Greek and Chinese dichotomies revisited

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Since I wrote at some length, several decades ago, on Polarity as a mode of argumentation in early Greek thought,[1] a word of explanation is in order for my return to the topic. A lot of work has been done, since *Polarity and Analogy*, on the subjects it broached, some with, some against, the grain of its arguments.[2] If I return to the topic of dichotomies now, it is not to go back over old disputes, but rather to see what can be learned, in this area, for the new style of cross-cultural comparative study on which I have embarked in collaboration with the Sinologist Nathan Sivin.[3]

That collaboration has two strategic aims: first to relate the science and philosophy of ancient Greece and of ancient China, far more closely than is ordinarily done, to their respective social, cultural, political and institutional backgrounds; and secondly to examine *both* those backgrounds *and* the intellectual products in each case in the light of the other. It is not as if those two aims correspond to two distinct studies: rather, both have to be pursued concurrently. It is only by being resolutely comparativist that one can see how to define the chief explananda and to see where the key problems lie. Many of the most important issues are liable to remain invisible to a historian working within just *one* ancient culture. That applies both to questions to do with the institutional structure of ancient science and philosophy and those to do with the science and philosophy themselves.

So I approach the subject of dichotomies again, first in the hope that a new comparativist attack will lead to new insights, and secondly to investigate what this study can tell us about how to go about comparing Greek and Chinese thought. There will be lessons to be learnt both about substantive issues and about methodological ones. I shall proceed, in the first instance, by way of a critique of some common assumptions in an effort to clear the ground for a better targeted and more securely grounded discussion of the problems.

Ancient Greek and ancient Chinese ideas on opposition have been juxtaposed

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on innumerable occasions. Sometimes it is with some sense of the difficulties of generalization on either side, with some awareness of the problems of the lacunae and bias of our sources. But whether or not reservations and qualifications are expressed, one very often finds one or other of two diametrically opposed theses being argued for. *Either* the claim is that we are dealing with the same or very similar patterns of thought, in both China and Greece, maybe even ones of universal applicability. *Or* (less often) that the similarities are superficial and mask underlying radical differences that reflect the fundamental contrasts between the two ancient civilizations.

Let me first outline very briefly some points in connection with each of those two theses. Students of early Greek philosophy often do not have to get very far into their subject before they are confronted with comparisons with China. Thus the interplay of opposites and the notion of continual flux in Heraclitus may be compared with Chinese ideas of process.[4] Or again the Pythagorean Table of Opposites, the *sustoichia*, may be compared with Chinese ideas to do with *yin* and *yang*, and with what is correlated with those two principles – often set out, in just the way in which Aristotle reports the Pythagoreans, in the form of a Table of opposed pairs.[5]

It used to be common for some such comparisons to be the starting-point for a search for origins. Who first had the idea that all things go in pairs? This type of question was often answered by the suggestion that perhaps it was neither the Greeks nor the Chinese, but someone in between, the Indians, the Iranians or whoever. Quite what the intermediates in question were supposed to have originated was generally left indeterminate – as between, for example, explicit Tables of Opposites, and implicit ones; that is, ideas that *we* can, if we try, represent as such.[6] Indeed a cynic might remark that the ideas at issue have to be left very vague for any talk of origins to have even the slightest claims to plausibility.

Now such grandiose speculations about origins have, for some time, been on the decline. To start with, any such hypothesis has, indeed, to be massively speculative. In the absence of solid, reliably dated, evidence, the argument that what we have is compatible with whatever grandiose thesis is propounded does not cut much ice;[7] for the evidence, such as it is, is so meagre it is compatible with widely divergent speculations. But the more widespread the use of opposites is believed to be, the less urgent, the less sensible indeed, the attempt to specify some particular spatio-temporal and cultural origin.

The way *that* argument leads is to a view that has also often been expressed in

connection with the appeal to opposites, namely that we are dealing with a universal phenomenon, not just a phenomenon common to many different cultures, but one embedded in thought, language, communication themselves. That effectively removes the need to pursue the Holy Grail of an origin: but only at the cost of leaving all the major problems in place. For if we are dealing with a universal phenomenon, just how the distinctive forms it took in different cultures are to be accounted for is anything but clear.

Of course, with care it is possible to identify certain basic features of all communication. As linguistics pointed out many years ago, all meaning depends on contrast, on difference. Terms signify thanks to the fact that they occupy a more or less determinate place in a contrastive network. Phrases and sentences bring terms into collocations that again signify something – though not necessarily some *one* thing – by not signifying everything. Propositions assert or deny some predicate of some subject and imply the negation of their contradictories, though well-formed propositions are the tools of formal logicians, not the normal currency of communicative exchanges in natural languages.

But it is equally obvious that to locate the similarities between Greek and Chinese oppositions at that level is vacuous. If the varied uses of opposites in both societies merely reflect a universal feature of communication, that blocks further questions just as effectively as the lack of historical data does the pursuit of the question of origins.

Now some extravagant talk of the similarities between Greek and Chinese polarities has been countered, on occasion, by just as dogmatic an insistence on their contrasts. Just to describe them as polarities, and to think of them, thereby, as somehow equivalent, is, on this second view, entirely to miss the significance of the fundamental differences in the ways they were used and in the very nature of the polarities in question.

