10. MCD in CM, in so far as it claims to be scientific, may be said to be a **Newtonian Science**; Epidemiology may be said to be a **post-Newtonian Science**.

11. The history of Western Science in general similarly exhibits several ruptures: from Medieval Science based on neo-Aristotelianism to Newtonian Science, to post-Newtonian Science including Quantum Physics in the last century.

12. In contrast, CC*M-Zhongyi* has suffered no such rupture since its emergence at least two and a half thousand years ago. Its model of causation has always been Non-linear whether applied under what might be called *Epidemiology* as well as *Clinical Medicine/CM*. It has systematically and consistently embodied what may be called ***Ecosystem Science***. This book calls it **not-Newtonian *Science***.

13. CC*M-Zhongyi* apart, Chinese *Science* in general (which can be found in its hydrological engineering, architecture, to mention just two other domains), down the millennia, has instantiated *Ecosystem Science*. The concept of ***Wuxing*** is the concept of *Ecosystem Science* (or what today is called Systems Thinking or Complexity Theory).

14. Bm under MCD rests on Thing-ontology, as a disease-entity is a thing, be it a bacterium, a virus, a fungus, a piece of DNA. On the other hand, one cannot truly comprehend Epidemiology without talking about Process-ontology, as the events which take place between things (bits of Matter) involve processes and relationships. Epidemiology must, therefore, endorse a philosophical framework which goes beyond Thing-ontology to include Process-ontology.

15. CC*M-Zhongyi* takes place within a *philosophical* framework which this book calls ***Qi Wholism*** (*Qi*-in-concentrating mode and *Qi*-in-dissipating mode) which is a very clear instantiation of ***Thing-ontology cum Process-ontology***. Thing-ontology pertains to the domain of Matter, of Structure; Process-ontology pertains to the domain of Function, Events and Processes.

16. *Qi*-in-dissipating mode is equated in sinology literature with energy. In some contexts, this equation seems to work sufficiently well. It may, however, be more appropriate to understand it as some "force" analogous to Newton's force of gravity. If Thing-ontology pertains to the domain of Matter, then *Qi*-in-concentrating mode under C*P*T-CCD*P* is *Thing-ontology/Matter* while *Qi*-in-dissipating mode is *Process-ontology/energy as force*. This book refers to it as ***Em*-ism**.

[2] For detailed exploration, see Lee 2012b.

17. CC*M-Zhongyi* and Chinese *Science*, not to mention Chinese culture in general, have never systematically embraced *Dualism*. However, one must qualify this generality by acknowledging that Dualism was adopted in one domain of theory and practice, and that is the political domain since Han times, when the *philosopher*, Dong Zhongshu was specially tasked to formulate such a doctrine to underpin Han feudalism. Other domains have/had stayed faithful to what this book calls **The Contextual-dyadic Mode of Thinking**, which is an instantiation of ***Wholism***. The iconic *Yinyang* symbol embodies and exhibits it par excellence – the mutual entwining of *yin* with *yang*, the inseparability of the two *Qi* may be called ***Yinyang Wholism*** in which *yin* is not inferior to *yang* and *yang* is not superior to *yin*. They are different but equal.

18. Bm is about to undergo yet another rupture, the beginnings of which have emerged recently through the findings of various new domains in biology with profound implications for Bm, such as **genomics, proteomics, metabolomics, transcriptomics** and so forth and the discovery of **biomarkers** to yield access not merely to cell structure but to cell functioning in a ready way. In other words, these new omics technologies are expected to herald a new **Wholist** orientation away from the **wholist** (**Reductionist**) one which has held sway as the dominant orientation in CM for a century if not more. The Reductionist Model, in this book, is called Bm Mark I, the Wholist (non-Reductionist) Model is called Bm Mark II.

19. Ironically, The Coloniser is about to catch up with The Colonised (that is CC*M-Zhongyi*). It looks as if that The Coloniser is about to abandon the ship in which it has been travelling for so long to transfer to the kind which The Colonised has occupied for more than two thousand years.

20. Yet the Chinese Colonised is slow to appreciate this ironic turn of history; instead, they continue, in their benighted state to call, yet again, for the "**modernisation**" of *Zhongyi*.

21. The Chinese Colonised fail to see what the latest developments of the omics sciences and technologies and their **biomarkers** mean for assessing the relationship between the two systems of medicine/*medicine*. These biomarkers should be regarded as the analogue of ***Pinyin*** with regard to Chinese writing. The Colonised amongst the Chinese elites had once called for the outright abolition of Chinese writing in favour of Latinisation; instead, in the end *Pinyin* was adopted not so much in the name of "modernisation" with its accompanying abolition of Chinese writing but rather as a tool with two very limited aims: (a) helping foreigners who know no Chinese or Chinese writing to negotiate their various journeys in Chinese space as well as (b) acting as a pedagogic tool to help Chinese children (in different regions with different regional speeches) to learn *Putonghua* (Standard or Common Speech in the Peoples Republic of China).

    Biomarkers should play a similar role in making it easier for those who are unfamiliar with CC*M-Zhongyi* to come to terms with an at first sight strange and different system of *medicine*, as well as to realise that striking differences may also mask common grounds in certain contexts. Biomarkers should not and cannot play the role of modernising CC*M-Zhongyi*; they cannot play such a role for the simple reason that CC*M-Zhongyi* does not require such "modernisation". However, they may play the limited role of rendering the unfamiliar in more familiar and therefore, more accessible terms to theorists and practitioners of Bm in much the same way that the laboratory findings of body fluid sample tests (blood, saliva, urine) as well as X-rays and even more sophisticated scans of one kind or another are regarded as "interesting" by CC*M-Zhongyi* practitioners when patients thrust these in front of them in their consultation rooms. For instance, a CC*M-Zhongyi* practitioner worth his/her salt would be able to *diagnose* whether a female patient is pregnant or not as soon as conception has taken place; s/he neither relies on nor needs "confirmation" by the outcome of the pregnancy testing under Bm. The two systems of medicine/*medicine*, each has its own procedures of diagnosis and treatment. Only the truly Colonised with regard to CC*M-Zhongyi* would find it surprising that CC*M-Zhongyi* could in this context come to a diagnostic conclusion which is similar to that arrived at by Bm.

22. CC*M-Zhongyi* has its own ***biomarkers*** which it invokes to determine the efficacy or otherwise of the treatments prescribed following diagnosis. Naturally, these *biomarkers* are radically different from the biomarkers of Bm Mark I or II; although different, it is undeniable that they perform the same function as their counterparts in Bm, namely, as check about the correctness of its *diagnosis* and/or the efficacy of its *treatment*. CC*M-Zhongyi*'s *biomarkers* include, amongst others, the *mai* profile and the tongue profile which are checked at the time of *diagnosis/pre-treatment* as well as *post-treatment*.

23. Chapter Ten explores the personal trajectory of Professor Zhu Zongxiang which shows how his biophysical findings regarding the *Jingluo* Network has led him to drop the Colonial Mind-set, to stop seeing CC*M-Zhongyi* as The Colonised Inferior and to embrace, so to speak, ARIIMO. To put matters in yet another way: his project of trying to falsify the *Jingluo* Network as a scientific hypothesis, to his amazement, ended up, providing him

with biophysical data in its support. These biophysical data then acted as an analogue of *Pinyin*, as it led him to appreciate the validity of CC*M-Zhongyi* in its own right. Imagine a foreigner who knows only alphabetic scripts, in particular those using the Latin alphabet, such as English or French. Imagine such a foreigner to possess the Colonial Mind-set – Latinised alphabetic scripts are the scripts of civilised nations and cultures, hence, a non-alphabetic script such as the Chinese must be assigned the inferior status of The Colonised. However, his company has posted him to do big deals in China. For practical purposes, as he knows no Chinese, he must learn to navigate Chinese space. He is told to learn *Pinyin*, so that minimally he could read street names, if nothing else. Out of necessity, he grudgingly learns some *Pinyin*. As he comes to know more *Pinyin*, his curiosity about the language and script standing behind the *Pinyin* begins to grow in him. One fine day, he even decides to hire a tutor to teach him how to read and write the non-alphabetic script itself. As his knowledge of this script (and of the history and culture within which the script and languages[3] have flourished down the millennia) grows, he also begins to appreciate the richness, the complexity of such a culture and its regional speeches.[4] By then, he has long dropped his original Colonial Mind-set, and has adopted a more tolerant and respectful attitude to the Linguistic Other. *Pinyin* has led him to ARIILO, an adapted version of ARIIMO. He even strives to master the script, the history and the culture of the Chinese, as he comes to appreciate that Chinese culture/civilisation is different but equal to European culture/civilisation, that they should not be dualistically opposed but each to be respected in its own right.

Constructive Realism[5] and the Parable of the Fishing Nets

"All observation is theory-laden". This is a dictum usually drummed into the consciousness of first-year philosophy undergraduates in the so-called "Anglo-Saxon" world of analytic philosophy. The theory in question may be a very mundane, low-level one, so low-profile as to be near invisible to the untutored eye. For instance, take this: "Ahead, I see a tree". What theory/hypothesis could be behind that observation? A moment's pause and reflection may actually reveal more than one: (1) a tree is a thing, a macro-sized object subject to Newton's Laws of Motion; (2) a tree is an object which exists, that is, it is not a hallucination on my part, and that if I were to walk up to it and kick it, I would feel pain (the Johnsonian theory/hypothesis[6]); (3) if it were a real tree and not a hologram of a tree, I would not be able to walk through it as a (real) tree is Matter and Matter is impenetrable.

Others are much more obvious, such as "I can see Mars, the Red Planet" as the person peers through a powerful telescope. Although a lay person may not be able to spell out in detail what theories/hypotheses are behind that observation, s/he can at least mention that it presupposes the theory of optics. Only a trained and experienced radiologist can "deconstruct" what appears on the computer screen when s/he looks at a scan of a patient's lungs. The lay person may just see some bits which are murky and other bits which are clear whereas the radiologist (who knows and understands the theories behind radiology and oncology) can see tumours, what kind of tumours, whether malign or benign.

Constructive Realism accepts the dictum that observation is necessarily theory-laden. However, it does challenge what it considers to be a false conclusion, namely, that every observation is as valid or true as any other on the ground that as observations are framed by theories and because theories vary, so do observations. Through my theory, I observe that the Sun in our Solar System moves round the Earth, while through yours you observe that the Sun in the same Solar System stands still while the Earth revolves round the Sun.[7] Each of these two

[3] The reader may be surprised to find the author implying that China has more than one Chinese language. For a detailed account of the relationship between the Chinese script and the different regional speeches or even languages in Chinese history and China today, see Lee 2008/2018. This already is a gross oversimplification, as it has left out Uighur spoken in Xinjiang province which is a non-Han language as well as Tibetan which is said to belong to the Tibeto-Burman group of the Sino-Tibetan language family. However, the dominant language and the script down the ages are what the West calls Han culture and the Han language.

[4] A strong case can be made for saying that given the differences between these regional speeches (amongst themselves) and *Putonghua*, these speeches amount to different, though related, languages. In Western Europe, the Romance languages come to mind – French, Italian, Spanish and Portuguese – are descended from Latin. Today, they are very different in nature and each has to be learnt and mastered individually. The differences amongst them are no less than those which exist between say Cantonese (粵 *yue*), Fukienese/Hokkien (闽南 *minnan*) and *Putonghua*. So why in the former we do we call them different Romance languages and in the latter different Chinese regional speeches? (See Lee 2008/2018.)

[5] See one version of it as delivered by Professor Fritz Wallner called "A New Vision of Science", at the Twentieth World Congress of Philosophy in 1998.

[6] This is a story, said not to be apocryphal, about the famous Dr Samuel Johnson who wrote the *Dictionary of the English Language* in the 18th century. He was reported to have refuted Bishop Berkeley's philosophy that only Ideas were real by kicking against a stone to prove its reality. Undergraduates are asked to discuss whether it is a good argument or even if it is an argument at all,

[7] In the history of astronomy, Instrumentalism proposes a way forward: theories have nothing to say about Reality; they are simply calculating devices which enable the scientists to make predictions and calculation (such as about the

observations, according to simplistic Relativism, is correct, although they contradict each other. Therefore, there are as many truths and observations as there are theories; each is valid. Constructive Realism denies that it entails simplistic Relativism.

Constructive Realism appears to ride a middle path between the Devil (that there is every only one version of Reality) and the Deep-blue Sea (that theories/hypotheses and even observations necessarily prevent us from grasping Reality whatsoever). The middle path may be elucidated in terms of the Parable of the Fishing Nets.

Fisherman A is keen on catching small fishes such as sprat, herring or sardine. So, he builds a net with small holes, holes smaller than these small fishes he intends and expects to catch. Furthermore, he lacks the economic resources to build any other kind of net or any other kind of boat which could take him further afield, allowing him to catch larger fishes. All told, he sticks to his net with small holes. Occasionally he would catch a much larger fish or two and if these were edible, he would take them home to his wife to cook them for their supper while he would send the small fishes to his usual dealer in the nearby market.

Fisherman B, a neighbour is keen on catching large fishes. So, he constructs a net with holes larger than his neighbour's as he does not want smaller fishes to appear in his net. Furthermore, he has just won a substantial sum of money at the local betting shop, not so much as to make it possible for him to lead the leisurely life of a retired fisherman in the village, but large enough to permit him to get a bigger, more powerful boat to go further out to sea to catch larger fishes. In this way, he would get a competitive edge over his fellow villagers who all have smaller boats and nets with smaller holes. He prospers much to the envy of his neighbours.

Real fishermen, such as A and B, do not suffer from philosophical angst or delusion. They know that the fishes they catch are real: for a start, they weigh a ton if the catch is good and several tons if the catch is really good on a particular day; they can sell their fishes at the market; they also know they could eat some themselves, cooking them over an open fire, under the grill or curing them for the winter. They know that what they can catch not only depends on the time of year and the weather on a particular day but also on the kind of net and boat that they are operating. To them, the fishes are real, the boat is real, the sea and its currents and tides are real, the wind, the rain, the waves are all real.

They also know (without philosophical doubt, as they are immune to such doubt) that the nets they use are their own handiwork or the handiwork of a factory which manufactures them. Nets as well as boats are, if they care to use the jargon of philosophical discourse, artefacts as opposed to the fishes they catch with the nets, which are naturally-occurring organisms, beings which have come into existence independent of human intentions and their execution, continue to exist, reproduce and die eventually in principle independent of human interventions. (The operative word is "in principle" because, as we know, humans do intervene, they may overfish a particular fish and a particular population of a particular fish, bringing about its temporary disappearance if not total extinction.)

They would only commit philosophical errors should they become so deluded as to say that as their nets only catch sprat, herring, sardine, and similar size fishes, then the world only contains one-sized fish – on this misguided view, sharks of various kinds such as the white shark which weighs over 21.5 tons and is 12.5 m in length just cannot exist as none has ever been caught by their nets. The fishes caught by their nets are all the kinds of fishes that there are in the world. That would be an extremely absurd view to hold but real fishermen with their specific types of nets are not inclined to hold such absurd views.

On the contrary, if philosophically-inclined they would conclude that different nets with different sized holes would catch different sized fishes. From the yield as caught by the nets with which they familiarly operate, it would be unwise, if not absurd to conclude that the fishes they have caught are all the types of fishes that exist in the world, in Reality, or that only the fishes their nets have caught are truly real.

Every observation we make, as we have seen, is framed by a theory/hypothesis, just as every load of fishes the fisherman catches is caught by a net of a particular kind. A theory/hypothesis is a theoretical/cognitive construct, just as a net to catch fish is a material construct, an artefact. One cannot make observations in the absence of a theory/hypothesis just as one cannot catch a load of fish without a fishing net. The observations we make are real just as the fishes caught are real.

The Western history of science shows that a certain theory may reign supreme for centuries and achieve many successes, such as Newtonian Physics. Yet Quantum Physics arrived in the 20th century with a very different philosophical/theoretical set of concepts (post-Newtonian Science). Their respective philosophical/theoretical cores capture different parts of Reality; in one the world consists primarily of macro-sized objects (with the help sometimes of instruments such as the microscope or the telescope) while in the other, the world consists primarily of sub-atomic phenomena which embody both wave-particle duality.

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movements of the heavenly bodies). In the controversy about the Copernican Revolution, according to Instrumentalism, Geocentrism does not actually say that Earth stands still while Sun moves round it. Similarly, Heliocentrism does not actually say that Sun is stationary while Earth moves round it. The two theories are simply heuristic calculating devices. As such, they imply the following: it is **as if** Earth is stationary, or it is **as if** Sun is stationary. Pictures of so-called Reality are *au fond* fictions; if relying on a particular **as if** story we can make more accurate, precise predictions about the movements of astronomical bodies and also render our mathematical calculations more economical and/or more elegant, that is the story we buy.

Knowledge can be portrayed as a very big and tall tree – the easiest fruit (the Newtonian variety) to pluck would be the low-hanging ones when they ripen. The higher ones (the post-Newtonian variety) require a different set of tools (cognitive and technological) before they can be reached. Yet the fruit whether low-hanging or high-hanging are real fruit.

The respective theoretical cores and their methodological implications of Bm and CC*M-Zhongyi* are analogous to the difference between Newtonian and post-Newtonian Physics observed above or to the "parable" of the fishing nets. The two systems of medicine/*medicine*, naturally, embody Scientific/*Scientific* constructs; these constructs, however, unlike fishing nets, are not directly observable. On the other hand, they do entail testable outcomes which enable the practitioners to successfully diagnose and treat their patients. Both enjoy successes but also failures which are real, analogous to the respective successes and failures of Fishermen A and B. In spite of such failures, Fisherman A's net is not necessarily inferior while Fishermen B's net is necessarily superior; Fisherman B should not be regarded as The Coloniser and Fisherman A as The Colonised (the Dualised Other). Their nets and their methods of fishing are each "valid" or appropriate in their own rights, with their own strengths and weaknesses. CC*M-Zhongyi*, no more than Fisherman A's net, should be denigrated as necessarily inferior while Fisherman B's net is necessarily elevated as superior. Given that the contexts in which the two fishermen conduct their fishing expedition are different, they each achieve their own stated limited goals. It is true that CC*M-Zhongyi* is not the *medicine* one calls on when the patient in question requires an immediate blood transfusion; it is true, too, that Bm is not the medicine one calls on when the patient in question is not suffering from infertility which can be cured by a surgical operation or from an infection which could be eliminated by the right kind of antibiotic, but from conditions which are beyond the reach of surgery or of Bm's suite of pharmaceutical drugs.

