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# ZHANG ZAI'S (1020–1077) CRITIQUE OF THE SENSES*

**Abstract**
Often termed as *wenjian zhizhi* 聞見之知 (knowing from hearing and seeing), sensory knowing was a prominent topic in Song (960–1279) writings. Zhang Zai 張載 (1020–1077) developed a systematic critique of sense perception in the broad context of learning. While endorsing its utility, Zhang considered this way of knowing to be partial, superficial, and prone to error. He located the source of sensory errors inside the human body, arguing that the sense organs' vulnerability to pathological changes constituted the cause for perceptual fallibility. This line of argument had solid corroborating evidence in contemporaneous medical knowledge, a field of study Zhang was interested in pursuing. In sum, Zhang's critique demonstrated the importance of the senses and the different ways in which middle-period Chinese literati conceptualized the problem of perception in comparison with Western epistemological traditions.

**Keywords**
knowing from hearing and seeing, sensory knowing, Zhang Zai, epistemology

Zhang Zai 張載 is an interesting figure in Chinese intellectual history for many reasons. Best known as a pioneering figure in Neo-Confucianism, his name is most frequently associated with the intellectual lineage created by Zhu Xi 朱熹 (1130–1200), and he has remained part of Zhu's legacy for the past millennium.[1] A native of the Guanzhong region (modern Shaanxi), Zhang was also credited as the founding father of the "Guan

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[1]For an introduction to Zhang Zai against the background of Song learning, specifically as a representative figure leading to Zhu Xi's Neo-Confucianism, see Peter K. Bol, "Reconceptualizing the Order of Things in Northern and Southern Sung," in *The Cambridge History of China: Volume 5, Sung China, 960–1279 AD, Part 2*, edited by John W. Chaffee and Denis Twitchett (Cambridge: Cambridge University Press, 2015), 706–08.

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Learning" (*Guan xue* 關學) and represented a key regional school of thought.[2] He coined a number of philosophical concepts which later became cornerstones of Neo-Confucian discourse. For instance, his systematic engagement with the *qi*, the energy-matter believed to enable changes throughout the world, laid the foundation for philosophical discussions for centuries to come.[3]

Zhang Zai is also known for his exposition of a two-tier system of seeking knowledge, a dichotomy he postulated between "knowing from hearing and seeing" (*wenjian zhi zhi* 聞見之知) and "knowing from virtuous nature" (*dexing zhi zhi* 德性之知).[4] The former, sensory knowing, constitutes the central topic of the current study.[5] Throughout his extant writings, Zhang made a variety of arguments regarding the senses. He approached the topic with scholarly interest and developed a systematic critique of sense perception in the broad context of learning. While endorsing the utility of sense perception, Zhang considered this way of knowing to be partial, superficial, and unreliable.

The current study has two main purposes. First, it introduces Zhang's complex stance in four parts, demonstrating the scholarly interest he invested in the issue of sense perception. Second, it highlights the significance of Zhang's opinions in historical and philosophical studies of Chinese epistemology. Readers may be familiar with the fact that sense perception has occupied a central position in Western epistemologies from the ancient tradition to contemporary studies, and that examination of perceptual mechanisms remains the most prominent epistemological inquiry. The Chinese epistemological tradition, by contrast, credits the senses with no such status, which has led some scholars

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[2]For a discussion of Zhang Zai's status and contributions in the Guanzhong community, see Chang Woei Ong, *Men of Letters Within the Passes: Guanzhong Literati in Chinese History, 907–1911* (Cambridge: Harvard University Asia Center, 2008), 21–75.

[3]For a book-length study of Zhang Zai's thought, see Ira Kasoff, *The Thought of Chang Tsai (1020–1077)* (Cambridge: Cambridge University Press, 2002). For his thinking on the *qi*, see ibid., 36–53; Robin R. Wang and Ding Weixiang, "Zhang Zai's Theory of Vital Energy," *Dao Companion to Neo-Confucian Philosophy*, edited by Yong Huang (Dordrecht: Springer, 2010), 39–57, and Jung-Yeup Kim, *Zhang Zai's Philosophy of Qi: A Practical Understanding* (New York: Lexington Books, 2015).

[4]The dichotomy remained an important topic in Neo-Confucian discourse, appearing in the writings of the Cheng brothers (Cheng Hao 程顥 (1032–1085) and Cheng Yi 程頤 (1033–1107)), Zhu Xi, and a number of scholars in the late imperial period. For a comprehensive philosophical analysis of the dichotomy, see Stephen C. Angle and Justin Tiwald, *Neo-Confucianism*: *A Philosophical Introduction* (Cambridge: Polity, 2017), 112–22. Jeeloo Liu discusses the binary under the rubric of "virtue epistemology." See Liu, *Neo-Confucianism: Metaphysics, Mind, and Morality* (Hoboken: Wiley Blackwell, 2018), 215–26. The meaning of the binary changed considerably from Zhang's times through the late imperial period. The current article focuses on Zhang's definition of the terms only. Angle, Tiwald, and Liu all rightly point out that while modern scholars employ "epistemology" to approximate what Zhang called "knowing" (*zhi* 知), a number of salient distinctions exist between Western epistemological traditions and Neo-Confucian discourse, a point this article adopts and expands.

[5]Anne D. Birdwhistell covers the same topic in her article "The Concept of Experiential Knowledge in the Thought of Chang Tsai," *Philosophy East and West* 35.1 (1985), 37–60. I agree with her on a number of general observations; for instance, Zhang Zai viewed "knowing from hearing and seeing" as the inferior type of knowing for being limiting, narrow, and inaccurate. We do differ on some important readings, however. I do not consider "knowing from virtuous nature" as narrowly defined "moral knowledge," and this interpretation leads to disparate ways of explaining the limitations of sensory knowing. A key theme in the current study—the fallibility of the senses—is a completely new interpretation based on the intersection between philosophy and medical history. Given the overlap of topic, the current study draws on a number of common primary sources, for which I provide my own translations.

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to believe that premodern China witnessed no major philosophical arguments regarding the senses.[6] The current study suggests otherwise. A detailed analysis of the example of Zhang Zai shows how Zhang's conception of the senses fits with arguments and assumptions peculiar to the Chinese tradition.

## UTILITY OF THE SENSES

While inclined to view sensory knowing as a limited way of knowing, Zhang Zai crafted thoughtful arguments that acknowledged the utility of "knowing from hearing and seeing." The essence of such utility, in his view, was to "join the internal and the external" (*nei wai zhi he* 內外之合):

> One claims to know because his ears and eyes are susceptible to reception. One is susceptible to reception because of the union of the internal and external.
>
> 人謂己有知，由耳目有受也；人之有受，由內外之合。[7]

In another statement, Zhang pointed out that the capability to unite the internal and the external through seeing and hearing was a major distinction between humans and inanimate entities:

> Hearing and seeing are not enough to exhaust things, and yet one needs to have them. Without the ears and eyes one becomes wood and stone; with them, one is able to join the internal and the external. If one does not hear or see, how can he verify [what he knows]?
>
> 聞見不足以盡物，然又須要他。耳目不得則是木石，要他便合得內外之道，若不聞不見又何驗?[8]

Zhang went on to reveal the epistemological meaning of such a bridging function. He argued that the conjunction of internality with externality afforded the initial step for knowing:

> Although the ears and the eyes can be burdens on nature, their contribution in joining the internal and the external, so far as I know, is the key to the beginning [of knowledge].
>
> 耳目雖為性累，然合內外之德，知其為啓之之要也。[9]

Although Zhang never defined "the external" and "the internal" in forthright terms (in his extant writings), this passage strongly implied that he set the boundary along the bodily contours of his own existence. The "internal" referred to the entity within a human being, possibly with an emphasis on mechanisms of cognition and conation. The "external" was the world outside the human's corporeal containment. Only when the internal met the external, could one claim to gain knowledge.

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[6]For instance, see Barry Allen, *Vanishing into Things: Knowledge in Chinese Tradition* (Cambridge: Harvard University Press, 2015), 52.

[7]Zhang Zai, *Zhang Zai ji* 張載集, Zhengmeng 正蒙 (Beijing: Zhonghua shuju, 2006), 25.

[8]Zhang, *Zhang Zai ji*, Zhang Zi yulu 張子語錄, 1.313.

[9]Zhang, *Zhang Zai ji*, Zhengmeng, 25.

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By assigning the bridging capacity to the senses, Zhang Zai accredited the sense organs as the essential apparatus in accomplishing sensory knowing. In Zhang's original language, this means that "the ears and eyes" (*ermu* 耳目) were mainly responsible for conducting the processes of "hearing and seeing" (*wenjian* 聞見). While this statement may sound tautological in modern parlance, Zhang's generous acknowledgement of the utility of the senses was slightly different from some classical arguments.

Ancient thinkers such as Xunzi 荀子 (ca. 310 – ca. 220 BCE) spoke about sensory knowing as having two distinguishable procedures. The sensory modalities were responsible for the first phase, "looking" (*shi* 視) and "listening" (*ting* 聽), which not yet resulted in "seeing" and "hearing;" the "heart" (*xin* 心)[10] enabled the next procedure, which turned the result of the first process into "knowing."[11] As Xunzi argued:

> If the heart is not employed at it, though white and black are before us, the eyes do not see them; though thunder drums are behind us, the ears do not hear them.
>
> 心不使焉，則白黑在前而目不見，雷鼓在側耳不聞。[12]

In modern parlance, what the eyes and ears conducted were automatic and physiological processes not yet generating any conceptualization, and the eventual formulation of a perception depended on the heart.[13] Between the sense organs and the heart, Xunzi assigned the decisive role of completing sensory knowing to the latter.

In contrast, Zhang did not parse sensory knowing into sub-processes. By stipulating that the eyes and the ears operated to connect the internal human domain to the outside world, Zhang assigned de facto power to the sense organs for completing a perceptive process. Zhang did not mean to exclude the heart's participation, however: the "internal" more likely than not included the heart, and as I will discuss in section IV, Zhang viewed the sense organs and the heart as interconnected functional nodes in the human body. Nevertheless, in choosing to highlight the sense organs when describing "hearing and seeing," Zhang acknowledged them as more autonomous and conspicuous agents of knowledge.

In sum, the senses contributed to connecting the human to the environs he inhabited. In Zhang Zai's opinion, a sensory engagement with external things was often the beginning

[10]The conventional English translation of *xin* is the "heart-mind," which adds "mind" as a reminder to Western readers who would normally associate cognition with the mind instead of the heart. In the current paper, the *xin* and its cognitive activities constitute the central topic, which leaves little room for potential misunderstanding caused by Western assumptions. I thus adopt "heart" as the translation of *xin* to keep the diction simple and natural.

[11]For Xunzi's differentiation between "looking" and "seeing," as well as "listening" and "hearing," see Jane Geaney, *On the Epistemology of the Senses in Early Chinese Thought* (Honolulu: University of Hawai'i Press, 2002), 42–44.

