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# Russell's Inference and Zhang Dongsun's Compatibility – Two Models of Structural Perception<sup>1</sup>

## 1 Introduction

**A**lthough 張東蓀 Zhang Dongsun (1886-1973) can also be regarded as one of the leading Chinese philosophers of the 20<sup>th</sup> century, his Sinitized Marxist criticism of ideology characterized him as a political dissident, so that he was forgotten for several decades. Only recently has his work been rediscovered by a number of younger Chinese theorists, who show a growing interest in his ideas. During the first three decades of the 20<sup>th</sup> century, Zhang was one of the most influential thinkers in the Republic of China, a reputation based in part on his extraordinary ability to introduce Western thinking in a way that was compatible with the spirit of Chinese tradition. In

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this context, he also played an important role in the introduction of Bertrand Russell and epistemology to Chinese intellectuals, who sought to understand modern Western discourses in this field of theory.

Zhang Dongsun, who is certainly one of the most important Chinese epistemologists of the early modern period, developed his own system of thought based on the so-called pan-structural epistemology. According to this theory, the external cause of our perception is not a substance, but the structural order of the external world. In his *Introduction to Mathematical Philosophy* (1919), Bertrand Russell had proposed a similar idea.

This chapter is based on a comparative analysis of these two structural epistemological models, and aims to determine the specific and unique features of Zhang's theory, focusing on the elements derived from traditional Chinese thinking. In order to achieve this goal, the chapter aims primarily to highlight the crucial differences between the two systems. As we will see, Zhang, unlike Russell, has rejected any form of substance. He also considered the dualistic theories of idealism and materialism to be completely wrong. For while Zhang's theory contains elements of both approaches, his system as a whole cannot be identified with either of them.

We can assume that the basic inspiration for Zhang Dongsun's pan-structural epistemology came directly from his expertise in Western epistemological discourses, which at that time had a decisive influence on the search for new paradigms for the perception, understanding and interpretation of reality. We must therefore correct Zhang Yaonan's evaluation of pan-structuralism (2000, 143) in which he claims that Zhang Dongsun's system was a pioneering achievement in the field of international structuralism and that he had researched structuralist methods in ontology and epistemology "almost forty years before the emergence of Western 'structuralism'" (ibid.), which then became one of the leading discourses in Europe and America<sup>2</sup>.

2 "20世紀20年代,張東孫先生(1902–1973)提出了一種他稱之為‘架構論’(Theory of structure)的‘結構主義’(structuralism)宇宙觀,並在以後20年間不斷完善,使其成為他本人終生不願放棄的幾個基本觀念之一。就時間上說,這一宇宙觀的正式形成要比西方‘結構主義’風行歐美(20世紀60年代)早出將近40年;就內容上說,這一宇宙觀完全改變了二十世紀中國哲學家的固有思維方式,開了二十世紀中國哲學‘非本體論化’的先河。”(Zhang, 2000, 143)  
 (“In the 1920s, Zhang Dongsun (1902 – 1973) established a cosmological structuralism, which he called the ‘Theory of Structure’. Over the next twenty years, he continued to elaborate this theory as one of his basic paradigms, and would not abandon it until the end of his life. We should point out that this theory was elaborated almost forty years before the appearance of Western ‘structuralism’, which then became one of the leading discourses in Europe and America. In its content, this cosmology completely changed the previous mode of thinking of 20<sup>th</sup> Century Chinese philosophers and was a precursor for the new ‘deontological’ approaches of Chinese philosophy”).

Obviously, structuralism in the sense of an integral and substantial paradigm of academic research and an independent branch of Euro-American discourse did not appear in a significant way until the second half of the 20<sup>th</sup> century, but a structural approach to understanding had certainly been developed almost half a century earlier in Western philosophical systems, especially in the theories of the British philosopher Bertrand Russell (1918, 1919).