Constructive Realism and Wittgenstein's concepts of language games as well as family resemblance would provide the over-arching philosophical umbrella which could do justice to diverse worldviews, theories and practices in general and in medicine/*medicine* as represented by Bm on the one hand and CC*M-Zhongyi* on the other. This accommodation of diversity and pluralism is reinforced by abandoning Essentialism of Method/Methodological Exceptionalism as well as Dualism. In short, it amounts to abandoning The Colonial Mind-set and its Dualist pairing of The Coloniser as The Superior Class and The Colonised as The Inferior Class.

However, neither this nor other chapters amount to a comprehensive, well-worked out *philosophy* capable of fully accommodating the following domains of interest:

> *Process-ontology* cum *Thing-ontology* (*Qi Wholism/Em*-ism)
> The peculiar and unique feature that C*P*T-CCD*P* and CC*M-Zhongyi* invoke the Contextual-dyadic Mode of Thinking, not the Dualist Mode
> The implication that it is an Ecosystem *Science* which is *Wholist* (therefore, Not-reductionist) in orientation at all levels of analysis and understanding
> The implicit invocation of a Non-linear model of Causality, thereby rejecting the Humean Linear model of cause and effect, and so on.

It is obvious that the task of undertaking such a relevant metaphysics/ontology which can do justice to the major characteristics of CC*M-Zhongyi* in its theory and praxis is well beyond the remit of this project, which is simply to give a fair hearing to CC*M-Zhongyi* to convince readers that undertaking this further enterprise of constructing an appropriate *philosophy* would not be a waste of time and effort. Here, the author has, at best, succeeded in giving an outline of such a comprehensive *philosophy*.

However, this limited exploration of the two systems of medicine/*medicine* has uncovered that they invoke what may be called the Methodological Postulate of Causal Realism (MPCR) – in the case of MWS, we find that Newton had leant on it for his notion of gravity and that in the case of CC*M-Zhongyi*, *Qi* especially *Qi*-in-dissipating mode may be said to imply it. According to it, whatever has discoverable and palpable effects may be said to be "real" and "exist". Newton was satisfied that gravity passed the test posed by MPCR; the same claim could be made on behalf of *Qi* in CC*M-Zhongyi*. The effects of gravity for Newton are calculable and measurable; the effects of *Qi* and its manipulation for CC*M-Zhongyi*, though not quantifiable are palpable as ascertained by relying on its own *biomarkers* such has the *mai* profile, the tongue profile and other signs and symptoms[8] exhibited by the patient pre-*diagnosis*-*treatment* and post-*diagnosis*-*treatment*.

For one recent attempt to construct a systematic metaphysics for MWS in WPT, it is fitting to cite Chakravartty 2007 which argues for what he calls "semirealism" as far as causal processes are concerned; but is his account undertaken whole-heartedly within the framework of Process-ontology? He hints earlier in Chakravartty 2005 that it is – see below.

[8] Unlike Bm, CC*M-Zhongyi* does not regard subjectivities (symptoms) as anathema in their *science*. This is because it considers the concept of personhood to be a primitive one, where the mental and the physical are inextricably entwined, just as in *Yinyang Wholism* where *yin* and *yang* are inextricably entwined – see Chapter Eight.

CC*M-Zhongyi* implies scientific realism and its related notion of causal realism. Psillos 1999, xix claims it incorporates three theses:

1. The metaphysical stance asserts that the world has a definite and mind-independent natural-kind structure.

2. The semantic stance takes scientific theories at face-value, seeing them as truth-conditioned descriptions of their intended domain, both observable and unobservable. Hence, they are capable of being true or false. Theoretical assertions are not reducible to claims about the behaviour of observables, nor are they merely instrumental devices for establishing connections between observables. The theoretical terms featuring in theories have putative factual reference. So, if scientific theories are true, the unobservable entities they posit populate the world.

3. The epistemic stance regards mature and predictively successful scientific theories as well-confirmed and approximately true of the world. So, the entities posited by them, or, at any rate, entities very similar to those posited, do inhabit the world.
   Very briefly, causal realism (according to this view at least) may be characterised such that

   (a) Causation is a real and fundamental feature of the world
   (b) It consists of one event bringing about or producing another event
   (c) An event instantiates a property F which brings about another event which in turn instantiates another property G. In other words, properties have powers, that Fs are the powers to produce Gs. (See Esfield 2011.)

Chakravartty 2005, 22 holds that minimally causal realism rejects Humean causation, that it recognises *de re* necessity, that, however, the relata of causation are not events but processes. Furthermore, to cite him:

> …this process view is flexible enough to provide a framework for the analysis of causation not merely in cases of causal change, but also in cases involving static states of affairs that some think to be causal as well. Here the analysis would be given in terms of equilibrium relations, manifested in accordance with dispositions conferred by the relevant properties.

It is obvious that amongst philosophers of science not only is scientific realism only one view amongst others regarding scientific theories, it is also the case that there appear to be as many accounts of scientific realism as there are philosophers who claim to write about it – see, for instance Psillos 1999 and 2009.

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Appendix

Biomedicine and Chinese *Medicine/Zhongyi*: Is Integration on Equal Footing in Limited Domain Possible?

ARIIMO	Axiom of Respecting the Identity and Integrity of the Medical Other
Bm	Biomedicine
C*M*	Chinese *Medicine*/*Zhongyi* 中医 (generic term which covers both CC*M*-*Zhongyi* and TC*M*-*Zhongyi*)
CC*M*	Classical Chinese *Medicine* (Practitioners and adherents attempt to keep that *medicine* indigenous to China based on classical texts such as *The Yijing*, *The Huangdi Neijing*, *The Shennong Bencao*, *The Laozi*, *The Zhuangzi* from the impact of the dominant medicine of today, namely, Bm. The Chinese have called that indigenous *medicine Yidaoyi* 易道医 (which literally means, "the medicine based on *The Yijing* and *Daojia philosophy*")
GP	General Practitioners (doctors working outside hospitals in the UK)
MPQBP	*Zhongyi*'s Methodological Postulate of *Qi* Blockage Generating Pain and Unblocking *Qi* to Relieve Pain
MWM	Modern Western (now globalised) Medicine, generally referred to as Bm
MWP	Modern Western Philosophy
NHS	National Health Service (UK)
NICE	National Institute for Clinical Excellence (UK)
RCT	Randomised Controlled Trials
SSRI	Selective Serotonin Reuptake Inhibitor
TC*M*	Traditional Chinese *Medicine* (as pioneered and practised in the main in the People's Republic of China)

Introduction

Chapter Five earlier has looked at two attempts to integrate the two systems of medicine/*medicine* in China, namely, the Republican attempt by Zhang Xichun in the early decades of the 20th century and the People's Republic of China's project resulting in what is commonly referred to as TC*M*. That chapter concludes that in spite of the differences between these two projects, nevertheless, they may *au fond* be considered as attempts at integration via assimilation. In the case of Zhang Xichun, his efforts imply that MWM then (but today called Bm) should be assimilated to, and hence, subordinated to CC*M* – in other words, CC*M* would be the senior partner and MWM the junior partner. In contrast, TC*M* has reversed the relationship with Bm today playing the lead role and CC*M* having been relegated to the subordinate role. With either version, one ends up with an unequal relationship. This then leaves open the following question – is an unequal relationship necessarily built into any project of integration? In other words, is there room to explore the possibility of some other attempt at integration which, as a matter of fact, embodies a more equal rather than an unequal relationship? This Appendix sets out to explore such a possibility by critically assessing a particular, specific limited exemplar of practice-cum-theory which has arisen in the last few decades. One must straightaway point out that even if the enterprise intimates a more equal rather than an unequal type of integration, it is neither intended as, nor does it imply a rehearsal for a full-scale, full-dress undertaking to integrate these two very different systems of medicine/*medicine*. It is best to see it as a localised effort to solve a set of related issues concerning lack of movement and pain in certain parts of their person-bodies presented by patients.

Xiaozhendao Liaofa 小针刀疗法/Acupotome Therapy and *Zhendao Medicine* 针刀医学/Acupotomology

The story began in 1976 in the Muyang 沐阳 county of Jiangsu 江苏 province, where a Chinese physician[9] called Zhu Hanzhang 朱汉章, working as a barefoot doctor in the countryside, was particularly pre-occupied with how Chinese *Medicine/Zhongyi* 中医 treated external injuries. One day a joiner consulted him. In an accident at work, the axe which the carpenter was wielding cut into his palm so severely that it had as good as smashed his hand. The man was given (Western) medical treatment, but unfortunately, the treatment that he got was not ideal. As a result, he later found he could not open up his hand, to extend his fingers as these

[9] In this context, the term "Chinese physician" or "western doctor" does not refer to the ethnicity of the practitioner but to the kind of *medicine*/medicine they practise.

seemed to bend tightly towards his palm. He could no longer hold an axe or other tools which he needed for his trade. He grew depressed, even more so as he had lost his livelihood because of his condition. He had found no real joy or relief doing the rounds of Western doctors and hospitals. He finally came to Zhu Hanzhang for help. The patient said that these Western doctors (*xiyi* 西医) had told him surgery was not possible. Zhu found that the man's muscles and bones in the palm of his hand had adhered. Zhu at that time practised, in the main, herbal medicine/*tangyao*, acupuncture and *tuina* 推拿(massage) although, as already mentioned, he was very interested in externally caused injuries in individuals. Having studied and reflected upon the patient's predicament, he decided to use a thickish needle, Number 9 Needle from his acupuncture set of needles, to loosen the soft tissues in the palm of the patient's hand.[10] To the patient's delight and amazement, not to mention his own, the moment after Zhu had done the needling, the patient could open up his hand. After a few treatments, the patient could stretch his fingers with no problem whatsoever. He felt good enough to go back to work after a few days. This success led Zhu Hanzhang to reflect and to experiment further with this new therapy and the ideas behind it.

It led him to design a new type of tool by modifying that Number 9 Needle. From appearance, his invention looks no different from an ordinary acupuncture needle; but in reality, the needle has been re-designed to become a 0.8-millimetre-wide blade, a flat head and a cylindrical body. This new tool was much stronger and sturdier than a normal acupuncture needle; its new features enabled him to carry out loosening the patient's soft tissues much more accurately and effectively. This new type of tool he called *xiaozhendao* /小针刀, literally meaning "small needle-knife"; it is now often referred to in English as an acupotome.[11] In1984, it was recognised by the Jiangsu medical authority and in 1988, it was successfully patented in China. From 1991-1992, Zhu completed an instruction book called *Xiaozhendao liaofa*//小针刀疗法 (which may be translated as *Acupotomy Therapy*) which was later translated into 17 languages; today, his publication has been cited more than 9000 times worldwide. In 1994, he was appointed director of the Great Wall Hospital which is also a research institute specialising in this new domain of *Zhongyi*.

In 1988 at the 37th Eureka World Fair,[12] his invention won a gold medal. However, if it was a mere tool, this would have been interesting, and more than welcomed from the standpoint of efficacy and cure, naturally, but not as intellectually exciting if it had simply stayed at the level of mere therapy and no further. Other physicians after achieving the results which he had done with the carpenter's hand in 1976, in a busy daily round of seeing patients, might not have reflected and pondered further, but Zhu Hanzhang did. This led him to certain ideas which when developed enabled him to provide a theoretical framework for understanding that initial and later successes in treating soft tissue disorders, chronic injuries of one kind or another as well as abnormal bony growths which cause great pain. In September 2003, the new discipline was formally named *zhendao yixue* 针刀医学, literally meaning "the needle-cum-scalpel medicine" (translated into English as "acupotomology") and throughout the country, it is studied as a national second-level discipline. His project satisfies 3 criteria – in terms of clinical application, skill and theory – to qualify as a new domain of *medical*/medical understanding and intervention.[13]

The human body consists of hard tissues which are the bones and soft tissues which are the muscles, ligaments and cartilage.[14] Soft tissues are the more vulnerable part of the human body. We use them every time we move. When we move our arms, up and down or sideways, the muscles move about, 2-3 centimetres before returning to their original position. But in soft tissue injuries, the muscles lose this arc of movement, get stuck, causing pain to the person who tries to move them.

Soft tissue injuries can be tracked to different causes: an accident (as was the case of our carpenter earlier mentioned, or even a sprain), lack of movement or, indeed, too much movement. For instance, office workers who sit too long in front of computers today can suffer from numbness of back and cervical vertebrae; more physical workers could harm parts of the lumbar (lower part of the back) and shoulder which can in turn lead to nausea, dizziness, tinnitus and headaches.

Soft tissue trauma cover myofascial pain syndrome which is a chronic condition that affects the fascia (the connective tissue that covers the muscles and may involve a single muscle or a group of muscle); tendonitis or

[10] See *The Lingshu*, Chapter 78, On the Nine Kinds of Needles/灵枢·九针论

[11] Perhaps it would not be too inaccurate to translate it as "acu-lancet" as the tool is used in the context of *micro-surgery'*.

[12]The Eureka World Fair founded in 1954 for the exposition of inventions is held by the European Invention Association and is one of the three most influential invention expositions in the world where scientists and inventors exhibit the fruit of their R&D efforts.

[13] Professor Zhu today holds many distinguished positions both in China and abroad, including being Professor Director of the Department of Acupotomology, Beijing University of Chinese Medicine, Honorary Chairman of the Australian Association of Acupotomology, Member of the American Academy of Experts in Traumatic Stress.

[14] Ligament is what binds and fastens bones together; cartilage protects bones, acting as a cushion, preventing them from knocking together.

tendinitis (inflammation of a tendon when one overuses or injures a tendon, say, during sporting activities); bursitis (inflammation of a bursa which is a small sac between bone and other moving parts, ensuring smooth gliding between them); damage to articular cartilage (the smooth, white tissue covering the ends of bones where they form joints, to enable smooth gliding between them); lumbago[15]; cervical spondylosis[16], periarthritis[17] and so on.

In the case of serious broken bones, Bm would resort to surgery to mend bone fractures. However, Bm does not seem to have much to offer when soft tissues are injured and not functioning properly. Often surgery is not appropriate and even if deemed appropriate, surgical operations appear to yield less than ideal results, as although pain and distress may diminish, they are not eliminated and the problem can re-occur. The same limitations also seem to appear in the case of drugs (taking painkillers, for example) or other non-pharmaceutical measures (such as using ice caps or heat devices) – they may ameliorate the condition but not cure it at source and in the case of painkillers, their long-term use can lead to undesirable side-effects. In such circumstances, some sufferers in China then turn to *Zhongyi*, to Chinese physicians, which is what our carpenter did.

In his case, Zhu Hanzhang diagnosed it as conglutination of the metacarpus,[18] resulting in the inability of the patient to open up his hand and stretch the fingers. Since then, Professor Zhu has also cured many other severe conditions such as trigeminal neuralgia.[19] Yet the treatment applied in each case, in principle, is very simple. The acupotome/*xiaozhendao* performs what amounts to *micro-surgery*, no general anaesthetic but a local one may be in place, no open cuts or wounds, very little blood is produced (which can be readily wiped away with a swab), resting for a while, shorter or longer as the case may demand. In some cases, only one treatment is sufficient to remove the pain and lack of movement as well as prevent its recurrence in future; in other cases, more than one treatment may be required. The therapy is simple, costing little in financial and other resources, yet successful, with no serious after effects bar some muscle pain immediately following the operation.[20]

The characteristics of this new domain may be summarised as follows:

1. It integrates needle with scalpel; this is to say, it integrates acupuncture (a characteristic key component of *Zhongyi*) with surgery (a characteristic key component of Bm).

2. In acupuncture, the needle acts on the *Qi* 气 (which is the *zhen qi* 真气 of the *Jingluo* Network 经络 in the person-body[21]), to ensure that *Qixue* 气血 (*qi*-blood) suffers no blockage and circulates freely. In this way, adhering to the Methodological Postulate of No blockage, therefore no pain; pain, therefore blockage (MPQBP, spelt out in Chapter Nine earlier in this book) means that pain will stop.

3. By modifying the normal acupuncture needle to take on also the characteristics of a scalpel, the success of the new therapy demands that the practitioner have an intimate knowledge of the human anatomy upon which surgery in MWM/Bm depends.[22]

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[15] This is a common term used to describe pain in the lower back, a condition said to affect 80% of people in the industrialised world at some points in their lives. This is because the lower back in the human body has to bear a considerable amount of the body weight and at the same time it has to allow a wide degree of free movement at the waist. This means pressure and stress upon the muscles, ligaments and tendons which support the lower back which in turn disrupt the way the joints in the area work, leading to inflammation and pain.

[16] Age-related neck pain owing to wear and tear affects the spinal discs as these dry out and shrink. This condition is very common amongst people aged 60 or older, and for which Bm has no known cure.

[17] Commonly called "frozen shoulder".

[18] Put simplistically in lay terms, the metacarpus is the group of five bones in the hand between the fingers and the wrist. Conglutination in this context refers to the abnormal adhesion of parts with contiguous surfaces.

[19] In 1997, he successfully treated a patient with such a condition at the Great Wall Hospital in Beijing after three sessions only. This is the most common cause of facial pain; although the condition is not fatal, nevertheless, the intensity of the pain can be very debilitating. It can occur as a result of aging, be related to multiple sclerosis that damages the myelin sheath protecting certain nerves, or of a tumour compressing the trigeminal nerve. Bm has no cure but can provide treatment which can diminish the debilitating pain – anti-convulsive drugs are normally used for this purpose.

[20] See one recent assessment of its efficacy in English, via eleven systematic reviews involving 69 RCTs: Kwon, Chan-Young, S Yoon, Lee, B. 2019. Another one also available in English (J Li, P Yuan, R. Zhang et al. 2017) has been denounced by Ernst 2018 in no uncertain terms as totally worthless.

[21] See *Suwen*: Chapter 27; 《素问·离合真邪论》：真气这，经气也。

[22] This may explain why one of the world's top practitioners today, Dr Steven Woo 吴才华 is a former cardio surgeon; he is one of a handful of practitioners formally recognised to teach acupotomy – see Wong 2015.

4. The scalpel is the iconic tool of surgery. By re-designing the needle to become a scalpel, the acupotome/*xiaozhendao* clearly embodies the integration of acupuncture and surgery. Of course, the surgical operation is *micro-surgery*; as Professor Zhu says: "An acupotome operation (*zhendao shoushu* 针刀手术) is closed and there is no cut and seldom damages the soft tissues."[23]

5. An outstanding difference between MWM/Bm and C*M*/*Zhongyi* lies in the difference in emphasis between anatomy on the one hand and physiology on the other. The former focuses on anatomy, C*M/Zhongyi* on *physiology* (see Chapter Five of this book and Lee 2018, Chapters 8 and 9). Anatomy is about structure, physiology about function. Put simplistically, anatomy, therefore, is primarily concerned with bits of Matter or Things, in the form of bones, the muscles attached to them and their relationship with one another; physiology does not so much focus on bits of Matter *per se* but how an organ functions and its relationship with the functions of other organs, not to mention their relationship with the external environment in which the individual organism finds itself.[24]

Anatomy may therefore be said to fall under Thing-ontology, physiology under Process-ontology. Anatomy may meaningfully be studied through dissection in a path lab where medical students spend a considerable portion of their time and training in dissecting cadavers. As is obvious, physiology can only meaningfully be observed and studied in living organisms be these human or non-human. A corpse does not breathe and cannot sweat. Medical students in Bm are only unleashed on to living human organisms, that is, patients after their prolonged and serious pre-medical training in subjects such as anatomy.

