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A Comparison of Chinese and Western Interpretations of Cause, Will, and Free Will¹

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Abstract

A cross-cultural comparison of how constructs overlapping with cause, will (human cause), and free will (human cause of a controversial kind) have evolved from concrete origins reflected by Chinese pictographs and the Indo-European etymologies of Greek written words. Cause-related constructs compared are Zhang Dainian's 元 (yuán), 因 (yīn), 故 (gù), and 所以 (suóyǐ) and the Greek terms aitia (αἰτία; “cause”), archē (ἀρχή; “origin”) and genesis (γένεσις, “genesis”). 因 (yīn) is said, for example, to show a man enclosed (by determinants, possibly prison walls), while aitia (“cause”) is said to be related to aisa (“fate”) and ultimately to the Indo-European root *aito- (“share,” “allotment,” what fate has—concretely, it is contended here—allotted to a person). Reflections on cause lead to interpretations of the more specific cause called will, encountered as 志 (zhì) and 意志 (yìzhì) in Mandarin. Whether the ancient Greeks relied on a construct like will has been debated, but volition in some sense underlies the hekusion (εκούσιον), the voluntary. Volition immediately raises the much debated issue of whether the will is “free.” i.e., whether there is a subset of willed acts without antecedents, spontaneous, emerging *ex nihilo*. Examination of the etymologies of the characters used to translate the term free will into Chinese—自由的意志 (zìyóu de yìzhì, “freedom of the will”)—and of the Indo-European etymologies of Greek terms like hekusion and prohairesis (προαίρεσις, “deliberated choice”), suggest that neither the Chinese nor the ancient Greeks postulated the existence of free will.

Abstract Terms

Causes are ubiquitous. In the view of most observers, everything—except events on the subatomic level of quantum physics and the mysterious “first cause”—has a cause. Cause is also an abstraction based on observations made by observers in just about every imaginable discipline, though most clearly in the natural sciences.

In the human world, the cause is sometimes said to be the will, a term often implying power (“will power”) or energy. These, in turn, are frequently associated with decisiveness and action.

Finally, the will is sometimes said to be free in a way which implies that it is an emergent generated *ex nihilo*. On this construct the spirits are divided. In the West, it has given rise to interpretations which have split psychology into two camps, often labeled determinist and libertarian. These camps seem to overlap with, and sometimes to be as far apart as, those of the evolutionists and the creationists.

The question of interest here is how these three related and highly abstract constructs evolved from more concrete beginnings in human consciousness. The underlying premise guiding the approach taken is that the best way to understand something abstract and/or complex is to find out how it came about.

An Etymological Approach

Ontogeny is said to repeat phylogeny and one approach to the issue at hand might be to study how concrete terms and abstract concepts evolve in the course of individual development. Piaget (1971), for example, noted parallels between ontogeny and phylogeny and intensively studied how abstract notions like *conservation of volume* arise in the mind of the child.

Another approach is one suggested by a surprising source: B. F. Skinner (1989). Skinner reviewed the evolution of terms referring to mental activities like *deciding*, *analyzing*, *feeling* or *experiencing*. He did so by

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looking at the etymologies of these terms of mostly Latin provenance.

This paper seeks to extend Skinner's approach by pursuing the possibilities that we can go beyond Latin in attempts to trace etymologically and philologically the origins of *cause*-related constructs. Of particular interest are two quite distinct living languages presumed to have a common origin in the deep past. The two languages are Mandarin and Greek. They are promising for two reasons. First, they have evolved quite separately in the East and the West of Eurasia. Second, Mandarin has traceable concrete origins in the pictographs and ideograms used to record it, and the etymologies of Greek words, and those of Indo-European languages in general, have been intensively studied.

The following is thus meant to outline some possibilities in the way in which the terms *cause*, *will*, and *free will* may have evolved in two quite separate contexts.

Chinese *Cause*-Related Characters

Zhang on cause

Zhang (2002) declares flatly that “the concept... ‘cause’” has “no counterpart in ancient Chinese works... because ancient Chinese scholarship did not emphasize analysis” (p. xlv). However, Zhang does list three characters and one two-character term which were used by Chinese scholars in the past and which overlap or allude to what in English we know as cause. These characters and the two-character word are: 元 (yuán), 故 gù, 因 yīn, and 所以 (suóyǐ). In the body of his book, Zhang lists 元 (yuán) under “concepts of growth” and the remaining three terms in a category of their own labeled “causal concepts.” He distinguishes this category from that containing “binary relations,” i.e., relations between polar opposites. This suggests that cause was not necessarily construed to be the opposite of effect and appears to reinforce Zhang's point that cause did not play an important role in Chinese scholarship.

