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“Classical East and West: Case studies in philosophy and medicine to discuss methods, aims, and results of comparative research”

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A Philological Approach to Comparative Studies?
The Development of Pulse Lore in Classical Greco-Roman and Chinese Medicine

In the spirit of this research seminar, this (relatively full) handout presentation offers a set of materials intended to form the basis for conversation chiefly about methods, aims, and results of comparative studies in general. In the seminar proper, I will offer some remarks connecting the parts of the handout and inviting questions and conversations from the panelists and audience. There are five parts: the first offers some reflections on comparative methodology concerning the history of science and medicine. The second and third introduce the topic of pulse lore in Greco-Roman and Chinese antiquity and briefly survey some milestones in each so as to familiarize the audience with the key issues at hand. The fourth and fifth propose two different comparative methodologies that might be brought to bear on the subject matter. This presentation is very much a ‘work-in-progress’ and is intended principally as an invitation to participants in the seminar to share their own journeys in comparative studies and highlight successes and failures.

Part I: Comparative Methodology

1. The aims of comparative study

“This book is about the beginnings of science and medicine in early China and Greece. It aims to explore comparison, to find a way of gaining from the joint study of two cultures understandings about each that would be unattainable if they were studied alone.”
Geoffrey Lloyd and Nathan Sivin, *The Way and the Word: Science and Medicine in Early China and Greece* (New Haven 2002), xi.

2. A critical response

“I cannot conjecture what understanding I ought to have gained, and as a matter of fact I have not gained any at all—that is to say, the Chinese knowledge which I have learned from *The Way and the Word* has not added a jot to my understanding of the Greeks.”
Jonathan Barnes, “Spiv v. Gentleman,” review of Lloyd and Sivin, *LRB* 25.20 (23 Oct. 2003).

3. Expanding horizons

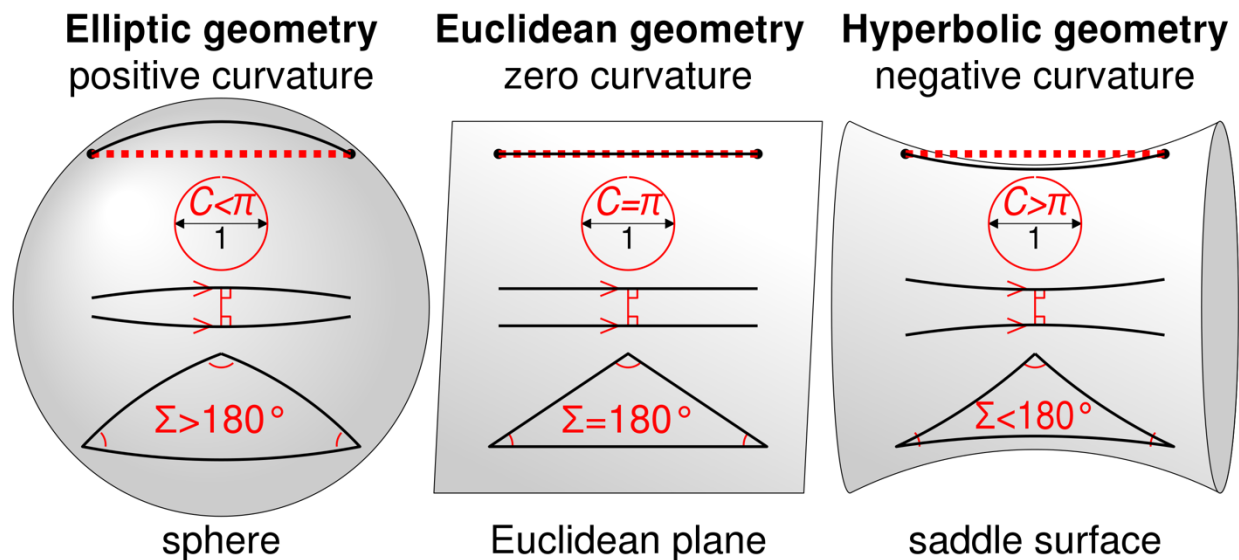
“That confrontation with divergent systems is the occasion for us to expand our horizons, reviewing our assumptions about what needs explaining and the modes of explanation appropriate for that, recovering more of the past and viewing where we are today with

due circumspection.” G. E. R. Lloyd, *Expanding Horizons in the History of Science: The Comparative Approach* (Cambridge 2021), 129.