Since Julien Offray de La Mettrie (*Man, A Machine* 1747/48), MWP has performed the ontological *volte-face* of turning the human being from an evolved organism with its unique consciousness into an artefact, a machine to boot, MWM/Bm has since followed in MWP's footsteps reducing the person to the level of the body (understood only in physical terms), putting it at the centre of its study of the patient – psychosomatic medicine was only recognised as a sub-speciality of psychiatry by the American Board of Medical Specialities in 2003. (See Lee 2012b.)

If anatomy is the paradigmatic science in MWM/Bm, then surgery is its paradigmatic technology. Anatomy is about Structure. Structure is best approached from the standpoint of Engineering and surgery is its paradigmatic engineering tool. Ambroise Paré, the founding father of modern surgery, had argued that the goal of surgery is to render the human body a leaner, fitter machine, with no redundant or ill-functioning component parts. (See Chapter Two of this book.) Although today, the surgeon who performs an appendectomy may be greatly appreciated by the patient whose life has been saved by such an operation, the operation itself is no longer highly regarded by the profession itself. Times have moved on; the surgeon who performs brain operations is considered to be the brainiest, at the top of the profession. However, no matter the type of operation, the surgeon, like the master craftsman (such as Chippendale, the furniture maker), must perform their respective metier with the greatest knowledge, skill and experience in their field of endeavour. Their activities, though radically different, are *au fond* different types of engineering expertise employed in crafting the most perfect structure possible given the material to hand.

Physiology in contrast falls into Process-ontology, as it is concerned with how different organs in the human body function. Function is studied through events and their relations as processes. In other words, physiology is not so much about things and body parts *per se* as about the functional relationships between them.

CC*M-Zhongyi* shows in the clearest manner possible the integrated roles played by both *Structure* and *Function* in its diagnosis and treatment. As Chapter Four of this book argues, CC*M-Zhongyi* is best understood in terms of ecology as *Ecosystem Science*, and that its account of *Wuxing*/五行 is best approached in terms of grasping the person-body as a system of *organ-systems* and their functioning in such a way as to exhibit feedback loops, both negative and positive. That is why Chapter Four has also argued that CC*M-Zhongyi* necessarily diagnoses and treats patients ultimately via the metaphysics of *Qi Wholism* and/or *Em-ism*, that is, *Energy-cum-Matter*. These key concepts fall neither into Thing-ontology nor Process-ontology but into *Thing-ontology cum Process-ontology*, as is made clear by *The Zhuangzi*. This text says that *Qi* 气, the fundamental *ontological* category exists in the universe in two modes: *Qi*-in-concentrating mode/*qi ju* 气聚 (*Thing-ontology*) and *Qi*-in-dissipating mode/*qi san* 气散 (*Process-ontology*).

[23] The first video in the series on the subject provided by Youku video. URL = 《针刀医学》01-教育-高清完整正版视频在线观看-优酷 (youku.com).

[24] Just a quick reminder to the reader: a paradigm of this is how our body reacts to great heat or cold. When the column of mercury in the thermometer hanging on the wall climbs up, our body opens up its pores, we sweat and through sweating the body cools itself down. In contrast, when the mercury in the thermometer drops, the pores of our body close up, preventing heat from escaping, keeping us warm. This shows a negative feed-back mechanism at work. This is a paradigmatic case of homeostasis.

When alive, the human being embodies *Qi Wholism*, that is to say it is both *qi ju* (*Thing-ontology*) and *qi san* (*Process-ontology*); the human being also embodies *Em-ism*, that is to say it is *Energy cum Matter*.[25] When the human being loses consciousness: (1) press the *renzhong* 人中/philtrum (see Chapter Four of this book) to restore consciousness, (2) ascertain whether the person is still breathing (via the nose usually), (3) ascertain if the *mai* 脉 is functioning and read its precise profile.[26] If these three attempts all prove negative, one would conclude that, alas, the individual is dead. A corpse does not breathe, a corpse shows no *mai* as the *mai* has ceased to operate and, hence, pressing the *renzhong* would not help in any way. In other words, the *zhenqi* in the *Jingluo* Network no longer is present, the corpse is no longer the person-body of the individual when alive, as *Qi*-in-dissipating mode is no longer circulating in the person-body. A corpse is but a mere thing (*Qi*-in-concentrating mode), but only temporarily, as decay and decomposition soon sets in under normal conditions.[27]

6. In the main, *Zhongyi* relies on two methods of treatment:

(a) *Tangyao* 汤药 (consisting predominantly of plants or parts of plants, but also some animal parts and some minerals, depending on the prescription/*fangzi* 方子). This is decocted *medicine*, as the ingredients have to be boiled down usually to almost a bowlful of the liquid for the patient to drink.
(b) Acupuncture *zhenliao*/针疗.

Tangyao is Matter working on Matter to produce certain results. These results may be purely physical in nature – for instance, the pain in the stomach or chest region which the patient has presented to the Chinese physician is now gone. In other cases, the patient might have presented not so much with physical pain in a certain area of the body but "in the mind" so to speak – s/he is depressed, fearful, anxious. *Tangyao* can also take care of such cases. From the Bm vantage point, this kind of efficacy attained by *tangyao* is not surprising, as its own pharmacology uses it – anti-depressants are said to do the same job.[28] In other words, Bm can implicitly rely on MWP which permits epiphenomenalism, that is, Matter (thing/*Qi*-in-concentrating mode *qi ju*) can produce mental effects, as it can act on the brain (a thing), altering its chemical levels thereby leading to change of mood/emotions. It endorses the claim that physical/biochemical events in the brain can generate mental events. What MWP cannot endorse is the claim that mental events can cause physical outcomes, and hence Bm/MWM is obligated to rule out the placebo effect, regarding such effect as the greatest source of "pollution" which can undermine the probity of RCTs. (See Chapter Eight of this book.)

From the standpoint of Bm and its philosophy of medicine, acupuncture ought to present the greater challenge if its claim to efficacy is accepted and goes unchallenged. To an extent in the UK, this appears to be the case – parts of the NHS, some GP practices, most pain clinics and hospices offer acupuncture as an option. Acupuncture is recommended by NICE as a treatment option for chronic-type headaches, migraines, chronic

[25] For that matter, this is true of all living organisms; here one focuses on the human organism for the simple reason that medicine is about keeping human beings alive, healthy and well by diagnosing and treating illnesses which may afflict them. Strictly speaking, it should be called "human medicine". However, being anthropocentric, this is not done; instead, we call the study of looking after the health and safety of our domesticated animals "Veterinary Medicine" and the doctors who care for animals are called "vets".

[26] In Chinese *medical* culture down the ages, these are the three steps one takes even as lay people in an attempt at diagnosis and treatment. However, the *mai* should not be equated with the pulse in Bm – see Chapter Four of this book. Increasingly, this "indigenous" theory-cum-practice is disappearing under the impact of the global dominance of Bm. Today, the majority of Chinese people will simply dial for an ambulance to rush the unconscious person to the nearest hospital and not many ordinary Chinese would know how to ascertain the *mai*.

In Bm today the clinical and legal definition of death is brain death; in consequence, sometimes, when someone is declared brain dead, their heart may still be beating, their chest may rise and fall with every breath from the ventilation and their skin may be warm and they appear to be resting. Three clinical criteria determine brain death: unresponsiveness, absence of reflexes and inability to breath without a ventilator. For instance, a person in a mere coma differs from a person who is brain dead – the former would blink or move their head if a cotton ball irritates their eye while the latter would produce no blink reflexes when their eye is similarly irritated. In some jurisdictions, the pronouncement of brain death means that organs may be removed for the purpose of organ donation. See How Brain Death Is Diagnosed: Death by Neurologic Criteria 2020.

[27] Nevertheless, cultures throughout history respect the corpse (or at least those of kith, kin and friends) mainly by not mutilating it and/or giving it a decent disposal. However, some cultures would permit disrespect to the corpse of one's enemy, including mutilation.

[28] Statistics show that (in 2012) one in six Americans took a psychiatric medication, twelve percent of such prescription drugs were anti-depressants of which there are many on the market, but the most well-known is Prozac (fluoxetine), approved by the US Food and Drug Administration in 1987. All such drugs are SSRIs, that is, selective serotonin re-uptake inhibitors, which by preventing the re-uptake of serotonin, boosts low levels of serotonin in the brain. See Miller 2016.

neck pain, joint pain, dental pain, post-operative pain. At the same time, its official website admits that the evidence for its efficacy "compared with other treatments is unclear". [29]

The challenge and puzzle posed by acupuncture to Bm, very briefly, lies in this: acupuncture simply amounts to the insertion of some needles (with varying degrees of fineness and length) in certain locations of the patient's body, after which the practitioner may "twiddle" them as seen fit. Unlike *tangyao* which requires the patient to swallow some distinctly unfamiliar-tasting liquid *medication*, acupuncture introduces no Thing/Matter into the patient's body. The needle, of course, is a thing, but it is the needle's function which is critical, as it appears to modify the *zhenqi* in the person's *Jingluo* Network, primarily, to remove *Qi* blockage. This control and modification of the *zhenqi* fall primarily within the *Qi*-in-dissipating mode and not *Qi*-in-concentrating mode. In other words, its operational format comes primarily under the domain of *Process-ontology*, rather than *Thing-ontology*.[30] Yet ironically, it is acupuncture which seems to have caught the attention of Bm practitioners in the "Western"[31] world and to have been given credence in some quarters, whereas *tangyao* appears to meet greater suspicion and resistance.

7. The above interpretation argues that *xiaozhendao* may be seen as an exemplar of integration between the two very different systems of medicine/*medicine*, albeit in a limited, specific domain only. Such an interpretation may not go unchallenged, in particular from those who wish to claim that apart from the modification of the acupuncture needle, the real work, done by the acupotome/*xiaozhendao*, as *micro-surgery*, is best understood as falling under surgery in Bm. We need now to examine this claim to see what merits it may have. In brief, it could be said to be too simplistic and as a result may be flawed for the following reasons:

(a) Microsurgery does exist today in Bm; however, it appears not to be the same thing which is referred to as *micro-surgery* in respect of *xiaozhendao*/acupotome therapy. In Bm, the concept of microsurgery amounts to a very different kind of medical intervention altogether, as the following definition shows:

> Microsurgery is a surgical discipline that combines magnification with advanced diploscopes, specialized precision tools and various operating techniques. These techniques are primarily used to anastomose[32] small blood vessels (arteries and veins) and to coapt nerves[33]…. Two of the main purposes of microsurgery are to transplant tissue from one part of the body to another and to reattach amputated parts. It is incorrect to state that microsurgery is simply a general term for surgery requiring an operating microscope. (Microsurgeon.org/Microsurgerydefinition 2021[34]).

In other words, although the same term may exist in the two systems, it may not stand for the same concept in the two discourses. To clarify what is meant here, it is very relevant to invoke the distinction made by van Norden 2007, 21[35] between what he calls a thin account and a thick account of a concept – see Chapters 1, 3: n 26 and 10 in Lee 2021 (Open Access). The two systems share a thin account of

[29] See https://www.nhs.uk/conditions/acupuncture/.

[30] However, one must hasten to labour two points, just to remind the reader that: (a) *Zhongyi* is based on what this author calls Contextual-dyadism and not Dualism as is the case in MWP and MWM/Bm – see Chapter Four of this book. In other words, polar contrasts are not understood to be mutually exclusive/antagonistic but to form a harmonious whole. *Zhongyi*, therefore, rests on *Thing-ontology cum Process-ontology/Qi Wholism*; (b) assuming that the diagnosis and the treatment following it are correct, when the needling (which may involve more than one session) has unblocked the *Qi*, the condition the patient has suffered from ought either to have been eliminated or ameliorated to some extent. A patient before treatment could only walk bent double and with pain but when treatment is successful, then, the patient would be walking with a straight back – the "thing", the back, which was bent is now straight, and the patient would no longer feel any pain. Acupuncture treats the condition by modifying *qi san* (*Qi*-in-dissipating mode) in the *Jingluo* Network which in turn produces an effect on *qi ju* (*Qi*-in-concentrating mode) as under *Zhongyi*, there is reciprocity in causality between the two modes of *Qi*.

[31] In this context, this term is simply used as short-hand to refer to any region of the world which historically has not been part of the Chinese-culture zone; as such, it does not refer simply to the Americas, UK and Europe (or Western Europe in particular). The greater acceptance of acupuncture in the "Western" world could be explained to an extent in terms of geopolitics – see Chapter Ten of this book. In the 1970s, it caught the attention of Kissinger (the then US Secretary of State) and President Nixon – the latter was so impressed that he initiated an exchange programme between the USA and China. This wider political context might have led people to overlook that in terms of theory and *philosophy*, acupuncture is infinitely "spookier" than *tangyao* – see Chapter Nine of this book.

[32] In surgery, it means connecting two structures. For example, when a part of an intestine is surgically removed, the two remaining ends are sewn or stapled together.

[33] It is nerve transfer – for example, when an important motor nerve in the patient is damaged, a healthy nerve donor is found to replace the damaged nerve.

[34] URL = https://www.microsurgeon.org/microsurgerydef#:~:text=Microsurgery%20is%20a%20surgical%20 discipline, veins)%20and%20to%20coapt%20nerves.

[35] At the same time, van Norden introduces the concept of The Lexical Fallacy, which consists of mistaking the lack of a term in a particular discourse for the absence of the concept standing behind the term in the discourse.

the concept of micro-surgery but not their thick accounts, which differ radically from each other. In other words, one must not be misled by a superficial similarity in terms to overlook radical difference in concept, in what van Norden calls a thick account of a concept.[36]

(b) The alternative interpretation which assigns at best a minor role to *Zhongyi* may wish to maintain that although the concept of the acupotome/*xiaozhendao* may have been inspired by the acupuncture needle, the function of the acupotome has nothing to do with acupuncture in particular or *Zhongyi* in general. This again may be said to be too simplistic as the theoretical implications in the use of the acupotome/ *xiaozhendao* may mask the intimate links with acupuncture than might appear at first sight.

As already mentioned, the "logic" behind the use of the concept of the re-designed tool may have more to do with the "logic" of *Zhongyi* than what initially meets the eye. *Zhongyi* (in any domain of its *medicine*, be it acupuncture, *tangyao*, *tuina*, *xiaozhendao*) adheres to the Methodological Postulate (MPQBP) of 通则不痛, 痛则不通 *tong ze bu tong, tong ze bu tong*: when 气血 *Qixue* /*Qi*-blood is not blocked and is flowing smoothly, there will be no pain; conversely, when there is pain, this means that there is *Qi* blockage. (See Chapter Nine of this book for an earlier exposition and discussion.) Now while acupuncture uses the needle to unblock the blockage of *Qi*-in-dissipating mode in the *Jingluo* Network, and while *tangyao* does the same via decocted herbs (which are things/Matter), the acupotome/*xiaozhendao* is more like acupuncture than *tangyao* in that it tries to unblock the blockage of *Qi*-in-dissipating mode by *micro-surgery* of the soft tissues rather than the *Qi* in the *Jingluo* Network. In other words, it is plausible to see acupotomology and acupotome therapy as resting on the insight that *micro-surgery* can unblock the blocked *Qi* in soft tissues. From such a vantage point, acupotomology/*zhendao medicine* is innovative beyond merely turning the needle into a scalpel – it appears to be based on the fundamental Methodological Postulate which underpins all domains of *Zhongyi* and the *philosophical* framework in which *Zhongyi* is embedded, of which *Qi Wholism* and *Em-ism* (*Thing-ontology cum Process-ontology* – see Chapter Four of this book) and Contextual-dyadism (see Chapter Eight of this book) are two key aspects. It is, therefore, not a wonder that the *micro-surgery* of acupotomology and acupotome therapy can render the patient pain-free – analogous to the acupuncture needle which acts to unblock the blockage of *Qi*-in-dissipating mode in the *Jingluo* Network, the acupotome/*xiaozhendao* acts to unblock the blockage of *Qi*-in-dissipating mode trapped in the soft tissues in certain parts of the patient's person-body, causing the patient to feel pain.

Acupotome therapy can be shown to be in accordance with what *The Lingshu*, Chapter 13 (On the Tendons Distributed Along the Channels)[37]/《灵枢·经筋》. This chapter is devoted to describing in detail the tendons associated with each of the twelve *jingmai* which constitute the *Jingluo Network*. It also sets out the illnesses which can ensue when the tendons (the soft tissues) are malfunctioning. Furthermore, it says that the physician ought to find out guided by the patient's subjective report as to where the pain along that particular tendon of that particular *jingmai* lies, and then needle that point. This is what is meant by the expression 以痛为输 *yi tong wei shu* used throughout this chapter, at least according to one plausible type of interpretation. [38] In other words, this is but the application of MPQBP, this time in the context of treating soft tissue (tendon) injuries. According to *The Lingshu*, all the muscles (part of the soft tissues) normally are capable of being taut (when we need them to be taut, in readiness for some movement or action) but also capable of being relaxed when we do not want them to be taut (after we have moved or acted in a certain way). If we can always retain this dual capacity embodied in the expression 肌肉解利 *jirou jieli* found in *The Lingshu*, Chapter 54 (The Natural Life Span)/《灵枢·天年》, one would be able to enjoy longevity. In this chapter, the Yellow Emperor pursued the matter about the natural life span of an individual to which Qibo (his tutor) maintained that one condition of longevity is the retention of the dual capacity of muscles (soft tissues) to stiffen up or to relax. In other words, should for some reason or other the soft tissues remain permanently taut, unable to relax, then naturally, we in the end would not be able to move that part of

[36] Another example to make this distinction clear may be found in the history of astronomy. Pre- and post- Copernicus, the same term "sun" is used; it is obvious that the term implies a very different thick concept in the two discourses. In Copernican astronomy, the term refers to the heavenly body which stands still at the centre of the system while Earth and other planets revolve around it (heliocentric thick concept), whereas in Ptolemaic astronomy, the term refers to the heavenly body as revolving around a stationary Earth which is at the centre of its system (geocentric thick concept). However, both systems share the same thin concept – people, pre- and post- Copernicus, agreed that the sun is that heavenly body they can point to, talk about in daily conversation, in literature, which they see rising in the East in the morning, reaching its height in the sky by noon and sinking below the horizon by very late afternoon/early evening.

[37] "Channel" is a standard translation in English of the term 经 *jing* which this author prefers to leave untranslated.