A typical example of this second view would have it that the basic contrast between Greek and Chinese cultures lies in the aggressive adversariality – the agonistic spirit – that animates the first, and the sense of compromise and the avoidance of confrontation that guide the second.[8] In the sphere of the use of opposites, the point would be that the Greeks very much stressed the opposition between them, the warfare that Heraclitus thought of as father of all and king of all (Fr. 53), the strife that he said *is* justice (Fr. 80), the antagonism and confrontation that seem to be implicit in much of the very vocabulary in which opposition is expressed, in Greek, starting with *antios* and *enantios* themselves.[9]

By contrast, on the Chinese side – so this second point of view would have it – the relationship between *yin* and *yang* is one of mutual interdependence and reciprocity. Even when *yang* is at its strongest, *yin* begins to reassert itself: conversely, at the moment of maximum *yin, yang* already starts to reemerge. *Yin* and *yang* are opposites, for sure, but they are correlatives defined in terms of one another. They are aspectual and relational: what is *yin* in one regard may be *yang* in another. So far from mutually excluding one another, neither exists in isolation from the other.[10]

The second view would have to concede, no doubt, that there is an idea of reciprocity in some Greek talk of opposites. Anaximander's cosmic fragment (Fr. 1) speaks of the penalty (*dikê*) and recompense (*tisis*) paid to one another by certain unnamed, but evidently opposed, forces; in Empedocles the relationship between Love and Strife is governed by a 'broad oath' (Fr. 30); there are many mundane references to the orderly cycle of the seasons; and in Greek medical theory, health is frequently identified as a matter of the balance between opposed factors. But – the argument would be – they are not the central, nor the most characteristic, uses of oppositions in Greek thought. With many Greek pairs of opposites, particularly those that underpin some of their deepest ontological assumptions, the relationship is anything but one of reciprocity and interdependence. Thus, becoming depends upon being, but not vice versa. Appearance depends upon reality, but not vice versa. Again, according to some, in living creatures body depends upon soul, but not vice versa, and again the changing upon the unchanging, and potentiality upon actuality. The examples could be multiplied – though as this multiplication happens, so the extent to which the ideas in question could be claimed to be typical, let alone universal, in Greek thought tends to diminish.

At this point, the opposition between the first, and the second, point of view, between one that emphasizes similarities, and one that stresses differences, between Greek and Chinese polarities, leads very quickly to an impasse. It is obviously futile merely to chalk up points on either side. Rather, the questions that we should be asking have themselves to be rethought. The suggestion I now wish to pursue is that it is not the question of whether this or that type of opposition is more prominent or more central that we ought to focus on, so much as the issue of what work the talk of oppositions does in either culture. *How* are they used to make sense of experience, *what* sense are they expected to make, *how* are they deployed in debate, *how* (to adapt a famous phrase of Lévi-Strauss) are they 'good to think with'?

But to tackle this nexus of questions it is essential to have a much closer look at some of the data, the actual uses of opposition in China and in Greece.

We may begin with China, where it is easy to be taken in by what used to be standard professions to the great antiquity of *yin* and *yang*, and the concept of the five phases, *wu xing*, with which they are associated. The latter used to be called 'elements', but they are not substances, but processes, phases, indeed, in the perpetual transformations of *qi*, breath.[11] Sivin's recent detailed examination of the question of the development of that whole set of ideas makes the fundamental points.

First and foremost the elaboration of *yin/yang* and *wu xing* into complex systems of correspondences is, in the main, a product of Han thought (i.e. not earlier than the end of the third century B.C.E.). Of course that is not to deny that certain uses of these and related ideas go back much earlier. *Yin* and *yang* originally refer to the shady, and sunny, sides of a hill, or the banks of a river. Indeed that is their main usage until the end of the fourth century B.C.E. There are references to the five virtues or powers, *wu de*, antedating the Han, and it is in all probability as five activities, indeed as a set of moral standards, that the concept of *wu xing* first appears. But what is missing from the extant evidence is good, reliably datable, texts from the Warring States period (480-221 B.C.E.), let alone from earlier times, presenting a cosmological use of *wu xing* as five phases. That is the use familiar from the elaborate systems of correlated factors, phases, colours, tastes, seasons, cardinal points, creatures, musical notes and so on, that were so often represented, in old text-books, as 'traditional' Chinese cosmology.[12] The complementarity of members of opposite pairs, father and son, ruler and minister, male and female, can certainly be exemplified readily enough in pre-Han texts: but what cannot, are syntheses based on a cosmological understanding of the five phases.

It is true that there are considerable problems of source-evaluation here, where the work of Graham, Loewe, Shaugnessy, Keegan, and others besides Sivin himself, has taken scholarship a stage beyond that secured by Needham's pioneering forays.[13] Many of the principal classical texts that, in the days before Needham, used to be believed to go back several centuries before the Han, are now recognised to be much later compilations. Either they include work from the Han period or later, or indeed they are products of that period, when they are not even later fabrications. To illustrate: the *Gongsun Longzi*, which purports to be the work of one of the foremost members of the *Ming Jia* (the Lineage of Names, often very misleadingly translated 'sophists'[14]), namely the eponymous Gongsun Long, who

was active down to the mid-third-century B.C.E., is now recognised as a 'forgery' composed between 300 and 600 C.E.[15]

The *Book of Changes* (*Zhou Yi*, or *Yi Jing*), the *Mozi* (the canon of Mohist writings) and the book of Zhuang Zhou, the *Zhuangzi*, are all composite works.[16] Take *Zhuangzi*, where Graham has done much of the fundamental work. Five main strata can be identified, ranging from the third to the second centuries B.C.E., while the text we have stems from an abridgement of Guo Xiang made in the late third or early fourth century C.E.[17]

Similar points apply also to our principal early Chinese medical and mathematical texts. The main recensions of the *Huangdi neijing* ('Inner canon of the Yellow Emperor'), namely the *Tai Su* (Grand Basis), the *Su Wen* (Basic Questions) and the *Ling Shu* (Divine Pivot), date from the Han.[18] The same is also true of our two main early mathematical works, the *Zhoubi Suanjing* and the *Jiu Zhang Suan Shu* (Nine Chapters of the Mathematical Art), where the most recent scholarship establishes, in each case, that the texts we have consist of several distinct strata.[19]

