

**METÁFORAS CONCEITUAIS E O SENTIDO DO CONHECIMENTO:
ORIENTE E OCIDENTE**CONCEPTUAL METAPHORS AND THE SENSE OF KNOWING:
EAST AND WEST

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Resumo

A teoria da metáfora conceitual de George Lakoff and Mark Johnson é uma poderosa ferramenta metodológica que tem sido usada em diversos campos acadêmicos para investigar uma série de questões relativas à cognição humana. A teoria da metáfora conceitual sugere que tanto nosso sentido pré-teórico sobre o que é conhecer algo quanto nossas práticas de aquisição de conhecimento serão formados por metáforas conceituais, quaisquer que sejam elas, que operam nos nossos processos cognitivos, e estas podem diferir entre as culturas. Eu proponho que olhar para as ciências naturais como extensões de um sentido específico pré-teórico do que é o conhecer, aquele que mapeia cognitivamente o conhecimento sobre a experiência do ver, contribui para uma explicação de porque a ciência moderna emergiu no Ocidente e não na China.

Palavras-chaves: teoria da metáfora conceitual; Lakoff and Johnson; conhecer é ver; Neo-Confucionismo; Wang Yangming

Abstract

George Lakoff and Mark Johnson's conceptual metaphor theory is a powerful methodological tool that has been used within many academic fields to investigate a wide range of questions concerning human cognition. Conceptual metaphor theory suggests that both our pre-theoretical sense of what it is to know something and our practices of knowledge acquisition will be shaped by whatever conceptual metaphors are at work within our cognitive processes, and that these may differ between cultures. I argue that regarding the natural sciences as extensions of a specific pre-theoretical sense of what it is to know, one that cognitively maps knowing onto the experience of seeing, contributes to an explanation of why modern science emerged in the West rather than in China.

Keywords: conceptual metaphor theory; Lakoff and Johnson; knowing is seeing; Neo-Confucianism; Wang Yangming.

CONCEPTUAL METAPHORS, SCIENCE, AND THE SENSE OF KNOWING

It is widely recognized that language is often used metaphorically in religious contexts, and many philosophers of religion and theologians have investigated the ways in which metaphor can contribute to religious understanding (McFague 1982; Harrison 2007). Furthermore, the past several decades have seen steadily growing recognition of the importance of metaphor within the sciences, with some scholars pointing out that the use of metaphor in religious contexts is not completely unlike its use in scientific discourse (Soskice 1985).¹ In both religious and scientific contexts, metaphor provides a way to refer to something that is not fully understood (referring to electrons as waves, for instance, or referring to Jesus as the lamb of God).

On the most basic level, metaphors are figures of speech that are employed to talk about one thing using terms that are more typically used about something else. It is highly unlikely that anyone in the ancient world ever thought that God was literally a shepherd. Nonetheless, it is easy to understand how people from a herding culture might have come to talk about God using images and words drawn from their experience of the relation between shepherds and sheep. Ancient texts, like the Hebrew Scriptures, are replete with metaphors that employ the language of everyday experience to talk about more elusive realities. In ancient East Asia, Mencius (fourth century BCE) provides us with another example of this phenomenon when he describes the moral life in terms derived from the everyday experience of cultivating plants (see Van Norden 2008). It is not an easy thing to understand or explain to others how a human being becomes virtuous, but a clever teacher will be able to appeal to something that people typically do understand and of which they are likely to have had some experience. Mencius was aware that many of his contemporaries had some understanding of what is required for the successful cultivation of plants, and he adapted the idea of cultivation from the horticultural context to help people think about their moral experience. By doing so Mencius cleared the way for others to think in a fresh way about the moral life, and many did come to experience it as a process of self-cultivation.

¹ Metaphor has been widely explored with continental philosophy, but interest is not limited to those within that philosophical tradition. For a sample of philosophical work on metaphor, see Johnson (1981).

Mencius' deployment of words and images from horticulture to describe the moral life goes far beyond the use of a simple metaphor that identifies one thing as being like something else ('my love is *like* a rose', for instance). Metaphors like the one employed by Mencius are complex and involve many layers of association. We might speak of someone's moral life as going through a period of drought or suffering from an excess of light, and so on. Mencius himself gave a prominent place within his thinking to the idea that moral sprouts, under suitable conditions, can grow into fully expressed virtues.² Mencius' use of the term 'sprouts' was not merely decoratively and he did not use it as a replacement for a more prosaic literal term. Rather, he clearly thought that the idea he was seeking to explain could be most effectively expressed, explored, and taught to others, using this metaphor. Moreover, it seems very likely that Mencius could not even have articulated his understanding of the moral life without using this metaphor. Surely, he did not begin with a theory formulated in literal language and then wonder how it might be explained in figurative language so as to be more easily understood by his students. This example alerts us to the possibility, to be discussed below, that some metaphors play an irreplaceable role in our thought processes. To see this, consider the difficulty that someone would now have in pursuing moral self-cultivation if they did not think in terms of cultivation at all, or use any of the images associated with it.