[38] This explanation is found in *How to understand '以痛为输' in *The Lingshu*, Chapter 13. In Baidu 2016.

the body affected but would also feel pain. Such malfunctioning eventually would adversely affect our blood vessels, our nerves, not to mention our joints.

Furthermore, *The Lingshu*, Chapter 13 recommends under such circumstances to use needles to treat such conditions: 燔针劫刺 以知为数 以痛为输 *fan zhen jie ci, yi zhi wei shu, yi tong wei shu*. On one interpretation of this passage, the author[39] based on his own understanding of *The Neijing-The Lingshu*, and his clinical experience understands this part of the text - 燔针劫刺 - plausibly to mean warming the handle of the needle, then swiftly needle the patient with it until the needle reaches the painful spot and then withdraw the needle. As for the whole passage cited above, his understanding is summarised as follows: (i) in diagnosing the patient's condition make sure that it falls under 经筋病 *jingjinbing*, that is, a condition which affects the tendons distributed along the *jingmai*; (ii) ascertain where the painful spots are along the injured tendon which are the locations for inserting the warmed-up needle; (iii) insert the needle, not too deeply or too superficially but far down enough for the patient to report feeling the warmth coming from the needle before withdrawing it; (iv) in the same painful location, re-insert the needle once or twice but this time in a slanting, side-wise manner until the patient reports a reaction, then withdraw the needle; (v) after this, press the spots which were earlier identified as painful and the patient should report that the pain has diminished (if the diagnosis and treatment are correct); (vi) the session ends at this point.

The Lingshu, Chapter 13 also talks about not only the cosmological significance of why acupuncture is interested in nine types of needles but also describes them in respect of shapes, sizes and function. For our purpose, we need only to focus on Needle Number 9 which is called "the Large Needle": 九曰大针，取法于锋针，其锋微员，长四寸，主取大气不出关节者也 which may be rendered as: "The ninth kind is called the Large Needle. Similar in construction to the fourth kind of needle, except that the tip of the needle is rounder. It is four (ancient Chinese) inches[40] long and is used to eliminate the *Qi* trapped between the joints." Naturally, Bm has no use for such a term and its concept; instead, it talks about arthralgia (translated as 痹症 *bizheng*) which literally means pain in the joints; it is used to describe joint stiffness which can have many causes such as overuse, sprains, injury, tendonitis, gout as well as a number of infectious diseases including rheumatic fever and chickenpox.[41] In other words, one could say that *Zhongyi* and Bm share a thin concept of stiffness and pain in muscles and joints (*bizheng*/arthralgia) but their thick concepts are different.

Professor Zhu Hanzhang began his long journey back in 1976 when the carpenter presented himself at his clinic, followed by many others presenting conditions which fall into the same "family" of disorders as exhibited in the case of the carpenter – it is true that such patients could not make certain movements which normal people can, but it is also the case that should some of them try to make such movements they would feel pain, and in the case of others, they would feel pain whether they tried to make any movements with that part of their body or not. For instance, patients suffering from frozen shoulder[42] not merely find they cannot move their shoulder (restricted motion), they also feel a dull or aching pain in the outer shoulder area, they feel pain during any type of shoulder movement as well as suffer from disturbed sleep when pain in the shoulder persists even when lying in bed. People with torn meniscus do not simply have difficulty extending the knee, with limited motion of the knee and suffer from popping in the knee during movement, swelling and stiffness in the knee but they also feel pain in the knee, especially when twisting or rotating, when walking long distances or running. In tendonitis, there may be stiffness or loss of motion in the affected joint, but there is also pain at or around a joint, including either gradual or sudden, severe pain at the affected part. Bursitis involves difficulty or loss of movement in affected joints (arm, elbow, hip, knee or shoulder) but also tenderness and pain of affected joints or affected areas.

(c) Those who see *xiaozhendao* in the case of the carpenter's hand as no more than surgery as understood in the Bm sense of surgery may have in mind how surgery in Bm copes with a condition which on the surface appears somewhat similar to that of the carpenter's palm. This is called Dupuytren's Disease and sometimes Viking's Disease, as it is a genetic disorder found mainly in males over the

[39] See *田文 2012 who also cites a historical authority to back up his interpretation; the authority is the Ming dynasty scholar, Zhang Jingyue 张景岳 (1563-1640) in his book 《类经》*The Leijing /The Classified Canon*, published in 1624; see also *Zhang Yi and Guo Changqing 2010 (*Qian xi zhendao liaofa yu zhongyixue de guanxi*).

[40] If one follows standard conversion tables, one ancient Chinese *cun* is said to equal 3⅓ cm; 4 cun, therefore would be roughly 13.2 cm which in turn is roughly equivalent to 5.2 inches.

[41] See What is arthralgia？2021.

[42] It is also known as adhesive capsulitis, a condition caused by the lining of the shoulder joint becoming contracted and inflamed, bringing about loss of movement and pain.

age of 50 who are of Northern European heritage. Bm has no real understanding of this genetic illness but to tell such a demographic to look out for risk factors such as (a) whether relatives have it, (b) diabetes or alcohol use disorder, smoking. Early symptoms include seeing or feeling a small lump in the palm usually near where ring finger and small finger meet. More advanced symptoms include seeing long, ropey cords or strands forming in the palmar fascia (the tissue under the skin in the palm of the hand) which cause fingers to pull towards the palm. In the majority of cases, this contracture does not cause pain, although large nodules can cause pain when the hand is gripping something. Bm today offers four treatment options, three of which involve surgery, the choice of which in any one case depends on the condition of the patient. Listed in terms of descending order of invasiveness, after effects and (financial) costs these are:

(i) Open Fascietomy is the traditional way of treating deformities. It is an operation conducted usually under general anaesthetic, although a local anaesthetic is also used in some cases; a zig-zagging incision is made from palm to finger-tip and the diseased tissue is then removed. The worst deformities can be dealt only by this method; although invasive, requiring a longer rehab and high risk of complications, it has the advantage of incurring lower recurrence rates compared with other methods. A perfectly straight finger is not a necessary outcome. Sometimes a skin graft may be needed in cases where there may not be enough skin to close the wound at the end of an operation.

(ii) Segmental Fascietomy is not as invasive as an open surgery, uses local anaesthetic with one or two small incisions to remove some but not necessarily all the diseased tissue. Less risk of complications, less rehab.

(iii) Percutaneous Needle Fasciotomy or Needle Aponeurotomy is considered to be the least invasive, with minimal rehab implications, quick return to work or normal life.[43] This bears remarkable resemblance to *xiaozhendao*, although it is called by a different name. Some practitioners claim to use a simple needle such as that used for taking blood samples to cut through the diseased tissue. However, it is also said to involve a higher recurrence rate compared with the other options.[44]

If Needle Fascietomy is really *xiaozhendao*, then the latter has just simply been incorporated into Bm at the level of therapy, regarding *xiaozhendao* as no more than a mere effective tool, in the same way as acupuncture needles and acupuncture itself are considered to be effective therapies in a limited domain of disorders for which Bm has less to offer – on this understanding Bm simply ditches the theoretical and *philosophical* underpinning of the measures found in the Medical *Other* as such underpinning is to Bm irrelevant, superfluous if not downright unintelligible and/or pseudo-scientific.

When essentially de-contextualised, *xiaozhendao* can begin to look like nothing more than another form of surgery as understood in Bm, except for the concession that it is the least invasive of all its surgical options.

Conclusion

From the above brief summary, one can see more clearly how a case can be made for regarding acupotomy/*xiaozhendao* and acupotomology/*xiaozhendao medicine* to be an exemplar of a limited integration of *Zhongyi* and MWM/Bm, of acupuncture (the needle) on the one hand and of surgery (the scalpel) on the other, of *physiology/function* and structure/anatomy, of *Process-ontology* on the one hand and Thing-ontology on the other.

Previous attempts at integration as assimilation, such as those undertaken by Zhang Xichun and TC*M* in the earlier part of the 20th century appear to embody an unequal relationship between the two systems. In contrast, this latest venture appears to be a case of integration on more or less equal terms, albeit in a limited

[43] This procedure is said to have become popular first in France some twenty years ago (sometime in the 1990s) and then exported to other countries (presumably in the West) – see https://dupuytrens-society.org.uk/treatment-2/dupuytrens-disease/needle-aponeurotomy/ .

[44] One other method – Collagenase – is also used. It is a kind of chemical treatment, involving the injection of a special fluid, an enzyme (clostridium histiolyticum collagenase), into the diseased tissue. This fluid, the brand name of which is Xiapex, digests the collagen fibres in the diseased tissue. It is said also to be minimally invasive, with quick rehab and return to normal activities although it is not suitable for every patient, is very expensive and has a higher recurrence rate than open surgery. Minor effects or complications include bruising, swelling and sometimes skin tears. For commercial reasons, since December 2019, this pharmaceutical product is no longer available in Europe, Asia or Australia, owing to a purely commercial decision by the American manufacturer, Endo, to focus on the profitable US market upon receiving a license to use it in the treatment of cellulite in the buttocks.

domain of medical practice-and theory, and therefore, may be said to constitute an instance which is in accordance with ARIIMO.

However, one should be on one's guard against any attempt to de-contextualise the matter, presenting *xiaozhendao* merely as a tool which happens to produce effective outcomes when used within a certain range of disorders. Such de-contextualisation makes it feasible to argue that it is no more than a new kind of surgery as understood in Bm or which can comfortably be endorsed/incorporated by it; the *Xiaozhendao* is just a surgical scalpel, except that it is much smaller than one.

Finally, below are three images: the first may help readers to grasp what the acupotome/*xiaozhendao* is like in terms of design and size compared, on the one hand, with the normal needle used in acupuncture and on the other, the scalpel used in surgery. The second simply shows the suite of acupotomes/*xiaozhendao* which exist and are in use today. The third shows acupotomy/*xiaozhendao* in operation in one clinical context.

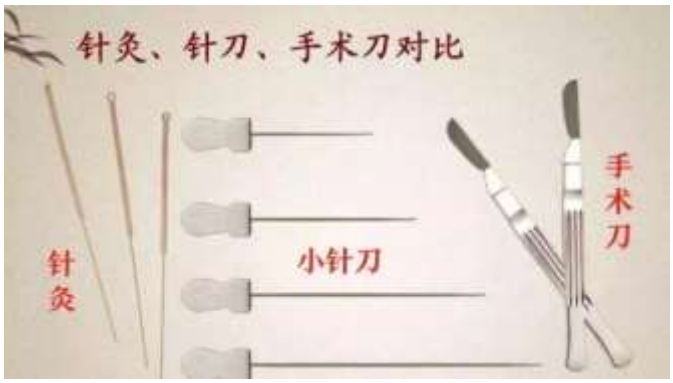

Figure A.1 On left: acupuncture needles; on right, surgical scalpels; in middle: acupotomes/*xiaozhendao*


Figure A.2 Suite of acupotomes/*xiaozhendao*


Figure A.3 Acupotomy/*xiaozhendao* to treat knee problems such as torn meniscus (torn ligaments of the knee cap)

References and Select Bibliography

*Items preceded by * are publications in Chinese*

(The References and Select Bibliography of Lee 2017a and 2018 should also be consulted)

Adam, D. 2020. The Limits of R: What the reproduction number can and can't tell us about managing COVID-19. *Nature* 583: 346-348.

Aebersold, R. and M. Mann, (2003). Mass spectrometry-based proteomics. *Nature* 422, 198-207.

Acupuncture. 2020. URL = https://www.hopkinsmedicine.org/health/wellness-and-prevention/acupuncture .

Acupuncture: In Depth 2016. URL = https://nccih.nih.gov/health/acupuncture/introduction .

Alam, M., K. Karbil and J. Tanimoto. 2020. Based on mathematical epidemiology and evolutionary game theory, which is more effective, quarantine or isolation? *Journal of Statistical Mechanics: Theory and Experiment 033502*.

Albury, W. 1993. Ideas of Life and Death. In Eds. Bynum and Porter, Vol. 1.

Ames, R. & D. Hall. 1987. *Thinking Through Confucius.* Albany, NY: State University of New York Press.

Ames, T. 2019. 20 Facts About the Opium Wars. HISTORY HIT. URL = https://www.historyhit.com/facts-about-the-opium-wars/.

Andreski, S. 1974. Ed. *The Essential Comte*. Trans. M. Clarke. London: Croom Helm.

(The) Andrew Weil Center for Integrative Medicine: University of Arizona. 2020. URL = https://integrativemedicine.arizona.edu/about/staffdirectory.html .

Andrews, B. 1996. *The Making of Modern Chinese Medicine, 1895- 1937*. Cambridge: Cambridge University Press.

— 2001. From case records to case histories: the modernisation of a Chinese medical genre, 1912-49. In Hsu.

— 2013. The Republic of China. In Hinrichs and Barnes.

— 2014. *The Making of Modern Chinese Medicine, 1850 – 1960.* Vancouver: University of British Columbia Press.

Andrews, B. and M. Bullock. 2014. Eds. *Medical Transitions in Twentieth-Century China*. Bloomington: Indiana University Press.

Anjum, R., S. Copeland, and E. Rocca. 2020. Eds. *Rethinking Causality, Complexity and Evidence for the Unique Patient: A CauseHealth Resource for Healthcare Professions and the Clinical Encounter.* Berlin: Springer International Publishing.

Antoine-Laurent Lavoisier. 2017. *Science History Institute*. URL = https://www.sciencehistory.org/historical-profile/antoine-laurent-lavoisier .

Ariew, R. 2000. Ed. *Descartes: Philosophical Essays and Correspondence*. Indianapolis: Hackett Publishers.

Astbury, W. 1950. Adventures in Molecular Biology. Harvey Lecture 1950-1951 Series, 46.

Atkins, P. 2010. *The Laws of Thermodynamics: A Very Short Introduction*. Oxford: Oxford University Press.

Bauer, D. 2018. What is Dark Matter and Why Does It Matter? Fermi Lab. URL = https://www.youtube.com/watch?v=o79szJBtQ5E&t=55s .

BBC News. 2 March 2009. China 'patriot' sabotages auction. URL = BBC NEWS | World | Asia-Pacific | China 'patriot' sabotages auction. Retrieved 09/10/2020.

Beasley, W. 1981. Edo Japan: politics and foreign relations. *The Great Japan Exhibition: Art of the Edo Period (1600-1868)*. London: Royal Academy of Arts in association with Weidenfeld and Nicolson.

Becker, R., M. Reichmanis, A. Marino and J. Spadaro. 1976. Electrophysiological Correlates of Acupuncture Points and Meridians. *Psychoenergetic Systems*, Vol.1, 105-112.

Beebee, H. 2006. *Hume on Causation*. London: Routledge.

— 2007. Hume on Causation: A Projectivist Interpretation. In Eds. R. Corry and H. Price. *Causation, Physics and the Constitution of Reality: Russell's Republic Revisited*. Oxford: Oxford University Press.

Bellis, M. 2018. History of the Steam Engine. URL = https://www.thoughtco.com/captivity-of-steam-1992676 .

Bergson, H. 1907/1998. *Creative Evolution*. New York: Dover Publications.

Bergson's letter to William James. 2014. URL = http://www.britannica.com/EBchecked/topic/61856/Henri-Bergson.
Bergson on Process Philosophy. 2014. URL = http://www.britannica.com/EBchecked/topic/61856/Henri-Bergson.
Bergson and Process Philosophy of Biology. 2021. Anne Sophie Meincke. In Eds. M. Sinclair & Y. Wolf. *The Bergsonian Mind* (London, New York: Routledge). URL = https://www.academia. edu/ 50126798/ Bergson_ and_Process_Philosophy_of_Biology. Retrieved 10/10/2021.
Bernasconi, R. 2001. Who Invented the Concept of Race? Kant's Role in the Enlightenment Construction of Race. In *Race*. Ed. Robert Bernasconi. Oxford: Blackwell.
— 2002. Kant as an Unfamiliar Source of Racism. In *Philosophers on race: critical essays.* Eds. Julie Ward and Tommy Lott. Oxford: Blackwell.
— 2011. Kant's Third Thought on Race. In Elden and Mendieta. Eds. *Reading Kant's Geography*. Albany: SUNY Press.
Biomarkers Definitions Working Group. 2001. *Clinical Pharmacology and Therapeutics*, Vol. 69, 89-95.
Biophysical Approach. 2015. URL = http://dict.cnki.net/...hot_eng/h_226521006.html
Blaedel, N. 1988. *Harmony and Unity: The Life of Niels Bohr.* Berlin & New York: Springer-Verlag.
Blevins, S. and M. Bronze. 2010. Robert Koch and the 'golden age' of bacteriology. *International Journal of Infectious Diseases*, Vol.14, Issue 9.
Bhopal, R. 2008/2016. Third Edition. *Concepts of Epidemiology: an integrated introduction to the ideas, theories, principles and methods of epidemiology*. Oxford: Oxford University Press.
Bohm, D. 1976. *Fragmentation and Wholeness*. Jerusalem: Van Leer Jerusalem Foundation.
— 1980. *Wholeness and the Implicate Order*. London: Routledge & Kegan Paul.
Bohr, N. 1934. *Atomic Theory and the Description of Nature*. Cambridge: Cambridge University Press.
— 1938. Biology and Atomic Physics. *Nuovo Cimento* 15, 429-438 (1938). URL = https:// doi.org/ 10.1007/BF02959119 .
— 1961). *Atomic Physics and Human Knowledge.* New York: Science Editions, INC.
Bowlby, C. 2015. The palace of shame that makes China angry. BBC News, Beijing. URL = https://www. bbc.co.uk/news/magazine-30810596 .
Boyle, P. 2005. Tobacco smoking and the British doctor's cohort. *British Journal of Cancer,* 92, 419-420.
Broadbent, A. 2013. *Philosophy of Epidemiology*. Basingstoke: Palgrave Macmillan.
— 2016. *Causality and Causal Reference in Epidemiology: The Need For A Pluralistic Approach*. Oxford: Oxford University Press.
— 2017. Philosophy of Epidemiology. *The Bloomsbury Companion to Contemporary Philosophy of Medicine*, ed. James A. Marcum. London and New York: Bloomsbury Academic.
— 2019. *Philosophy of Medicine*. New York: Oxford University Press.
BSEM (*British Journal of Ecological Medicine*). (2020). What is Ecological Medicine? URL = https://www.bsem.org.uk/pages/8-what-is-ecological-medicine .
Buck, Charles. 2014. *Acupuncture and Chinese Medicine: Roots of Modern Practice.* London and Philadelphia: Singing Dragon.
Burnham, H. 2005. Leibniz: Metaphysics. URL = http://www.iep.utm.edu/leib-met/.
Buriani, A., M. Garica-Bermejom, E. Bossio *et al*. (2012). Omic techniques in systems biology approaches to traditional Chinese medicine research: Present and future. *Journal of Ethnopharmacology*, 140, 3: 535-544.
Bynum, W. F. and Roy Porter. 1993. Eds. *Companion Encyclopaedia of the History of Medicine*, 2 Vols. London: Routledge.
Carey, T. 2012. Hypotheses (Non) Fingo. *Philosophy Now*. URL = https://philosophynow.org/ issues/88/ Hypotheses_Non_Fingo .
Cartwright, N. (2007). Are RCTs the Gold Standard? *Biosocieties*, Vol. 2, Issue 1. (The Construction and Governance of Randomised Controlled Trials).
Chakravartty, A. 2005. "Causal realism: events and processes". In *Erkenntnis*, 63, 7-31.
— 2007. *A Metaphysics for Scientific Realism: Knowing the Unobservable.* Cambridge: Cambridge University Press.
Chakrabarty, D. 2000. *Provincialising Europe: Postcolonial Thought and Historical Difference.* New Jersey: Princeton University Press.
Chan, W. 1963. *A Source Book in Chinese Philosophy*. New Jersey: Princeton University Press.
Chang, R. 2019. Yinyang Wuxing Yi versus TCM. URL = https://rhondachang.com/2019/10/19/yinyang-wuxing-yi-versus-tcm/.
Checkland, P. 1999. *Systems Thinking, Systems Practice*. London: Wiley.
Chin, L C. 2006. The inauguration of the structural perspective in China. http://www.oocities.org/ theophoretos/fanzhen.html .
Ching, J. 1978. Chinese Ethics and Kant. *Philosophy East and West*, Vol 28, No.2.
Ching, J. & W. Oxtoby. 1992. *Moral Enlightenment: Leibniz and Wolff on China.* Nettetal: Steyler Verlag