Although Zhang Dongsun acknowledged that his (pan-)structural epistemology was partly derived from the philosophy of Immanuel Kant<sup>3</sup>, he almost never mentioned Russell's philosophy, even though he must have been quite familiar with his work, since he had accompanied the British philosopher on his lecture tour in China in 1920-21 (see Russell 2000). In addition to the influence of Western philosophy, and despite the differences between the two structural epistemologies, which we will indicate schematically below, in Zhang Dongsun's pan-structuralism we can also clearly detect the influence of both Chan Buddhism<sup>4</sup> and the autochthonous, classical philosophy<sup>5</sup> of ancient China. In this sense, it represents an extremely intriguing synthesis of modern Western and classical Chinese approaches.

3 “我主張感覺不能給我們以條理的知識,這雖跟康德相同,但條理卻不能完全是心的綜合能力所產,這又和康德不同了.因此我承認外界有其條理;內界(即心)亦有其立法;內界的立法又分兩種,一為直觀上的先驗方式,一為思維上的先驗方式.(這一點與康德相似).至於感覺,則不是真正的‘存在者’.所以我此說有幾個方面, 因名之曰多元論”. (Zhang, 1995, 165)

(“I believe that we cannot obtain regulated (structured) recognition through sensory perception – in this respect, I agree with Kant. On the other hand, this regulation (structuredness) cannot arise entirely from the synthetic ability of our mind - in this respect, I disagree with Kant. Therefore, I acknowledge that the external world is ordered and that our inwardness (i.e. our mind) also functions in accordance with particular laws. This regulated constitution of our inwardness can also be divided into two kinds: the first can be called the *a priori* form of direct sensory perception, and the second the *a priori* form of cognition. /Here, again, my view is similar to Kant's/. However, the sensations are not identical with ‘existing beings’. Since my theory arose from many different aspects, I have named it a ‘pluralistic theory”). See also Jiang Xinyan: ‘His pluralism is derived from a revised version of Kantian philosophy. To justify such an epistemology, he proposed a cosmology: pan-structuralism”. (Jiang, 2002, 58)

4 “As a youth, it was Buddhist scriptures such as *Leng Yan Jing* and *Da Cheng Qi Xin Lun* that led him to be interested in philosophy. Although he criticized Buddhism later on, he seemed always to have accepted Buddhist cosmology, especially certain ideas from the Great Vehicle School (Mahayana, *dacheng*). (Jiang, 2002, 63)

5 Nonetheless, Zhang still managed to remain rooted in his own tradition. In his youth, he had obtained a very solid classical Chinese education. (Rošker, 2008, 301)

In order to better understand this synthesis and the transcultural methodological paradigms on which it is based, and also to shed light on the main methodological and theoretical divergences between Russell and Zhang, we will first take a brief look at some general problems that define the dialogues between Chinese and Western philosophies.

## 2 Back to the Roots: Frameworks of Reference

On the threshold of the 21<sup>st</sup> century, it finally became widely known that Western epistemology is only one among many different theoretical models for the perception and understanding of the outside world. Even though numerous transcultural studies still often assume that Western standards of knowledge and interpretation are universal, we must take into account the fact that these standards have dominated the sciences for centuries due to the colonial past of European cultures.

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This chapter is dedicated to the study of the so-called non-European views of reality and perception, in order to overcome the dualistic and mechanistic theory that has prevailed in the development of modern science. Indeed, in such discourses nature was seen as something bereft of consciousness, something that was objectified to the extent that it was completely separated from perceptual experience:

Adhering to the principles of scientific materialism, science came to be equipped with more and more sophisticated means of exploring objective physical processes; but there was no corresponding development of means to explore subjective cognitive processes. Thus, scientists simply redefined secondary properties – such as colour, sound, and so on – in terms of the objective physical stimuli for the corresponding subjective experiences. In so doing, they shed increasing light on the nature of these physical phenomena, while shedding little or no light on the corresponding subjective perceptions. (Wallace 2000, 123)

Among other issues, this chapter is focused upon the illumination of some specific epistemological approaches to human understanding that differ from the prevailing Euro-American paradigm-based models. Based on a comparison between Russell and Zhang, it *inter alia* presents a theory which could be called “relational epistemology”, and which has historically been developed

within the framework of the East Asian and Sinitic, especially the Chinese, intellectual tradition<sup>6</sup>.