[12]Xunzi, *Xunzi jijie* 荀子集解, compiled by Wang Xianqian 王先謙 (1841–1917), annotated by Shen Xiaohuan 沈嘯寰 and Wang Xingxian 王星賢 (Beijing: Zhonghua shuju, 1988), 15.387. Translation after Chris Fraser, see Fraser, "Knowledge and Error in Early Chinese Thought," *Dao: A Journal of Comparative Philosophy* 10 (2011), 141. For an analysis of the heart's discriminative and guiding functions in Xunzi's stipulation, see Geaney, *On the Epistemology of the Senses in Early Chinese Thought*, 96–97, and Fraser, "Knowledge and Error in Early Chinese Thought," 141.

[13]I thank Stephen Angle for bringing this point to my attention.

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of one's understanding of the world. This was the reason he embraced "knowing from hearing and seeing" as a useful course of action in learning.

## PARTIALITY OF THE SENSES

The limits of sensory knowing, however, seemed to occupy more of Zhang's attention. The first problem he considered was partiality. As he pointed out, "knowing from hearing and seeing" was "narrow" (*xia* 狹)[14] and "petty" (*xiao* 小).[15] And he elaborated:

> [One] enlarges the heart so that [his heart] can embody all things under Heaven. So far as there are things not embodied, there is something external to the heart. The heart of ordinary people is restricted to the narrowness of hearing and seeing. The sages, who have fully realized their nature, do not let hearing and seeing limit their hearts and view nothing under Heaven as separate from themselves. When Mengzi stated that [one should] "fathom the heart and know nature," [he meant that one should] know Heaven as such. There is nothing external to grand Heaven, so any heart to which there is something external is insufficient to match the heart of Heaven.
>
> 大其心則能體天下之物，物有未體，則心為有外。世人之心，止於聞見之狹。聖人盡性，不以見聞梏其心，其視天下無一物非我，孟子謂盡心則知性，知天以此。天大無外，故有外之心不足以合天心。[16]

In another passage, Zhang discussed the limited scope of the senses in detail:

> There is nothing in Heaven brighter than the sun; thus when the eyes are in contact with it, [one] does not know how many tens of thousands of *li*[17] high it is. There is nothing in Heaven louder than thunder; thus when the ears engage it, [one] does not know how many tens of thousands of *li* far away it is. There is nothing in Heaven more elusive than the Great Void; thus when [one] explores it with knowing, he does not reach its end. The problem of humans is that they burden the heart with seeing and hearing by the eyes and ears without thoroughly applying the heart. Thus, those who thoroughly apply the heart must understand the origin of the heart and then become able [to use it].
>
> 天之明莫大於日，故有目接之，不知其幾萬里之高也；天之聲莫大於雷霆，故有耳屬之，莫知其幾萬里之遠也；天之不禦莫大於太虛，故必知廓之，莫究其極也。人病其以耳目見聞累其心而不務盡其心，故思盡其心者，必知心所從來而後能。[18]

In both statements, Zhang compared "hearing and seeing" to the heart and reached the conclusion that sensory knowing was inferior as a result of its partiality and incompleteness. He postulated that the heart—associated with not only humans but also with

[14] Zhang, *Zhang Zai ji*, Zhengmeng, 24.
[15] Zhang, *Zhang Zai ji*, Zhengmeng, 20.
[16] Zhang, *Zhang Zai ji*, Zhengmeng, 24.
[17] One *li* approximated 558 meters/0.35 mile in Zhang's times. For the conversion rates, see Wu Hui 吳慧, "Song Yuan de duliangheng" 宋元的度量衡, *Zhongguo shehui jingji shi yanjiu* 1994.1, 18.
[18] Zhang, *Zhang Zai ji*, Zhengmeng, 25.

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Heaven—was able to cover a more extensive scope, that is, more "things" (*wu* 物).[19] The heart of a person, if well developed (specifically, not limited to hearing and seeing), enabled him to reach "things" beyond his daily experience. And the heart of Heaven, an entity with ideal, all-encompassing cognitive-conative power, included all "things" and left nothing "external" to it. Thus, Zhang exhorted his audience to guard against the tendency to indulge in sense perception at the cost of neglecting the heart.

Zhang's concern with the partiality of knowing was both cause and effect of his emphasis on "exhausting things" (*jinwu* 盡物) as an important intellectual endeavor.[20] He spoke of the significance in relation to other pertinent knowing activities:

> To speak of "exhausting things" is to refer to the expansiveness and the inclusiveness (of knowing). Today [I] talk about "exhausting things" without yet mentioning "fathoming patterns" lest [my audience] take hearing and seeing as the heart and are thus unable to fully reveal the heart. Humans originally did not have the heart, which came into being due to [encounters with] things. If one takes hearing and seeing as the heart, I am afraid that [he] would understand the heart too narrowly. Today things fill up the space between Heaven and Earth. If one only relies on his own hearing and seeing, how many [things] could he have encountered, and how can he exhaust things under Heaven? This is why [I] intend to [encourage people to] fully reveal the heart. "Fathoming patterns," nevertheless, [guides one to see] differences in the intricate and the subtle. Take ritual and music for example. [People] know at the beginning that they are expansive and inclusive [categories], and then they make further efforts to compare and thus fathom intricate patterns. The so-called "extending from kind to kind" is to exhaust things through fathoming patterns. But if one extends from kind to kind according to hearing and seeing only, [he makes a mistake because] how is it possible that hearing and seeing can exhaust things! Today what I mean by "exhausting things" is to fully reveal the heart.

> 言盡物者，據其大總也。今言盡物且未說到窮理，但恐以聞見為心則不足以盡心。人本無心，因物為心，若只以聞見為心，但恐小卻心。今盈天地之間者皆物也，如只據己之聞見，所接幾何，安能盡天下之物？所以欲盡其心也。窮理則其間細微甚有分別，至如禮樂，其始亦但知其大總，更去其間比較，方盡其細理。若便謂推類，以窮理為盡物，則是亦但據聞見上推類，卻聞見安能盡物！今所言盡物，蓋欲盡心耳。[21]

In this passage, Zhang presented three epistemic acts: "exhausting things," "fathoming patterns" (*qiongli* 窮理), and "extending from kind to kind" (*tuilei* 推類).[22] To

[19]"Things," *wu*, was a key concept in Song thought. It stood for both objects and affairs, and the "ten thousand of things" (*wanwu* 萬物) encompassed the entire phenomenal world. For a general introduction to the Song uses of the concept, see Hoyt C. Tillman, "The Idea and the Reality of the 'Things' during the Sung: Philosophical Attitudes Towards *Wu*," *The Bulletin of Sung and Yuan Studies* 14 (1978), 68–82.

[20]"Exhausting things" was a common locution from the ancient times through the Song, and yet scholars defined it variously. Zhang treated it as an independent procedure; as I will analyze in the main text, he acknowledged the close affinity between "exhausting things" and "fathoming patterns" and yet identified them as separate processes. Some of his peers conflated the two by using "exhausting things" as an alternative of "exhausting the patterns of things" (*jin wu zhi li* 盡物之理). For instance, see Cheng Yi and Cheng Hao, *Er Cheng ji* 二程集, Henan Cheng shi yishu 河南程氏遺書 (Beijing: Zhonghua shuju, 2004), 15.162.

[21]Zhang, *Zhang Zai ji*, Yulu, 2.333.

[22]Zhang's remarks here did not stipulate the mutual relationships between the three epistemic acts in clear terms. But if we read this passage in juxtaposition with similar arguments by the Cheng brothers, it seems that the formula the Chengs presented provides the best possible reading of Zhang's passage. Specifically, the

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"exhaust things," which meant to engage "things" "expansively and inclusively" and to know at the ultimate breadth, was his central concern here. "Hearing and seeing," however, by no means delivered the comprehensive coverage "exhausting things" required; the proper course of action, as Zhang suggested, should be to "fathom patterns" and then to "extend from kind to kind." To fathom patterns, one placed the focus on "intricacies and subtleties" and progressed through individual cases. Presumably, as one discerned one pattern in one "thing," he was able to extend to other "things" by following the pattern, which constituted the act of "extending from kind from kind." "Kind" (*lei* 類) was obviously associated, if not synonymous, with "pattern," as it was likewise rooted in "intricacies and subtleties" to which sensory knowing had no access. Taken together, Zhang exhorted readers to fully apply the heart, the epistemic agent able to reach all these higher goals that eluded the eyes and ears.

Although by emphasizing inclusivity Zhang seemed to imply that the difference between "hearing and seeing" and knowing by the heart was merely a matter of breadth, his definition of the heart implied otherwise. Zhang stipulated that the heart reached "things" through "resonance" (*gan* 感), a mechanism distinctive from sense perception. In fact, he argued that the very existence of the heart arose from the human resonance with "things." In the passage cited above, Zhang claimed that "humans originally did not have the heart, which came into being due to [encounters with] things." In another statement he elaborated:

> Having and not-having are one; the internal and the external unite; [the mundane and the sagely are the same.] Such is the origin of the human heart. Emptiness is all-encompassing resonance. To resonate is to unite and to totalize. Because the ten thousand things are originally one, the oneness can unite differences. Resonance is the capability to unite differences.
>
> 有無一，內外合，｛庸聖同。｝此人心之所自來也。[ … ] 無所不感者虛也，感即合也，咸也。以萬物本一，故一能合異；以其能合異，故謂之感。[23]

Thus, the heart of one person was different from that of another, because each heart had a particular individual experience in terms of resonating with "things." As Zhang reiterated:

> The reason that the heart varies in myriad ways lies in that it resonates with external things and thus becomes diverse.
>
> 心所以萬殊者，感外物為不一也。[24]

Chengs argued that "fathoming patterns" and "extending from kind to kind" together constituted the means by which one knew extensively. As they stated, "to investigate things and fathom patterns does not mean that one has to exhaust all things under Heaven. If one fathoms [the pattern of] one thing, he can extend by kind for the rest" (格物窮理，非是要盡窮天下之物，但於一事上窮盡，其它可以類推). See Cheng and Cheng, *Er Cheng ji*, Yishu, 15.157.

[23]Zhang, *Zhang Zai ji*, Zhengmeng, 63.

[24]Zhang, *Zhang Zai ji*, Zhengmeng, 10.

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According to the sources above, "resonance" was different from sense perception. First, Zhang made no mention of the senses when describing resonance. More importantly, he stipulated that resonance was a process in which differences vanished into unity, a characteristic notably lacking in sense discrimination. Zhang's definition of resonance was surely related to the idea of "resonance between things of the same kind" (*tong lei ganying* 同類感應), the cornerstone of so-called correlative thinking.[25] The "kind" via which resonances occurred also provided the foundation for the epistemic act "extending from kind to kind." I discussed above that both "patterns" and "kinds" exceeded the reach of the senses. Taken together, Zhang used multiple angles to differentiate the act of knowing by heart from the act of sensory knowing.

In sum, sense perception was partial in capacity, and sole employment of it would cause one to fall short of the goal of acquainting oneself with "things" as widely as possible. To amend the narrowness of the senses, Zhang Zai urged his followers to get in contact with "things" through the heart. By suggesting that one should engage the deep and subtle "patterns" and "kinds" via the heart, Zhang already implied that the issue of partiality was in fact a shortage in depth. As such, his criticism of the partiality of sensory knowing was continuous with his consideration of the problem of superficiality, an issue I address in the following section.