Choi, S. & J. Kim. 2019. *The Philosophy of Qi/Gi: East Asian and Comparative Philosophy Perspectives*. Lanham: Lexington.
Churchland, P. 1986. *Neurophilosophy: Toward a Unified Science of the Mind-brain.* Cambridge, Mass.: MIT Press.
Churchman, C. 1971. *The Design of Inquiring Systems: Basic Concepts of Systems and Organizations*. New York: Basic Books.
—. 1979. The Systems Approach and Its Enemies. Quotations from it available online. URL = http://coevolving.com/blogs/index.php/archive/the-systems-approach-and-its-enemies-c-west-churchman-1979/.
Clayton, P. 2004. *Mind and Emergence: From Quantum to Consciousness.* Oxford: Oxford University.
Clayton, P. and P. Davies. 2006. Eds. *The Re-emergence of Emergence: The Emergentist Hypothesis from Science to Religion*. Oxford: Oxford University Press.
Clinical Endpoint – an overview. 2017. *Science Direct*. URL = https://www.sciencedirect.com/topics/medicine-and-dentistry/clinical-endpoint/pdf.
Cobb, M. 2020. *The Idea of the Brain*. London: Profile.
Cochrane, A. 1972. *Effectiveness and Efficiency: Random Reflections on Health Services*. Nuffield Provincial Hospitals Trust.
Coggon, D., G. Rose and D. Barker. (2020). Epidemiology for the Uninitiated. London: *The British Medical Journal*.
Cohen, F. 2015. *The Rise of Modern Science Explained: a comparative history*. Cambridge: Cambridge University Press.
Cohon, R. 2018. Hume's Moral Philosophy. *The Stanford Encyclopedia of Philosophy*. E. N. Zalta (Ed.).
Comte, A. 1830-1842. *Cours de philosophie positive*. 6 tom. Paris.
—. 1974. *The Essential Comte*. Ed. S. Andreski. Trans. M. Clarke. London: Croom Helm.
Collins, F. 1999. Medical and Societal Consequences of the Human Genome Project. *New England Journal of Medicine*, 341, 28-37.
Corcoran, K. 2001. Ed. *Soul, Body and Survival: Essays on the Metaphysics of Human Persons*. Ithaca: Cornell University Press.
Cox, B. and J. Forshaw. 2010. *Why Does $E = mc^2$?* London: Da Capo Press.
Crane, L. 2011. Drugs in Victorian Britain. URL = https://wellcomecollection.org/articles/W87wthIAACQizfap .
Criado Perez, C. 2019. *Invisible Women: Data Bias in a World Designed for Men*. London: Chatto and Windus.
Crick, F. 1966. *Of Molecules and Men.* Seattle and London: University of Washington Press.
Criticism of Traditional Chinese Medicine. Beijing: Concord Medical University Press.
Curt, R. 1991. *Brushes with Power: Modern Politics and the Chinese Art of Calligraphy*. Berkeley: University of California Press.
Cyranoski, D. 2018 (26/September). Why Chinese medicine is heading for clinics around the world. *Nature*. URL = https://www.nature.com/articles/d41586-018-06782-7.
—. 2020a (04/May). Profile of a killer: the complex biology powering the coronavirus pandemic. *Nature*. URL = https://www.nature.com/articles/d41586-020-01315-7 .
—. 2020b (06/May). China is promoting coronavirus treatments based on unproven traditional medicines. *Nature*. URL = https://www.nature.com/articles/d41586-020-01284-x .
Dhanasekaran, S., T Barrette, D Ghosh et al. 2001. Delineation of prognostic biomarkers in prostate cancer. *Nature* 412, 822-826.
Davies, H. 1980. *George Stephenson.* Middlesex: Hamlyn.
Dawkins, R. 1986. *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design*. New York: W.W. Norton and Company.
De, S.N. 1959. Enterotoxicity of Bacteria-free Culture-filtrate of *Vibrio cholerae*. *Nature* 183, 1533-1534,
De Francis, J. (1984). *The Chinese Language: Fact and Fantasy*. Honolulu: University of Hawaii Press.
De la Mettrie, Julian Offray. 1748. *Man A Machine*. In English 1750. URL = http://www. cscs.umich. edu/ ~crshalizi/ LaMettrie/ Machine/
*Deng Tietao 邓铁涛. 1988. 略论五脏相关取代五行学说/Brief Discussion of Five Organs Correlation Replacing Wuxing Theory. *Guangzhou Chinese Medicine College Bulletin*, 5.2, 65-68. (English translation of title of article is provided by R. Chang 2019.)
*Deng Tietao 邓铁涛 and Zheng Hong 郑洪. 2008. Editors-in-chief.《中医五脏相关学说研究: 从五行到五脏相关》(广东· 广东科技出版社)/Zhongyi wuzang xiangguan xueshuo yanjiu: cong wuxing dao wuzang xiangguan/Researching Chinese Medicine from the Perspective of Wuxing in Respect of the Mutual Relationships Between the Five Yin Visceral Organs. (English Title is supplied by this author and not the Editors.)
DePrimo, S. 2007. Drug Discovery Technologies. Eds, J. Taylor and D. Triggle. *Comprehensive Medicinal Chemistry ll*. Elsevier Science
Depression. 2018. URL = https://www.medicinenet.com/depression/article.htm .

Derbyshire, D. 2013. Why acupuncture is giving sceptics the needle. URL = https://www. theguardian.com/science, that it/2013/jul/26/acupuncture-sceptics-proof-effective-nhs.
Descartes, R. 1628/2020. *Rules for the Direction of the Mind*. URL = http://faculty.uccb.ns.ca/ philosophy/kbryson/rulesfor.htm.
— 1637/1992. Discourse on the Method. *The Philosophical Writings of Descartes*, translated by John Cottingham, Robert Stoothoff and Dugald Murdoch. Vol. 1. Cambridge: Cambridge University Press.
— 2000. *Philosophical Essays and Correspondence*. Ed. Roger Ariew. Indianapolis: Hackett Publishers.
Dimond, E. 1971. Acupuncture anesthesia: Western medicine and Chinese traditional medicine. *Journal of the American Medical Association*, 218,1558-1563.
Diez Roux, A. 2011. Complex Systems Thinking and Current Impasses in Health Disparities Research. *American Journal of Public Health*, 101(9): 16627-1634.
Doll, R, and R. Peto. 1954. The Mortality of Doctors in Relation to Their Smoking Habits. *The British Medical Journal* 1(4877): 1451-1455.
—1976. Mortality in relation to smoking: 20 years' observations on male British doctors. *The British Medical Journal*. 2(6051): 1525-1536.
Doll, R., R. Peto, J. Boreham and I Sunderland. 2004. Mortality in relation to smoking: 50 years' observations on male British doctors. *The British Medical Journal*. 328(7455): 1519.
Dondrop, A, F. Nosten, P Yi *et al*. 2009. Artemisinin Resistance in *Plasmodium falciparum* Malaria. *New England Journal of Medicine.*
Dong, J. 2013. The Relationship between Traditional Chinese Medicine and Modern Medicine. In *Evidence-Based Complementary and Alternative Medicine.* (See WHO 2004.)
Drucker, C. 2008. Ambroise Paré and the Birth of the Gentile Art of Surgery. *Yale Journal of Biology and Medicine*, 81(4): 199-202.
Duke, M. 1991. *The Development of Medical Techniques: From Leeches to Heart Surgery.* Madison, CT: International University Press.
Dunsworth, H. 2016. Surprise! Semen is Required. *Sapiens*. URL = https://www.sapiens.org/column origins/ sperm-and-reproduction/ .
Dusenberry, M. 2018. *Doing Harm: The Truth About How Bad Medicine and Lazy Science Leave Women Dismissed, Misdiagnosed and Sick*. New York: HarperOne.
Eisenberg, D. with T. Wright. 1985. *Encounters with Qi: Exploring Chinese Medicine*. New York: W.W. Norton & Company.
Ellis, Harold. 2001. *A History of Surgery*. London: Greenwich Medical Media.
Ernst, E. 2018. Mini-scalpel acupuncture = maxi-nonsense. URL = Mini-scalpel acupuncture = maxi-nonsense (edzardernst.com).
Esfeld, M. 2011. Causal realism. In *Probabilities, laws, and structures*. Eds. D. Dieks, W. Gonzalez, S. Hartmann *et al.* Dordrecht: Springer.
Epstein, S. 2003. Richard Doll, An Epidemiologist Gone Awry. Excerpted from *Stop Cancer Before It Starts: How to Win the War On Cancer.* URL = http://www.preventcancer.com/losing/other/doll.html.
Evans, A. 1976. Causation and Disease: The Henle-Koch Postulates Revisited. *The Yale Journal of Biology and Medicine*, 49, 175-195.
— 1993. *Causation and Disease: A Chronological Journey*. New York: Plenum Press.
Evans, D. 2004. *Placebos*. Oxford: Oxford University.
Evans, I., H. Thornton, I. Chalmers & P. Glasziou. 2011. *Testing Treatments: Better Research for Better Healthcare.* London: Pinter & Martin Ltd.
Fan Zhen 范镇. 507 CE. *《神灭论》 *Annihilation of the Soul*. URL = http://www.360doc.com/ content/18/1012/19/60662186_794196843.shtml.
Fiala, C., J. Taher, E. Diamandis. 2019. P4 Medicine or O4 Medicine? Hippocrates Provides the Answer. *The Journal of Applied Laboratory Medicine*, Vol. 4, Issue 1, 108-119.
Florence Nightingale. 2020. The National Archives, UK. URL = https://www.nationalarchives.gov.uk/ education/ resources/florence-nightingale/.
— 2020. History.com Editors. URL = https://www.history.com/topics/womens-history/florence-nightingale -1.
Formal Logic. 2010. URL = https://sites.cs.ucsb.edu/~pconrad/cs40/lessons/logic/ modusPonens Modus Tollens. html.
(The) Four Phases of Clinical Trials. 2020. URL = https://www.pfizer.com/science/clinical-trials/guide-to-clinical-trials/phases .
Fox, E. (2008). *Emotion Science: Neuroscientific and Cognitive Approaches to Understanding Human Emotions.* London: Palgrave Macmillan.
—. (2013). *Rainy Brain, Sunny Brain: The New Science of Optimism and Pessimism*. London: Arrow.

Fruehauf, H. 2009. *Correlative Cosmology: Energetics of the First Month of Spring and Lung Function* (A collection of relevant classical sources), URL = http://www.classicalchinesemedicine.org/wp-ontent/uploads/2010/03/fruehauf_correlativecosmo-lung.pdf.

—. 2019. Introduction to Liu Lihong's book, *Classical Chinese Medicine*. (For bibliographical details, see Liu 2019).

Fry, S. 2009. Last Chance to See. URL = https://www.stephenfry.com/2009/09/last-chance-to-see/ .

Fung, S. 2018.The Development of the Chinese Doctrine of the Nonidentity and inseparability of the Body and the Soul – The *Shenmielun (On the Extinction of the Soul) and its Origins. Dao* 17, 363-379.

Fuxi and Nüwa. 2013. URL = http://en.wikipedia.org/wiki/N%C3%BCwa.

Galas, D. 2018. Systems biology. Britannica.com. URL = https://www.britannica.com/science/systems-biology .

Galas, D, and Hood, L. 2009. Systems Biology and Emerging Technologies Will Catalyze the Transition from Reactive Medicine to Predictive, Personalized, Preventive and Participatory (P4) Medicine. *Interdisciplinary Bio Central*, 1(6)

Global Times. 19 December 2018. Bronze dragon head believed to have been looted from Old Summer Palace during Second Opium War purchased by anonymous Chinese buyer at Paris auction. URL = Bronze dragon head believed to have been looted from Old Summer Palace during Second Opium War purchased by anonymous Chinese buyer at Paris auction: reports - Global Times. Retrieved 13/04/2021.

Graham, A. 1986. *Yin-yang and the Nature of Correlative Thinking*. IEAP Occasional Paper and Monograph Series, No. 6. Singapore: Institute of East Asian Philosophies.

— 1989. *Disputes of the Tao: Philosophical Arguments in Ancient China*. La Salle, IL; Open Court.

Graham, D. 2005. Heraclitus. URL = http://www.iep.utm.edu/heraclit/.

— 2008. Leucippus' Atomism. In Curd, P., & Graham, D. (Eds). *The Oxford Handbook of Presocratic Philosophy*. Oxford: Oxford University Press.

— 2011. Heraclitus. *The Stanford Encyclopedia of Philosophy*, E.N. Zalta (Ed.).

Gu, M. 2013. *Sinologism: An Alternative to Orientialism and Postcolonialism*. London and New York: Routledge.

(The) Guardian. 18/05/2020. British army veteran faces £27,000 NHS hospital bill. URL = https:// www.theguardian.com/uk-news/2020/may/18/british-army-veteran-faces-27000-nhs-hospital-bill.

— 03/06/2020. Helen Davidson. Beijing draws up plans to outlaw criticism of traditional Chinese medicine. URL = https://www.theguardian.com/world/2020/jun/03/beijing-draws-up-plans-to-outlaw-criticism-of-traditional-chinese-medicine .

Hall, D., and R. Ames. 1995. *Anticipating China: Thinking Through the Narratives of Chinese and Western Culture*. Albany: State University of New York Press.

—. 2001. *Focusing the Familiar: A Translation and Philosophical Interpretation of the Zhongyong*. Honolulu: University of Hawaii Press.

Hall, A. 2020. Isaac Newton's Life. Isaac Newton Institute for Mathematical Sciences. URL = https://www.newton.ac.uk/about/isaac-newton/life .

Han, J. 2003. Acupuncture: neuropeptide release produced by electrical stimulation of different frequencies. *TRENDS in Neuroscience*, Vol. 26 No 1.

— 2004. Acupuncture and endorphins. *Neuroscience Letters* 361: 258-261.

Hansen, K. and K. Kappel. 2017. Complementary/Alternative Medicine, and the Evidence Requirement. In Solomon, Simon and Kincaid (Eds).

**Hanshu*. 2020. URL = https://baike.baidu.com/item/%E6%B1%89%E4%B9%A6/363840?fr=aladdin.

Hanson, M. 2011. *Speaking of Epidemics in Chinese Medicine: Disease and the Geographic Imagination in Late Imperial China*. London and New York: Routledge.

— 2015. What the 2015 Nobel Prizes Mean for Traditional Chinese Medicine. URL = http:// fortune.com/2015/10/06/2015-nobel-prizes-traditional-chinese-medicine/.

*Hao, W./郝万山. 2011. Series of lectures on Zhang Zhongjing and *The Shanghanlun*. URL = http://video. baidu. com/v?word.

— 2012. 《郝万山说健康》/*Hao Wanshan Talking about Health* (in a series of eleven lectures on CCTV, The Lecture Room). URL = http://kejiao.cntv.cn//C40454/videopage/index.shtml .

Hartley, L., M. Lee, J. Kwong, N. Flowers, D. Todkill, E. Ernst and K. Rees. 2015. Qigong for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews*.

Hegel, G. 1807. *Phenomenology of Spirit*

— 1812-1816. *The Science of Logic*.

— 1830-1831. *Philosophy of History*.

Hejazi, A. 2020. *You Must Know Guide to Systems Thinking*. URL = http://www.academia.edu/ 1841998/ Your_Must_Know_Guide_to_Systems_Thinking.

Hernon, I. 2003. *Britain's Forgotten Wars: Colonial Campaigns of the 19th Century*. Gloucestershire: The History Press.