The upshot of this scholarly effort for our understanding of the growth of Chinese cosmological thinking is far-reaching. Cosmology, as such, develops quite late. The role of the philosopher Zou Yan (active around 305-240 B.C.E.), whom Needham considered to be the founder of what he called the Naturalist school,[20] is now seen in a very different light. Sivin's close analysis of all the admittedly limited direct evidence for this thinker leads him to the conclusion that he was, indeed, responsible for important and original ideas, notably an account of the earth that starts with a catalogue of China's contents, including its institutions, and proceeds outwards to encompass parts of the world that no one had seen – or indeed could ever see. But, to quote Sivin's verdict, 'there is no cosmology. The stars in their courses, the rhythms of the seasons... play no part in this expansive scheme.' Zou Yan's Five Virtues (*wu de*, not *wu xing*) imply a mutual conquest system, but that is a story of dynastic change, a 'philosophy of history', and ultimately ethical and political in character.

All of this may seem rather scholastic from the point of view of the use of opposites. After all, someone might ask, what difference it makes *when* precisely the elaboration of *yin-yang* and the five phases into a fully fledged cosmological system took place: it was certainly one of the most important Chinese systematic theories that (everyone must agree) dates from some time before the end of the Han (second century C.E.) at the latest.

But that objection would miss the key point. The date and circumstances of the

development of this cosmology *are* significant. To quote Sivin again: 'The association [of the concepts of *yin yang* and the five phases] with cosmology and science came about, not because they were pulled by the demands of science or technology, theoretical or practical, but because they were fitted into various doctrines that legitimated the workings of the unified and centralized Qin-Han state as a model of Nature's processes. The Han did not spawn a single orthodox ideology, but the yearning for one on the part of rulers and intellectuals led the more or less convergent world view of these philosophies to inform the sciences as they gradually emerged.'

There were special reasons for this 'yearning', both from the side of the rulers and from that of the intellectuals. First, from the side of the rulers: the first Qin emperor had unified China by conquest. When his dynasty collapsed, soon after his death in 210 B.C.E., the legitimacy of the warlords who tried to establish themselves as his successors was anything but assured. The new Han dynasty needed, one might say, all the support it could muster: nor did it achieve it immediately.

As for the intellectuals, they were reacting to what Sivin has called the 'multiple traumata of the Qin-Han transition'. 'First there was the contempt of the First Emperor [viz. Qin Shi Huang Di], the slaughter of scholars, attempts to burn books in private hands. Next was the enormous attrition of books in the warfare that ended the Qin. The upshot was that scholars considered their canons threatened. Transmission was problematic. When in the Han they were offered court protection for their teachings, they jumped at it.'

On this view, the cosmological synthesis of *yin yang* and the five phases served a particular function at a turning-point in Chinese history. The key feature of the system is the unity of the political and the natural orders, with the emperor serving the role of mediator between heaven and earth. The human or social order, the due, properly hierarchical relationships that apply all the way from emperors and their ministers to fathers and sons, was naturalized as a mirror image of the cosmic order, the reciprocity of heaven and earth themselves. To be sure, some of the ideas thus synthesized reach back far into earlier Chinese thought: but what was new was the synthesis. That very neatly served the dual functions, of helping to underpin the emperor's position, and of contriving to provide a *raison d'être* for the literati who helped to secure that underpinning.

Of course, not all the literati joined in; and not all were in favour with the emperors. Not all worked away at, or even applied, some version or other of the

yin yang five-phases synthesis. Some were notably idiosyncratic characters, such as the sceptic Wang Chong of the first century C.E. (an admittedly marginal figure). Yet even he, in the *zi ran* chapter of his book *Lun Heng*, has heaven and earth, high and low, balance one another in a reciprocal relationship parallel to that between male and female. Again, of the technical mathematical treatises, the *Nine Chapters* at least does without a grand cosmological framework.

While reservations must, no doubt, be entered, the crucial point for our understanding of the Chinese use of oppositions remains that they generally serve political purposes: or rather they are, in a broad sense at least, themselves political. We can distinguish, for analytic purposes – as I have just done – between the natural and the social order, but they are parts of a single seamless whole. The emperor's role is not *just* political in the narrow sense. To be sure, his rule directly secures social order; but he has a further more important cosmic function to fulfil. The welfare of the empire as a whole depends on the harmonious relationship between Heaven and Earth – which the emperor's own behaviour, his virtue, has to guarantee. One consequence of this is the direct concern that the emperor had for the study of the heavens (astronomy, as we say), both *li fa* (calendar studies) and *tian wen* (the study of celestial 'patterns' of any kind)– a concern translated into practical, institutional form in the founding and staffing of the imperial Astronomical Bureau.[21]

The balance between Sivin's two remarks, that there was no single orthodoxy under the Han, and yet a strong desire for one, must be respected. Divergences, between individuals and between groups, remained, both within each broad field (medicine, mathematics, astronomy) and between them. Chinese medicine, in particular, was not just a matter of the styles of theory and practice cultivated by the authors of the *Huangdi neijing*, any more than classical Greek medicine was just a matter of the views of the authors represented in the Hippocratic Corpus.