## SUPERFICIALITY OF THE SENSES

The second and most crucial problem Zhang Zai identified in sensory knowing was its superficiality. In his view, the sensible qualities of "things" were nothing but triviality. Zhang once stated:

> The shapes and colors of the ten thousand things are the dregs of the numinous.
>
> 萬物形色，神之糟粕。[26]

Shapes and colors as well as other properties captured by the senses were merely the residue of something more valuable, "the numinous." By invoking the derogatory term "dregs," Zhang explicitly stated his intention to relegate the subject to secondary importance.

To fully understand Zhang's statement, an explanation of a cosmological scheme popular among eleventh-century literati is in order. At the center of Northern Song cosmology was a belief that the *dao* generated the phenomenal world through a multi-stage process. The most prominent version of this generative scheme was articulated by Shao Yong 邵雍 (1011 – 1077). On the basis of the *Classic of Change* (*Yi jing* 易經), Shao stated:

[25]For a recent introduction of the resonance mechanism, see Robin R. Wang, *Yinyang: The Way of Heaven and Earth in Chinese Thought and Culture* (Cambridge: Cambridge University Press, 2012), 83–96. For a summary of the exemplary definitions of correlative thinking, see Michael Nylan, "Yin-Yang, Five Phases, and *Qi*," in *China's Early Empires: A Re-appraisal*, edited by Michael Nylan and Michael Loewe (Cambridge: Cambridge University Press, 2010), 410–14.

[26]Zhang, *Zhang Zai ji*, Zhengmeng, 10.

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The Great Ultimate is one. Unmoving, it gives birth to two (duality). Duality is the numinous. The numinous gives birth to number. Number gives birth to figure. Figure gives birth to objects.

太極，一也，不動；生二，二則神也。神生數，數生象，象生器。[27]

The "Great Ultimate" (*taiji* 太極) in Shao's usage was interchangeable with the *dao*,[28] and "objects" (*qi* 器) was synonymous with the "ten thousand things" (*wanwu* 萬物),[29] the constituents of the phenomenal world. So the formula can be rendered as follows:

*dao* → the numinous (*shen* 神) → number (*shu* 數) → figure (*xiang* 象) → ten thousand things[30]

In this generative scheme, each stage stood for an order of reality in a descending sequence, each less fundamental and yet more accessible than the prior stage. The *dao* claimed the utmost fundamentality and remained ineffable. The numinous was a similarly enigmatic state not susceptible to articulation of any kind. The subsequent orders, number and figure, provided more concrete clues for description. Number encompassed a wide range of numerical relations, including the famous *yinyang* and the Five Processes, and figure comprised basic images that served as the deep orders of the world, such as the hexagrams in the *Classic of Change*. Beyond number and figure (both key components in the *Change* system), the eleventh-century literati also spoke of a few other important intermediate stages, such as *li* 理, patterns in which "things" hang together, and *qi*, the texture and dynamic of the ever-changing world. Following all these orders, the ten thousand things emerged last in the sequence and possessed the most concrete, perceivable qualities. This scheme was the background of Zhang Zai's claim that "things" were the descendants of the prior cosmological orders, such as "the numinous."

In contemplating the (in)significance of the sensory properties of "things," Zhang Zai pushed the scheme a little further: given that "things" occupied the trivial end of the generative sequence, their sensory properties—the cause and effect of their shallow significance—were undisputedly the "dregs" of the deep structures of the world. Thus, engagement with "things" only through the senses was a superficial undertaking.

Zhang's point was certainly not to discredit "things" as subjects unworthy of thinking and learning; rather, he was exhorting readers to turn away from indulging in the superficial "hearing and seeing" and to focus on what he deemed more important: the deep orders. He argued that behind each sensory quality more fundamental orders were at work:

[27]Shao Yong, *Huangji jingshi shu* 皇極經世書 (Zhengzhou: Zhongzhou guji chubanshe, 2006), 14.522. Translation after Kidder Smith and Don J. Wyatt with minor changes, see Smith and Wyatt, "Shao Yung and Number," Kidder Smith et al., *Song Dynasty Uses of the I Ching* (Princeton: Princeton University Press, 1990), 106.

[28]Shao, *Huangji jingshi shu*, 14.522.

[29]In another passage where Shao Yong reiterated the generative scheme with slightly different verbal constructions, he ended the formula with "the ten thousand things." See Shao, *Huangji jingshi shu*, 14.522.

[30]For a comprehensive study of this formula, including the meanings of all key concepts, see Smith and Wyatt, "Shao Yung and Number," 105–35.

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> Shapes, sounds, smells, flavors, warmth and cold, motion and stillness, all six have their differences based on the Five Processes as well as changes between the identical and the different.
>
> 形也，聲也，臭也，味也，溫涼也，動靜也，六者莫不有五行之別，同異之變。[31]

Zhang specified that whether one perceived a shape, a sound, a smell, a flavor, a tactile sensation, or a motion, each contained distinctions based on the Five Processes, that is, the order of number. To probe these sensory qualities beyond the superficial meant to see these numerical ratios situated deeper in reality.

Besides the fundamental orders mentioned in Shao Yong's formula, Zhang was known for his emphasis on *qi* as the agent that propelled all transformations in the world. He once explicated the deep structures behind sounds in terms of the *qi*:

> A sound is the result of the mutual pressure between form and *qi*. Two types of *qi* [are relevant here]: the kind of echoes in the valley and the kind of thunder; [so are] two types of form: the kind of drums and the kind of gongs. When form presses *qi*, [the resultant sound is] the kind of a feather fan (in motion) or a swooshing arrow. When *qi* presses form, [the resultant sound is] the kind of a human voice or a *sheng* [a mouth-blown free reed instrument].
>
> 聲者，形氣相軋而成。兩氣者，谷響雷聲之類；兩形者，桴鼓叩聲之類；形軋氣，羽扇敲矢之類；氣軋形，人聲笙簧之類。[32]

The deep orders underlying sounds lay in the interactions between form and *qi*. Here "form" (*xing* 形), which I translate in the singular form, stood for a deep order just like *qi*, number, and figure; it did not refer to the concrete shape of an object.[33] Both *qi* and form were fundamental structures which came prior to sounds. Zhang did invoke perceptible phenomena to give his readers clues to how these *qi* and form might manifest, such as the *qi* of valley echoes or thunder rolling, as well as the form of varied percussion instruments. Note that this was his strategy of presentation: *qi* and form were not equivalents of these specific sensory phenomena, although they relied on the latter to become accessible to human cognition. When *qi* and form interacted, they generated concrete sounds, such as those of a fan, an arrow, or a human voice, in accordance with the interactional patterns of the deep orders.

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[31]Zhang Zai, *Zhang Zai ji*, Zhengmeng, 20.

[32]Zhang Zai, *Zhang Zai ji*, Zhengmeng, 20.

[33]In the conceptual vocabulary of the *Change*, "form" was an intermediate stage between the ineffable *dao* and concrete "objects" (*qi* 器). The "Attached Verbalizations" ("Xi ci" 繫辭) famously claimed that "what is above the form is called the *dao*" (形而上者謂之道) and "what is below the form is called objects" (形而下者謂之器), a stipulation Zhang Zai reiterated in his commentary on the *Change*. See Zhang, *Zhang Zai ji*, Hengqu yi shuo 橫渠易說, 1.206–7. Although "form" was related to the concrete shape of a particular thing, they were not ontological equivalents; in the generative scheme starting with the *dao*, form came prior to "things." Zhang once claimed that "form assembles into things, and form collapses back into the origin" (形聚為物，形潰反原), a characterization revealing the intermediate status of this concept. See Zhang, *Zhang Zai ji*, Zhengmeng, 66. There was, however, a difference between *xing* as a cosmological concept and *xing* as a plain word. The word *xing* did appear in other contexts denoting a concrete shape. For example, in the previously cited phrase *wanwu xingse* 萬物形色, *xing* and *se* followed "things" and thus must be their sensory properties.

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To highlight the type of knowing that went beyond "hearing and seeing," Zhang coined the term "knowing from virtuous nature." To understand how this type of knowing was able to exceed the sensory facade of the world, an explanation of "virtuous nature" is in order. To begin with, a potential miscomprehension regarding the terminology requires clarification. The invocation of "virtue" may invite readers to associate this type of knowing with morality narrowly construed. But in Zhang's case and beyond, this understanding is too limited to cover the concept's intended scope.[34] Grammatically speaking, *dexing* (virtuous nature), just like *wenjian* (hearing and seeing) in *wenjian zhi zhi* (knowing from hearing and seeing), was the means instead of the subject of "knowing;" the phrase is thus translated as "knowing from virtuous nature" instead of "knowing about virtuous nature." The content of "knowing from virtuous nature" extended to all fundamental orders in the phenomenal world; these orders most certainly encompassed moral principles but were not restricted to them.

In Zhang's diction, "virtuous nature" was an alternative designation for Heaven-endowed nature, the primordial state of human nature connected to all orders in the perfectly harmonious cosmos. This nature existed prior to the constitution of each individual and stood for the ultimate potentiality he could achieve. Zhang explicitly presented the links between virtuous nature, Heaven, and individual beings as follows:

> The virtuous nature originally came from Heaven and now returns to Heaven, so that each [thing/human] follows its own kind.
>
> 德性本得乎天者今復在天，是各從其類也。[35]

By describing that virtuous nature descended from and "returned" to Heaven, Zhang implied that virtuous nature relayed normative orders from Heaven (hence "coming from") and held these orders in place despite disruptive vicissitudes (hence "returning to"). The intimate connection between Heaven and virtuous nature led him to coin alternatives such as "Heavenly nature" (*tianxing* 天性)[36] and "the nature of Heaven and Earth" (*tiandi zhi xing* 天地之性).[37] In Zhang's thinking, the Heaven-endowed nature stood in contrast to the "nature of *qi* constitution" (*qizhi zhi xing* 氣質之性), the psycho-physical endowment of a person. The quality of *qi* differed from one individual to another, a disparity that potentially stood in the way of one fulfilling his Heaven-endowed nature.[38]

As a result of its connection to Heaven, "virtuous nature" led one to delve deep into the fundamental orders of the world. To know through one's virtuous nature was

[34]See Angle and Tiwald, *Neo-Confucianism*, 114.

[35]Zhang, *Zhang Zai ji*, Yishuo, 1.75.

[36]Zhang, *Zhang Zai ji*, Zhengmeng, 22.

[37]Zhang, *Zhang Zai ji*, Zhengmeng, 23.

[38]For the distinctions and connections between "the nature of *qi* constitution" and Heavenly nature, see Wang and Ding, "Zhang Zai's Theory of Vital Energy," 50–76. Zhang used the term "nature of *qi* constitution" as interchangeable with "*qi* constitution" (*qizhi* 氣質). "Nature of *qi* constitution" does not indicate another "nature" separate from the nature of Heaven, which was formless and came prior to the actual life of an individual. Angle and Tiwald discuss the potential misreading of the two-fold nature in the example of Zhu Xi, who inherited the terminology from Zhang Zai. I am persuaded by them that a non-literal, more accurate translation of *qizhi zhi xing* should be "embedded nature." See Angle and Tiwald, *Neo-Confucianism*, 65–67, cited 67.