Introducing his book, Zhang (2002, p. xlv) also presents, in passing, two terms pertaining to cause in use in modern Chinese: 因素 (yīnsù) and 元素 (yuánsù). The editor/translator of his work presents the first as “cause,” the second as “original cause.” These terms are interesting because they add the character (sù) to those one might expect to relate to the notion of cause.

The online dictionary of modern Chinese at nciku.com (NCIKU, 2010) translates cause as 起因 (qǐyīn), introducing a final character of interest here in relation to cause: 起 (qǐ).

元 (yuán), 素 (sù), 元素 (yuánsù)

元 (yuán; “origin, beginning”) has been derived from a pictograph showing a person with an exaggerated head. The head being the prime part of the human body, the character came to mean “the origin” (e.g., Henshall, 1998, p. 30). In Japanese, 元 has retained this ancient meaning, in Mandarin it still contributes this meaning of origin in the two-character word 元素 (yuánsù). See below).

素 (sù) can be disassembled into three components, each of which is a character on its own (e.g., Henshall, 1998, p. 229). On a first level, there are 絲 (sī; “thread”) and 垂 (chuí; “drooping, hanging down”). On a second level, 垂 (chuí) turns out to contain 土 (tǔ; “earth, soil”). Each of these component characters comes with its own etymology, some of these are more persuasive than others. 土 (tǔ), for example, is said to be derived from a pictograph showing a “clod of earth on the ground” by Henshall (1998) and from a “plant sprouting out of the earth” by Yoshida et al. (1969). Together these various elements are said to give 素 (sù) meanings like “elemental, primitive, basic, original.”

One might expect the combination 元素 (yuánsù) to mean something like basic or ultimate cause. However, the Nciku.com dictionary translates it most frequently as “factors” in the context of “all factors” or “every factor.” Although the meanings “cause” and “element” (*sensu* “factor,” “determinant”) of the two characters overlap, they do not appear to combine in a particularly obvious way to produce a more specific meaning than either does separately.

因 (yīn), 起 (qǐ), 因素 (yīnsù), 起因 (qǐyīn)

因 (yīn) is said to show a man in an enclosure which some interpret to be a prison and others the house of a host offering shelter. The character's meanings include "cause," "because," "to depend on." There is no obvious pictographic root meaning of the character here, but the focus may originally have been the power of the prison warden or the host to cause things to happen for the enclosed one. The "prison" interpretation is interesting because, in the medieval West, cause denoted a legal cause or case long before it re-acquired its Roman and now present very broad meaning of "thing that has effects," "mover," etc. (e.g., Barfield, 1985; McNaughton & Li, 1999; Kluge; 1975).

起 (qǐ) is confusingly rich in identifiable components which may throw light on its origins and its meaning. On a first level we have 走 (zǒu) and 己 (jǐ), and on a second level 走 turns out to contain 止 (shǐ). Henshall (1998, p. 72) notes that 己 (jǐ) serves as sound element but also contributes the meaning "rearing up" (like a stopped or cornered snake) to 起 (qǐ). 走 means "walk" and its subcomponent 止 means "stop." He endorses the view that 起 (qǐ) can mean "rearing, to rise, arise, occur, cause."

What does this tell us about the modern term 起因 (qǐyīn)? It seems fairly clear that both characters of this word point to cause, 因 in a more general way ("the thing that has effects"), 起 in a more specific way ("something that moves," perhaps like Hume's apparently causal billiard ball).

故 (gù) and 所以 (suóyǐ)

The right half of 故 (gù) is said to represent "a stick in the hand" and to mean "coerce" while the right half is derived from the character meaning "old." Henshall (1998, p. 207) explains its meanings "cause" and "reason" (in the sense of cause) by alluding to something in the past which compels us to do something.