4. Expanding horizons (cont.)

“... we need all the resources we can muster as antidotes to the hegemonic assumptions that have so often punctuated the history of human endeavours to impose a certain understanding of our predicament” *ibid.* 132.

5. Rejecting the parallel postulate



6. A hermeneutic principle

“Now every continuous whole one part of which is moved while the other remains at rest must, in order to be able to move as a whole while one part stands still, have in the place where both parts have opposed movements some common part which connects the moving parts with one another.” (tr. Farquharson)

ἐπεὶ δ' ἀνάγκη παντὸς συνεχοῦς, οὗ τὸ μὲν κινεῖται τὸ δ' ἡρεμεῖ, ὅλου δυναμένου κινεῖσθαι ἐστῶτος θατέρου, ἢ ἄμφω κινεῖται τὰς ἐναντίας κινήσεις, εἶναι τὸ κοινόν, καθ' ὃ συνεχῆ ταῦτ' ἐστὶν ἀλλήλοις, κ.τ.λ. (Arist. IA 706b18–21)

Part II: Pulse Lore in Greco-Roman Antiquity

7. Τρόμος in Homer

“ . . . just as when a wave falls upon a swift ship, violent, driven by wind from the clouds, and the whole ship is hidden under the spray, and the terrible blast of the wind roars in the sail, and the terrified sailors tremble in their hearts, for they are barely delivered from death . . .”

ἐν δ' ἔπεσ' ὡς ὅτε κῦμα θοῆ ἐν νηὶ πέσησι
λάβρον ὑπαὶ νεφέων ἀνεμοτρεφές· ἦ δέ τε πᾶσα
ἄχνη ὑπεκρῦφθη, ἀνέμοιο δὲ δεινὸς ἀήτη
ἰστίῳ ἐμβρέμεται, τρομέουσι δέ τε φρέναι ναῦται
δειδιότες· τυτθὸν γὰρ ὑπ' ἐκ θανάτοιο φέρονται.
(Hom. *Il.* 15.624–8)

8. A few early milestones in Greek pulse-lore

Aristotle (4th c. BCE) → natural pulsation of blood in vessels, e.g. *HA* 3.19, 521a6–7 σφύζει δὲ τὸ αἷμα ἐν ταῖς φλεψὶν ἅπασι πάντῃ ἅμα τοῖς ζώοις, κ.τ.λ.

Praxagoras of Cos (fl. c. 300 BCE) → distinction between arteries (ἀρτηρίαί, pneuma, have pulse) and veins (φλέβες, blood, no pulse) + diagnostic use of pulsation¹

Herophilus of Chalcedon (generation after Praxagoras) → arteries contain blood + general description of pulse (κινήσεις αἰσθητικαί of arteries) + διαστολή vs. συστολή + general differentiae and differentiae by age (ἡλικία) + rhythmical analysis, etc. + elaboration of diagnostic use

Part III: Pulse Lore in Chinese Antiquity

9. A few early milestones in Chinese pulse-lore

Mawangdui 馬王堆 manuscripts (c. 200 BCE, excavated texts) → 11 vessels (脈) carrying qi (氣) and/or blood distinguished (some uncertainties about precise vessel theory and pathology)

¹ Some Hippocratic texts use pulsation/throbbing for diagnosis and prognosis, but only sporadically and in virtue of its existence rather than as a qualitative variation of natural pulsation (see e.g. O. Lewis, *Praxagoras of Cos on Arteries, Pulse and Pneuma* (Brill 2017), 113).