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synonymous with the idea that one should fully reveal his Heaven-endowed nature. In the process of reaching his Heavenly nature, one simultaneously got in contact with the fundamental orders so as to act in accordance with the *dao*.

Under this conceptual framework, Zhang articulated the connection between virtuous nature and a number of deep orders. For example, he linked *li* (pattern) to Heavenly nature by treating "fully revealing [Heavenly] nature" (*jinxing* 盡性) and "fathoming patterns" (*qiongli* 窮理) as interdependent intellectual tasks:

> "From clarity to sincerity" means that [one proceeds] from fathoming patterns to fully revealing [Heavenly] nature; "from sincerity to clarity" means that [one proceeds] from fully revealing [Heavenly] nature to fathoming patterns.
>
> "自明誠," 由窮理而盡性也；"自誠明," 由盡性而窮理也。[39]

In other words, one explored patterns among "things" in the effort to reach virtuous nature, and in the process of exploring virtuous nature, one experienced more patterns in the phenomenal world and kept gaining knowledge of them.

Zhang also argued that through virtuous nature one was able to enter the numinous state. He presented this point in the context of the *Change*:

> When [one's] virtue is grand, [he is] able to fathom the numinous changes. That is why the superior man venerates him.
>
> 德盛者，神化可以窮盡，故君子崇之。[40]

And similarly:

> If [one] fully reveals [his] nature, [he] enters the numinous.
>
> 若盡性則［即］是入神。[41]

Ultimately, Zhang further argued, when an exemplary seeker of learning "fully employed his [Heavenly] nature," "it could be called the *dao*" (率性可以謂之道).[42] Summing up, a person could access deep orders one by one all the way through the *dao*, as long as he diligently cultivated virtuous nature and maintained an unobstructed connection with Heaven.

How exactly could one accomplish the task of knowing through virtuous nature? By making the proposal, Zhang faced a potential dilemma: virtuous nature was supposed to be the Heaven-endowed potential that most ordinary people were in the process of revealing, and yet "knowing from virtuous nature" required them to seek epistemic guidance from this perfect state they had not yet achieved. To solve this problem, Zhang added a new agent to this formula: he assigned the heart, an active agent capable of realizing

[39] Zhang, *Zhang Zai ji*, Zhengmeng, 21.
[40] Zhang, *Zhang Zai ji*, Yishuo, 3.218.
[41] Zhang, *Zhang Zai ji*, Yishuo, 3.217.
[42] Zhang, *Zhang Zai ji*, Zhengmeng, 31.

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and communicating changes, to the presumably "still" (*jing* 靜) nature.[43] The heart thus became the key apparatus through which one achieved learning superior to sensory knowing.

In Zhang's configuration, nature and the heart were closely connected, and the latter performed a cognitive-conative function on behalf of the former. In his definition, the heart was the combination of nature and an active awareness of the world. As he stated:

> Combining nature and consciousness, there is the name *xin* (the heart).
>
> 合性與知覺，有心之名。[44]

With the capacity of "consciousness," the heart became the active cognitive-conative agent which assisted a person in accomplishing two mutually dependent goals: to "fully reveal nature" (*jinxing* 盡性) and to know through virtuous nature. Due to this close connection, Zhang often juxtaposed nature and the heart when he spoke of pursuing learning. For instance:

> Books are for maintaining this heart. The moment one puts [books] down, his pursuit of virtuous nature slackens. When one reads, his heart is constantly present; if he does not read, he would be unable to see principles and patterns.
>
> 蓋書以維持此心，一時放下則一時德性有懈，讀書則此心常在，不讀書則終看義理不見。[45]

According to this statement, reading was an important means to maintain the heart as well as for one's long-term mission to reach his Heavenly nature. Only through reading was one able to see "principles and patterns," a key subject of knowing from virtuous nature.

In addition to content, another issue that concerned Zhang in regard to "knowing from virtuous nature" was its relationship with sense perception: did sense perception contribute to knowing from virtuous nature, or detract from it? Zhang did not answer this question consistently; nevertheless, he demonstrated a salient belief that in most cases sensory knowing preceded and prepared knowing from virtuous nature. In the statements where he endorsed the utility of the senses (previously cited in section I), Zhang repeatedly alluded to this connection in making a variety of arguments. For instance, he deemed hearing and seeing "key to the beginning [of knowledge]."[46] He also discussed the contribution of the eyes and ears to "join the internal and the external," a condition essential not only to sensory knowing but also to any type of knowledge seeking. On a related note, he argued that hearing and seeing provided a means of "verification" (*yan* 驗), which presumably addressed higher learning.[47] Sensory clues could affirm (or challenge) the validity of knowledge one acquired regarding deep orders. For example, one's understanding

[43]In Zhang's opinion, "utmost stillness and absence of resonance" (*zhi jing wu gan* 至靜無感) constituted "the origin of nature" (*xing zhi yuanyuan* 性之淵源). Zhang, *Zhang Zai ji*, Zhengmeng, 1.7.

[44]Zhang, *Zhang Zai ji*, Zhengmeng, 9. Translation after Wang and Ding, "Zhang Zai's Theory of Vital Energy," 46.

[45]Zhang, *Zhang Zai ji*, Jingxue liku 經學理窟, 275.

[46]Zhang, *Zhang Zai ji*, Zhengmeng, 25.

[47]Zhang, *Zhang Zai ji*, Yulu, 1.313.

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of the yin-yang patterns of a sound had to concur in a certain way with his experience of this sound. Zhang's belief in the verification mechanism was built on the assumption that the two types of knowing were connected in the first place.

Zhang, however, did not turn this belief into a definitive philosophical argument; occasionally he let his stance wobble. For instance, he asserted that "knowing from virtuous nature does not originate in seeing and hearing" (德性所知，不萌於見聞).[48] Without further context evident in Zhang's extant writings, his refusal to place the origin of "knowing from virtuous nature" in sensory knowing would seem to imply that the latter did not necessarily precede the former. Nevertheless, on another occasion Zhang reverted to his previous belief by claiming that in the pursuit of deeper knowledge, while one did not have to rely on sensory knowing in the present, he still had to resort to sensory knowledge previously acquired.[49]

Zhang's irresolute stance (or at least ambiguous verbalization) on this issue was also manifest in his understanding of "joining the internal and external." While he highlighted inner–outer unification as the key function of the senses, he also once argued that one need not rely on sensory modalities to achieve this goal, alluding to other possibilities:

> If one combines the internal and external [via means] beyond the ears and eyes, what he knows must also far surpass others.
>
> 知内外之合於耳目之外，則其知也過人遠矣。[50]

Here Zhang explicitly acknowledged means other than sensory knowing able to bridge the gap between one's internality and the outside world, and he considered the alternative way(s) superior. While he did not specify what the means might be, Zhang was likely suggesting a way of knowing that involved the entirety of one's being rather than any specific organs, an epistemic praxis recorded in earlier texts. For instance, *Liezi* 列子 (ca. 4th century),[51] a text normally associated with the Daoist tradition, introduced this type of knowing in an anecdote featuring the Duke of Lu (Lu hou 魯侯) and Kangcangzi 亢倉子. The Duke of Lu inquired how one could "see with the ears and hear with the eyes" (*er shi er mu ting* 耳視而目聽), and Kangcangzi answered as below:

> People who talk about it ("seeing with the ears and hearing with the eyes") are wrong! I can see and hear without using my ears and eyes, and yet I cannot change the functions of the ears and eyes. … My body combines with the heart; my heart combines with the *qi*; the *qi* combines with the numinous, and the numinous, with the void. [Even if] there are faint sounds [only], I still surely know if they come to affect me. [I] however do not know whether it is the awareness of my seven orifices and four limbs, or knowledge acquired through the heart, stomach, and six yang organs. I just automatically have the knowledge!

[48]Zhang, *Zhang Zai ji*, Zhengmeng, 24.
[49]Zhang, *Zhang Zai ji*, Yulu, 1.313.
[50]Zhang, *Zhang Zai ji*, Zhengmeng, 25.
[51]For the date of the text, see A. C. Graham, *The Book of Lieh-tzu: A Classic of Tao* (New York: Columbia University Press, 1990), 1.

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> 亢倉子云："傳之者妄！我能視聽不用耳目，不能易耳目之用。[…] 我體合於心，心合於氣，氣合於神，神合於無。其有介然之音，唯然之有來干我者，我必知之，乃不知是我七竅四肢之所覺，心腹六臟之所知；自知而已矣！"[52]

According to Kangcangzi, a person's body and heart, among other particular constituent parts, could merge into larger cosmic orders, such as the *qi*, the numinous, and the void (the *dao*) so as to achieve the goal of "joining the internal and external." In this case, one "knew" about the world through vanishing into the world as an entirety. Such a way of knowing did not depend on piecemeal acts of cognition-conation conducted through sensory organs (or even the heart). Despite the Daoist flavor of the *Liezi* passage, the cosmological assumptions, such as the deep orders and their hierarchical sequence, were highly consistent with those in Zhang Zai's times. The spontaneous knowing described by Kangcangzi was one possible explanation of Zhang's "other means" when he spoke of superior ways of joining oneself with the outside world. Returning to the question on the relationship between the two types of knowing, we may assume that in Zhang's mind, the consummated version of "knowing from virtuous nature" might resemble what Kangcangzi described, that is, a human fully and spontaneously immersed in the world without any specific exertions.

In sum, Zhang Zai endorsed the utility of sensory knowing and believed that for ordinary people in most contexts it served as the initial step to higher forms of learning. At the moment of realizing some deep order of the cosmos, one could hardly avoid having certain knowledge of this occasion in the sensory realm. Zhang was also convinced, in principle, that one could know through virtuous nature and access deep orders without having to observe the world through the sensory lens. In either argument, Zhang's understanding of the hierarchical order of the two types of knowing was clear and unwavering: "knowing through virtuous nature" remained superior and intellectually desirable, while hearing and seeing afforded only a superficial engagement with the world.

## FALLIBILITY OF THE SENSES

In addition to the problems of partiality and superficiality, Zhang also believed that the senses were prone to err. Sensory error was distinctive in belonging particularly to the bodily realm of the senses: in Zhang's opinion, the sense organs often failed to function properly, that is, to "see and hear" correctly, and the cause of the fallibility of the senses was internal to the human body.

Zhang's criticism of sensory errors started with his deep misgivings about "hearing and seeing" in individual experience. He warned that a person's own sense perception often led to false beliefs:

> In [the experience of] individual seeing and individual hearing, even a small oddity should be [considered as] strange, because it arises from disease and delusion. In [the experience of] collective seeing and collective hearing, even a big oddity should be [considered as] indeed the case, because it arises from the proper yin and yang.

[52] Liezi, *Liezi jishi* 列子集释, annotated by Yang Bojun 楊伯峻 (Beijing: Zhonghua shuju, 1979), 4.118–9.