Hinrichs, T. and L. Barnes. 2013. Eds. *Chinese Medicine and Healing: An Illustrated History.* Cambridge, Mass.: Harvard University Press.
(The) Hippocratic Oath. 2002. *The National Library of Medicine* (USA). URL = https://www. nlm. nih. gov/ hmd/greek/greek_oath.html .
History of Surgery. 2020. *World Heritage Encyclopedia*. Project Gutenberg Self-Publishing Press. Article Id: WHEBN0011848019.
Ho, M. 1998. *Genetic Engineering: Dream or Nightmare? The Brave New World of Bad Science and Big Business*. Bath: Gateway.
Ho, P. 1972. The System of the Book of Changes. *Japanese Studies in the History of Science*, 11, 23-39.
Hoffert, B. 2006. Distinguishing the 'Rational' from the 'Irrational' in the Early Zhuangzi Lineage. *Journal of Chinese Philosophy*, 33(1), 159-173.
Hood, L. 2018. Lessons Learned as President of the Institute for Systems Biology (2000-2018). *Science*, Vol 16, Issue 1, Genomics, Proteomics & Bioinformatics.
Hood, L., R Balling and C. Auffray. 2012. Revolutionizing medicine in the 21st century through systems approaches. *Biotechnology Journal*, Vol. 7, 992-1001.
Hood, L. and S. Friend. 2011. Predictive, personalized, preventive, participatory (P4) cancer medicine. *Nature Review Clinical Oncology* 8, 184-187.
Hood, L., J. Heath, M. Phelps and B Lin. 2004. Systems Biology and New Technologies Enable Predictive and Preventive Medicine. *Science*, 306: 640=643. URL = https://science. sciencemag.org/ content/ 306/5696/ 640.long.
Hood, L. and L. Rowen. 2013. The Human Genome Project: big science transforms biology and medicine. *Genome Medicine* 5, 79 (2013).
Horgan, R. and L. Kenny. 2011. S(cience)A(dvisory)C(ommittee) review: 'Omic' technologies: genomics, transcriptomics, proteomics and metabolomics". *The Obstetrician and Gynaecologist*, 13:189-195. See also Wiley Online Library.
How Brain Death is Diagnosed: Death by Neurologic Criteria, 2020: URL = https://www. verywellhealth.com/brain-death-what-does-it-mean-3157217 .
*How to understand '以痛为输' in *The Lingshu*, Chapter 13. 如何正确治疗经筋病之 "以痛为输". 2016. URL - https://wenku.baidu.com/view/4de01b8727284b73f34250c6.html .
Howell, Joel D. 2016. Early Clinical Use of the X-ray. In *Transactions of the American Clinical and Climatological Association*, 127:341-349.
Hsu, Elisabeth. 1994. Change in Chinese medicine: *bian and hua*. An anthropologist's Approach. In Eds. Viviane Allerton and Alexei Volkos, *Notions et Perceptions de Changement en Chine. Mémoires de l'Institut des Hautes Etudes Chinoises 36*. Paris: Collège de France, 41-58.
— 1999. *The Transmission of Chinese Medicine*. Cambridge: Cambridge University Press.
— 2000. Towards a Science of Touch, Part I: Chinese pulse diagnostics in early modern Europe. *Anthropology & Medicine.* Vol.7, Issue 2.
— 2001. Ed. *Innovation in Chinese Medicine.* Cambridge: Cambridge University Press.
— 2010. Towards a science of touch, Part II: Representations of the tactile experience of the seven Chinese pulses indicating danger of death in early modern Europe. *Anthropology & Medicine,* Vol. 7, Issue 3.
* (*The*) *Huangdi neijing* 《黄帝内经》/*The Inner Canon of the Yellow Emperor*. 2020. https://baike.baidu.com/ item/%E9%BB%84%E5% B8%9D%E5%86% 85% E7%BB%8F/97915?fr=aladdin#1.
Huang, S. 1999. *Essentials of Neo-Confucianism: Eight major philosophers of the Song and Ming Periods*. Westport, CT: Greenwood.
Hui, Y. and R. Mackay. 2018. *The Question Concerning Technology in China: An Essay in Cosmotechnics.* Falmouth: Urbanomics.
(The) Human Genome Project. 2020. URL = https://www.genome.gov/human-genome-project; https://www. genome.gov/ human-genome-project/Completion-FAQ .
Huss, R. 2015. Biomarkers. *Translational Regenerative Medicine*, Chapter 19, 235-241. Academic Press.
Ing, N. 2005. Steroid Hormones Regulate Gene Expression Posttranscriptionally by Altering the Stabilities of Messenger RNAs. *Biology of Reproduction*, Vol. 72, Issue 6, 1290-1296.
Interlandi, J. 2016. The Acupuncture Myth. In *Scientific American* 315, 2, 24-25.
Irvine, A. 2010. Principia Mathematica. *The Stanford Encyclopedia of Philosophy*, E.N. Zalta (Ed.).
Ideker, T. Galitski, L. Hood. 2001. A new approach to decoding life: systems biology. *Annual Review of Genomics and Human Genetics*, 2, 343-172.
Jackson, G. 2019. *Pain and Prejudice: A call to arms for women and their bodies.* London: Piatkus.
**Jingluo*. 2015. URL = http://www.39yst.com/zt/jingluo/.
John Dalton, Modern Atomic Theory. 2020. *Scientists Index. History of Chemistry*. Purdue University.
Jones, S. 1994. *The Language of the Ge*nes. London: Flamingo/Harper Collins.

Kant, I. 1764/2011. *Observations on the Feeling for the Beautiful and Sublime and Other Writings*. Edited Patrick Frierson and Paul Guyer. Cambridge: Cambridge University Press.
— 2012. Physical Geography. In *Kant: Natural Science*. Ed, Eric Watkins. Cambridge: Cambridge University Press.
Kaptchuk, T. and D. Benksy. 2000. Appendix F (on *Wuxing*) in *The Web That Has No Weaver*. London: Rider.
— 2001. The double-blind, randomized, placebo-controlled trial: Gold standard or golden calf? *Journal of Clinical Epidemiology*, 54, 541-549.
Karchmer, Eric. 2002. Magic, Science and Qigong in contemporary China. Eds. S. Blum and L. Jensen. *China Off Center: Mapping the Margins of the Middle Kingdom*. Hawai'i: University of Hawai'i Press.
— 2015. Slow Medicine: How Chinese Medicine Became Efficacious Only for Chronic Conditions. In *Historical Epidemiology and the Making of Modern Chinese Medicine.* Ed. Howard Chiang. Manchester: Manchester University Press.
— 2017. Double Truths and the Postcolonial Predicament of Chinese Medicine. In Solomon, Simon and Kincaid.
Keck Observatory. 2019. Unusual Galaxies Defy Dark Matter Theory: Two New Studies Confirm that Galaxies Lacking Dark Matter Do In Fact Exist. URL = https://keckobservatory.org/df2-df4/ .
Kendell, D. 2002. *The Dao of Chinese Medicine: Understanding an ancient healing art.* Singapore: Oxford University Press.
Kermack, W. and A. McKendrik. 1927. A Contribution to the Mathematical Theory of Epidemics. *Proceedings of the Royal Society* A 115(772) 700-721.
Kim, Jaegwon. (2005). *Physicalism or Something Near Enough*. Princeton, New Jersey: Princeton University Press.
Kim, Jung-Yeup. (2010). A Revisionist Understanding of Zhang Zai's Development of Qi in the Context of his Critique of the Buddhist. *Asian Philosophy* (*An International Journal of the Philosophical Traditions of the East*), Vol. 20, Issue 2, 111-126.
— 2015. *Zhang Zai's Philosophy of Qi: A Practical Understanding*. Lanham: Lexington Books. Access: https://ebookcentral.proquest.com/lib/manchester/reader.action?docID=1987850.
Kitano, H. 2001. Ed. *Foundations of Systems Biology.* Cambridge, MA: MIT Press.
— 2002. Systems biology: a brief overview. *Science*, Vol. 295, 1662-1664.
Koppelman, M. 2018. Acupuncture: An Overview of Scientific Evidence. In *Evidence Based Acupuncture*. URL = https://www.evidencebasedacupuncture.org/acupuncture-scientific-evidence/ .
Kuhn, T. 1962. *The Structure of Scientific Revolutions*. Chicago: Chicago University Press.
Kuna, L., J. Jabak, R Smolic, N. Raguz-Cucic, A. Vcev and M Smolic. 2019. Peptic Ulcer Disease: A Brief Review of Conventional Therapy and Herbal Treatment Options. *Journal of Clinical Medicine*, 8(2): 179.
Kurcharski, A. 2020. *The Rules of Contagion: Why Things Spread - and Why They Stop*. London: Profile.
Kuriyama, S. 1999. *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine.* New York: Zone.
Kurtz, J. 2011. *The Discovery of Chinese Logic.* Leiden: Brill.
Kwon, C., S. Yoon & B. Lee. (2019). Clinical effectiveness and safety of acupotomy: An overview of systematic reviews. *Complementary Therapies in Clinical Practice*, Vol. 36: 142-152. URL = https://www. sciencedirect. com/science/article/abs/pii/S1744388119302130?via%3Dihub .
Ladyman, J. & K. Wiesner. 2020. *What is a Complex System?* New Haven, Connecticut: Yale University Press.
Lakatos, I. 1978. *The Methodology of Scientific Research Programmes.* J. Worrall & G Currie (eds). Cambridge: Cambridge University Press.
Lakatos, I. & A. Musgrave. 1970. Eds. *Criticism and the Growth of Knowledge*. Cambridge: Cambridge University Press.
Lake, J. 2004. The Integration of Chinese Medicine and Western Medicine: Focus on Mental Illness. *Integrative Medicine*, 3(4).
— 2007. *Textbook of Integrative Mental Health Care.* New York & Stuttgart: Thieme.
Lane, A. 1952. Queen Mary II's Porcelain Collection at Hampton Court. *Transactions of the Oriental Ceramics Society, 1949-1950.* Vol. 25, 21-31.
Lau, K.C., Sit, T. The Need for Recovering the Subjugated Knowledge of Traditional Chinese Medicine. *Development* **63**, 249-256 (2020). https://doi.org/10.1057/s41301-020-00276-8; https://link.springer.com/article/10.1057%2Fs41301-020-00276-8 .
Lawlor, L. and V. Moulard Leonard. 2020. Henri Bergson. *The Stanford Encyclopedia of Philosophy* , Edward N. Zalta (Ed.).
Lawrence, G. 1993. Surgery (Traditional). In Eds. Bynum and Porter, Vol. 2.
Lederberg, J. & A. McCray. 2001. 'Ome Sweet' Omics – a genealogical treasury of words. *Scientist*, 15:8.
Lee, K. 1969. Popper's Falsifiability and Darwin's Natural Selection. *Philosophy.*
— 1975. The Legalist School and Legal Positivism. *The Journal of Chinese Philosophy*, 23-56.
— 1984. Kuhn - A Re-appraisal. *Explorations in Knowledge*, Vol.1.

— 1989a/2020. *Social Philosophy and Ecological Scarcity*. London: Routledge.
— 1989b. *The Positivist Science of Law*. Gower, Hampshire: Avebury.
— 1999. *The Natural and the Artefactual: The Implications of Deep Science and Deep Technology for Environmental Philosophy*. Lanham: Lexington Books.
— 2005. *Philosophy and Revolutions in Genetics: Deep Science and Deep Technology*, Palgrave, Basingstoke, (second edition). Basingstoke: Palgrave.
— 2006. *Zoos: A Philosophical Tour*. Basingstoke: Palgrave.
—.2008/2018. *Warp and Weft: Chinese Language and Culture*. New York: Eloquent Books/Amazon Publishing.
— 2012a. Towards Constructing Post-postmodern 21st Century Sciences: The Relevance of Classical Chinese Medicine. In *Asia, Europe Dialogue and the Emergence of Modern Science: Knowledge Crossing Boundaries*. Ed. Bala Arun. New York: Palgrave MacMillan.
— 2012b. *The Philosophical Foundations of Modern Medicine*. Basingstoke: Palgrave Macmillan.
— 2016. Kant and Chinese Philosophy. In *The Interwoven World: Ideas and Encounters in History*. Eds. Burjor Avari and George Joseph. Illinois: Common Ground Publishing.
— 2017a. *The Philosophical Foundations of Classical Chinese Medicine: Philosophy, Methodology, Science*. Lanham: Lexington Press.
— 2017b. RCTs & EBM as Gold Standards: A Trojan Horse for Biomedicine? In *Knowing and Acting in Medicine* edited by Robyn Bluhm. Lanham: Rowman and Littlefield International.
— 2017c. Bohr, Quantum Physics and *The Laozi*. *Australasian Philosophical Review*, 2017, 1.3.
— 2018. *Classical Chinese Medicine: Theory, Methodology and Therapy in Its Philosophical Framework*, Lady Stephenson Library, Newcastle-upon-Tyne, Cambridge Scholars Publishing, 2018.
— 2019. Epidemiology is Ecosystem Science. *Synthese* (Springer), 2019. Online: February 2019.
— 2021. *Modern Western and Classical Chinese Philosophy: A Case Study of Intercultural Philosophy*. (Open Access) www.keekoklee.org .
— 2021a. Epidemiology as Interventionist Science: Covid-19 and Non-pharmaceutical Experiments. (Open Access) www.keekoklee.org .
— 2021b. A Diagnosis and a Prognosis of RCT as Gold Standard and Pillar of EBM'. (Open Access) www.keekoklee.org .
Legends of Fuxi and Nüwa. 2019. URL = http://www.absolutechinatours.com/china-travel/legends-of-fuxi-and-nuwa.html .
Les Porcelaines chinoises. 2020. URL = https://www.youscribe.com/catalogue/documents/savoirs/techniques/les-porcelaines-chinoises-du-palais-de-santos-article-n-1-vol-884654
Lewis, M. 2006. *The Flood Myths of Early China.* Albany: State University of New York Press.
Li, J., P. Yuan, R. Zhang et al. 2017. Acupotomy Therapy for Joint Pain Relief of Knee Osteoarthritis -Systematic Review and Meta-Analysis. American College of Rheumatology. Presented in Poster Session on November 6, 2017.
Li, L. 2018. Pinpricks: Needling, numbness, and temporalities of pain. Eds. Chiara Ambrosio and William MacLehose. *Imaging the Brain: Episodes in the History of Brain Research*. Cambridge, Mass. & London: Academic Press.
Li, M. & Y. Liang. 2016. Sun Simiao, super physician of the Tang Dynasty. *Journal of Traditional Chinese Medical Sciences*.
Li, X. & J. Zhao. 2016. The History and Concept of Qi: An Approach to the Nature of Qi in TCM – Qi and Bioenergy. *Qi Encyclopedia*.
*Li, Y. & W. Wang. Eds. 2015. 李艳 王伟恒 编著.《妙用六味地黄丸》*Miao yong liuweidihuang wan*. Beijing: 人民军医出版社 Renmin junyi chuban she.
Lippi D, & E. Gotuzzo. 2013. The Greatest Steps Towards the Discovery of Vibrio Cholerae. In *Clinical Microbiology and Infection* Vol. 20, Issue 3.
*Liu, C. 1980. 刘长林《内经的哲学和中医的方法》，北京：科学出版社. *The Philosophy of 'Neijing' and the Methodology of Chinese Medicine.* Beijing: Science Publications Press.
Liu, F. & J. Zhang. 2013. A Note on Mohist Logic. URL = http://fenrong.net/archives/MohistLogic.pdf.
Liu, L./ 刘力红. 2003. *《思考中医》. 桂林， 广西师范大学出版社/*Exploring Chinese Medicine*. Guilin: Guangxi Normal University Press.
— 2019. *Classical Chinese Medicine*. Trans. G. Weiss and H. Buchtel with S. Wilms. Ed. H. Fruehauf. Hong Kong: The Chinese University of Hong Kong Press.
Loewe, M. 2011. *Dong Zhongshu: A "Confucian" Heritage and the Chunqiu Fanlu*. Leiden: Brill.
Loewe, M., and E. Shaughnessy. 1999. *The Cambridge History of Ancient China*. Cambridge: University of Cambridge Press.

Lokhorst, G. 2020. Descartes and the Pineal Gland. *The Stanford Encyclopedia of Philosophy* (Fall 2020 Edition), Edward N. Zalta (Ed.).
Longhurst, J. 2010. Defining Meridians: A Modern Basis of Understanding. *Journal of Acupuncture and Meridian Studies*, Vol. 3, Issue 2.
Loomba, A. 2015. Third Edition. *Colonialism/Postcolonia*lism. Milton Park: Routledge.
Lucas, T. 2005. Later Mohist Logic, *Lei*, Classes and Sorts. *Journal of Chinese Philosophy*, .32.
*Luo, D./罗大伦. 2011.《古代的中医·七大名一传奇》/ *The Tales of Seven Distinguished Physicians in Ancient Times*. 北京：中医药出版社/Beijing: Chinese Medicinals Publishing House.
— 2014a. 这就是中医 说张锡纯/*Lectures on Zhang Xichun* in the series *This is Chinese Medicine.* URL = http://www.youku.com/ playlist_show/id_4256236.html.
— 2014b. 张锡纯，中西医结合的奠基人/Zhang Xichun: Founding Father of Integrating Chinese and Western Medicines. URL = http://bbs.gdmm.com/thread-2779831-1-1.html.
—.2015.《救命之方》/ *Life-saving Prescriptions.* Jiangxi/Nanchang：江西科学技术出版社/Jiangxi Science and Technology Press.
Maciocia, G. 1989. *The Foundations of Chinese Medicine: A Comprehensive Text for Acupuncturists and Herbalists.* London, New York: Churchill Livingstone.
— 1987. *Tongue Diagnosis in Chinese Medicine*. Seattle: Eastland Press.
— 1994. *The Practice of Chinese Medicine: The Treatment of Diseases with Acupuncture and Chinese Herbs.* London, New York: Churchill Livingstone.
Mair, V. 2002. Sound and Meaning in the History of Characters: Views of China's Earliest Script Reformers. In Ed. Mary S. Erbaugh. *Difficult Characters: Interdisciplinary Studies of Chinese and Japanese Writing*. Ohio: National East Asian Languages Resource Center, Ohio State University.
Major, J. 2012. Review. Michael Loewe. *Dong Zhongshu, a "Confucian" Heritage and the* Chunqiu fanlu. Brill, 2011. In China Review International Vol. 19, No. 2. URL = Document (jstor.org). Retrieved 30/09/2021.
Major, J., S. Queen, A. Meyer and H. Roth. 2010. (Trans. & Eds). *Liu An,* Huainanzi*: A Guide to the Theory and Practice of Government in Early Han China*. New York: Columbia University Press.
Manheimer, E., S. Wieland, E. Kimbrough *et al*. 2009. Evidence from the Cochrane Collaboration for Traditional Chinese Medicine Therapies. *Journal of Alternative and Complementary Medicine*, 15(9): 1001-14.
Mann, A. 2020. What is gravity? *Live Science*. URL = https://www.livescience.com/37115-what-is-gravity.html .
Marks, R. 2017. Qigong and Arthritis. *Medicine*, 4,71.
Marshall, G. et al. 1948. Streptomycin Treatment of Pulmonary Tuberculosis – A Medical Research Council Investigation. *British Medical Journal*, 2, 79-782.
Mass. 2020. URL = https://www.encyclopedia.com/science-and-technology/physics/physics/mass-physics .
Maturana, H. & F. Varela. 1980. 2nd English Edition. *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht/New York: D. Reidel Publishing Company.
Maybee, J. 2016. Hegel's Dialectics. *The Stanford Encyclopedia of Philosophy*, E.N. Zalta (Ed.).
McDonald, J. 2014. Basic concepts of hypothesis testing. URL = http://www. biostathandbook. com/ hypothesistesting.html .
McDonald, J. & S. Janz. 2017. *The Acupuncture Evidence Project: A Comparative Literature Review.* Australia: Australian Acupuncture & Chinese Medicine Association Ltd. URL = file://nask.man.ac.uk/ home$/ Downloads/TheAcupunctureEvidenceProject_McdonaldandJanz_Reissued.pdf.
Mbengue, A., S. Bhattacharjee, T. Pandharkar, *et al*. 2015. A molecular mechanism of artemisinin resistance in *Plasmodium falciparum* malaria. *Nature* 520(7549) : 683-7.
McKeown, T. 1979. *The Role of Medicine: Dream, Mirage or Nemesis?* Oxford: Blackwell.
Merchant, C. 1980. *The Death of Nature: Women, Ecology and the Scientific Revolution.* San Francisco: Harper & Row, Publishers.
Miller, Sara G. 13 December 2016. 1 in 6 Americans Takes a Psychiatric Drug. *Scientific American*. URL = 1 in 6 Americans Takes a Psychiatric Drug - Scientific American .
Milner, S. 2018. Newton didn't frame hypotheses. Why should we? *Physics Today*. URL = https://physicstoday.scitation.org/do/10.1063/PT.6.3.20180424a/full/ .
Millidge, J. 1999. *Chinese Gods and Myths*. Edison, N.J.: Chartwell Books.
Moerman, D. 2002. *Meaning, Medicine and the Placebo Effect*. Cambridge: Cambridge University Press.
Mooney, C. 2003.The pitfalls of seeking a scientific foundation for alternative medicine. *Reason: Free Minds and Free Markets*. URL = https://reason.com/2003/06/01/quacks-and-flacks-2/ .
Morphine as A Cure for Opium Addiction. 2020. URL = https://www.cram.com/essay/Morphine-As-A-Cure-For-Opium-Addiction/F33ZP4FNBXYQ.
Mote, F. 2003. *Imperial China: 900-1800* Cambridge, Massachusetts: Harvard University Press.
Moyers, B. 1993. The Mystery of Chi. Series: *Healing and the Mind*. URL = https://billmoyers.com/content/the-mystery-of-chi/ .