The two characters of Zhang's binome 所以 (suóyǐ) do not overlap with the cause-related characters discussed so far. At least one ancient meaning of the term is hinted at—and contrasted with the meaning of 故 (gù) in a passage Zhang quotes from the Laozi: "That by which (suoyi) rivers are the kings of the valleys is that they are able to descend; thus (gu) they are able to be kings of the valleys..." (Zhang, 2002, p. 277). In this context 所以 (suóyǐ) can be translated, as do Zhang and his translator Ryden, as "the reason why" and 故 (gù) simply as "thus", i.e. as "it follows."

Henshall (1998, p. 93) traces an elaborate derivation of 所 (suó) focusing on the left side of the character meaning "door" and pronounced, in Japanese, ko, cho, and sho and on the right side meaning "axe" and "chop." It appears the left side serves both as sound element and perhaps as "place," originally in the sense of "door" at which the wood was chopped. From "place" the meaning extended to the more abstract "situation" in the sense of "circumstances."

Henshall's (1998, p. 128) suggestions concerning the origins of 以 (yǐ) center on the idea that an original pictograph from which it is derived depicted a person behind a plow. The concrete utensil "plow" may be the origin of a more abstract notion of "means" through which effects are achieved.

Together the two characters 所以 (suóyǐ) appear to have the meanings like "the reason why" in ancient Chinese and of rather vague notions like "so" and even "the" offered by nciku.com in modern Mandarin.

Greek Variants of Cause

Αἰτία (aitia; "cause")

In the Indo-European languages the two most widely used terms referring to determinants, antecedents, agents, movers etc. are the Greek *aitia* and the Latin *causa*. Cicero is sometimes cited as a Roman author who dealt with the Greeks' notion of *aitia* and who translated it, or followed the practice of translating it, as *causa*. The etymological roots of *causa* appear to be a mystery (e.g., Buck, 1949). There is, however, an interesting connection between the Greek and the Latin terms, and the Greek term has been traced to its proto-Indo-European origins. The connection is this: Both *aitia*, in particular in the forms *aition* (e.g., "agent") and *aitios* (an adjective translated not only as "responsible," but also as downright "culpable") refer not solely to physical causes but in large part to human causes. Cicero was a lawyer and Romans had a penchant to *ac-cuse* and to take their *cause* or *case* to court. *Cause*, whatever its etymology might have been, was intimately connected with one's

case, one's explanation, one's arguments about what and who did (caused) what. In the Germanic world the word *Ursache*, the translation of *causa* into Germanic or German, attests to this legal meaning of cause since one's *Sache* is one's case and an *Ur-sache* is something that initiated a chain of other *Sachen*.

Given the implications of culpability, responsibility, and legal argumentations of both *aitia* and *causa*, and given that *causa* is an etymological dead end, the speculations about the etymology—i.e., the roots in human consciousness—of *aitia*, *aition*, and *aitios* are of interest because they throw light on human pondering of origins and explanations that take us much further back in time than even the times of the first Romans, the iron age shepherds on the seven hills of the time of Romulus and Remus circa 800 BC.

In a nutshell, the etymology of interest here can be represented as: *Aitia* (explanation), *aition* (agent), *aitios* (responsible, culpable) <= Greek *aisa* (fate) <= Indo-European **aito-* (share, allotment; what fate has allotted) <= Indo-European **ai-* (to give, to allot, e.g. Buck, 1949, p. 1183; *Chambers Dictionary of Etymology*, 1988, p. 346).

This etymology points to the early Greeks' conceptions of cause: The Greeks of the first western world we know—that of Homer—explained their world in the fatalistic way of Antiquity. The gods, Zeus in particular, determine human fate. But even the gods, including Zeus himself, operate within limits: those set by the mysterious, baffling, and implacable three *moirae*. In Greek mythology these ultimate causes or agents change shape, but in the time of Hesiod they were Klotho, the spinner; Lachesis, the allotter; and Atropos, the inflexible one. The notion of ultimate causes as constituting an allotment and the associated fatalism are deeply rooted in Western culture and similar threesomes appear at other times ranging from the Erynies of Aeschylus's *Oresteia*, the Furies, the Roman *Parcae*, the Germanic *Parzen* or *Nornen*, perhaps the three witches of Shakespeare's *Macbeth*.