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獨見獨聞，雖小異，怪也，出於疾與妄也；共見共聞，雖大異，誠也，出陰陽之正也。[53]

The central message of this statement is simple and clear: oddities perceived by an individual were perceptual errors, whereas anomalies perceived by "collective seeing and hearing" could be taken as veridical. Note that Zhang employed the dichotomy "strange" (*guai* 怪) and "indeed the case" (*cheng* 誠) to contrast the results of (an erroneous case of) individual perception and collective perception. This contrast shows what Zhang truly meant by "strange": instead of simply repeating the quality of an "oddity" (*yi* 異), the word also implied that such oddness was false, a result of "disease and delusion" (*ji yu wang* 疾與妄), and thus a product of the individual perceiver's failure to capture veridical information through his senses.

While Zhang Zai indeed endorsed "collective hearing and seeing" for its reliability, such approval did not in any sense assuage his deep suspicion against sense perception. Zhang's invocation of "the proper yin and yang" when affirming collective sense perception was intriguing and illuminating: the yinyang patterns were the deep structures of reality, usually associated with "knowing from virtuous nature" rather than sensory knowing. In Zhang's reasoning, "collective hearing and seeing" was more reliable because it afforded a more robust connection with the deep facts (yinyang) and provided a dependable gateway to higher learning. In light of my previous discussion of the relationship between the two types of knowing, preparing for "knowing from virtuous nature" was a general function of veridical sensory knowing, whether carried out by an individual or by a group of people.

The distinction Zhang made here was in fact one between veridical and erroneous sense perception. He did not intend to differentiate individual sense perception from collective sensory knowing in terms of nature—at least his arguments did not support such an assertion.[54] The reliability of collective sense perception perhaps drew on the mechanism of mutual correction available among a crowd. In other words, collective sensory knowing was an edited and thus more accurate way of sense perception. Nevertheless, Zhang did not postulate any error-free version of sensory knowing in terms of its internal mechanisms.

In a similar statement, Zhang again articulated his concern for perceptual errors in individual experience:

A strange thing[55] if seen by a crowd is a pattern and numinous; if partially seen, however, it is either [the result of] a disease or a fake. How is it possible that a thing can be sometimes seen

[53]Zhang, *Zhang Zai ji*, Zhengmeng, 20.

[54]Anne Birdwhistell deduces that collective sensory knowing might be an equivalent of "the knowledge of Heaven," by which I am not persuaded. See Birdwhistell, "The Concept of Experiential Knowledge in the Thought of Chang Tsai," 45–47.

[55]In pre-Han texts, the term "a strange thing" (*wu guai* 物怪) specifically designated awe-inspiring suprahuman beings (often in political contexts). For this early history, see Tu Cheng-sheng 杜正勝, "Gudai wuguai zhi yanjiu (shang): yizhong xintai shi he wenhua shi de tansuo" 古代物怪之研究（上）：一種心態史和文化史的探索, *Dalu zazhi* 大陸雜誌 104.1 (2002), 1–14, 104.2 (2002), 1–15, 104.3 (2002), 1–10. Zhang's usage of this term was more or less consistent with the early definition, e.g., his reference to a meteorite. Given the etymology, it is reasonable to assume that the term in the Song times did not refer to any random occurrence that struck observers as unusual.

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and sometimes not? Partial seeing is sickness. When a human's heart is sick, his ears and eyes are sick, too. The brightness of the sun and moon is numinous, and who doesn't see it? Also, a meteorite fell to the [realm of] the Song dukedom. [Although] it existed now but not before, [the meteorite] was plainly seen by all on the ground and it was thus a pattern.

物怪，眾見之即是理也、神也，偏見之者非病即偽。豈有有一物有不見者有見者？偏見者即病也，人心病則耳目亦病。今日月之明，神也，誰有不見者？又如殞石於宋，是昔無今有，分明在地上皆見之，此是理也。[56]

"Partial seeing," *pianjian*, was Zhang's derogatory reference to individual sense perception. The negative connotation of *pian* specifically highlighted the predilection of a person's senses to err (without mentioning the possibility of correct sensing). Again, Zhang stressed his distrust of sensory knowing by comparing veridical oddities in collective knowing ("seen by a crowd") to the false cases in individual experience ("partial seeing").

So what caused a sensory error? The two sources above demonstrate Zhang's answer: certain pathological conditions of the sense organs. In the first statement, Zhang pointed out that false sense perception emerged from "disease and delusion." In the second source, Zhang stressed again that erroneous perception was a "sickness" (*bing* 病) and specified that the ears and eyes as well as the heart could be "sick." Zhang undoubtedly associated "disease and delusion" with the sense organs. As I will demonstrate in the following pages, "disease" might refer to conditions such as cataracts, whereby one's perception is clouded; "delusion" might correspond with illusory or hallucinatory states, in which one sees an object incorrectly "as it is not" (illusion) or sees something where in fact nothing exists (hallucination).[57] The heart problem was a parallel condition correlated with the malfunction of the sense organs, a point I will explicate later. In sum, Zhang traced the origin of sensory errors to the failure of cognitive-conative organs.

Zhang took his medical judgments such as "disease" and "sickness" seriously, and he had literal, concrete references in mind when using these terms. The most telling evidence is that when he dealt with actual sicknesses of his sense organs, he would also turn to contemplate larger issues concerning cognition and learning. For instance, in his elderly days, Zhang developed cataracts (*yi* 翳, literally "shade") in his eyes. While discussing the affliction, he reiterated the entire theme regarding the eyes, the heart, and the correlation between their malfunctions:

Master Zizhang (Zhang Zai) has developed an eye condition, cataracts, and calls for a doctor to treat him. When the cataracts grow thinner, his relatives, wife, and sons are happy; when they grow denser, they are worried. Master Zizhang says: The eye is like the sun and moon in Heaven. When the sun and moon are in eclipse, it is just like when the superior man commits errors. I have not cultivated my virtue, nor have I articulated my learning. I have heard principles and yet cannot follow them; I have weaknesses and yet cannot correct them. I have offended Heaven for a long time. The cataracts developed in my eye are [the result of] the defect of my heart. [The eye problem and the heart deficiency are] the same form transpiring

[56]Zhang, *Zhang Zai ji*, Yulu, 1.314.

[57]See William Fish's definitions of illusion and hallucination, Fish, *Philosophy of Perception: A Contemporary Introduction* (London: Routledge, 2010), 3.

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in two locations. It is fortuitous when it (the condition) slightly heals. How is luck, however, a sufficient cause for happiness? Sometimes they (the cataracts) grow denser, and it is because Heaven is implementing its punishment. It is proper [for me] to retreat, listen, and accept it. How does worrying help? [The disciple then] asks: How do you cope? [Zhang] says: I am old and it is too late. I can only regret it.

子張子目病生翳，命醫治。目翳小淡，則親戚妻子為之喜；或加增焉，則復為之憂。子張子曰：目猶天之日月也，日月薄蝕，猶君子之有過也。余德之不修，學而不講，聞義不能徙，不善不能改，其得罪於天也久矣。目之生翳，是吾心之過，形見於兩間也。其或小愈，是幸免也，幸免奚足喜？其或加增，是天正典刑也，宜退聽以受之而已，憂之何益？曰：如之何以處之？曰：吾老矣，無及也，當以悔之而已矣。[58]

Zhang believed that his eyes were sick as well as his heart, and that the cataracts (eye problem) and the deficiency in his heart were "the same form transpiring in two locations," two concrete signs of a common problem. He made a few additional points regarding the heart problem. The defect in his heart, Zhang argued, was both cause and effect of his failure in self-cultivation, and his cloudy vision, accordingly, was the punishment Heaven sent to him.[59] In Zhang's understanding, this was not a consequence for which he could easily atone.

It is particularly noteworthy in this passage that Zhang invoked a specific medical condition—cataracts—which supplied a concrete substantive to his previous invocation of "sickness" and "disease." In other words, Zhang envisioned a solid connection between bodily malfunction and sensory error. The cause of the fallibility of the senses was innate to the human body.

Readers may question how serious Zhang was about his medical judgments, as the cataract story can also be understood as a statement of moral conviction which referenced the eye problem as a mere hook. Although Zhang discussed his eye condition as part of a larger issue regarding his moral existence, it is erroneous to see his thinking on cognition-conation in medical terms as irresponsible theorizing. Zhang's whole line of argument regarding perceptual fallibility and pathological conditions had solid corroborating evidence in contemporaneous medical knowledge.

Zhang indeed held an interest in medicine. In his opinion, although early medical treatises were not as significant as the Six Classics, they were "what the (ancient) sages preserved" (*shengren cun ci* 聖人存此),[60] thus claiming a considerable intellectual value. He regarded medical texts to be useful for "benefitting the family" (*hui ji gurou* 惠及骨肉),[61] indicating an interest in self-medication and family care. He also identified in medical knowledge a repertoire of sources for "fathoming patterns and exhausting nature"

[58]Zeng Zaozhuang 曾棗莊 compil., *Quan Song wen* 全宋文 (Shanghai and Hefei: Shanghai cishu chubanshe and Anhui jiaoyu chubanshe, 2006), vol. 60, 1305.125.

[59]Zhang's invocation of Heaven may remind readers of his discussion of "knowing from virtuous nature," which, however, was not the central concern here. The thesis of this passage was to place erroneous sense perception (caused by cataracts) in the large context of one's moral existence. Heaven played a key role in "knowing from virtuous nature" because it served as the repertoire of all orders in the world and thus the source of deep knowledge. In the current passage, Heaven assumed the role of a supervising authority figure and exerted an influence on sensory knowledge instead.

[60]Zhang, *Zhang Zai ji*, Jingxue liku, 278.

[61]Zhang, *Zhang Zai ji*, Jingxue liku, 278.

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(*qiongli jinxing* 窮理盡性),[62] thus medicine was a valid subject preparing a student for higher learning. Although extant sources provide no concrete information as to which medical texts Zhang had read or owned, it is safe to assume that he would have had at least limited access to some of the most popularly circulated medical texts in the Song, such as the *Inner Canon of the Yellow Emperor* (*Huangdi neijing* 黃帝內經).[63]

Two prominent commonalities exist between Zhang's arguments on the etiology of sensory errors and contemporaneous medical discourse. To begin with, some pathological conditions of the sense organs were indeed correlated with those of the heart. In fact, only in light of the more detailed discussions in medical texts do we obtain a clear understanding of Zhang's claim that the eye problem (cataracts) and the heart deficiency were two signs of one problem, albeit in different "locations." Second, what Zhang called "disease and delusion," that is, eye maladies such as cataracts and illusory/hallucinatory mental states, were often considered in medical texts as related conditions concerning both the senses and the heart. The two points are closely connected.

To make the comparison between Zhang and medical literature I will focus on the example of the eyes. The aforementioned medical arguments also concerned sensory modalities other than vision. The ears, too, assumed a similar role in the same conceptual frameworks which linked the eyes to the heart, a point I will demonstrate after discussion of the visual modality.