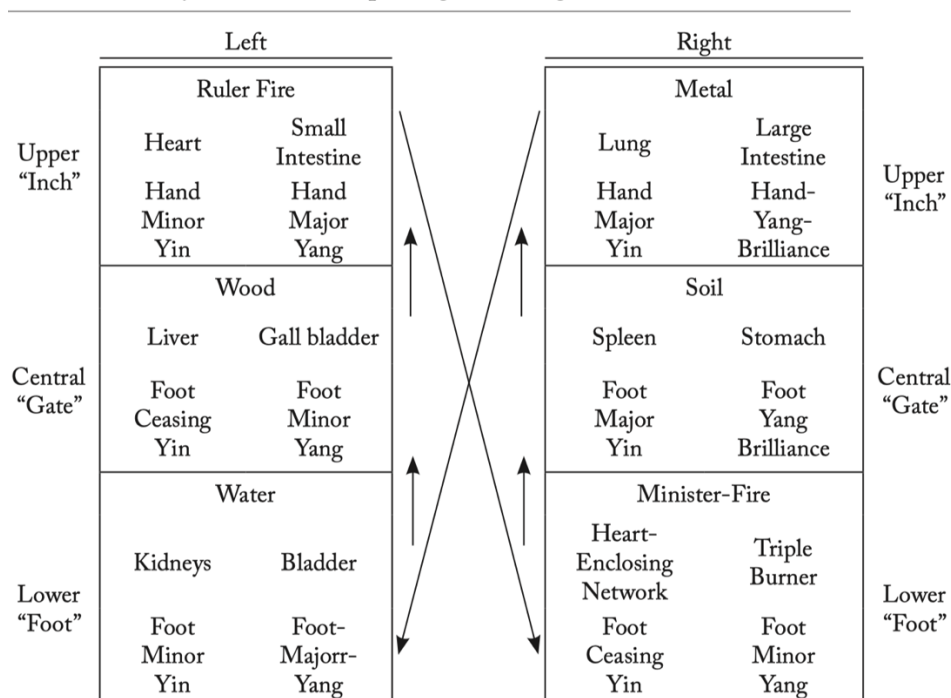
Huangdi neijing 黃帝內經 (oldest parts 2nd/1st c. BCE) → 12 vessels/conduits (經, 脈) carrying qi and/or blood; holes (穴) allow for palpation (切脈) as well as puncturing for treatment (acupuncture)

Circulation (?): “[Huang] Di: ‘I should like to hear [the following]: when man’s five depots experience sudden pain, which qi causes this?’ Qi Bo responded: ‘The flow in the conduit vessels (經脈 *jīng mài*) does not stop. It circulates without break. When cold qi enters the conduits, stoppage and retardation result. [The contents of the vessels] are impeded to the degree that they fail to flow. When [the cold qi] settles outside the vessels, then the blood is diminished; when it settles inside the vessels, then the qi cannot pass through. Hence, there is sudden pain”’ (tr. Unschuld and Tessenow).

帝曰：願聞人之五藏卒痛，何氣使然。岐伯對曰：經脈流行不止，環周不休，寒氣入經而稽遲，泣而不行，客於脈外則血少，客於脈中則氣不通，故卒然而痛。
(*Huangdi neijing* 39, 1b).

Nanjing 難經 (1st/2nd c. CE) → fully developed notion of interconnected circulation of qi in twelve vessels; inch-opening (寸口)/qi-opening (氣口) on one or both wrists allows for checking of the function of respective organs (藏 + 府)

For the most elaborate such schema found in the *Nanjing*, see Unschuld’s diagram based on the 18th difficult issue:



Part IV: Method 1 – “Aetiological-Heuristic”

10. Richard Feynman on why-questions

“Of course, it’s an excellent question [sc. what causes magnetic repulsion]. But the problem, you see, when you ask why something happens, how does a person answer why something happens? For example, Aunt Minnie is in the hospital. Why? Because she went out, slipped on the ice, and broke her hip. That satisfies people. It satisfies, but it wouldn’t satisfy someone who came from another planet and knew nothing about why when you break your hip do you go to the hospital. How do you get to the hospital when the hip is broken? Well, because her husband, seeing that her hip was broken, called the hospital up and sent somebody to get her. All that is understood by people. And when you explain a why, you have to be in some framework that you allow something to be true. Otherwise, you’re perpetually asking why. Why did the husband call up the hospital? Because the husband is interested in his wife’s welfare. Not always, some husbands aren’t interested in their wives’ welfare when they’re drunk, and they’re angry.