Nevertheless the consensus among Chinese intellectuals, and the sense that they operated within a common conceptual framework and spoke, as it were, the same theoretical language, are far greater than is the case with ancient Greece. But that is understandable, given the relationship between the Chinese literati and the imperial authorities, the role the former played in legitimating the emperor's position, and conversely the direct support the emperors could and did provide for members of the literate elite.[22] In that general socio-political situation, the stress on reciprocity, interdependence, complementarity, that we so often find in Chinese references to pairs of opposites, could be seen as reflecting what were perceived

as the prerequisites of social order. That was an idea that gained momentum with the gradual consolidation of the imperial order under the Han, even if the ideal of complementarity in human relations was one that received eloquent expression already in Confucius.

In this view the emphasis was not so much on the opposition of hierarchically distinct but complementary functions as on the mutual support they could provide one another. What might be thought to be a major exception to this attitude towards opposites, in Chinese medicine, turns out rather to confirm the underlying notion at least as the ideal. Chinese pathology makes much use of the idea of the body attacked by hostile forces from without, the sources of many disorders within.[23] Yet here too the ideal for *health* is often viewed as a matter of balance, and the hostility of the hostile forces is evidently to be deplored as well as controlled.

Our tendency, with the still common Western insistence on the separation of the political and the physical (or scientific) domains, may well be to wonder whether there were not plenty of Chinese classical oppositions that strike a very different note, in the sense that they do not overtly, or even covertly, reflect that implicitly political emphasis on the importance of harmony and reciprocity. That may well be the case, for there are indeed many different types of opposition in classical Chinese thought. Yet if we are looking for scientific uses of opposites that are quite uncontaminated (as we might be tempted to say) by the social and political, we are bound to be disappointed. That very search would, in fact, be deeply anachronistic, and indeed runs counter to the Chinese sense of the seamlessness of the whole constituted by the social and cosmic order. Given that *yin* and *yang* themselves are inherently human as much as cosmic, that seamlessness has to be respected. This is not to apply human analogies to the cosmic situation, nor the reverse: but rather to see heaven and earth, ruler and minister, father and son, old and young, male and female, as all, ideally, embodying the same reciprocal relationship.

If we turn back now to Greek opposites, what chance have we of making better sense of them? Certainly there is no analogue to the dual functions that, in Sivin's interpretation, the *yin yang* and five-phases synthesis served in the crises of legitimacy (both political and intellectual) under the Han. Rather, as I have already said, there was far less consensus among the Greeks in their references to opposites – as in other matters, including in particular a lack of agreement on the question of the ideal, or even the acceptable, political order. Whereas for the Chinese, throughout their history until modern times, there was never any doubt about the political ideal, namely the wise and benevolent rule of a single king or emperor, the

Greeks, as is so well known, engaged in more or less constant argument, from the fifth century B.C.E. until long after they had lost their independence to Rome, about the merits and demerits of democracy, oligarchy, monarchy, and about their varieties, deviations and true types.

I shall come back in due course to explore possible connections between the uses of opposites and political preferences in ancient Greece, but the first and fundamental point is the very diversity of such uses that we find. Not only are they deployed in every kind of inquiry, in metaphysics, cosmology, the exact and natural sciences (as we call them), medicine, ethics and politics: the nature of the relationship between different pairs is quite diverse, as Greek theorists of opposites, such as Aristotle, themselves pointed out. There are, in his view,[24] contradictories (pairs of propositions of which one or other must be true), contraries – which themselves come in two main kinds, those that do, and those that do not, exclude intermediates (as odd and even, and black and white, respectively), correlatives (such as double and half) and privations (such as sighted and blind).

Given this great diversity, it is not at all surprising that examples can be found to suggest both similarities with, and differences from, the uses we have considered from China. There are Greek opposites where the relationship is one of reciprocity and mutual interdependence, and others where the relationship is one of incompatibility, including relationships between pairs of items that belong to different orders or levels of reality. So each of the two, simplistic, viewpoints that I mentioned at the outset – that which sees a basic similarity between ancient Greece and China with regard to polarities, and that which stresses the differences between them – can be said to have some evidence in its favour. But that, of course, does not get us anywhere.

To make some progress in understanding, on the Greek side, we must first press harder on the question of the underlying reasons for that diversity – though no doubt with little hope of encompassing it all. Domain by domain, however, a recurrent feature of much Greek speculative thought at all periods is a certain theoretical free-for-all, as rival 'masters of truth'[25] set out claims and counter-claims on any number of obscure issues in a bid to make a name for themselves. It is repeatedly the case that the starting-point for a new theory, in cosmology, physics, medicine, is the denial of an existing one. To the view that the world came to be is opposed the assertion that it is eternal, to the view that there is just the one world, the idea that there is a plurality, an indefinite or unlimited number, separated from this one in time or space or both, to the view that matter, space and time are infinitely

divisible, the theory that they are constituted by indivisibles. Even when the theories in contention do not take the form of pairs of contradictories, they are nevertheless implicitly opposed to one another, in competition with one another as the one true account of the problem at issue. Opposition here, then, one may say, is the product of rivalry.

Now, that rivalry is already a feature of the second of the two views I sketched at the outset, namely that which – in the manner familiar since Burckhardt – stresses the adversariality, the agonistic spirit, that pervades Greek culture. But the move we need to make, to make better sense of more of our data concerning opposites, is to see that adversariality as not just a first-order matter, of the view that the relationship between certain pairs of opposites is one of hostility: it is also a second-order one as well, of the relationships between different types of theories (and their proponents), including some that emphasize (at the first order) harmony and reciprocity, as well as others that emphasize hostility.