In the Aristotelian explanation of how the pot came into being, four elements or causes play a role. They are the clay, *hyle*, the *causa materialis*; the desired or anticipated form of the pot, *eidos*, the *causa formalis*; the idea of what the pot is for, *telos*, the *causa finalis*; and the potter whose hands and tools actually impact on and shape the clay, the *causa efficiens*. Only the last of these pertains to modern *cause*—we see the world as pushed by the past rather than pulled by the future. (This last of Aristotle's four causes also happens to be the one always referred to by its Latin label, never—as far as admittedly non-exhaustive research suggests—by the Greek word or words Aristotle himself must have used.). Modern interpretations indicate that Aristotle used the word *aitia* in the sense of “explanation” to refer to all four of these causes acting together (Hankinson, 1998, p. 238).

The connection between cause and guilt suggests that the notion of will, or something resembling it, appeared as early as the more general abstract notion of cause. Indeed, it has been suggested that *aitios* was initially, and in the Homeric epics, applied to sentient agents, and that it only later was applied to natural and historical causes like the plague “responsible” for the deaths of many Athenians in the fifth century (Hankinson, 1998, p. 73).

Ἀρχὴ (archē; “origin”) and γένεσις (genesis, “genesis”).

Two other Greek terms which convey the sense of cause in one way or another are *archē* (“origin, principle”) and *genesis*. Both are deeply embedded in the various European languages greatly influenced by Greek.

Archē is said to overlap greatly with *aitia* (Nussbaum, 1986, p. 282). Its etymology leads to the Greek verb *arkhein* (literally “to begin,” as in *ancient*, *archaeology*, and *archive*; figuratively “to take the lead,” as in *monarchy* and *architect* (Claiborne, 1989, p. 53). *Genesis* has been linked to the Greek verb *gignesthai* (“to be born”) and to the Indo-European root **gen(h)-* (“to beget,” “to give birth”). It is reflected by words like *generate*, *gene*, *progeny*, *kin*, *genital*, *congenital* and many more.

Will

Chinese notions of will: 志 (zhì, “will”), 意志 (yìzhì, also “will”)

Both Zhang (2002) and the online NCIKU dictionary (NCIKU, 2010) translate “will” as 意志 (yìzhì). Of the two characters comprising this term, the second seems to be the more central one. 志 (zhì) by itself is also translated as “will.” The lower half of the character is 心 (xīn, “heart-mind”); the upper part is 土 (tǔ, “earth,

soil”). This second component is a sound component, but it also modifies the meaning component . According to Henshall (1998, p. 215), 志 is sometimes interpreted as “warrior plus heart” but appears more likely to have represented an “emerging plant plus heart.” 志 is said to mean “movement of the heart.”

意 (yì) is variously translated as “feelings, sentiment, intention.” It combines 音 (yīn, “tone, sound”; “mouth blowing a flute”; Yoshida et al., 1969) with 心 (xīn, “heart-mind”). It is said to mean “oral expression of a thought” (Yoshida et al., 1969). The expression 任意 (rènyì; “arbitrarily,” “at will,” “random”) suggests that 意 points to something quite different from the Western kind of “will” with its connotations of will power and self-determination.

The concrete roots of the word 意志 (yìzhì) thus point to 心 (xīn; “heart”) and, to a lesser extent, to speaking, perhaps fighting, and to emerging (from the ground). 意志 denotes things that arise in an organic manner, from within, or both. Its meaning seems to be quite different from that of the Western will which emanates with often explosive force from the cortex and/or from the faculty of ratio.

Εκούσιον (hekusion, “the voluntary”); βούλομαι (bulomai; “to will, to wish”), and θελω (thelo)

Homeric Greece may not have had a word to express the idea of (human) will or volition (Jaynes, 1976, pp. 70-71). Onians (1973, p. 303) points out the striking fact that the Homeric heroes, however great in battle, are not great decision-makers and are presented as mere puppets manipulated by the gods. By the 5th century, Athenian philosophers made a distinction which on the surface might look as implying human will: Some actions are *hekusios* and most are *akusios*. The terms *hekusion* and *akusion* have typically been translated as “the voluntary” and “the involuntary.”

However, commentators on Aristotle in particular have noted that the Greeks’ distinction and the modern one are not equivalent (e.g., Liao, 2009; Siegler, 1968). For example, while an action is *hekusios* in Aristotle’s sense, and thus subject to ethical judgement, if the organism is its origin (*archē*), the organism could be a child or an animal and the action could be something as mundane as brushing one’s teeth.