First let's explore why certain pathological conditions of the eyes were correlated with those of the heart. The short answer to this question, as provided in the medical literature, is that both the sense orifices and the heart served as functional nodes in large circulatory systems governing the entire human body. In medical discourse since the age of the *Inner Canon*, the eye was often viewed as a constituent of larger systems. Medical practitioners sometimes treated certain diseases as conditions of the eye in its own right and viewed the eye as an organ independent from the rest of the human body. More often, however, doctors and healers considered the eye as part of a larger organism, and eye problems as manifestations of deficiencies in greater systems. In the latter cases, eye conditions should be more accurately characterized as "illness at the eyes" instead of "disease [affecting] the eyes."[64] The eleventh century witnessed the continuation and prevalence of the second perspective.

[62]Zhang, *Zhang Zai ji*, Jingxue liku, 278.

[63]In the following pages, I rely on three kinds of medical texts to corroborate the discussion of Zhang Zai: earlier classics collated, reprinted, and promoted by the Northern Song government, pharmacological treatises compiled in early Northern Song (prior to Zhang) and promoted by the government, and crucial medical texts which appeared slightly later than Zhang's times and yet comprised large amounts of quotations from early texts. For each key text I cite, I will provide information on its availability/popularity in Zhang's times in a separate footnote. Government-commissioned medical publishing was a significant phenomenon in the Song. We can safely assume that the selection of works the state chose to print constituted the most important repertoire of medical texts at the time; official recognition was both the cause and effect of such significance. Zhang was more likely to engage these works by chance and by choice (although he did not necessarily read them in the state-commissioned versions). For studies of state-sponsored medical publications in the Northern Song, see TJ Hinrichs, "The Song and Jin Periods," in *Chinese Medicine and Healing*, edited by TJ Hinrichs and Linda L. Barnes, 102–8, and Fan Jiawei (Fan Ka Wai) 范家偉, *Beisong jiaozheng yishu ju xin tan* 北宋校正醫書局新探 (Hong Kong: Zhonghua shuju, 2014).

[64]Jürgen Kovacs and Paul U. Unschuld, trans. and annot., *Essential Subtleties on the Silver Sea: The Yin-Hai Jing-Wei: A Chinese Classic on Ophthalmology* (Berkeley: University of California Press, 1999), 41. For a

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Medical texts circulating in Zhang's time offered a variety of ways to conceptualize the connection between the eye and larger systems. In the current study I cite two popular kinds. Not only did both systems situate the eyes within body-wide connections, they also involved the heart in the same schemes. The first system was centered upon the *qi*. The eyes were said to be where the "essential *qi*" (*jing qi* 精氣) gathered. This idea was first seen in the *Divine Pivot* (*Lingshu* 靈樞) section of the *Inner Canon* and stated by the legendary ancient doctor Qibo 岐伯:[65]

> All the essential *qi* of the five viscera and six bowels flow up to the eyes and form the eyeballs.[66]
>
> 五臟六腑之精氣，皆上注於目，而為之睛。[67]

This stipulation was cited repeatedly by Tang and Song medical texts. For instance, the famous Tang formulary, *Precious Essential Remedies* (*Qianjin yao fang* 千金要方) transcribed it verbatim,[68] and the Song *Imperial Grace Formulary of the Taiping Reign* (*Taiping shenghui fang* 太平聖惠方) reinstated it with negligible changes.[69]

In the same passage, Qibo also mentioned the heart and explained the role it assumed in the same circulatory scheme. The essential *qi* was closely related to a person's soul (*hun* 魂 and *po* 魄) as well as spirit (*shen* 神), factors key to one's consciousness:

> The essence of the five viscera and six bowels is where the guarding *hun*- and *po*-souls frequently rest, as well as where the spirit is generated.
>
> 五藏六府之精也，營衛魂魄之所常營也，神氣之所生也。[70]

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survey of conceptual frameworks regarding eye illnesses from the ancient times to the Ming (1368–1644), see ibid., 3–52.

[65]As part of the *Inner Canon*, the *Divine Pivot* was one of the key texts that the Song state chose to collate and reprint. See Li Tao 李燾 (1115–1184), *Xu Zizhi tongjian changbian* 續資治通鑒長編 (Beijing: Zhonghua shuju, 2004), 186.4487. It was a widely cited source in extant Song writings.

[66]The eyeball referred to the anterior section of the eye, that is, the cornea and the iris with the pupil. See Kovacs and Unschuld, *Essential Subtleties*, 61.

[67]*Lingshu jing* 靈樞經 (Beijing: Renmin weisheng chubanshe, 1963), 80.153.

[68]Sun Simiao 孫思邈 (581–682), *Qianjin Fang* 千金方, Beiji qianjin yao fang 備急千金要方, annotated by Liu Qingguo 劉清國 (Beijing: Zhongguo zhongyiyao, 1998), 6.105. The *Precious Remedies* was one of the most popular Tang (618–907) medical texts in the Song. The Northern Song government invested a strong interest in the treatise by republishing it along with classics such as the *Inner Canon*. For this history, see Fan, *Beisong jiaozheng yishu ju*, 82–83. For a study of the Song literati's engagement with this text in wider contexts beyond the government's monitoring, see Chen Hao 陳昊, "Zai xieben yu yinben zhijian de fangshu: Songdai *Qianjin fang* de shuji shi" 在寫本與印本之間的方書：宋代《千金方》的書籍史, *Zhongyiyao zazhi* 24.1 (2013), 69–85.

[69]Wang Huaiyin 王懷隱 (fl. late 10th century), *Taiping shenghui fang* 太平聖惠方 (Beijing: Renmin weisheng chubanshe, 1959), 32.898. The *Taiping shenghui fang* (completed in 992; hereafter *Shenghui fang*) was the most important formulary in early Northern Song. Emperor Taizong (r. 976–997) commissioned the text and ordered to circulated it to all prefectures. See Li Tao, *Xu changbian*, 33.736. For a comprehensive discussion of the imperial efforts to promulgate the text, see Fan, *Beisong jiaozheng yishu ju*, 39–57.

[70]*Lingshu jing*, 80.537.

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The essential *qi* gave birth to the spirit, and the spirit took residence in the heart. In Qibo's phrasing, the heart was "the abode of the spirit" (*shen zhi she ye* 神之舍也), thus standing as a critical way station in the movement of the essential *qi*. He then called the eyes "the messenger of the heart" (*xin zhi shi* 心之使), because the essential *qi* would eventually reach the eyes with directives made by the heart. The eyes and the heart thus became connected due to the movement of the *qi*.

Besides the *qi* system, another large scheme featuring the blood as the central agent also connected the eyes to the heart. In this scheme, the blood ran in one direction from the heart to the liver, which then supported the proper function of the eyes. In the *Essential Questions* (*Su wen* 素問) section of the *Inner Canon*,[71] Qibo introduced the positions of the liver and the heart in the systematic motions of the blood, and, in a separate passage, asserted that "the heart generates the blood" (*xin sheng xue* 心生血)[72] and "the liver preserves the blood" (*gan cang xue* 肝藏血).[73] The Song text *Classified Pharmocopoeia* (*Zheng lei bencao* 證類本草) combined the two statements into one coherent argument regarding eye illnesses:[74]

> The heart generates the blood, and the liver preserves the blood. One can see as soon as his liver receives the blood. It is against principles that [a doctor] does not focus on the blood when treating an eye illness.
>
> 心生血，肝藏血，肝受血则能視，目病不治血為背理。"[75]

In sum, the eyes and the heart were closely linked because they served as nodal points which routed the flow of the blood/*qi*. These conceptual frameworks provided the background for Zhang Zai's claim that an eye problem and a heart deficiency should be deemed "the same form transpiring in two locations." The same "form," or the common overarching problem, resided in the greater systems and transpired in different bodily organs ("locations"). For instance, in the case of a disruption of the normal *qi* movement, both the *qi* holder, the heart, and the *qi* receiver, the eyes, would be affected; the eye affliction and heart malfunction were perceivable consequences of the same internal disease—the *qi* disorder.

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[71]The *Essential Questions* drew unparalleled attention from the Song state, which summoned scholars to collate the text thrice in the eleventh century. See Paul Unschuld, *Huang Di nei jing su wen: Nature, Knowledge, Imagery in an Ancient Chinese Medical Text* (Berkeley: University of California Press, 2003), 59, Asaf Goldschmidt, *The Evolution of Chinese Medicine: Song Dynasty, 960–1200* (London: Routledge, 2008), 38, and Fan, *Beisong jiaozheng yishu ju*, 23–24, 81–83, and 92–93.

[72]*Huangdi neijing suwen jiaozhu* 黃帝內經素問校注, annotated by Guo Aichun 郭靄春 (Beijing: Renmin weisheng chubanshe, 1992), 5.85.

[73]*Huangdi neijing suwen jiaozhu*, 62.746.

[74]The *Classified Pharmocopoeia* was compiled by Tang Shenwei 唐慎微 (fl. 1080s–1090s) slightly after Zhang Zai's times. Nevertheless, Tang incorporated a rich repertoire of quotations from early texts as the foundation of his new work. For the bibliographical history of the text, see Tang Shenwei, *Chongxiu Zhenghe jingshi zhenglei beiyong bencao* 重修政和經史證類備用本草 (hereafter *Zhenglei bencao*), annotated by Okanishi Tameto 岡西為人 (Taipei: Guoli Zhongguo yiyao yanjiusuo, 1971), 4–5 and Fan, *Beisong jiaozheng yishu ju*, 260–5.

[75]Tang, *Zhenglei bencao*, 22.452.

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Now let's proceed to concrete examples under the purview of what Zhang called "disease and delusion" and explore how these causes of sensory errors were similar conditions which concerned both the sense organs and the heart. Take cataracts for example. Some medical texts referred to the blood system to account for the origin of cataracts. The statement cited above on the connection between the blood and eye sicknesses was actually a diagnosis of cataracts. The text first stated:

> Once a person suffers a cataract in his eye, it will come and go in an unstable manner. Such is due to the disorder of the blood.
>
> 嘗有人病眼中翳，往来不定，如此乃是血所病也。[76]

It then spelled out the etiology: "The heart generates the blood, and the liver preserves the blood. One can see as soon as his liver receives the blood." The symptom described here greatly resembles Zhang's condition: a cataract that "came and went in an unstable manner," or, in Zhang's words, one that grew "thinner or denser." Also similarly, by attributing the cause of cataracts to abnormal conditions of the blood, this analysis linked the eye condition to that of the heart. When a "disorder of the blood" occurred, the eyes and the heart demonstrated different yet correlated pathological signs.

The *qi* system was an even more prominent source of explanations for cataracts. In *Treatise on the Origins and Signs of Diseases* (*Zhu bing yuan hou lun* 諸病源候論), Chao Yuanfang 巢元方 (fl. ca. 605–616) pointed to irregular movements of the *qi* as the cause of "thin cataracts" (*fu yi* 膚翳, one among many other kinds of cataracts in this treatise):

> The yin and yang *qi* both flow up into the eyes. If wind-evil or phlegm-*qi* hitches into the viscera, the *qi* of viscera would be out of the balance between the weak and the strong. The *qi*, therefore, would spring into the eyes and stay undissipated for a long time, which further generates thin cataracts. A thin cataract is a flywing-like thing over the eye.
>
> 陰陽之氣，皆上注於目。若風邪痰氣，乘於腑臟，腑臟之氣虚實不調，故氣沖於目，久不散，變生膚翳。膚翳者，明眼睛上有物如蠅翅者即是。[77]

According to this source as well as the previously cited *Inner Canon*, the eyes were indeed where all essential *qi* "flew up to." But if the flow of the *qi* was disturbed by invasive influences (wind-evil or phlegm-*qi*, for example) and thus became excessively strong, it would cause persistent tension against the eyes and generate a thin cataract. Here wind-evil and phlegm-*qi* were pathogenic agents responsible for actively interrupting the regular movement of the *qi*.[78] The resultant abnormal *qi* activities constituted the cause of cataracts.