It should be borne in mind that researchers who work with texts from different cultural traditions must take into account that these texts always relate to a specific frame of reference. The particular characteristics of this frame of reference are defined by the use of specific categories and concepts that lead to specific methodological measures (Rošker 2019, 283). The Sinitic frames of reference have the following characteristics:

- Their basic groundwork consists of dynamic, processual and strongly context-related fundamentals;
- They belong to all-embracing, holistic schemes;
- They include both immanent and transcendent elements;
- They are binary (though not dualistically) designed;
- They function in accordance with processes of correlative complementarity.

These specifics are even more important in the framework of our focal topic, which deals with two different referential frameworks. In the framework which prevailed in the Chinese (and Sinitic) tradition, the processual network of reality was embedded in a holistic structure in which the existence of each individual object, idea or category was determined by its relations to the others (Rošker 2019, 282). Within this framework, the concept of relation represents a core of human perception of external reality. In order to place this new theoretical model in the context of the corresponding contemporary discourses, it must also be linked to a number of other

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6 These kinds of theories are not only typical for the Chinese, but to a certain extent also for the entire Sinitic region. The Sinitic cultural-linguistic space includes most East Asian regions and some countries in Southeast Asia such as Vietnam. The term refers to all areas that have historically been under strong Chinese cultural influence (especially under the influence of Confucianism, but also of Chan Buddhism and some other ideological systems) and have traditionally used Chinese characters. (For the example of Korea see e.g. Maldonado 2020, 129-30.) In the Sinitic traditions, the structural approaches to human perception and understanding of external reality were part of the common and elementary world views. They are found in most of the dominant epistemological approaches that are part of the most influential Sinitic philosophies, starting with classical works such as *Guanzi*, *Gongsun Longzi*, *Mozi* and *Xunzi*, but also in the works of some important Neo-Confucian thinkers such as Cheng Hao, Cheng Yi Zhu Xi, Jeoung Jak Yang, and Itō Jinsai. Of course, they are also present in some pre-modern, modern and contemporary scholars who have adopted certain classical paradigms of structural epistemology in their works, such as Nishida Kitarō, Xiong Shilli, Zhang Dongsun, Cheng Chung-ying, Hajime Tanabe, Feng Qi, Eun Ha Jun Cho Kyu Young and Lee Seong Woo. For a longer and more detailed elaboration of the main features of such structural epistemologies see Rošker 2012 and 2018.

newly coined concepts that denote the multiple ways in which the world is perceived and interpreted – including the culture in which the human world is always necessarily embedded. Therefore, the present chapter is closely linked to the problems of human understanding in different cultural environments. We will therefore begin our investigation with the question of whether human perception and understanding of reality is a universal or culturally determined process. At this point, people are always confronted with the need for objectivity, which could enable them to establish universally valid evaluation criteria.

In illuminating this problem, we can start from the connection between language and thought. At its most elementary level, human thinking is certainly something universal, such as the general human ability to produce language. Thus, although the ability or potential to produce language and thus linguistic communication is universal, each individual language and the grammatical structures by which it is defined are culturally conditioned. Because human thinking is also semantic and thus linguistically determined on a more differentiated level, or, in other words, because of the inherent connection between language and reasoning, different languages simultaneously represent different ways of cognition or different patterns of thinking. The greater the structural, semantic and axiological differences between two languages, the more diverse are the specific laws of rational thought in the respective cultures. Different linguistic environments produce different frames of reference, which in reality are discrete networks of concepts and categories with different semantic connotations. They are based on the non-transferability of concepts from one socio-cultural context to another. Many contemporary scholars (e.g. Feng 1989, 291-292) assume a certain degree of impossibility of comparison or incommensurability between the frames of reference of the Euro-American and the Sinitic traditions. In other words, culturally conditioned differences in human understanding are rooted in the differences between certain frames of reference, which are complex and very dynamic networks of constantly changing references that are used as patterns to describe the lived realities of human life.