MS vs. NMR: Which One Is a Better Pick for Biofluids Analysis? 2020. URL = https://www. nanalysis. com/ nmready-blog/2020/1/2/ms-vs-nmr-which-one-is-a-better-pick-for-bio-fluids-analysis .

Mundell, E. and C. Murez. 2021. Used to gauge COVID severity, pulse oximeters can be inaccurate on darker skin. URL = Used to gauge COVID severity, pulse oximeters can be inaccurate on darker skin (medicalxpress.com) .

*(The) *Nanjing/* 《难经》. 2015. URL = http://www.baike.com/wiki/%E3%80%8A%E9%9A%BE%E7%BB%8F%E3%80% 8B.

Nature. 06/05/2020. D. Cyarnoski. China is promoting coronavirus treatments based on unproven traditional medicines. URL = https://www.nature.com/articles/d41586-020-01284-x.

NCI Dictionary of Cancer Terms. 2020. Biomarker. URL = https://www.cancer.gov/publications/ dictionaries/ cancer-terms/def/biomarker.

Needham, J. and L. Wang. 1956. *Science and Civilisation in China.* Vol. 2. Cambridge: Cambridge University Press.

**(The) Neijing: explaining and revealing its secrets*. 2011.《解密黄帝内经》in CCTV *Tansuo faxian, a* series of four lectures. URL = http://kejiao.cntv.cn/C24047/classpage/video/20110213/100011.shtml; http://v.ifeng. com/documentary/culture/201110/4a45e136-ffa1-46f1-823d-4f3519a03c43.shtml.

Newton's Three Laws of Motion: Billiard Balls. 2010. Youtube Video.

NICCAM/NCCIH (National Center for Complementary and Integrative Health, NIH). 2016. Traditional Chinese Medicine: In Depth. URL = https:// nccih.nih.gov/health/whatiscam/chinesemed.htm.

Nicholson, J. & J. Lindon. 2008. Systems biology: metabonomics. *Nature* 455, 1054-1056.

Nicholson, J., J. London & E. Holmes. 1999. Metabonomics: understanding the metabolic responses of living systems to pathophysiological stimuli via multivariate statistical analysis of biological NMR spectroscopic data. *Xenobiotica*, 29: 1181-1189.

Nicholson, J. & I. Wilson. 2003. Understanding 'global' systems biology: metabonomics and the continuum of metabolisms. *Nature Reviews Drug Discovery* 2, 668-676.

No Dark Matter = Proof of Dark Matter? 2019. (A PBS broadcast on Space Time). URL = https://www.youtube.com/watch?v=5t0jaE--l0Y.

Noble, D. 2006. *The Music of life: Biology Beyond Genes*. Oxford: Oxford University Press.

Null hypothesis. 2015. URL = https://explorable.com/null-hypothesis; http://mathworld.wolfram.com /NullHypothesis.html; http://www.statisticshowto.com/what-does-it-mean-to-reject-the-null-hypothesis/

O'Connor, J. & I. McDermott. 1997. *The Art of Systems Thinking: Essential Skills for Creativity and Problem Solving*. London: Thorsons.

O'Leary, D. 2020. Medicine's metaphysical morass: how confusion about dualism threatens public health. *Synthese* (doi.org/10.1007/s11229-020-02869-9).

O'Sullivan, S. (2016). *It's all in your head: true stories of imaginary illness.* London: Vintage.

— (2018). *Brainstorm*: *detective stories from the world of neurology*. London: Chatto & Windus.

— (2021). *The Sleeping Beauties And Other Stories of Mystery Illness*. London: Picador.

— (2018). See Detective of the Mind Dr Suzanne O'Sullivan. *Life Scientific*, Radio 4, BBC: an interview by Jim Al-Khalili. URL= https://www.bbc.co.uk/sounds/play/m000112j .

Offray de la Mettrie, J. 1748. *L'homme machine*. Leyden. *Man A Machine* 1750 in English, URL = http://www. cscs.umich.edu/~crshalizi/ LaMettrie/ Machine/.

Omura, Yoshiaki. 2003 (originally published by Japan Publications, Inc., Tokyo 1982). *Acupuncture Medicine: Its Historical and Clinical Background*. New York: Dover Publications.

Osler, W. 1931. 11th Revised Ed. *The Principles and Practice of Medicine*. New York: Appleton.

*Pan, Y. 潘毅. 2013. *Xun hui zhongyi shiluo de yuan shen*《寻回中医失落的元神》, 广东: 广东科技出版社, 2013 年. 2 Volumes. Guangdong: Guangdong Technology Publishers.

Peking Summer Palace Destroyed, October 18, 1860. *History.Com*. URL = https://www.history.com/this-day-in-history/pekings-summer-palace-destroyed .

Peptic Ulcers (Stomach Ulcers). 2020. URL = https://www.niddk.nih.gov/health-information/digestive-diseases/peptic-ulcers-stomach-ulcers.

Perkins, A. 2015. Differences Between an Adversarial and an Inquisitorial Legal System. URL = https://www. ashfords.co.uk/news-and-media/general/differences-between-an-adversarial-and-an-inquisitorial-legal-system .

Peto, R. & V. Beral. 2010. Sir Richard Doll CH OBE: 28 October 1912 – 24 July 2005. *Royal Society (Biographical Memoires*). URL = https://royalsocietypublishing.org/doi/pdf/10.1098/rsbm.2010.0019.

Photograph capturing the process of converting energy into mass. 2018. URL = https://history.aip.org/ exhibits/einstein/ae22.htm.

Pierson, S. 2007. *Collectors, Collections and Museums: The Field of Chinese Ceramics in Britain, 1560-1960*. Berlin & Oxford: Peter Lang.

Pike, O., F. Mackenroth, E. Hill & R. Rose. 2014. A photon-photon collider in a vacuum hohlraum. *Nature Photonics*, 8, 434-436.
Pinto-Correia, C. 1997. *The Ovary of Eve: Egg and Sperm and Preformation*, Chicago: University of Chicago Press.
Plumwood, V. 1993. *Feminism and the Mastery of Nature*. London: Routledge.
Popper, K. 1959. *The Logic of Scientific Discovery*. London: Hutchinson.
— 1963. *Conjectures and Refutations: The Growth of Scientific Knowledge.* London: Routledge.
Porkert, M. 1974. *The Theoretical Foundations of Chinese Medicine: Systems of Correspondence*. Cambridge, MA.: MIT Press.
Porter, R. 1996. Ed. *The Cambridge Illustrated History of Medicine.* Cambridge: Cambridge University Press.
Powers, M. 2018. *China and England: The Preindustrial Struggle for Justice in Word and Image*. Abingdon: Routledge.
Presumption of innocence. 2015. URL = http://legal-dictionary.thefreedictionary.com/ Innocent+until +proven +guilty.
Prigogine, I. 1980. *From Being to Becoming: Time and Complexity in the Physical Sciences.* New York: W. H. Freeman & Co.
Psillos, S. 1999. *Scientific Realism: How Science Tracks Truth*. London: Routledge.
— 2009. *Knowing the Structure of Nature: Essays on Realism and Explanation*. Basingstoke: Palgrave Macmillan,
Psychosomatic Medicine. 2010. *Massachusetts General Hospital Handbook of General Hospital Psychiatry* (Sixth Edition). USA: Elsevier.
Puciani, S., A. Di Lonardo, C. Fagnani & D. Taruscio. 2017. P4 Medicine *versus* Hippocrates. *Annali 1st Super Sanità*, Vol. 53, No.3, 185-191.
Qiu, Y., M, Chen, M, Su, G. Xie, X. Li, M. Zhou, A. Zhao, J. Jiang and W. Jia. 2008. Metabolic profiling reveals therapeutic effects of *Herba Cistanches* in an animal model of hydrocortisone-induced 'kidney-deficiency'. *Chinese Medicine*, 3, 3.
Quan, Y., Z. Wang, M. Xiong, Z. Xiao and H. Zhang. (2014). Dissecting Traditional Chinese Medicines by Omics and Bioinformatics. *Natural Product Communication*, Vol. 9, 9: 1391-1396.
Rainville, S., J. Thompson, E. Meyers *et al*. 2019. (Reporting experiments published in 22 December 2005 Issue of *Nature*.) *Einstein was Right (Again): Experiments confirm that* $E=mc^2$. URL = https:// history.aip. org/ nexhibits/ einstein/emc1.htm.
Rao, Yi, D. Zhang & R. Li. 2016. Authors and Editors. *Tu Youyou And the Discovery of Artemisinin : 2015 Nobel Laureate in Physiology or Medicine.* Singapore: World Scientific Publishing.
Raphals, L. 2012/2020. Chinese Philosophy and Chinese Medicine. *The Stanford Encyclopedia of Philosophy* (April 2015 Edition), Edward N. Zalta (Ed.).
Reihman, G. 2006. Categorically Denied: Kant's Criticism of Chinese Philosophy. *Journal of Chinese Philosophy*, 33 (1). 51-65.
Rescher, N. 1997. *Process Metaphysics: An Introduction to Process Philosophy*. New York: SUNY Press.
— 2000. *Process Philosophy: A Survey of Basic Issues*. Pittsburgh: University of Pittsburgh Press.
Richarz, M. 2008. *The History of the Jews in Europe during the Nineteenth and Early Twentieth Centuries.* URL = http://www. un. org/en/holocaustremembrance/docs/pdf/Volume%20I/ The_History_of_the_Jews_ in_ Europe.pdf.
Ridley, M. 1999. *Genome: Autobiography of a Species*. London: Fourth Estate.
Riegelman, R. and B. Kirkwood. 2015. *Public Health 101 Healthy People – Healthy Populations*. Second Edition. Sudbury, Mass: Jones & Bartlett Learning.
Rifai, N., M. Giletter & S. Carr. 2006. Protein biomarker discovery and validation: the long and uncertain path to clinical utility. *Nature Biotechnology* 24, 971-983.
Robena, R. 2010. Systems Biology – Old Concepts, New Science, New Challenges. *Frontiers in Psychiatry*, 1:1.
Robinet, I. 1997. *Taoism: Growth of a Religion.* Trans. P. Brooks. Stanford: Stanford University Press.
— 2008. *Daojia*. Ed. F. Pregadio, *Encyclopedia of Taoism*. London: Routledge.
Robinson, H. 2016. Dualism. *The Stanford Encyclopedia of Philosophy*, E. N. Zalta (Ed.).
Robinson, T. 1987. *Heraclitus*. Toronto: University of Toronto Press.
Robinson, W. 2015. Epiphenomenalism. *The Stanford Encyclopedia of Philosophy*, E. N. Zalta (Ed.). URL = http://plato. stanford.edu/ entries/epiphenomenalism/.
Roland, J. 2019. Is H. Pylori Contagious? Helpline. URL = https://www.healthline.com/health/h-pylori-contagious.
Rodriguez, T. & V. Stern. 2014. Acupuncture for Depression. *Scientific American Mind* 25, 4, 12.
Role of Environmental Factors in Gene Expression. 2012. *Biotechnology Forums. COM*.
Rumsay, D. 2020. What a p-value Tells You about Statistical Data. URL = http://www.dummies.com/how-to/content/what-a-pvalue-tells-you-about-statistical-data.html

Russell, B. & A. Whitehead (1910-1913). *Principia Mathematica*, 3 Volumes. Cambridge: Cambridge University Press.
Rynasiewicz, R. 2014. Newton's Views on Space, Time and Motion. *The Stanford Encyclopedia of Philosophy.* E. N. Zalta (Ed.).
Ryle, Gilbert. 1949. *The Concept of Mind*. London: Hutchinson.
Sadi Carnot. 2018. URL = http://www.britannica.com/EBchecked/topic/96405/Sadi-Carnot.
Salek, R., L. Emery and S. Beisken. 2019. Metabolomics: An Introduction. URL = https:// www. ebi.ac.uk/ training/online/course/introduction-metabolomics/what-metabolomics.
Salzberg, S. 2018. Open questions: How many genes do we have? *BMC Biology*, 16. 94.
Sample, I. 2013. *Massive: The Higgs boson and the greatest hunt in science.* London: Virgin.
Shaw, V., R. Diogo and I. Winder. 2020. Hiding in Plain sight – ancient Chinese anatomy. *The Anatomical Record*. American Association for Anatomy. URL = https://anatomypubs. onlinelibrary.wiley. com/ doi/ full/ 10.1002/ar.24503
Shaw, V. & I. Winder. 2020. This ancient Chinese anatomical atlas changes what we know about acupuncture and medical history. *The Conversation*: Academic rigour, journalistic flair. URL = https:// theconversation.com/this-ancient-chinese-anatomical-atlas-changes-what-we-know-about-acupuncture-and-medical-history-140506.
Scheid, V. 1995. The Great Qi: Zhang Xichun's Reflections on the Nature, pathology and Treatment of the Daqi. *Journal of Chinese Medicine* 49 (5): 5-16.
— 2002. *Chinese Medicine in Contemporary China: Plurality and Synthesis.* Durham: Duke University Press.
— 2007. *Currents of Tradition in Chinese Medicine: 1626-2006* Seattle: Eastland Press.
— 2014. Convergent Lines of Descent: Symptoms, Patterns, Constellations, and the Emergent Interface of Systems Biology and Chinese Medicine. *East Asian Science, Technology and Society: An International Journal*, 8(1).
Scheid, V. & E. Karchmer. 2015. The History of Chinese Medicine, 1890-2010. *Modern Chinese Religion II, 1850-2015*. Eds. V. Goossaert, J. Kiely& J. Lagerwey. Leiden: Brill, 141-194.
Schettler, T. 2002. A Call for Ecological Medicine. URL = climateandcapitalism.com/2019/01/03/a-call-for-ecological-medicine/.
— 2018. An Ecologic Approach to Health and Disease. URL = https://www.youtube.com/ watch?v= CXCPwI-Ly6Q .
Schliesser, E. 2012. Newtonian gravity as action at a distance (you know, a sympathetic process). URL = http:// www.newappsblog.com/2012/07/newtonian-gravity-as-as-action-at-a-distance-you-know-a-sympathetic-process. html.
Schumacher-Brunhes, M. 2012. *Enlightenment Jewish Style: The Haskalah Movement in Europe.* URL = http://ieg-ego.eu/en/threads/ european-networks/jewish-networks/marie-schumacher-brunhes-enlightenment-jewish-style-the-haskalah-movement-in-europe.
Schwartz, B. 1985. *The World of Thought in Ancient China*. Cambridge: Belknap (Harvard University) Press.
Sellman, J. 2019. *Beyond Dualism: A Review of* Mind and Body in Early China. *The Journal of World Philosophies* 4 (Winter): 166-172.
* *Shendu jiexi liuweidihuang wan de gongxiao yu zuoyong* 深度解析六味地黄丸的功效与作用/*In-depth analysis of the uses and efficacy of liuweidihuang wan*. 2020. URL = http://www.360doc.com/content/ 19/0509/11/58031973_834527535.shtml .
Singh, S. & E. Ernst. 2008. *Trick or Treatment: Alternative Medicine on Trial*. London: Bantam Press.
Silberstein, M. 2009. The cutaneous intrinsic visceral afferent nervous system: A new model for acupuncture analgesia. *Journal of Theoretical Biology*, 261, 4, 637-642.
Silverman, W。A. 1985. *Human Experimentation: A Guided Step into the Unknown.* Oxford: Oxford University Press.
Sinden, R. 2007. Malaria, mosquitoes and the legacy of Ronald Ross. *Bulletin of the World Health Organization.*
Slingerland, E. 2018. *Mind and Body in Early China: Beyond Orientalism and the Myth of Holism*. Oxford and New York: Oxford University Press.
Smith, A. 2011. The Chinese sexagenary cycle and the ritual origins of the calendar. Ed. John Steele, *Calendars and Years: astronomy and time in the ancient and medieval world. Oxford: Oxbow.*
Smith, Richard. 2008. *Fathoming the Cosmos and Ordering the World: The Yijing (I-Ching, or Classic of Changes) and Its Evolution in China.* Charlottesville and London: University of Virginia Press.
Smith, Robin. 2020. Aristotle's Logic. *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta (Ed).
Snow, E. 1937. *Red Star Over China*. London: Victor Gollancz Ltd.
Speed of Light May Not Be Constant (2013). URL = http://news.discovery.com/space/speed-of-light-einstein-physics-130428.htm.
Solomon, M., J. Simon and H. Kincaid. 2017. Eds. *The Routledge Companion to Philosophy of Medicine.* New York and London: Routledge.

St. James, J. 2017. Vintage Drug Addiction: 19th and Early 20th Century Opium Dens. *The World of Wonder Report*. URL - https://worldofwonder.net/vintage-drug-addiction-19th-early-20th-century-opium-dens/.

Stengers, I. 2000. *The Invention of Modern Science*. Trans. D.W. Smith. Minneapolis: University of Minnesota Press.

— 2002/2011. *Thinking with Whitehead: A Free and Wild Creation of Concepts*. Cambridge, Mass: Harvard University Press.

Stern, V. 2014. 5 Scientists Weigh in on Acupuncture. *Scientific American Mind* 25, 4.

Strawson, P. 1959. *Individuals: An Essay in Descriptive Metaphysics*. London: Methuen.

Strimbu, K. & J. Tavel. What are Biomarkers? 2010. *Current Opinion in HIV AIDS*, 2(6): 463-466.