The role of metaphor within our cognition was highlighted by George Lakoff and Mark Johnson in their groundbreaking book *Metaphors We Live By* (1980). This work brought the subject of metaphor to the forefront of attention within many areas of philosophy, while also significantly impacting the field of linguistics. In the decades since the publication of *Metaphors We Live By*, Lakoff and Johnson's pioneering theory of conceptual metaphor has been applied within many other domains of inquiry, including economics, politics, Asian studies, religious studies, and, to some extent, theology. Any theory that has been so widely adopted will also have attracted criticism, and Lakoff and Johnson's theory is certainly no exception. As we will see later, Lakoff and Johnson rely heavily on linguistic evidence to support a general theory about human cognitive patterns, and some critics question the extent to which the evidence supports this theory (for a discussion of the main criticisms of conceptual metaphor theory, see Gibbs 2009). Despite

² For a comparative discussion of Mencius' view, see Yearley (1990).

such criticism, there is still wide agreement that Lakoff and Johnson have developed a powerful methodological tool that can be used to investigate a wide range of questions concerning cognition. Some scholars have taken up Lakoff and Johnson's conceptual metaphor theory and developed it in distinctive ways, with Gilles Fauconnier's Blending Theory being the most widely discussed (Fauconnier 2003). Others have applied it to intercultural studies, and especially to ancient Chinese thought (Allan 1997; Slingerland 2003, 2004a, 2004b, 2005, 2011, 2017). In this paper, I suggest that Lakoff and Johnson's understanding of the role of metaphor within our cognitive processes can shed light on a question that many have found perplexing: Given that Sinitic culture was more technologically advanced than western culture in early modernity, why did modern science develop in the West and not in China?³

Almost two decades after the appearance of *Metaphors We Live By*, Lakoff and Johnson published *Philosophy in the Flesh* (1999), in which they explore the role of metaphor within philosophical understanding and philosophical practice. A central plank of their argument is that sophisticated philosophical epistemologies, as well as pre-theoretical folk understandings of knowledge, are irreducibly metaphorical. In *Philosophy in the Flesh*, Lakoff and Johnson argue that we can't understand what it is to know something without connecting it to another type of activity: in other words, without understanding it metaphorically. They claim that understandings of knowledge are metaphorically structured and to some extent culturally specific, as is the activity of knowing and the language that people use to talk about that activity. English speakers, for instance, talk about *grasping* an idea and getting *hold* of a concept. People typically have available to them a range of, what Lakoff and Johnson call, 'conceptual metaphors' with which to understand, experience, and talk about knowledge.

The acquisition of knowledge can be regarded as a very basic and universal drive of all normally functioning human beings. Conceptual metaphor theory suggests that both our pre-theoretical understanding of what it is to know something and our practices of knowledge acquisition will be shaped by whatever conceptual metaphors are at work within our cognitive processes. Given that knowledge acquisition is a fundamental goal

³ The desire to answer this question fuelled the work of, for example, the prolific scientist and Sinologist Joseph Needham (1900-1995). Volume 1 of Needham's multi-volume work *The Science and Civilisation of China* appeared in 1956.

of those involved in the sciences, it seems likely to be fruitful to consider what light conceptual metaphor theory might shed on the sciences when they are viewed as a specific mode of knowledge production and acquisition. For the sake of exploring the idea that conceptual metaphor theory can contribute to an explanation of why modern science emerged in the West rather than in China, I will assume below that we can regard the natural sciences as an extension of a specific pre-theoretical understanding of knowledge, one that is metaphorically embedded.⁴ Before proceeding with my own argument, I provide a very brief introduction to Lakoff and Johnson's theory of conceptual metaphor.