[76]Tang, *Zhenglei bencao*, 22.452.

[77]Chao Yuanfang, *Zhu bing yuanhou lun jiaoshi* 諸病源候論校釋 (hereafter *Yuanhou lun*), annotated by Nanjing zhongyi xueyuan 南京中醫學院 (Beijing: Renmin weisheng chubanshe, 2009), 28.774. This seventh-century treatise enjoyed a popularity similar with the *Shenghui fang* in the Northern Song. See Fan, *Beisong jiaozheng yishu ju*, 15–16.

[78]Thus, more specifically speaking, the conceptual framework regarding the cause of cataracts encompassed the *qi* etiology as well as the wind etiology (in the case of wind-evil), a combination we will see again in the case

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Now let's turn from "disease" to "delusion" and the notable similarities in their etiology. The various conditions of "delusion" concerned not only malfunctioning sense organs but also the heart. The pathogenic agent wind, too, often played a role in disrupting the blood/*qi* motions. When a person's blood and *qi* were weak, at a moment when "the *qi* and blood were injured from the outside" (*qi xue wai shang* 氣血外傷),[79] for instance, wind-evil would likely invade the human organism and cause maladies. When wind encroached on the heart, it would entail "heart-wind" (*xin feng* 心風).[80] Because the heart was where the spirit resided, the wind malady would cause a person to "become confused and talk deliriously, as well as to see and hear [things]" (*huanghu wangyu, you suo jianwen* 恍惚妄語，有所見聞),[81] hence the emergence of sensory errors.

Taken together, disorders which induced perceptual fallibility, such as cataracts and illusion/hallucination, were indeed connected in terms of etiology. They often involved the heart in addition to the sense organs, as both participated in the movements of the blood and *qi*. This interconnectivity also found resonance in treatment, as demonstrated in the stipulations of drug efficacy in the pharmacological literature. For instance, according to *Classified Pharmocopoeia*, the herb mayapple (*guijiu* 鬼臼, *podophyllum peltatum*) could be a cure for both "losing the *po*-soul and illusory/hallucinatory seeing" (*shi po wang jian* 失魄妄見) as well as "thin cataracts in the eyes" (*mu zhong fu yi* 目中膚翳), because it was capable of "removing the harmful evil-*qi*" (*pi e qi buxiang* 闢惡氣不祥).[82] A number of medicines, such as cinnabar (*dansha* 丹砂),[83] red halloysite (*chishizhi* 赤石脂),[84] ginseng (*renshen* 人參),[85] irises (*yuanwei* 鳶尾),[86] and amber (*hupo* 琥珀),[87] assumed similar dual functions: to "clear the eyes" (*mingmu* 明目) and to "nurture the essence and spirit" (*yang jingshen* 養精神) by warding off evil-*qi*.[88]

As previously mentioned, the correlation between the senses and the heart applied not only to vision but also to other sensory modalities. In the *Inner Canon*, for example, the ears assumed a role comparable to that of the eyes in serving as a node in the systems centered on the blood and *qi*. Therefore, the treatment of ear conditions—especially those affecting hearing capacity—was often conflated with the cure of eye illnesses. The *Precious Essential Remedies* pointed out that one should "strengthen the blood and *qi* so as to make the ears and eyes clear" (*sheng xueqi, yi tong ermu* 盛血

of delusion. The *qi* system and the wind etiology were closely associated and often jointly contributed to explaining the cause of an ailment. Scholars such as Paul Unschuld regard the wind etiology as a possible precursor of the *qi* system. See Unschuld, *Huang Di nei jing su wen*, 183. A variety of wind-related pathogens could become the source of disruption in the *qi* movement and cause different types of cataracts. For a few other examples, see Chao, *Yuanhou lun*, 28.775, and Wang, *Shenghui fang*, 18.503.

[79]Wang, *Shenghui fang*, 4. 95.

[80]Wang, *Shenghui fang*, 4. 93.

[81]Wang, *Shenghui fang*, 4. 95.

[82]Tang, *Zhenglei bencao*, 11. 271–2.

[83]Tang, *Zhenglei bencao*, 3.79.

[84]Tang, *Zhenglei bencao*, 3.93.

[85]Tang, *Zhenglei bencao*, 6.145.

[86]Tang, *Zhenglei bencao*, 10.246.

[87]Tang, *Zhenglei bencao*, 12.297.

[88]Tang, *Zhenglei bencao*, 3.79.

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氣，以通耳目).[89] The pharmacological literature also provided evidence to support the connection. Turquoise, for example, was an ingredient said to "pacify the heart and sooth fright" (*anxin, zhi jingji* 安心，止惊悸), "clear the eyes and remove cataracts" as well as "facilitate the ears (hearing)."[90] Also, bulrush (*xiangpu* 香蒲, *typha orientalis*) was an herb able to "brighten the eyes and clear the ears" through treating the "evil *qi* at the heart" (*xin xia xieqi* 心下邪氣).[91] Therefore, vision and hearing were conditions which could entail perceptual errors involving both the sense organs and the heart, confirming Zhang Zai's self-diagnosis of his eye condition.

Summing up, both Zhang Zai and mainstream medical texts attributed the fallibility of the senses to pathological conditions of the sense organs as well as of the heart, and they saw the two problems as related signs of larger issues. Zhang did not necessarily have all the medical details in mind when he contemplated "disease and delusion," but he was certainly aware of the conceptual frameworks connecting the senses with the heart, especially given his interest in *qi*. His concern with sensory knowing was grounded in his understanding of the human body.

A key implication for my discussion of epistemology lies in Zhang's location of the source of sensory errors: perceptual errors arose primarily for reasons intrinsic to the human body. First and foremost, a pathological condition of a sense organ undoubtedly concerned the organ and its immediate bodily environment. Besides Zhang's focus on the internal state, various external reasons could account for sensory errors. For example, they might arise from external impediments, e.g., darkness, or from interference with the sense organs, such as pressing on the eyes or covering the ears.[92] Incorrect sensory knowing might also be an artifact of how things are in the world. In the case of a moon illusion, for instance, one's eyes might be working impeccably, yet the moon appears larger on the horizon than it is high in the sky. Particular circumstances in the phenomenal world contain cues able to mislead one's perception.[93]

Zhang Zai, however, glossed over the external possibilities and concentrated on the perceiver's role in perceptual errors. He identified a proclivity to err on the part of the senses and pointed to their susceptibility to illness as the cause. To Zhang, the sense organs' vulnerability to pathological changes was a constant issue as well as an approximation of an innate quality. The "inherent" perspective Zhang held in his discussion of the fallibility of the senses had at least two notable features. For one, such inherence was a literal reference to the interior of the human body; for another, Zhang focused on the senses and yet did not limit his discussion to the sense organs as individuated entities. The two points demonstrate the singularity of Zhang's understanding of "internality," especially in light of a comparison with major Western epistemologies.

In focusing on the human body, Zhang did not direct attention to exploring the nature of perception, that is, mechanisms innate to the perceptual process. He did not adopt a

[89] Sun, *Qianjin fang*, 2.34.

[90] Tang, *Zhenglei bencao*, 5.132.

[91] Tang, *Zhenglei bencao*, 7.180.

[92] Fraser discusses these possibilities in the case of Xunzi; see Fraser, "Knowledge and Error in Early Chinese Thought," 139.

[93] For a discussion of predictable and intersubjective illusions including the moon illusion, see William Fish, *Perception, Hallucination, and Illusion* (Oxford: Oxford University Press, 2009), 148–49.

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conceptual framework which bound the senses to the perceived object in a closed relationship. In so doing Zhang stayed clear of the conventional path that the Western epistemological tradition has followed. Some common types of intersubjective illusions, such as the moon illusion, therefore fell out of the purview of his discussion.

Readers may wonder: if Zhang's framework is only capable of accounting for idiosyncratic and non-intersubjective types of illusion, can we justifiably call the susceptibility to illness an "inherent quality" of the senses, as we do with the nature of perception? To address this question, we should first ask what kind of "inherent quality" Zhang could possibly envision given the cultural/intellectual resources he had in his times. Although the occurrence/absence of an idea in a certain time period is a contingent event, Zhang had convincing reasons not to engage in a philosophical anatomy of perceptual mechanisms.

Arguably, Zhang's times did not afford him the ontological grounds for an examination of the nature of perception, which requires that the perceiver is a subject independent from his object. Perceptual experience involves the presentation of a mind-independent object to the subject, and the subject is supposed to reach an objective reality via a subjective sensation. The "problem of perception" in the Western tradition arises from the existence of illusion and hallucination in human experience. The philosophical solutions to this problem focus on conceptualizing the mechanism of perceptual experience in ways capable of accommodating these sensory errors.[94]

A separation between the knowing subject and the known object, however, directly contradicted a fundamental epistemological assumption prevalent in Zhang's day, namely, that only in the absence of such a distinction one could achieve truly good knowledge.[95] In Zhang's stipulation of "knowing from virtuous nature," he exhorted the knower to pursue his Heaven-endowed nature and thus remain in unobstructed contact with Heaven. The closer a relationship one could maintain between his heart and Heaven, the better he understood all deep orders, thus constituting the better type of knowledge which led one to the *dao*. In this stipulation, no matter if a modern audience views Heaven, the *dao*, or the deep orders of the world as the placeholder of the object, the knowledge-seeker (the approximation of the subject) was not supposed to be separate from any of them. On the contrary, he should overcome such distinctions so that his self, his subjective inquiring process, and the environment of such a process all merged into the entirety of the world and stayed in harmony with the deep pulses connecting all.

[94]For a comprehensive introduction to the "problem of perception" and its various theoretical solutions in modern epistemology, see Fish, *Philosophy of Perception*, especially 1–48.

[95]Zhang Zai is not singular in rejecting the subject–object distinction. Scholars of Chinese epistemology have observed in various periods and contexts that premodern Chinese thinkers were generally in favor of resisting such a division. See, for example, Roger Ames, "Meaning as Imaging: Prolegomena to a Confucian Epistemology," in *Culture and Modernity: East-West Philosophic Perspectives*, edited by Eliot Deutsch (Honolulu: University of Hawai'i Press, 1991), 228; Hans Lenk, "Introduction: If Aristotle Had Spoken and Wittgenstein Known Chinese: Remarks Regarding Logic and Epistemology, A Comparison Between Classical Chinese and Some Western Approaches," in *Epistemological Issues in Classical Chinese Philosophy*, edited by Hans Lenk and Paul Gregor (Albany: State University of New York Press, 1993), 1–11; Fraser, "Knowledge and Error in Early Chinese Thought"; and Allen, *Vanishing into Things*, 103–4 and 197.