It seems possible to relate this variety of modes of opposition broadly to the circumstances in which Greek intellectuals operated. In the classical period, at least, these were evidently very different from those of their Chinese counterparts. Early Greek philosophers had no emperors to impress. Some certainly found their way to the courts of tyrants (where analogies with the courts of rulers of the pre-Qin Warring States are not too far-fetched).[26] Some Greeks did so to enlist the tyrant's support for a political programme (as Plato seems to have tried with Dionysius II), others just in search of a living. But many more operated in one or other of the more or less democratic, more or less oligarchic, city-states, whether their own, as citizens, or in others, as metics or resident aliens, or simply as visitors. In the fourth century Athens became the centre of philosophy and home of all the main philosophical schools, Plato's Academy, Aristotle's Lyceum, Zeno's Stoa, Epicurus' Garden. Some of these received some support from the political powers of the day: Aristotle's Macedonian connections were enough to get him into trouble with those who thought they saw a political opportunity on Alexander's death in 323. But it was not until Roman times that these schools had stipendiary heads. Throughout the classical and early Hellenistic periods, they were in the main self-supporting, relying on the wealth of their members and (as much and sometimes maybe more) on fee-paying pupils.

From the fourth century onwards the competition among philosophers can be said to be not just for prestige in general, but for those pupils. We know that prospective pupils often 'shopped around', attending different schools before

becoming more firmly attached to one.[27] Dialectical debate was, in Greece, the essence not just of philosophical activity, but of philosophical recruitment. While this point is particularly true of philosophy, it has relevance also throughout the history of Greek medicine. It was not just their patients who paid Greek doctors, but also their pupils. Analogies may be suggested with some Chinese teachers and their institutions, but also disanalogies, notably in that the entry of pupils into the imperial Academies came to be controlled by examination. There was no need there, then, for the members of rival schools to advertise themselves by attempting to outdo one another in public debate on the issues of the day.

So the first argument we might offer is that adversariality is endemic in Greek intellectual life for good *institutional* reasons. But can we go further? Is there a Greek analogue to the political argument mounted by Sivin for China? Again, we must be careful to distinguish between the levels at which we look for connections.

Thus at one level, we certainly find the relationships between opposites described in terms that are directly drawn from the political sphere. The medical theorist Alcmaeon, in the fifth century B.C.E., speaks of health as the *isonomia* (equal rights) of various opposed factors in the body, and of disease as the *monarchia* (sole rule) of one of them (Fr. 4). The term *isonomia* is often associated with democratic ideals – not that we should necessarily infer from his use of that language that Alcmaeon was a democrat or was covertly advocating democracy: we simply have no evidence of his political leanings whatsoever.

But then there is a further complication, namely that talk of equality (*isotês*) at least is not limited to democrats. The oligarchs, too, thought that rights should be distributed equally, but by that they meant what Aristotle calls 'proportional' equality,[28] where the share any individual was given reflected differences in birth or wealth. Some people were, according to the oligarchs, definitely more equal than others.

However the more appropriate level at which to conduct our analysis is deeper: we should focus not on the points where Greek constitutions differed but on what they all had in common. The topic we should now investigate is the hierarchical structures that are present in city-states of every type, a particularly promising subject since it affords the possibility of a direct confrontation with Chinese hierarchizations.

Let us begin with an obvious Greek example. It would be an exaggeration to see Plato's entire metaphysics as just a cover for his political programme – the ideal of philosopher-kings, the insistence that decisions should be left to 'experts'.

However, there are connections that Plato himself points out between his recommendations for the welfare of the state and those for the welfare of the individual. Both depend on the due observance of the fundamental contrast between *what rules* and *what is ruled*, or rather between *what should rule* and *what should be ruled*. A similar idea finds echoes in Aristotle's notorious justification for the view that slavery is a natural institution,[29] merely one of the most striking instances of an authoritarianism that permeates much of his thought, including his natural science. I shall return to that at the end.

But while, unsurprisingly, hierarchical structures are prominent in certain authoritarian political philosophies, we may once again dig deeper. A consideration of the ancient Greek perception of the democratic ideal brings to light some important and unexpected points. Decisions, on the democratic view, should be taken by majority vote. But while those in the minority were obliged to concur in that decision, it was not that they were expected to be happy with it. On the contrary, it was often assumed that they would continue to hold their different view, and might well continue to advocate it in the hope of reversing the decision at a subsequent vote. At Athens during the Peloponnesian war, Thucydides provides many examples of such reversals, even within the space of a few days, such as that which overturned the decision to execute all the Mytileneans who had revolted.[30] While the institutions of the democracy guaranteed free speech – that is the right to address the Assembly – and therefore to try to persuade the majority, it was not imagined that this procured unanimity. So the democratic ideal was not one of total agreement so much as one of the due management of disagreement.[31]

This already brings to light one point where, from a Chinese perspective, what the various Greek political constitutions of the classical period had in common is as striking as where they diverged. The anti-egalitarian, oligarchic ideal was that good order depended on the differences between rulers and ruled being duly observed. Not much is said, by those who promulgated such a view, about the complementarity or interdependence of those two. Some writers emphasize, to be sure, that the good state is for the sake of the whole, not for the good merely of a section:[32] but in that context not much is generally said about the 'whole' including slaves. Rather the stress is on the need for those ruled to obey. But in the egalitarian, democratic, Greek ideal, too, the potential hostility of opposing views is recognized. It is just that the resolution of political disagreements proceeds by way of the vote of the many, not by appeal to the superiority that was claimed to go with birth, or with wealth, let alone simply with greater force.

Politics in the Greek style, in other words, was in this way confrontational through and through, whatever the political preference, whatever the view as to how that confrontation was to be managed.