LAKOFF AND JOHNSON ON CONCEPTUAL METAPHOR

In *Metaphors We Live By* (1980), George Lakoff and Mark Johnson introduced the term 'conceptual metaphor' to highlight what they took to be a universal feature of human cognition. A conceptual metaphor is not literally a metaphor because it is not actually a feature of language at all. Conceptual metaphors, according to Lakoff and Johnson, may be at work within a person's cognitive processes even though that person is not actually using any metaphors detectable on the level of language. In attempting to describe a cognitive procedure by using a term familiar from our understanding of language, Lakoff and Johnson – and the many others who have adopted their theory – rely implicitly on a metaphorical use of the word 'metaphor'. By coining this term, Lakoff and Johnson sought to elucidate a common mechanism of cognition whereby one thing is understood by being conceptually mapped onto an understanding of something else. Typically, the 'something else' is more directly accessible to experience than is the thing to be understood. For instance, English speakers often talk about emotions using terms borrowed from their experience of temperature. All competent speakers of English unreflectively know the meaning of stock expressions such as 'she was cold towards him', 'his feelings towards her were lukewarm', or 'her love for him has cooled'.

Conceptual metaphors are regarded, by Lakoff and Johnson, as patterns within human cognition that exercise a profound – yet often unconscious – shaping effect on thought, language, and everyday activity. The evidence for this can be found, they

⁴ I do not claim that this approach can deliver a complete explanation of why science emerged in one place rather than other, at most it can give us one part of the bigger picture.

claimed, by attending to common linguistic patterns that are used to talk about one area of experience using language derived from another. For this reason, investigating the role of cognitive metaphors in cognition involves looking at the way language is used. Common patterns discernible in the way that speakers use language are regarded as an indication that a conceptual metaphor is at work. Patterns found at the surface level language are taken as potential windows onto otherwise hidden cognitive processes. If conceptual metaphor theory is broadly correct, we can get indirect access to at least some of our cognitive processes by attending to what our language reveals about the structure of our thought (Lakoff and Johnson 1980: 4; see also Slingerland 2004b: 9). The linguistic evidence, Lakoff and Johnson maintain, establishes ‘that most of our ordinary conceptual system is metaphorical in nature’ (1980: 4).

To support their view, Lakoff and Johnson supply plentiful and wide-ranging examples drawn from standard modern English. One of the most widely discussed focuses on the range of expressions typically used in the context of argument. For instance, someone might say that an *argument has been lost* (where losing an argument is not like losing a wallet, but like losing a battle) or has been *won* (where winning is like winning a battle rather than winning a lottery; winning an argument by chance when your opponent is suddenly called away is not accorded the same respect as actually winning the argument). These expressions, and many others, are interconnected by being conceptually dependent on a main conceptual metaphor, which Lakoff and Johnson name ARGUMENT IS WAR.⁵ Commenting on these common metaphorical ways of speaking about arguments, Lakoff and Johnson claim:

It is important to see that we don’t just *talk* about arguments in terms of war. We can actually win or lose arguments. We see the person we are arguing with as an opponent. We attack his positions and we defend our own. We gain and lose ground. We plan and use strategies. If we find a position indefensible, we can abandon it and take a new line of attack. Many of the things we *do* in arguing are partially structured by the concept of war. Though there is no physical battle, there is a verbal battle, and the structure of an argument—attack, defense, counterattack, etc.—reflects this. It is in this sense that the ARGUMENT IS WAR metaphor is one that we live by in this culture; it structures the actions we perform in arguing. (1980: 4)

⁵ Lakoff and Johnson introduced the useful convention, which I employ here, of using capital letters to indicate that reference is to a conceptual metaphor and not to the linguistic form in which it is expressed.

This example effectively illustrates what Lakoff and Johnson mean by their claim that some activities are metaphorically structured. Without relying on the metaphor, even if one does so unconsciously, one cannot engage in the activity. Lakoff and Johnson claim that ARGUMENT IS WAR is not unusual in this respect, and that the performance of a very large number of our everyday activities is structured by metaphor. In *Philosophy in the Flesh* (1999), as we have seen, they investigate the conceptual metaphors at work within philosophical thinking. Given the close connection between western philosophy and western science, their work on this raises the intriguing possibility that a similar analysis can be applied to science.

CONCEPTUAL METAPHORS AND SCIENCE

Historians of philosophy and of science have done much to explain the interaction between these two areas of inquiry; an interaction that was especially pronounced during the seventeenth century. During this crucial formative period for both disciplines, natural scientists and philosophers spoke the same language, both figuratively and literally. They shared a conceptual background in neo-Aristotelian, neo-scholastic epistemology and metaphysics, while Latin provided a common language of scholarship.⁶ Furthermore, and well into the eighteenth and nineteenth centuries, many who were involved in the natural sciences were also practicing philosophers, and the goals of both areas of study were widely perceived to be closely aligned.⁷

Knowledge lies at the heart of both philosophy and science, for to acquire it is the goal of each. Yet because the activity of knowing is far removed from our senses it is difficult to think or talk about what we are doing when we know without recourse to metaphor. Conceptual metaphor theory, as explained above, claims that we often understand things that are not directly available to our experience by unconsciously mapping them onto a domain of experience that is more closely tied to one of our senses.