And you begin to get a very interesting understanding of the world and all its complications. If you try to follow anything up, you go deeper and deeper in various directions. For example, if you go, “Why did she slip on the ice?” Well, ice is slippery. Everybody knows that, no problem. But you ask why is ice slippery? That’s kinda curious. Ice is extremely slippery. It’s very interesting. You say, how does it work? You could either say, “I’m satisfied that you’ve answered me. Ice is slippery; that explains it,” or you could go on and say, “Why is ice slippery?” and then you’re involved with something, because there aren’t many things as slippery as ice. It’s not very hard to get greasy stuff, but that’s sort of wet and slimy. But a solid that’s so slippery? Because it is, in the case of ice, when you stand on it (they say) momentarily the pressure melts the ice a little bit so you get a sort of instantaneous water surface on which you’re slipping. Why on ice and not on other things? Because water expands when it freezes, so the pressure tries to undo the expansion and melts it. It’s capable of melting, but other substances get cracked when they’re freezing, and when you push them they’re satisfied to be solid.

Why does water expand when it freezes and other substances don’t? I’m not answering your question, but I’m telling you how difficult the why question is. You have to know what it is that you’re permitted to understand and allow to be understood and known, and what it is you’re not. You’ll notice, in this example, that the more I ask why, the deeper a thing is, the more interesting it gets. We could even go further and say, “Why did she fall down when she slipped?” It has to do with gravity, involves all the planets and everything else. Nevermind! It goes on and on. And when you’re asked, for example, why two magnets repel, there are many different levels. It depends on whether you’re a student of physics or an ordinary person who doesn’t know anything. If you’re somebody who doesn’t know anything at all about it, all I can say is the magnetic force makes them

repel, and that you're feeling that force." Excerpt from interview on BBC program *Fun to Imagine*, 1983.

11. Aetiological-heuristic questions

Greek ideas to question:

- ἀρτηρίαὶ καὶ φλέβες
- δύναμις
- πνεῦμα
- ῥυθμός

Chinese ideas to question:

- *qi* 氣
- *yin* 陰 and *yang* 陽
- *wuxing* 五行
- *zang* 藏 (臟) and *fu* 府 (腑)
 - E.g. "Triple Burner" *sanjiao* 三焦

Part V: Method 2 – "Philological-Historical"

12. Παλμός vs. σφυγμός

"Whenever, once again, I read Aegimius' book *On Palpitations*, I find that what we now call 'pulse' was called 'palpitation' by him. But you would find Herophilus, right at the beginning of his treatise *On Pulses*, taking a view opposed to Aegimius', inasmuch as he distinguishes 'pulse' from 'palpitation.'" (tr. von Staden)

ὅταν δ' αὖ πάλιν ἀναγνῶμεν Αἰγίμιου τὸ περὶ παλμῶν βιβλίον, εὐρίσκομεν, ὁ νῦν ἡμεῖς καλοῦμεν σφυγμόν, ὑπ' ἐκείνου παλμόν ὀνομαζομένον. ἐναντίως δ' αὐτῶ τὸν Ἡρόφιλον εὖροις ἂν εὐθὺς ἐν ἀρχῇ τῆς περὶ σφυγμῶν πραγματείας διορίζοντα σφυγμόν παλμοῦ. (Galen, *Diff. pul.* 4.2, K 8.716f. = von Staden T148)

13. Σφυγμός, σπασμός, τρόμος, παλμός according to Praxagoras

"There was no paltry dispute between Herophilus and his teacher Praxagoras concerning these affections [sc. spasm, tremor, palpitation], since Praxagoras had stated incorrectly that palpitation, tremor, and spasm are an affection of the arteries, differing not in kind but in size from the pulsating motion in them. For the pulse, Praxagoras said, occurs when the arteries are in a natural condition, in the absence of every difficult circumstance. But when their motion is increased to an unnatural extent, first spasm is caused; secondly, following upon it, tremor; third, palpitation. All these affections differ from each other in size." (tr. von Staden)

οὐ σμικρὰ δ' ἀντιλογία περὶ τῶν παθῶν τούτων (sc. σπασμῶν, τρόμων, παλμῶν) γέγονεν Ἡροφίλῳ πρὸς τὸν διδάσκαλον Πραξαγόραν, οὐκ ὀρθῶς ἀποφηνάμενον ἀρτηριῶν πάθος εἶναι καὶ παλμόν καὶ τρόμον καὶ σπασμόν, οὐ γένει διαφέροντα τῆς σφυγμώδους ἐν αὐταῖς κινήσεως, ἀλλὰ μεγέθει. κατὰ φύσιν μὲν γὰρ ἐχόντων ἄνευ