Moreover, all states exhibited a fundamental cleavage between citizens and the rest. Greek democracies were participatory, not representative, and they involved every citizen far more than the modern democracies we are used to in the West.[33] However it was, of course, *only* the citizens, even if *every* citizen, who participated, who voted in person in the Assembly, served on the jury-courts and so on. The contrasts between citizen and non-citizen, and again between free and slave, and again between Greek and barbarian, and again between male and female, all lie beyond the reach of an egalitarianism actually practised in classical Greek city-states – indeed, beyond most theoretical conceptions of egalitarianism that were ever expressed there. A female 'citizen' was so-called because she was the daughter of a citizen father (in the strict sense) and a 'citizen' mother (in the same sense as herself). The idea of an assembly of women is an absurdity fit only for comic exploitation. Again Greeks and barbarians are both humans, to be sure: but it took the upheavals of Alexander's conquests and the effective crippling of city-state autonomy before the notion that Greeks and non-Greeks alike participated equally as citizens of the world was adopted as an ideal by some political philosophies, notably Stoicism, founded by the Phoenician Zeno of Citium.

It is not that Greek democracy was only a charade. The differences between Greek democracies and Greek oligarchies were real enough, for whether or not political rights should be restricted by criteria of wealth or birth was a live issue. But at a level beyond that contrast, all Greek city-states depended upon hierarchical structures that distinguished, or rather opposed, those with and those without political rights at all. While some Chinese notions of the *inter*dependence of certain categories can, of course, be paralleled in Greece (for the Greeks appreciated well enough the interdependence of male and female in reproduction), in certain key Greek social relations the ideal is of the *in*dependence of the superior from the inferior, of the citizens from the non-citizens on whom, economically, they nevertheless did most assuredly depend. That independence is fundamental to the Greek notion of freedom, *eleutheria*, for what marked out the slave was the necessity to obey, while the free were, precisely, free to decide for themselves.

Any claim that these basic political structures have any relevance to, let alone influence on, the general uses of opposites in Greek philosophy and science that are our *explananda*, will strike many as extravagant. Slave and free, it will be objected,

do not figure in scientific, nor even in metaphysical, Tables of Opposites, and their only importance is strictly in the domain of Greek political theory, where indeed the issue of their relationship was not taken for granted, but was the subject of some debate,[34] even if the opposed theoretical positions adopted were no more than *just* theoretical since they had no actual outcome on the institution of slavery.

That objection has some force, for indeed Greek uses of opposites cannot be reduced to those that convey some kind of notion of hierarchy. Yet first, just as we observed that in ancient China we cannot separate out the domain of the political from the scientific or cosmological, so we may remark that, for all the Greeks' interest in the demarcations of inquiries, their cosmology, their metaphysics, their science all remain deeply permeated by values – as is clear from the explicit justifications that many of the writers in question offered for the inquiries they undertook.[35]

Secondly, the interest in determining *what rules* continues, not just in cosmology but elsewhere in physics, wherever the term for principle, *archê*, still carried its original associations with rule.[36] Greek metaphysical principles *govern* the cosmos, but that meant, for the Greeks, a one-way relationship of dependence – of the cosmos on them, but not of them on the cosmos.

Thirdly and most importantly, a perceived hierarchical distinction within pairs of opposites that we might have expected to have been totally value-free is a feature that is made to do explanatory work in a variety of scientific contexts.

That last point needs elaborating briefly, though many examples will be familiar from other studies.[37] Aristotle, especially, provides some of our most explicit evidence, though in many cases the views he advanced owe a good deal to much earlier Greek beliefs. Thus in each of the pairs right/left, above/below, front/back, the first is the principle (*archê*) not just of one of the three dimensions (breadth, length and depth respectively), but also of one of the three modes of change in living beings, namely locomotion, growth and sensation. Moreover, this provides him with the basis of the explanation he proposes for a wide variety of problems, ranging from why the heavens move in one direction rather than in the other, to such real or assumed facts as the relative positions of the windpipe and the oesophagus, those of the kidneys, the function of the diaphragm and the positions of the vena cava and the aorta.[38]

The point can be extended even to what we might have assumed to be the purely mathematical pair, odd and even. They provide the basis for the Greek classification of integers. But we also find them associated with good and evil respectively

in the Pythagorean Table of Opposites. Further afield still, in classical Greek medicine, the contrast between odd and even days is the basis of one theory of 'critical days', by which the course and outcome of diseases were supposed to be determined and from which they could be predicted. So here too values, even though, of course, not directly political ones, are in play and are used to structure reality. As we should expect from the disputatious relationships between Greek medical theorists, it was not as if the reality so structured was agreed by all of them. But certainly one Greek, or un-Chinese, feature of that structure was that there was no room for compromise as to the good or evil character in question, no room for an idea corresponding to the Chinese perception of *yin* in *yang* and the *yang* in *yin*.

I began with two opposing and admittedly simplistic views, that laid the emphasis, the one on the similarities, the other on the contrasts, between the uses of opposites in classical Greece and China. Both similarities and differences can, indeed, be suggested, though they are not the ones we started with.

In both China and Greece many oppositions are either directly political or carry political, often hierarchical, overtones. Thus far there are some broad similarities.

But first the political messages in the two cases differ, and so too, secondly, do the notions of hierarchy in play. Moreover, thirdly, it is not just that the political situations that obtained in Greece and China in the periods we are concerned with are very different: so too are the positions of intellectuals of different types in the two societies, especially their relationships with political authority and with their own rivals and colleagues.

All three points affect, in differing ways, the styles of argument mounted using opposites. In China, the main points emerge from Sivin's analysis. The reciprocity of heaven and earth, of *yang* and *yin* in all their manifestations, is a key feature in the synthesis that at once legitimated the place of the emperor as mediator between heaven and earth – and secured the role of the literati who acted as his advisers. This synthesis took over many earlier ideas and themes, but it served a distinctive function in its elaborated form in the crises that followed the first grand unification of China.