⁶ John Locke's monumental *An Essay in Human Understanding* (1689) was the first significant philosophical text to be published in the vernacular. In that text, Locke engages with the natural sciences of his day, especially the corpuscular theory of matter. Locke sought to provide a philosophical epistemology that would underwrite the new experimental forms of natural science that were gaining ground in his lifetime.

⁷ Rene Descartes (1596-1650), for instance, worked in both philosophy and natural science (as well as mathematics).

As Lakoff and Johnson have demonstrated, and many others have also observed, the linguistic evidence is abundant that the activity of knowing is frequently mapped onto the domain of sight. Here are some of the common linguistic markers in English that indicate the structuring role of the conceptual metaphor that links knowledge and vision:

- As we have seen
- Clarity
- Discern
- Illuminate
- Shed light on
- Enlightening, enlightenment
- Light of reason
- View something in the light of
- Perspective, angle, viewpoint
- Focus on an idea
- I see what you are saying
- Discover a theory
- Philosophical insight

While these words and expressions are widely used, many people employ them without being aware of the underlying conceptual metaphor. A person may routinely use such expressions as ‘shed light on’ or ‘put into perspective’ without noticing the link they are presupposing between knowledge and vision (our vision is better when there is enough light, so shedding light on something will allow us to see it and thereby to know it, likewise, if we are not able clearly to see something we might shift our location so as to gain a different perspective). As Lakoff and Johnson explain, this ‘metaphor is so firmly rooted in the role of vision in human knowing and is so central to our conception of knowledge that we are seldom aware of the way it works powerfully to structure our sense of what it is to know something’ (1999: 394).

Early modern philosophy and natural science were scaffolded upon a widely shared pre-theoretical sense of what it was to come to know something that cognitively

mapped the domain of knowledge onto the domain of vision. This cognitive pairing of knowing and seeing pervaded the wider culture and it provided a shared framework for understanding against which developments within each area of inquiry took place. As Lakoff and Johnson have shown, this widely shared pre-theoretical framework for understanding came to be articulated and formalized in a variety of ways (see, especially, 1999: 393-394). We might think of epistemological theories, such as John Locke's or René Descartes', and scientific methodologies, such as Robert Boyle's or Isaac Newton's. At the core of such theories and methodologies, if Lakoff and Johnson are right, we will be able to discern a pervasive conceptual metaphor that maps the sense of knowing onto our visual experience.

Lakoff and Johnson have labelled this almost ubiquitous conceptual metaphor KNOWING IS SEEING. They claim that when we use this metaphor we unconsciously structure our mental activity of knowing as if it were the concrete activity of visual perception. KNOWING IS SEEING is a primary metaphor because it is grounded one of our core sensory modalities. Learning about the world through our visual faculties is universal to all normally functioning human beings, as it is to many other species of animals, birds and, presumably, fish. Moreover, this is true of human beings irrespective of their historical or cultural background. The universality of the experience of sight renders it a natural resource to draw on to bring to conceptualization something else that is equally fundamental to all normally functioning human beings, although it is harder to conceptualize directly; namely, the sense of knowing. In fact, as Lakoff and Johnson also claim, [i]t is the commonality and experiential grounding of this ubiquitous metaphor that makes it an ideal candidate for sophisticated philosophical elaboration in a wide variety of theories of mind and knowledge' (1999: 394).

The KNOWING IS SEEING metaphor is directly related to the traditional western conception of philosophy as the pursuit of wisdom; philosophers are sometimes described as seeking a comprehensive vision (Hadot 1995; Harrison 2016). It has also shaped western religious ideas over a very long period of time. KNOWING AS SEEING is aligned with the classical western concept of God (omniscience being one of God's omnipowers). It is remarkable, though often over-looked, that vision – and what was available to sight – was also crucial to the natural sciences as they developed within the western cultural sphere, especially once a broadly empirical methodology came to be widely

accepted. Consider the central role of the invention of lenses within the early modern sciences: telescopes helped scientists to look further than had hitherto been possible while, after that development, microscopes helped them to observe the world at a micro-level (Payne 2015).