On the individual level, these frameworks differ from person to person, but cultures and societies provide us with semantically stable coordinate systems that inspire our sensitivities and mental states and strongly influence our language, thinking and behaviour. Therefore, the different reference systems produced in different societies are also associated with different methods used in the processes of recognizing, understanding and communicating reality.

In this context, I explicitly discuss frames of reference that refer to methods and theories of the social sciences and humanities, and can be defined as interactive networks of categories, terms, ideas and concepts, but also values, which are used in the processes of perception and understanding. These networks comprise discrete perspectives and dimensions that have a strong influence on the perception and evaluation of concrete semantic elements within their internal structure, as well as on the structure as a whole. However, such questions are by no means limited to theories or methods developed in different cultures and corresponding traditions. On the contrary, they usually arise in a single language or tradition. This is indeed a general problem that has been discussed by many Western theorists such as Feyerabend, Quin, Lakatos, and Kuhn, among others. In this context one could mention the relationship between the theories of Newton and Einstein: since they were embedded in different frames of reference, the semantic connotations and functions of the same concepts applied in them are also dissimilar. Thomas Kuhn has explained these kinds of problems as arising from different paradigms:

Within the new paradigm, old terms, concepts and experiments fall into new relationships one with the other. The inevitable result is what we must call, though the term is not quite right, a misunderstanding between the two competing schools...Consider, for example, the man who called Copernicus mad because he proclaimed that the earth moved. They were not either just wrong or quite wrong. Part of what they meant by "earth" was a fixed position. Their earth, at least, could not move. Correspondingly, Copernicus' innovation was not simply to move the earth. Rather, it was a whole new way of regarding the problems of physics and astronomy, one that necessarily changed the meaning of both "earth" and "motion". (Kuhn 1996, 149).

As we have seen, different frames of reference can lead to different descriptions and interpretations of the same objective reality. Let us take a closer look at specific frames of reference developed in Sinitic societies. Since one of the main features of such frames of reference is their relational character, which emphasizes the fact that all existing entities receive their meaning and identity only through their relations to other entities, the epistemological theories and theories of perception that have emerged from such frames of reference are also relational.

### 3 Relational Epistemology

In order to understand the common threads of the differences between Zhang's and Russell's structural epistemologies, we need to look at those specific approaches of the Chinese tradition on which Zhang based his theory and which differ substantially from the Western type of structural epistemologies, the pioneer of which was Bertrand Russell. An important basis of these divergences is the relational nature of reality, which leads to relational approaches in epistemology, as presented in the present section of this paper. In later sections I will also show why and how relational epistemology is essentially linked to a processual and dynamic constitution of both inner and outer realities.

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In contrast to the dominant traditional European epistemologies, knowledge of and about reality has chiefly been gained through reasoning and observation. However, in traditional Chinese thought, it has been seen in a much wider sense, namely as something which primarily arises from moral subjects and which cannot be separated from social action.

The method which determined most of the epistemological teachings found in the Chinese classics was based on a holistic world view, and was directed towards a comprehension which could be achieved through education and learning. The basic contents of these teachings were rooted in the premises of pragmatic and utilitarian ethics. Chinese epistemology was relational, meaning that it understood the external world to be ordered structurally, while the human mind was also structured in accordance with its all-embracing but open, organic system (*li* 理). The relational correspondence between the cosmic and mental structures thus represents the basic precondition of human perception and comprehension (see Rošker 2012).