In Greece, by contrast, dialectical debate, on which the reputations of philosophers and scientists alike so often depended, stimulated – when it did not dictate – confrontation, between theories of opposites as between theories of every kind. The relationship between rival theories is inherently adversarial, leaving little room for the development of a consensus, let alone of an orthodoxy to legitimate

a political – or even an intellectual – programme.

However, below or beyond the level of explicit dialectical debate, the hierarchical structures of Greek society are mirrored in much Greek theorizing with opposites, not just in overtly authoritarian philosophers such as Plato and Aristotle, and not just in philosophy, but also in such other fields as medical theory. Thus notions of the inherent superiority of male to female pervade even those medical theorists who disagreed with the Aristotelian view according to which the male alone produces seed. Even when that view was contradicted and the female too was recognized as producing seed, it was not as if male and female seed were deemed equal.[39]

Besides, as we said, hierarchy appears in different guises when we compare Greece and China. The Chinese repeatedly stress the interdependence of ruler and ruled, of emperor or king and ministers, of high and low. *Yin* and *yang* themselves are in constant interaction and can only be defined in terms of one another. The Greek ideal, by contrast, was often one of the independence, the autonomy, of what is superior.

Thus even when Aristotle recognizes that male and female have to cooperate in procreation, he claims that it is a mark of the superiority of those species of animals where male and female are distinct that that should be the case. While he defines the male by a capacity, he defines the female not by a complementary capacity, but by an incapacity. The male provides the moving cause and the form in generation – while the female provides merely the matter – and that is a mark of the greater 'divinity' of the male.[40] Again, where ruler and ruled more generally are concerned, the fact that the household has to be there for the head of the household to rule is not allowed to obtrude in the characterization of the freedom of the latter. The implicit contrasts with the non-citizen (let alone the slave) are not permitted to surface in the definition of the autonomous activities of the citizen. In one instance after another, the converse of the Greek recognition of the potential hostility between pairs of opposites was a desire to separate them, even when their very opposition connects or joins them.

In the perspective I have adopted here, the usefulness of the study of beliefs concerning opposites in different societies, ancient and modern, lies not in any contribution such a study might be supposed to make to the understanding of universal features of human communication, let alone of the structure of the human mind. No: the debate between universalists and relativists on those questions can hardly be advanced by invoking either the similarities or the differences between

the beliefs we have been discussing, since any argument would presuppose a judgement as to the relative significance of those similarities and differences and so risk being merely circular. Rather, the study of those beliefs provides, if we are careful, an invaluable resource for investigating, first the styles of communicative exchange cultivated in different societies, and beyond that, secondly, the underlying value systems of the societies in question, as these are exemplified not just in their political ideas, ideals and institutions, but also in their cosmological and scientific beliefs. As explained at the outset, it is indeed the relationships between, on the one hand, the scientific ideas produced, and, on the other, the societies that produced them, that are the subject of the wider collaborative investigation on which Professor Sivin and myself have now embarked.

NOTES

1 G.E.R. Lloyd, *Polarity and Analogy* (Cambridge 1966). The basic ideas of this book were worked out in writing my Cambridge PhD dissertation in 1958.

2 I have summarized some of the principal reactions and commented on what I have learnt from them in G.E.R. Lloyd, 'Introduzione all'edizione italiana di *Polarity and Analogy*' in *Polarità ed analogia* (Napoli 1992) 20-4.

3 A brief statement of the aims and scope of this project appeared in G.E.R. Lloyd and N. Sivin, 'Tao and logos: comparing ancient Chinese and Greek science', *Newsletter for the History of Chinese Science* 5 (1993) 165-6.

4 See, for example, J. Needham, *Science and Civilisation in China*, Vol. 2, *History of Scientific Thought* (Cambridge 1956) 37.

5 See, for example, W.K.C. Guthrie, *A History of Greek Philosophy*, Vol. 1, *The Earlier Presocratics and the Pythagoreans* (Cambridge 1962) 251-6.

6 The important distinction between explicit – 'actors' '–categories and those categories only made explicit by outside 'observers' has been brought to bear on the use of oppositions by Jack Goody, *The Domestication of the Savage Mind* (Cambridge 1977) ch. 4.

7 Cf for example many of the arguments used by Colin Renfrew, *Archaeology and Language: the puzzle of Indo-European origins* (London 1987).

8 See, for example, H. Nakamura, *The Ways of Thinking of Eastern Peoples* (Tokyo 1960). Some such idea of a radical contrast between the West and China has a long history going back at least as far as Voltaire, whose *Au roi de la Chine* dates from 1771. I have examined critically the use of this polarity in 'Adversaries and authorities', a paper to be published in the *Proceedings of the Cambridge Philological Society.*

9 Analogous points have been made in connection also with the English term 'opposition' by Rodney Needham, *Counterpoints* (Berkeley 1987) 27-9.

10 With J. Needham, *Science and Civilisation* Vol 2, 232-44, and A.C. Graham, *Yin Yang and the Nature of Correlative Thinking* (Singapore 1986), compare N. Sivin, '*Yin yang* and the five phases' in

G.E.R. Lloyd and N. Sivin, *Tao and Logos: Comparing Ancient Chinese and Greek Science*, forthcoming.

11 Needham already raised objections to translating *wu xing* as five elements, but persisted in that usage himself. For an account of the various cycles in which the five, water, fire, wood, metal and earth, are related, see Needham, *Science and Civilisation* Vol. 2, 242-61, where comparisons with Greek and other element theories are made at 245-6. Compare Sivin '*Yin yang* and the five phases'.