The high value accorded to observable evidence by many western thinkers, especially from the early modern period to the present, can plausibly be regarded as a consequence of the pre-theoretical link between knowledge and sight. Without the pre-theoretical mapping of the sense of knowing onto visual experience, perhaps observable evidence would not have assumed the prominence that it so clearly did within western science. Many today regard the idea that observable evidence is an essential component of scientific knowledge as self-evident and beyond serious question.⁸ This non-critical attitude is itself a practical demonstration of the deep hold on western culture still maintained by the primary conceptual metaphor that supports the view that observable evidence is the best kind.

The high evaluation of observable evidence has impacted western scholarship profoundly since the early modern period, having a far-reaching effect on many areas of inquiry, including, the philosophy of religion.⁹ Consider the work of the eighteenth-century English philosopher and scientist, William Paley (1743-1805), for example. Paley is well known for his articulation and defence of an argument for the existence of God based on evidence that can be found within the natural world (Paley 2008). Interest in arguments like Paley's (arguments that rely on the availability of observable evidence) has persisted into the twenty-first century, and arguments from design are still widely discussed within current philosophy of religion.

The almost universal and largely uncritical acceptance of the centrality of observable evidence to knowledge in western scholarship can easily mislead people into thinking that it must have been so regarded at all times and in all places. Yet this is clearly not the case. In East Asia, for instance, the link between observable evidence and

⁸ The English word 'evidence' is cognate to the Latin *videre* (to see). This shows that the conceptual link between knowledge and vision is built into the notion of evidence. The words 'theory' and 'demonstration' also betray their roots in this pre-theoretical conceptual link.

⁹ For an informed analysis of the ways in which the notion of evidence has impacted philosophy of religion, see Taliaferro (2005).

knowledge did not take on the importance that it did in the West. This fact requires some explanation given that the mapping of the domain of knowing onto the domain of seeing is grounded in a core human sensory modality, and we would consequently expect to find the KNOWING IS SEEING metaphor in Chinese conceptualizations of knowledge and understanding (Harrison 2015; and see Slingerland 2004a: 327).

There is abundant evidence of the KNOWING IS SEEING metaphor within modern Chinese. Consider, for example, these common Chinese characters and character combinations:

- 日 rì sun
- 月 yuè moon
- 白 bái white
- 明白 míngbai (1) clear, obvious, plain (2) understand, realise, know
- 明亮 míngliàng (1) bright, well-lit, shining (2) clear (of understanding)

This is exactly what we would expect given the grounding of the KNOWING IS SEEING metaphor in universal human experience. However, within traditional Chinese thought KNOWING IS SEEING plays a secondary role to another primary metaphor, one that – as I have proposed elsewhere – is based in the common human experience of locomotion (Harrison 2015, 2016). The sense of knowing that this alternative metaphor brings to expression is not principally a matter of abstract discernment. As Edward Slingerland explains, for the early Chinese thinkers, ‘the culmination of knowledge is understood not in terms of a grasp of abstract principles but rather as an ability to move through the world and human society in a manner that is completely spontaneous and yet still fully in harmony with the normative order of the natural and human worlds—the Dao 道 or “Way”’ (2003: 4). Knowing then has a very practical orientation within the context of early Chinese thought. This practical sense of what it is to know something typically does not implicitly appeal to the connection between knowledge, light and vision; instead, we are pointed in the direction of a different way of knowing. Within traditional Chinese thought, the sense of knowing is primarily brought to conceptualization by mapping it onto the more fundamental sense of moving one’s body.

The dominance of a different primary conceptual metaphor sheds light on many of real differences at the level of conceptual structure found between traditional Chinese thought and that typical of the West (Harrison 2015).¹⁰ It also forms part of an explanation for why observable evidence was typically not accorded a high value by those whose cognition was shaped within the Sinitic cultural sphere. Another part of the explanation is found in neo-Confucianism, a philosophical movement which flourished in China from the 8th century CE (on this movement see Liu 2018 and Ivanhoe 2009).

The form of neo-Confucianism that came to dominate East Asia was promulgated by Wang Yangming (1472-1529). It emphasized the role of introspection in acquiring knowledge. The neo-Confucians inspired by Wang held that the ultimate nature of things was available to us through introspection. In ideal cases, a person living according to the Way was thought to have access to knowledge of all things because his mind was completely harmonized with everything in the universe. One consequence of the success of this position was that externally focused vision came to be regarded as a lower form of knowledge acquisition; one to be despised by the genuine scholar.