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The ontological grounds Zhang shared with his peers to a large extent excluded the discussion of the subject–object division as an appealing philosophical idea. The separation undoubtedly occurred to Zhang, for he mentioned the need to "join the internal and the external," implying that there was a demarcation to start with. In the case of sensory knowing, one could barely avoid conceptualizing that the perceiver and the perceived were two distinctive entities connected by the senses.[96] Yet due to the stipulation that higher learning required the elimination of such a distinction, the inner–outer division became a transient stage that ought to yield to more desirable epistemic setups.

Returning to the question of what kind of "inherent quality" Zhang could possibly envision for the senses, we should now be able to see that he had little reason to appreciate an "inherence" based on a philosophical examination of the subject (independent from the object). A perceiver alienated from the perceived was the antithesis of good epistemological praxis; he represented a foothold deprived of philosophical meanings. Zhang as well as any Song literatus ambitious to promote learning associated with the *dao* would have no motivation to linger in an area categorically separate from the *dao*, so that any effort to complicate the local mechanisms would only drive him further from higher learning goals. Thus, Zhang turned to a simple explanation germane to his daily experience with the senses: that the sense organs, as part of the human body, were vulnerable to sickness, and certain pathological conditions were the source of sensory errors. The invocation of the human body was not only a convenient choice, but also one that did not contradict Zhang's larger epistemological scheme.

Another feature of Zhang's internal perspective when locating the source of sensory errors was his treatment of the sense organs as interconnected rather than individuated entities. This invites a new question regarding the definition of "inherent quality": if, according to Zhang, the error-inducing pathological conditions were associated not only with sensory organs but also with the heart as well as larger systems in the body, how could vulnerability to illness remain a quality inherent to the senses? Indeed, Zhang did not intend to restrict "disease and delusion" to the eyes and ears only. In analyzing the illnesses of the sense organs, he paid respect to the interconnectivity between the orifices and viscera (especially the heart) and situated his thinking in large themes governed by body-wide agents (*qi* or blood). The "internality" in Zhang's definition more accurately corresponded with the entire human body rather than the sense organs.

But Zhang's choice once again calls attention to historical possibility: would it be epistemologically sound for Zhang to limit "disease and delusion" to the sense organs as individuated entities? The dichotomy between "knowing from hearing and seeing" and "knowing from virtuous nature" implies a negative answer. In fact, Zhang's analysis of the pathological conditions fit beautifully with his two-tier epistemology: when examining a "thing," such as the eyes, one should not simply attach to the sensory, individuated reality (the eyes in the physical form as part of the human body) but also to their status in deep relations and larger orders.[97] In this case, the eyes' connection with the

[96]Angle and Tiwald call this distinction the foundation of sensory knowing. See Angle and Tiwald, *Neo-Confucianism*, 113.

[97]For "things" as a discourse of individuation especially in early Chinese thought, see Franklin Perkins, "What is a Thing (wu)?" In *Chinese Metaphysics and Its Problems*, edited by Chenyang Li and Franklin Perkins (Cambridge: Cambridge University Press, 2015), 54–68. Scholars have also noticed that in Song

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heart as well as the nodal functions they served in the *qi*/blood systems were precisely the deep facts a responsible inquirer should pay heed to (presumably through "virtuous nature"). In Zhang's construal, an inherent condition of the senses legitimately connected with and extended to areas beyond the sense organs in terms of breadth and depth; he had convincing epistemological reasons to avoid defining "inherence" on the foundation of an individuated entity.

In sum, the third problem Zhang identified in sensory knowing was that the senses were prone to err. He noticed the existence of illusion and hallucination, which convinced him of the unreliability of sense perception. The origin of the problem, as he argued, lay in the sense organs' vulnerability to pathological changes. Holding an inward viewpoint focusing on the human body, Zhang drew on contemporaneous medical arguments to discuss the etiology of illnesses associated with the sense organs. The fallibility of the senses became a linchpin issue that wedded Zhang's mastery of medical knowledge to his concern with learning.

Some old issues resurface in Zhang's analysis of the senses' fallibility. One, for instance, concerned the relationship between sensory knowing and "knowing from virtuous nature." Zhang's regard of both the senses and the heart in the etiology of sensory errors adds a new facet to his belief that sensory knowing served an instrumental role to support higher forms of knowing. In this case, erroneous sense perception was a sign of the malfunction of the entire cognitive-conative apparatus, the sense organs plus the heart. When one's heart was sick, it followed that he would likely encounter difficulty in attaining all other higher epistemic goals, such as to "exhaust things" as well as to "fathom patterns." Zhang confirmed that the well-being of the sense organs was correlated with that of the heart, so that the epistemic functions they respectively assumed were likely connected. This argument also affirms the relevance of sensory knowing in learning in a subtle way: the acknowledgement of the fallibility of the senses provided a reason to invest attention in sense perception for the purpose of resolving larger issues.

## CONCLUSION

Scholar Zhang Zai certainly had a serious intellectual interest in sensory knowing. He made deliberate efforts to render sensory knowing a scholarly topic and annex it to a larger scheme concerning learning. He held a distinctive two-tier epistemology, one that encompassed sensory knowing ("knowing from hearing and seeing") and higher learning ("knowing from virtuous nature"). While retaining a privileged focus on the latter, Zhang systematically considered the significance of knowing through the senses, paying heed to its utility as well as its defects. On the one hand, he deemed sensory knowing useful; after all, to know through the eyes and ears was a critical first step in understanding the world. Many an inquiry into the deep facts of the cosmos involved some sensory knowledge as the starting point. On the other hand,

times "things" were "dynamic configurations" of deep relations, such as the *qi* movements. See Stephen Angle, *Sagehood: The Contemporary Significance of Neo-Confucian Philosophy* (Oxford: Oxford University Press, 2009), 38. The two facets of "things" corresponded with the two types of knowing at issue. For a systematic discussion of the dual nature of "things," see Ya Zuo, *Shen Gua's Empiricism* (Cambridge: Harvard Asia Center, 2018), 40–44.

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Zhang urged his readers to remain alert to the limitations of sensory knowing, especially in the pursuit of edifying learning: if one relied on the senses only, the scope of his knowledge would be partial, the depth, insufficient, and the pitfall of illusion, possible. The senses remained an item worthy of scrutiny on Zhang's intellectual agenda.

Zhang's engagement with sensory knowing has a number of critical implications for the study of Chinese thought. In the first place, such a discussion proves that premodern China has its own "problem of perception": as early as the eleventh century, educated men like Zhang posed critical questions regarding the capacity of the senses, and assessed the merit and demerit of sensory perception in comparison with other types of knowing. In historical and philosophical studies of Chinese epistemology, the problem of the senses deserves a place.

Second, Zhang's juxtaposition of sensory knowing and "knowing from virtuous nature" calls for a more thorough consideration of the nature of knowledge in premodern Chinese thinking. Specifically, the role of sensory experience in epistemic praxis requires a closer scrutiny: did it serve as a kind of epistemic guide, and how did it coordinate with other sources of knowledge? Some scholars regard the nature of Chinese knowledge to be purely experiential because premodern Chinese texts seemed indifferent to the vision of a realm beyond experience.[98] Although not an erroneous generalization, it is a simplification that glosses over many intricate claims regarding diverse ways of knowing, such as Zhang's two-tier epistemology. In his case, if "knowledge from hearing and seeing" is an approximation of sensory knowledge, what then is the nature of knowing conducted via a connection with Heaven? An encompassing, homogenous label of "experiential knowing" does not invite readers to carefully consider a distinction like this.

An accurate understanding of Zhang's dichotomy requires more nuanced conceptual frameworks and better management of comparative strategies. The division between sensory knowing and "knowing from virtuous nature" bears a deceptive resemblance to that between empiricism and rationalism in the Western tradition. Philosophers have successfully tackled the issue of rationalism in the Chinese context and laid the groundwork for debunking this misleading similarity.[99] Due to the lack of the subject–object distinction, a knower in premodern China had no ontological grounds for envisioning a supra-experiential realm, where innate ideas, the cornerstone of rationalism, by definition reside. In other words, none of the deep orders of the world, such as the *dao*, the numinous, number, *qi*, or pattern, were supposed to transcend sensory experience in a two-tier ontology. This distinction is indeed crucial to a just comparison between Zhang's epistemology and the Western counterparts, a point well worth emphasizing.

The flip side of this comparison, however, is that it has the potential to discourage further inquiries into the original distinction Zhang made, the difference he pursued with ardor between two types of knowing. Although an ontological transcendence was absent, "knowing from virtuous nature" eminently surpassed "knowing from hearing and seeing." Zhang articulated this divergence with a clear intention to go beyond

[98] Ames, "Meaning as Imaging," 234.

[99] For example, Barry Allen argues convincingly that premodern China lacked a Western-style rationalism to react to. See Allen, *Vanishing into Things*, 199–209.

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sense perception, which, in his opinion, was partial, superficial, and unreliable. Thus, it is reasonable to assume that in pursuing deeper knowledge of the universe one must employ other forms of epistemic guides in lieu of sensory modalities. The current study of Zhang's critical engagement with the senses confirms that sense perception was indeed endorsed by scholars as a source of knowledge; moreover, it highlights the significance of exploring other forms of epistemic guide in the broad world of learning.

For historians, a close examination of Zhang Zai's opinions on sense perception also sheds new light on the study of the history of knowledge; specifically, it reveals important epistemological assumptions that Song literati held in concrete processes of knowledge production. As a leading intellectual figure in the Song period, Zhang represented the community of the eleventh-century literati in distinguished ways, and, as many intellectual historians recognize, his two-tier epistemology was an idea well known among this community and had a palpable influence on other famous thinkers (e.g., the Cheng brothers). Zhang's scholarly interest in sense perception exemplified a trend among eleventh-century scholars to regulate epistemic praxis.

In addition, Zhang's reflections were by no means empty theorizing. The newly emerged epistemological prescriptions and changes in concrete epistemic praxis egged each other on against the background of a vibrant cultural scene. The effort to coin the concept "knowing from hearing and seeing," for instance, was both the cause and effect of the Song literati's interest in textualizing their explorations of the phenomenal world. The popularity of the "notebook" (*biji* 筆記) literature was partly a byproduct of this intellectual trend.[100] The hierarchical distinction between sensory knowing and "knowing from virtuous nature" partly explains why, despite widespread fascination with the phenomenal world, many literati differentiated recording what they "heard and saw" from the proper course of pursuing learning. The famous notion of "investigation of things" (*gewu* 格物), at least in the Song period, pertained to "knowing from virtuous nature" and thus focused on the revelation of deep orders beyond the sensory façade. Zhang Zai's concern with the senses opens a window onto a horizon of new ideas, commitments, and epistemic praxis.

[100]The study of *biji* has remained one of the most vibrant sub-fields in the historical study of the Song culture. For a most recent study which connects the genre with "knowing from hearing and seeing," see Ellen Cong Zhang, "To Be 'Erudite in Miscellaneous Knowledge': A Study of Song (960–1279) *Biji* Writing," *Asia Major Third Series* 25.2 (2012), 43–77.

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