12 See, for example, Needham, *Science and Civilisation* Vol 2, 253-68 and A.C. Graham, *Disputers of the Tao* (La Salle, Illinois 1989) 340-56, though both scholars resist attempts to date such correlations long before the Han.

13 See A.C. Graham, *Later Mohist Logic, Ethics and Science* (London 1978), *Chuang-tzu: The Seven Inner Chapters* (London 1981), *Studies in Chinese Philosophy and Philosophical Literature* (Singapore 1986), E.L. Shaugnessy, *The Composition of the Zhouyi* (PhD dissertation, Chicago 1983), D. Keegan, *The Huang-ti nei-ching* (PhD dissertation, University of California at Berkeley 1988), M. Loewe, ed., *Early Chinese Texts: A Bibliographical Guide* (University of California, Berkeley 1993).

14 This is a point already made by Jean-Paul Reding, *Les Fondements philosophiques de la rhétorique chez les sophistes grecs et chez les sophistes chinois* (Bern 1985), though he continues to apply the term 'sophists' to Chinese thinkers.

15 See Graham, *Studies*, 125-66.

16 See Shaugnessy, *Composition*, and Graham, *Later Mohist Logic*, for the first two of these.

17 See Graham, *Disputers*, drawing on *Studies*, 283-321.

18 See Y. Keiji, 'The formation of the *Huang-ti nei-ching*', *Acta Asiatica* 36 (1979) 67-89, Keegan, *Huang-ti nei-ching*.

19 See K. Chemla and Guo Shujun, (eds.), *Jiu Zhang Suan Shu* (Paris forthcoming) for the latter, and C. Cullen, *Astronomy and Mathematics in Ancient China: the Zhou Bi Suan Jing* (Cambridge forthcoming) for the former.

20 See Needham, *Science and Civilisation*, Vol. 2, 232-42, with which compare Sivin '*Yin yang* and the five phases'.

21 On the founding, operations and subsequent history of the Astronomical Bureau, see, for example, N. Sivin, 'Cosmos and computation in early Chinese mathematical astronomy', *T'oung Pao* 55 (1969) 1-73, Ho Peng Yoke, 'The astronomical bureau in Ming China', *Journal of Asian History* 3 (1969) 137-57, J. Porter, 'Bureaucracy and science in early modern China: the imperial astronomical bureau in the Ch'ing period', *Journal of Oriental Studies* 18 (1980) 61-76.

22 This was not limited to support for those appointed to posts in the Astronomical Bureau: the tradition of philosophers advising rulers goes back to Confucius and was extensively practised both by groups (the Mohists) and by individuals (Hui Shi, Gongsun Long), both in the Warring States period and later. On the rulers' side, the attempt to gather about themselves impressive entourages of 'guests' can be documented, but the role of what are sometimes called Academies, such as the Ji Xia one founded by prince Xuan, is disputed. With Needham, *Science and Civilisation*, Vol. 2, 234-5, compare Sivin '*Yin yang* and the five phases'.

23 See N. Sivin, *Traditional Medicine in Contemporary China* (Ann Arbor 1987) 95-109.

24 Lloyd, *Polarity*, 86-8, gives a summary account.

25 To adapt the expression from M. Detienne, *Les Maîtres de vérité dans la grèce archaïque* (Paris 1967).

26 I have, however, expressed my reservations about finding any analogue to the Greek city-state structure in archaic China in G.E.R. Lloyd, *Demystifying Mentalities* (Cambridge 1990) 125.

27 Diogenes Laertius provides rich, if admittedly anecdotal, evidence to the point in, for example, the lives of Theophrastus (V 36), Euclid of Megara (II 106), Zeno of Citium (VII 1-4), Chrysippus (VII 179, 183-4) and many others. On the topic of philosophical allegiance in Greece, see D. Sedley,

'Philosophical allegiance in the Greco-Roman world' in M. Griffin and J. Barnes, (eds.), *Philosophia Togata* (Oxford 1989) 97-119.

28 Aristotle sets out competing views of the 'equal' in the *Politics*, for example 1280a7-25.

29 Aristotle, *Politics* 1253b14-1255b15.

30 Thucydides III 36-49.

31 Cf N. Loraux, 'Le lien de la division', *Le Cahier du Collège international de la philosophie* 4 (1987) 101-24.

32 This contrast provides the articulating framework for Aristotle's six-fold classification of political constitutions into three good, three deformed or perverted types, at *Politics* 1279a22-b10.

33 Cf R. Osborne, 'Athenian democracy: something to celebrate?', *Dialogos* 1 (1994) 44-58.

34 As is recorded by Aristotle at *Politics* 1253b20-22, 1254a17-20, 1255a3-b15.

35 See, for example, G.E.R. Lloyd, *The Revolutions of Wisdom* (University of California Press, Berkeley 1987) ch. 6, on the justifications offered by Ptolemy for astronomical study, and by Galen for anatomy.

36 Cf Lloyd, *Polarity*, 231-2.

37 Cf Lloyd, *Polarity*, 48-65.

38 See, for example, Aristotle, *On the Heavens* 287b22-288a12, *Parts of Animals* 665a18-26, 667b34--668a4, 671b28-672a1, 672b19-24.

39 See, for example, G.E.R. Lloyd, *Science, Folklore and Ideology* (Cambridge 1983) 86-94 on the Hippocratic treatises, *On the Seed* and *On Regimen*, and cf L.A. Dean-Jones, *Women's Bodies in Classical Greek Science* (Oxford 1994) ch. 3.

40 See, for example, Aristotle, *On the Generation of Animals* 732a1-9.