πάσης περιστάσεως γίνεσθαι τοὺς σφυγμούς, ἀυξηθείσης δὲ τῆς κινήσεως αὐτῶν εἰς τὸ παρὰ φύσιν πρῶτον μὲν σπασμὸν ἀποτελεῖσθαι, δεύτερον δ' ἐπ' αὐτῷ τρόμον, καὶ τρίτον τὸν παλμόν, ἀλλήλων διαφέροντα μεγέθει πάντα ταῦτα τὰ πάθη. (Galen, *Diff puls.* 4.3 K 8.723f. = von Staden T150)

14. À propos of lexical innovation in the *Nan jing*

“The fourteenth difficult issue: The [movement in the] vessels may be ‘injured’ or ‘arriving.’ What does that mean?” (tr. Unschuld)

十四難曰：脈有損至，何謂也？(*Nan jing* 14.1)

See Unschuld’s note prefacing responses of later commentators:

“The discussion of this difficult issue by the commentators followed the usual path; some adopted the new ideas and attempted to reconcile them as best as they could with other concepts of systematic correspondence, while the conservatives ridiculed any innovation and focused their comments on contradictions with terms and concepts recorded by the *Nei jing*” (P. Unschuld, *Nan Jing: The Classic of Difficult Issues* (Oakland 2016), 154n4).

15. An early interpreter: Yang Xuancao 楊玄操 (7th/8th c. CE)

“The *Huang Di Ba shi yi nan jing* was compiled by Qin Yueren from Bo hai. Yueren had been instructed by [Chang] Sang jun in his secret arts and, as a result, he understood the principles of medicine. He was quite capable of penetrating [the body with his eyes], of recognizing the long-term depots and the short-term repositories, and of opening the intestines and exposing the heart. Because he stood on one level with the Bian Que of the times of Xian Yuan, he was given the honorary name Bian Que. His home was the state of Lu. Hence he was called the “physician from Lu.” Some people believe that the [physician from] Lu and Bian [Que] were two different persons. That is a mistake, though. The *Huang Di nei jing* consists of two volumes with nine chapters each. Its meaning is quite obscure, and it is extremely difficult to analyze it in its entirety. Hence Yueren selected only the most essential elements [of the *Nei jing*], and he combined its two sections in [this *Nan jing*], with its total of eighty-one sections. [Qin Yueren] wrote scroll after scroll in order to widen access to the [principles of medicine]; he inquired about the obscure and traced out hidden meanings in order to transmit them to posterity. He called [his work] “Eighty One Difficult Issues” because the principles [dealt with in this book] are very profound and comprehensive, and not easily understandable. [The book] contains the all-encompassing doctrine of a sage. Hence the name of Huang Di precedes [the title. The book] represents the heart and the marrow of medical literature, it is the pivot in one’s rescue from disease! As one says, its author has made use of the elephant’s

teeth and of the unicorn's horn; he has gathered the feathers of the kingfisher male, and the down of the kingfisher female" (tr. Unschuld, *Nan jing*, 31)

16. Doubts: Xu Dachun 徐大椿 (18th c. CE)

"The *Nan jing* is not a classic. Its aim is to explain difficult issues in the text of the classic. Hence it poses questions concerning these difficult issues and, then, clarifies them. Therefore it is called *Nan jing*. That is to say, it provides an explanation of difficult issues (*nan*) in the text of the classic (*jing*). The purpose of this book, therefore, is to investigate the meaning of the original classic, to elucidate its final principles, to dissolve doubtful aspects, and to provide guidance for students of later times. It is, indeed, of great help for anybody who reads the *Nei jing*. However, some parts of it lack final perfection . . . In the beginning, I greatly revered this [book]. After studying it for a long time I gradually developed some doubts as to whether it might be wrong in some aspects. When I studied it even longer, I lost my faith even in [some statements] which until then I had believed must be correct." (tr. Unschuld, *Nan jing*, 38–41)