In the frames of reference developed in the Chinese tradition, reality is seen as a complex network of relations that links all objects of the external world (Rošker 2010, 80). This network represents a dynamic structure that is compatible with the operating of human perception, which was also seen as a structural network of relations. This compatibility of internal and external structures was this seen as the basic condition of human perception and comprehension of reality.

An important supposition of such epistemologies is the neo-realist view that the external world exists independently of our consciousness and that there is no exact correlation between external phenomena and our understanding of these. Therefore, we are not able to perceive these phenomena as



they really are. In most of these epistemologies, especially those developed in Chan Buddhist discourses, the external cause of our perception is not a substance, but simply the order or structure of the external world. What is transmitted to us through our sensory impressions is a modification of this external order (Rošker 2015, 110). The negation of substance also refers to the sphere of ideas. Therefore, such cosmologies are neither idealistic nor materialistic (ibid. 214). One reason for our inability to perceive the quintessence of external things “as such”, lies – according to such theories – in the nature of our being itself; actuality is understood as a process of constant change that takes place in the interrelationships among the individual entities<sup>7</sup>. Such discourses are not metaphysical, and these ontological predispositions are particularly evident in the ideas of the Buddhist Great Vehicle School (Mahayana) (Jiang 2002, 63).

In such views, there can be no substance. Therefore, the objects perceived by human beings cannot have any “ontological status” (Zhang 1995, 215). All that exists in a process of continuous changing of structural relations, and in the development and disintegration of the “essential” properties of the individual entities. All that we can identify in such processes are some facets of these modifications. Nevertheless, this does not only relate to the level of our perception and understanding, because this network of relations is the only thing that truly exists in the external reality. Since these structures have neither substance nor any of their properties, they are essentially empty. What is shown to us as material being is hence merely a physical phenomenality that manifests itself as matter, even though in reality it cannot be equated with material substance. At best, it can be identified with structural connections that appear in physical laws which determine all forms of existence. In such a view, “matter” is only a notion, an umbrella term which includes a wide range of innumerable ideas about physical features.

We could therefore say that in such a view “there are only physical laws, but no matter”. (Jiang 2002, 64). Such “matter” is thus quite different from our usual notion of matter. What we perceive through our sense organs is not the colour, smell, size or sound of perceived objects, for they are usually too subjective. In this context, “matter” is only density, speed or the volume of concrete things. This is a form of existence that can only be defined by a set of physical formulas.

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7 This is actually a specific view of the universe that could be called “relational ontology”. Such a world view forms the basis of the “relational epistemology”, which can be regarded as a kind of epistemological theory that corresponds to such a processual ontology or cosmology.

In such an epistemology of relations, the structures of the external world are mirrored in our mind, which (re)shapes them in the process of developing structural orders of thought and comprehension. However, as we shall see later, Zhang Dongsun has emphasized that relational approaches are not solipsistic, for in their frameworks the external reality is not entirely a creation of our cognizance (Zhang 1995, 171). Here the relationship between our subjectivity and the external reality is correlative and interactive (*ibid.*, 218).

On the other side, however, the structural composition of the external world is also a common assumption of some contemporary Western theories of perception: “The seemingly isolated phenomenon of consciousness reappears in the structure of the cosmos itself” (Glattfelder 2019, 530). But this also means that structures are not limited to the external world. Somehow, they also must influence our consciousness.

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Consciousness is compositional (structured): each experience consists of multiple aspects in various combinations. Within the same experience, one can see, for example, left and right, red and blue, a triangle and a square, a red triangle on the left, a blue square on the right, and so on. (*Ibid.*, 523)

Confronted with such new visions, Glattfelder adds that “it is perhaps not too puzzling that the prevailing scientific paradigm has failed to reveal such a definitive nature and the links between reality and the human mind” (*ibid.*, 584). Here, a connection to the “Eastern” tradition is made on an obviously intuitive basis: “This knowledge, some ancient Eastern truth-seekers and traditions appear to have had access to for a long time” (*Ibid.*).