Perhaps the ancient Greeks did not have a word for *will* in our modern sense of a mover or agent, but *boulomai* (“to will”) and *boulesis* (“will”) approach our meaning. The following etymology of *boulomai* (Buck, 1949, p. 1160) is suggestive: *boulomai* (“to will, to make a choice”) <= *boule* (“counsel, Council”) <= *ballomai* (“cast about in the mind, ponder, resolve”) <= *ballo* (“throw, put”) <= Indo-European **gwel* and other roots such as **wel* (related to Latin *volere*, English volition).

It should be noted that *thelo* is another widely used Greek term of interest. It is translated as both “will” and “wish.”

Free will

自由的意志 (zìyóu de yìzhì)

This brings us to the extremely controversial subcategory of will called *free will*. Free will is usually translated into Chinese as 自由的意志 (zìyóu de yìzhì). The last two of the characters of this term have been unpacked earlier, the third character 的 (de) in this context is translated as “of” (it also can mean “from,” “to,” etc.). What remains is the two-character word 自由 (zìyóu; “free, freedom”).

自 (zì) is derived from the pictogram representing a nose. The term still means “nose,” it also means “self.”

由 (yóu) has a complicated etymology. Henshall (1998, p. 120) derives it from a pictograph representing a basket and, more specifically, a wine press. An earlier version of 由 is said to depict “drops falling from the basket.” The drops depend on the basket; it is their source, origin, cause. Yoshida et al. (1969) think of the original pictograph as depicting fruit hanging from a branch: the fruit is dependent on the branch. Both sources translate 由 as “to depend on.”

Together, 自 (zì) and 由 (yóu) seem to reinforce and make more specific each other’s meanings of “self” and “depending on”: Freedom of the will according to this reading appears to be the compatibilist freedom of self-determination and agential action in the soft-determinist sense of Deci and Ryan (2008) and Bandura (2008).

Προαιρεσις (prohairesis, “deliberated choice”)

If the Greeks had no term for will, one cannot expect them to have one for free will. It is worthwhile, however, to consider their term *prohairesis* (προαιρεσις). Some have translated it as “free will” (Hirschberger, 1976), others as “deliberated choice” (e.g., Robinson, 1989). Clearly the possibility of free will did not arise in Homeric Greece, but did it, for example, in the work of Aristotle? Scholars do not agree whether Aristotle was a determinist (Irwin, 1980, see Robinson, 1989) or whether he was—implicitly or explicitly—a libertarian (Hardie, 1968; Hirschberger, 1976; Huby, 1967; Sappington, 1990). It seems parsimonious to think of him as a determinist.

Will and Free Will as Recent Western Constructions

The present, extremely cursory, comparison between Mandarin and Greek terms pertaining to *cause*, *will*, and *free will* offers hints to what on the surface appears to be a spectacular evolution of human terms and constructs which help make sense of the world.

A closer look suggests a gradual rather than a punctuated evolution: Later abstractions usually evolved step-by-step from earlier concrete observations and actions. In the case of Mandarin, concrete perceptions have been depicted in pictographs like 囚 (yīn) which is said to show a man enclosed (by determinants, possibly prison walls). In the case of Greek, concrete activities have been expressed originally in Indo-European roots like **aito* (“to give”).

A closer look also suggests the Chinese understanding of *cause* is more holistic and intuitive than the Western understanding which has focused more on analysis of causal sequences in the service of prediction and control. It seems to confirm the prevalent Western view that in China the will of the individual has less significance than it does in the West. Finally, it suggests that the notion of free will in the libertarian sense quite sensibly exists in China only as a concept occurring in translations of Western writings. Much more detailed analyses, by investigators more deeply steeped in Chinese culture, philosophy, and language, is clearly required. Much relevant research is most likely already available on either side of the still formidable Great Wall separating Eastern and Western cultures. But in a nutshell: The issue of free will does not appear to have arisen in the construction and evolution of ideas about *cause* in China.