Schwartz, Benjamin. (1985). *World of thought in ancient China*. Cambridge, MA: Belknap Press of Harvard University Press.

Tang, J. 1956. *Zhang Hengqu zhi Xinxinglun ji qi Xingshangxuede Genju* [Zhang Zai's theory of human experience and the capacity for resonance, and its metaphysical basis]. In *Tang Junyi Chuanji* [The collected works of Tang Junyi]. Taibei: Taiwan Xuesheng Shuju.

Tansey, E. 1997. From the Germ Theory to 1945. *Western Medicine: An Illustrated History*. Oxford: Oxford University Press.

Taylor, F. 1979. *The Concepts of Illness, Disease and Morbus*. Cambridge: Cambridge University Press.

Taylor, S. 2009. Correspondence to the Editor, *New England Journal of Medicine*.

Taylor, R. 2014. *On the Shoulders of Medical Giants: What Today's Clinicians Can Learn From Yesterday's Wisdom*. Berlin: Springer.

Tcytcarev, A., R, Bazhenov, E. Amineva & A. Pronin. 2019. Constructive realism: advantages of ontology and methodology. SHS Web of Conferences 72, 04009. URL = http://doi.org/101051/shsconf/2019724009.

Thagard, P. 2000. *How Scientists Explain Disease*. Princeton: Princeton University Press.

The Viral Universe. 2020 *The Economist, Essay*. 20 August.

Thornton, S. 2019. Karl Popper. *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta (Ed).

Three Laws of Thermodynamics. (2020). URL = http://www.physicsplanet.com/articles/three-laws-of-thermodynamics; URL = http://www.zo.utexas.edu/courses/Thoc/Thermodynamics.html.

*Tian Wen. 田文 2012. 灵枢经筋病的治法 —— 燔针解刺再解/*Lingshu jingjinbing de zhifa – fan zhen jie ci zai jie*. URL = http://blog.sina.com.cn/s/blog_7a2e8ce3010127td.html .

Tingle, M. 2014. The logic of phlogiston. Royal Society of Chemistry. URL = https://edu.rsc.org/feature/the-logic-of-phlogiston/2000126.article.

Tong, D. 2017. Quantum Fields: The real building blocks of the universe. Royal Institute Lecture. https://www.youtube.com/watch?v=zNVQfWC_evg .

Top 20 public health achievements of the 21st century. 2020. *Royal Society for Public Health: Vison, Voice and Practice*.

Transcriptomics, 2020. *The Free Dictionary*. URL = https://medical-dictionary.thefreedictionary. com/ transcriptomics.

Tu, Youyou. 2011. The discovery of artemisinin (qinghaosu) and gifts from Chinese medicine. *Nat Med* **17**, 1217-1220.

—. 2015. Artemisinin – A Gift from Traditional Chinese Medicine to the World. URL = https://www.nobelprize.org/uploads/2018/06/tu-lecture.pdf.

— (See book on Tu's work by Rao Yi/Yi Rao et al. 2016.)

Tu, W. 1989. The continuity of being. In J. Baird Callicott & Roger T. Ames (Eds.), *Nature in Asian traditions of thought: Essays in environmental philosophy*. Albany, NY: State University of New York Press.

Tun, K., M. Imwong *et al*. 2015. Spread of artemisinin-resistant *Plasmodium falciparum* in Myanmar: a cross-sectional survey of the K13 molecular marker. *The Lancet*, Vol. 15, Issue 4, 415-421.

Turnbaugh, P., R. Ley, M. Hamady et al. 2007. The Human Microbiome Project. *Nature* 449, 804-810.

UCLA 2018. Who First Discovered Vibrio Cholera? URL = https://www.ph.ucla.edu/epi/snow/firstdiscoveredcholera.html.

Understanding Morphine. 2020. URL = https://www.addictioncenter.com/opiates/morphine/ .

Unschuld, P. 1978. *Approaches to Ancient Chinese Medicine*. Dordrecht: Springer.

— 1979. *Medical Ethics in Imperial China: A Study in Historical Anthropology*. Berkeley: University of California Press.

— 1985. *Medicine in China: A History of Ideas*. Berkeley, CA: University of California Press.

— 1986a. *Medicine in China: A History of Pharmaceutics*. Berkeley, CA: University of California Press.

— 1986b. *Nan-Ching: The Classic of Difficult Issues*. Berkeley, CA: University of California Press.

— 1998. *Chinese Medicine: Translated from the German* by Nigel Wiseman. Brookline, Massachusetts: Paradigm Publications.

— 1993. History of Chinese Medicine. In K. Kiple (Ed.) *The Cambridge World History of Human Disease*. Cambridge: Cambridge University Press.

— 1998. *Chinese Medicine*. Translated from the German by Nigel Wiseman. (Brookline, Massachusetts: Paradigm Publications).
— 2003. *Huang Di Nei Jing Su Wen: Nature, Knowledge, Imagery in an Ancient Chinese Medical Text*. Berkeley: University of California Press.
— 2009. *What is Medicine?: Western and Eastern Approaches to Healing*. Berkeley: University of California Press.
— 2015. Tu's Nobel Prize Not a Win for Ancient Chinese Medicine. CaixinOnline. URL = http://english.caixin.com/2015-12-07/100882768. html.
Vaidya, V. & J. Bonventre. 2010. Eds. *Biomarkers in Medicine, Drug Discovery and Environmental Health*. Oxford: Wiley-Blackwell.
van Norden. B. 2007. *Virtue Ethics and Consequentialism in Early Chinese Philosophy*. Cambridge: Cambridge University Press.
— 2017. *Taking Back Philosophy: A Multicultural Manifesto.* New York: Columbia University Press.
van Wietmarschen, K. Yuan, C. Lu *et al.* 2009. Systems Biology Guided by Chinese Medicine Reveals New Markers for Sub-Typing Rheumatoid Arthritis Patients. *Journal of Clinical Rhematology*. Vol.15, 330-337.
Veltman, K. 1992. *Leonardo da Vinci: Studies of the Human Body and Principles of Anatomy.* URL = http://www.sumscorp.com/img/file/1992_Leonardo_da_Vinci,_Studies_of_the_Human_Body_and_Principles_of_Anatomy.pdf .
von Bertalanffy, L. 1968. *General System Theory: Foundations, Development, Applications.* New York: George Braziller.
Vox, Apr 14, 2020. How images of the coronavirus are made. URL = https://www.vox.com/ 2020/4/14/ 21220839/ images-of-the-coronavirus-how-they-are-made
Wallner, F. 1994. *Constructive realism: Aspects of a new epistemological movement.* Vienna: Braumüller.
— 1998. A New Vision of Science. Delivered at the Twentieth World Congress of Philosophy at Boston, Mass., USA. URL= http://www.bu.edu/wcp/MainScie.htm .
Wallner, F. and G. Klunger. 2016. Eds. *Constructive Realism: Philosophy, Science, and Medicine*. Nordhausen: Verlag Traugott Bautz GmbH.
Wang, M., R-J. Lamers, A. Henrie *et al*. 2005. Metabolomics in the context of systems biology: bridging traditional Chinese medicine and molecular pharmacology. *Phytotherapy Research*, 19: 173-182.
Wang, R. 2005. Dong Zhongshu's Transformation of 'Yin-Yang' Theory and Contesting of Gender Identity. *Philosophy East and West*, 55 (2), 209-231.
— 2012. *Yinyang: The Way of Heaven and Earth in Chinese Thought and Culture*. New York: Cambridge University Press.
Wang, X., H. Sun, A. Zhang, W. Sun, P. Wang & Z. Wang. 2011. Potential role of metabolomics approaches in the area of traditional Chinese medicine: As pillars of the bridge between Chinese and Western medicine. *Journal of Pharmaceutical and Biomedical Analysis*. Vol. 55, 859-868.
Wang, X., A. Zhang, H. Sun & P. Wang. 2012. Systems Biology Technologies Enable Personalized Traditional Chinese Medicine: A Systematic Review. *The American Journal of Chinese Medicine*, Vol. 40, 6, 1109-1122.
Wang, Z, J. Liu, Y. Cheng & Y. Wang. 2011. Fangjiomics: In Search of Effective and Safe Combination Therapies. *Journal of Clinical Pharmacology*, Vol. 51: 1132-1151.
Watts, S. and E. Hayes. 2013. Monastic medicine: medieval herbalism meets modern science. *The European Journal for Science Teachers*, Issue 27.
Weaver, W. 1948. Science and Complexity. *The American Scientist*, 536-544.
Wiener, N. 1948;1965, 2nd Ed. *Cybernetics: or the Control and Communication in the Animal and the Machine*. Cambridge, Mass: MIT Press.
What is arthralgia? 2021. Johns Hopkins Medicine. URL = https://www.hopkinsmedicine.org/health/conditions-and-diseases/arthralgia.
What is the Human Genome Project? 2018. National Human Genome Research Institute. URL = https://www.genome.gov/human-genome-project/What.
What is Systems Biology? 2020. Institute of System Biology. URL = https://systemsbiology.org/about/what-is-systems-biology/.
WHO (World Health Organisation). 2004. *SARS: Clinical Trials on Treatment using a Combination of Traditional Chinese Medicine and Western Medicine*. URL = http://apps. who.int/ medicinedocs/ en/d/Js6170e/.
— 2015. "Overview of malaria treatment". URL = http://www. who.int/malaria/areas/ treatment/ overview/ en/.
WHO-China Joint Mission on Coronavirus Disease. 18/02/2020. URL = https://www.who.int/publications/i/item/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19).
Who first discovered vibrio cholera? URL = https://www.ph.ucla.edu/epi/snow/firstdiscoveredcholera.html .
Who Invented the Microscope? 2013. *Live Science*. URL = https://www.livescience.com/39649-who-invented-the-microscope.html.

Williams, G. and R. Searle. 1958. *The Complete Molesworth*. London: Pavilion Books Ltd., Michael Joseph.
Wilms, S. 2014. Nurturing Life in Classical Chinese Medicine: Sun Simiao on Healing without Drugs, Transforming Bodies and Cultivating Life. *The Journal of Chinese Medicine*.
Wittgenstein, L. 1953. First Edition. Trans. G.E.M. Anscombe. *Philosophical Investigations*. London: Macmillan Publishing Company.
Wolfram, S. 1962. *A New Kind of Science*. Wolfram Media.
Wong, B. 2015. Acupotomy Explained. URL = https://medium.com/@bobwong/how-acupotomy-works-ccfe9f0f4759 .
Wootton, D. 2006. *Bad Medicine*. Oxford: Oxford University Press.
World Health Report. 2003. Chapter 5. "SARS: Lessons from a New Disease". URL = http://www.who.int /whr/2003/ chapter5/en/ index5.html.
**Wuxing*. (2020). URL= http://baike.baidu.com/view/4292.htm; https://baike.baidu.com/ item/%E4%BA%94%E8%A1%8C%E7%9B%B8%E7%94%9F%E7%9B%B8%E5%85%8B/10979545?fr=aladdin .
**Yinyang*. (2020). URL = http://blog.sina.com.cn/s/blog_69da04910101a5ls.html .
Young, R. 2016. *Postcolonialism: An Historical Introduction*. New Jersey: Wiley Blackwell.
*Yu, Hao and Zheng Li/余浩、郑黎著. 2011.《医问道》, 北京: 中国中医药出版社. (*Yi wen dao*. Beijing: Chinese Pharmacological Press).
Zadeh, L. 1962. From Circuit Theory to System Theory. Proceedings of the IRE, 50(5): 856-865.
— 1965. Fuzzy Sets. *Information and Control*, 8, 338-353.
— 1973. Outline of a New Approach to the Analysis of Complex Systems and Decision Processes. *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. SMC-3, 1.
— 1975. Fuzzy Logic and Approximate Reasoning. *Synthese*, 30, 407-428.
Zalta, E. 2019. Gottlob Frege. *The Stanford Encyclopedia of Philosophy* (Winter Edition). Ed. Edward N. Zalta (Ed).
Zhang, A., H. Sun, Z. Wang, P, Wang and X. Wang. 2010. Metabolomics: towards understanding traditional Chinese Medicine. *Plants Med.* / P*lanta Medica*.
Zhang, A., H. Sun, P. Wang, Y. Han & X. Wang. 2011. Modern analytical techniques in metabolomics analysis. *Royal Society of Chemistry*; *Analyst* 2012, 137: 293-300.
Zhang, A, G. Yan, H, Sun *et al*. 2016. Deciphering the biological effects of acupuncture treatment modulating multiple metabolism pathways. *Scientific Reports*, 6, Article number: 199942.
Zhang, D. 张岱年. *1978. *Guanyu Zhang Zai de Xixiang he Zhuzuo* [Concerning Zhang Zai's philosophy and works]. In *Zhang Zai ji* [The collected works of Zhang Zai]. Beijing: Zhonghua Shuju.
— 1982. 《中国哲学史大纲》. (北京: 中国社会科学出版社, 1982). *Key Concepts in Chinese Philosophy*. Tr. Edmund Ryden (2002). Beijing: Foreign Languages Press.
*Zhang, Jingyue. 2015. URL = http://www.zysj.com.cn/mingyi/zhangjingyue/
*Zhang, L. 1990. Ed. *Qi*. Beijing: Renmindaxue chubanshe.
*Zhang, Q. 张其成. 2017. 通则不痛 痛则不通。光明日报 (2017 年 01 月 23 日). URL = https://epaper.gmw.cn/gmrb/html/2017-01/23/nw.D110000gmrb_20170123_1-02.htm .
*Zhang, W. 张微. 2015. 气血通道经络概念溯源/*Qixue tongdao jingluo gainian suyuan"* (中国中医药报, 2010). URL = http://www.39kf.com/TCM/zyjc/2010-01-14-633565.shtml.
Zhang, X. /张锡纯. c1933. On the Relationship Between Medicine and Philosophy. Translated and introduced by H. Fruehauf. URL = http://www.classicalchinesemedicine.org/on-the-relationship- between-medicine-and-philosophy/ .
— *2009.《医学衷中参西录》/ *Yixue zhongzhong canxilu* /山西出版集团/Shanxi: Shanxi chuban jituan.
Zhang, Y. 2007. *Transforming Emotions with Chinese Medicine: An Ethnographic Account from Contemporary China*. Albany: State University of New York Press.
*Zhang Y. and C. Guo. 张义 郭长青. 2010. 浅析针刀疗法与中医学的关系. 《 江苏 中医药》*Jiangsu zhongyiyao*. URL= https://wenku.baidu.com/view/33240542be23482fb5da4c10.html .
* Zhang, Zai. 1978. 《张载集》 *Zhang Zaiji /The Collected Works of Zhang Zai*. Beijing: Zhonghua Shuju.
*Zhang, Zailin 张再林. 2008. 《作为身体哲学的中国古代哲学》(Beijing: 中国社会科学出版社). *Traditional Chinese Philosophy as the Philosophy of the Body*. Beijing: Chinese Social Sciences Publisher.
Zheng, Y. 2005. *The Social Life of Opium in China*. Cambridge: Cambridge University Press.
*Zhu, B. 朱伯昆. 2005. 《易学哲学史》. 北京: 昆仑出版社/*The History of the Philosophy of Yi*. 4 Vols. Beijing: Kunlun Publishers.
*Zhu, H. 朱汉章. 2002. 《针刀医学原理》. 北京人民卫生出版社/*Principles of Acupotomy*. Beijing: *Renmin weisheng chubanshe*.
— 2002. See also 针刀医学原理完整版.doc (book118.com) .

*Zhu, Z. 祝总骧. 1987. 《隐性循经感传线和循经低阻线 的初步研究》/ *Preliminary Report of Research on LPSC and PAP Lines*. URL = http://211.83.206.51/kcms/detail/detail.aspx?filename= ZGZE198703026&dbname= CJFQ1987&dbcode= CJFQ .
— 2007. A Different Point of View. URL = http://www.china.org.cn/english/health/210918.htm.
— 2011.《气血通畅保健康》*Qixue tongchang bao jiankang/Unhindered Passage of Qixue Promotes Health*. 北京：中医古籍出版社/Beijing: *Zhongyi guji chubanshe.*
— 2016. 312 *jingmai* method of health promotion 《 312 经 络 锻 炼 法 》". URL = http://www.meridianenergy.org/312-%E7%B6% 93%E7%B5%A1%E6%B3%95/ .
— 2020 https://www.youtube.com/watch?v=mx7vqom9dMo&list=PLz-ouiw1sNS7kyt9x0WHYcs_GWzPiWc4se .
*Zhu, Z. 祝总骧 & J. Hao 郝金凯. 1998. 《针灸经络生物物理学： 中国第一大发明的科学验证》/ *The Biophysics of the Jingluo Behind Acumoxa: the experimental evidence for a great Chinese scientific discovery*》. 北京: 北京出版社/Beijing: Beijing Publishers.

Chinese Historical Periods and Dynasties

Palaeolithic Period 旧石器时代	ca. 1,7000,000 – 8000 BCE
Neolithic Period 新石器 时代 Yangshao Culture 仰韶文化 Hemudu Culture 河姆渡 文化 Dawenkou Culture 大汶口文化 Majiayao Culture 马家窑文化 Longshan Culture 龙山文化	ca. 8000 – 2000 BCE ca. 5000 – 3000 BCE ca. 5000 – 2500 BCE ca. 4300 – 2500 BCE ca. 3300 – 2050 BCE ca. 2300 – 1900 BCE
Xia Dynasty 夏代	ca. 21st – 16th century BCE
Shang Dynasty 商代	ca. 16th – 11th century BCE
Zhou Dynasty 周代 Western Zhou 西周 Eastern Zhou 东周 Spring and Autumn Period 春秋时代 Warring States Period 战国时代	ca. 11th century – 221 BCE ca. 11th century – 770 BCE 770 -221 BCE 770- 476 BCE 475 – 221 BCE
Qin Dynasty 秦代	221 – 207 BCE
Han Dynasty 汉代 Western Han 西汉 Eastern Han 东汉	206 BCE – 220 CE 206 BCE – 24 CE 25 – 220 CE
Three Kingdoms Period 三国时代	220 – 265 CE
Jin Dynasty 晋代	265 – 420 CE
Northern and Southern Dynasties 南北朝	420 – 589 CE
Sui Dynasty 隋代	581 – 618 CE
Tang Dynasty 唐代	618 – 907 CE
Five Dynasties 五代	907 – 960 CE
Song Dynasty 宋代 Northern Song 北宋 Southern Song 南宋	960 – 1279 CE 960 – 1127 CE 1127 – 1279 CE
Yuan Dynasty 元代	1279 – 1368 CE
Ming Dynasty 明代	1368 – 1644 CE
Qing Dynasty 清代	1644 – 1911 CE
The Republic of China 中华共和国 The People's Republic of China 中华人民共和国	1911 – 1949 CE 1949 -

End

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