Wang's form of neo-Confucianism was convincing to many within China and the wider Sinitic cultural sphere, and its influence does much to explain the widespread lack of interest in the sorts of empirical investigation that were formative of the natural sciences in the West during early modernity.¹¹ The acceptance of introspection as the best route not only to self-knowledge but also to knowledge of the world sheds light on the lack of concern with empirical studies and the paltry value often accorded to observable evidence by many traditional Chinese scholars. It is notable that introspection was rarely taken at all seriously as a potential way to acquire knowledge about the external world within the philosophies or the various scientific methodologies that gained ground in the West after the seventeenth century. As the modern natural sciences developed, it became increasingly taken for granted that psychological explanations for natural phenomena were impermissible if a theory was to be regarded as credible. In short, introspection was quickly and decisively disregarded in the West as a viable means of acquiring knowledge

¹⁰ It is, of course, a generalization to refer to 'traditional Chinese thought' and 'western thought'. Yet, despite the dangers it courts, this generalization can sometimes be helpful provided we remember that each of these rivers of thought is fed by many streams.

¹¹ A host of social and political factors are also relevant but cannot be discussed here. A fuller treatment would consider, for instance, the role of the civil service examinations in setting the scholarly curriculum.

about the natural world.

SEEING AND MOVING

The understanding of scientific inquiry that is now widespread in the globalized modern world can be seen as a product of the pre-theoretical connection between the domains of knowing and seeing. This pre-theoretical preference for the experience of vision as a resource to articulate the more elusive sense of knowing eventually led, in the West, to an emphasis on abstraction and a focus on analysis. The object to be known was to be mentally abstracted from its context and, if possible, analyzed into its smallest parts. It seems plausible to suggest that this push towards greater and greater abstraction and more fine-grained analysis resulted from a largely unconscious conceptual connection between knowing and seeing.

Traditional Chinese ways of thinking typically do not regard understanding as achievable if context is eliminated and systems are analyzed into their component parts. Context is regarded as vital to knowledge, and we can see why this would be so within a conceptual system that linked knowledge and movement. What matters for practical action is the whole picture, which will include both spatial and temporal dimensions. Consider the practice of traditional Chinese medicine. Over many centuries, a large supply of empirical data was recorded, but not in a form that was accessible or useful if it was abstracted from the context in which it was acquired. The data bank was not designed to yield any generalizable results. Traditional Chinese medicine does not regard the body as a collection of small parts that can be understood in isolation from the whole system and, unlike western medicine, it does not focus on symptoms. Instead, it regards the body as an irreducible system, and the goal of the doctor as to keep that system in balance (thereby preventing ill-health). Moreover, each system was regarded as unique and requiring the individual attention of a competent practitioner. The place of the patient within an astrological calendar factoring in solar and lunar cycles as well as movements of the stars also needed to be taken in account by the doctor, taking the distinctiveness of each patient's situation to a whole new level of complexity (see Schipper 1993).

Traditional Chinese medicine illustrates the more general point that systems in motion within a multi-faceted spatial, temporal, and – we can add – social environment

were the concern of traditional Chinese thinkers. The same point can be made by briefly considering the interest many traditional Chinese scholars took in water; they studied its movement with a view to understanding how it might be manipulated and thereby controlled. The concern with water was probably a response to geography. In pre-modernity, the very real danger of flooding in much of China encouraged the development of technological expertise in water management. Yet this expertise was not leveraged into the formulation of general hydraulic theories containing abstract truths about water. We can opine that the objective constitution of water was of no interest because it was regarded as of no direct practical importance.

In conclusion, the goal of modern science is widely thought to be the accumulation of objective knowledge of objects that is acquired by analysing them into the smallest parts that can be studied and isolating them from their contexts within larger systems. The results of scientific work are expected to be obtainable again by any competent person who repeats the relevant experiments, while the knowledge acquired by scientists is usually regarded as detached from any moral or social concerns. In short, the modern sciences are still typically atomistic, acontextual, and amoral (at least, this is what people are commonly led to believe). We could have predicted that such a practice was unlikely to develop and come to prominence within an intellectual environment, such as that of pre-modern China, that was not fundamentally shaped by the conceptual mapping of the domain of knowing onto the domain of vision. Moreover, the dominance of Wang's form of neo-Confucianism, combined with a pre-theoretical mapping of the sense of knowing onto the experience of moving one's body, made it even more unlikely that the forms of empirically based science that were to develop in the early modern West would also be nurtured in China.

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