Similarly, their ideas pertaining to *cause* suggests that the Greeks had a sophisticated vocabulary for describing and identifying causal agents, that they originally saw causes as sentient agents but that these agents were not modern Sartrean agents making courageous decisions, they were basically manifestations—usually personifications—of fate. The actions of Zeus himself had to fit within the possibilities defined by more primary, primal, or primitive powers the Greeks labeled *Chronos*, *Uranos*, and the *moirae*. The Ancient Greeks, both Homeric and Aristotelian, are said *not* to have had a concept that corresponds to the modern will, qua power emanating from an actor, leader, or hero. Whether the Greeks interpreted *will* and *free will* in the modern sense is thus doubtful in the first case and extremely unlikely in the case of the second.

Tracing the history of cause-related terms in both the East past and present and in the Greek origins of Western philosophy may thus lend support to the view that the notion of free will is a recent and western invention (e.g., Bandura, 2008). If that is what it is, one may ask why other cultures have done without it and, in the process, have avoided the fundamental conflict pitting determinists and libertarians against each other in the West.

References

- Bandura, A. (2008). The reconstrual of “free will” from the agentic perspective of social cognitive theory. In J. Baer, J. C. Kaufman & R. F. Baumeister (Eds.), *Are we free? Psychology and free will*. (pp. 86-127). Oxford: Oxford University Press.
- Barfield, O. (1985). *History in English words*. West Stockridge, Mass: Lindisfarne Press. (Original published in 1967).
- Buck, C. D. (1949). *A dictionary of selected synonyms in the principal Indo-European languages*. Chicago: Uni-

- versity of Chicago Press. (Reprinted)
- Chambers Dictionary of Etymology. (1988). Edinburgh: Chambers Harrap Publishers.
- Deci, E. L. & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology*, 49, 182-185.
- Hankinson, R. J. (1998). *Cause and explanation in the ancient Greek world*. Oxford: Oxford University Press, 1998.
- Hankinson, R. J. (1998). Cause and explanation in the ancient Greek world. Oxford: Oxford University Press.
- Hardie, W. F. R. (1968). Aristotle and the freewill problem. *Philosophy*, 43(164), 274-278.
- Henshall, K. G. (1998). *A guide to remembering Japanese characters*. Rutland, VT: Tuttle Publishing.
- Hirschberger, J. (1976). *Geschichte der Philosophie*. 2 Baende. Freiburg: Herder. (Sonderausgabe der 14. Auflage).
- Huby, P. (1967). The first discovery of the freewill problem. *Philosophy*, 42(162), 353-362.
- Irwin, T. H. (1980). Reason and responsibility in Aristotle. In A. O. Rorty (ed.), *Essays on Aristotle's ethics*. Berkeley, CA: University of California Press.
- Jaynes, J. (1976). *The origin of consciousness in the breakdown of the bicameral mind*. Boston: Houghton Mifflin.
- Kluge, F. (1975). *Etymologisches Wörterbuch der deutschen Sprache* [Etymological dictionary of the German language]. Berlin: De Gruyter.
- Liao, Shenbai. (2009). Responsibility for "doing what is right": Aristotle's approach and difficulties. *Journal of Chinese Philosophy*, 36(4), pg. 618-628.
- McNaughton, W. & Li, Ying. (1999). *Reading and writing Chinese*. Rutland, VT: Charles E. Tuttle. NCIKU dictionary. Retrieved on Jan 1 2010 at <http://www.nciku.com>.
- Onians, R. B. (1973). *The origins of European thought*. New York: Arno Press.
- Piaget, J. (1971). *Biology and knowledge*. Chicago: University of Chicago Press.
- Robinson, D. N. (1989). *The psychology of Aristotle*. New York: Columbia University Press.
- Sappington, A. A. (1990). Recent psychological approaches to the free will versus determinism issue. *Psychological Bulletin*. 108, 19-29.
- Siegler, F. A. (1968). Voluntary and Involuntary, *Monist*, 52(2), pp. 268-287.
- Skinner, B. F. (1989). The origins of cognitive thought. *American Psychologist*. 44, pp. 13-18.
- Yoshida, Y., Saji, K., & Nishide, I. (1969). *The first step to kanji: Part I*. Osaka, Japan: Osaka University of Foreign Studies.
- Zhang, D. (2002; E. Ryden, trans. and ed.). *Key concepts in Chinese philosophy*. New Haven, CT: Yale University Press. (Original published in 1989).