Without knowing his theory (or even his name), some discourses in contemporary Western epistemology are therefore already quite close to Zhang Dongsun’s approach. They categorize it as a type of the so-called “participatory ontology”, in which the “ultimate taboo within the current materialistic and reductionist scientific world view is broken by exposing a mind-matter relationship” (*ibid.*). They also admit that such theories include refined methods of both being in the world and knowing the world. In this context, Graham Harvey (2005, 20-21, 49) even explicitly speaks about “relational epistemology” and “relational ontology” .

Of course, the structural nature of perception became part of the dominant Western theories of knowledge much earlier than this. As already mentioned, Russell was one of the pioneers of the structural approach to the riddles of human understanding. However, as we shall see in the following parts of this essay, his structural theories of understanding differ in several of their

methodological foundations from those constructed by Zhang Dongsun. To illustrate some central dissimilarities between them, the next section will introduce Zhang's pan-structuralism in greater detail. In the following, I will provide a contrastive analysis of Russell's structural theory of knowledge on the one side, and the "pan-structural" epistemology created by his Chinese contemporary Zhang Dongsun on the other.

#### 4 Pan-structuralism (Fanjiagouzhuoyi 泛架構主義)

Pluralistic epistemology represents the core of Zhang's philosophical system. His pluralism is derived from a revised version of Kantian philosophy. To justify such an epistemology, he proposed a new cosmology: pan-structuralism (Jiang, 2002, 58).

An important assumption of his theory of knowledge is the neo-realistic view that the external world exists independently of our consciousness, and that there is no exact correlation between external phenomena and our comprehension of them. Hence, we are unable to perceive these phenomena as they really are.

According to Zhang, the external cause for our sensation is not a substance, but the order or structure of the external world. What is transmitted to us through our sensory impressions is a modification of this external order. In interpreting the basic structure of reality, he also referred to scientific discoveries regarding atoms and their most elementary structures, which transcend the categorical boundary between particles of matter and non-substantial electromagnetic waves. Here, his critique of substance was quite radical, and he denied the real existence not only of the smallest particles of matter, but also of quanta, electrons and even electromagnetic waves (Zhang, 1995, 168-9). Similarly, the theory of relativity was important only in terms of recognizing structural laws, and not in terms of recognizing any new essences in nature or the cosmos. The denial of substance also refers to the sphere of ideas. As in Chan Buddhism, all that we perceive is not only empty in the sense of substantial absence, but also illusory. Therefore, Zhang's cosmology is neither materialistic, nor idealistic (ibid. 214).

According to Zhang, one reason for our inability to recognize the essence of external things "as such" is thus to be found in the very nature of their existence; for Zhang, who did not acknowledge the existence of substance, reality was a process of constant changes that manifests itself in the inter-relations of particular entities. His cosmology is not metaphysical. In his view, this constituted another difference between Kantian philosophy and his own. In Kant,

metaphysics is not abandoned, even though the priority given to epistemology radically alters its role. Zhang's revision of Kant is, in fact, limited to the Kantian theory of knowledge. In his ontology, the Chan-Buddhist impact is much stronger. In his early youth, his reading of Buddhist sacred texts got him interested in philosophy. Although he would criticize Buddhism severely later on, he always seemed to have accepted much of Buddhist cosmology, especially certain ideas from the Great Vehicle School (Mahayana) (Jiang, 2002, 63).

Because he rejected the existence of substance, Zhang maintained that the objects we cannot possess any "ontological status" (Zhang, 1995, 215). All beings exist in a process of constant change that manifests itself in a never-ending modification of structural connections, and the growth and decline of the qualities of the "essence" of particular entities. According to Zhang, our consciousness can only recognize certain aspects<sup>8</sup> of these manifest changes. However, this refers not only to the level of our perception and comprehension, as, according to Zhang, the structured order of relations is all that really exists in the cosmos.

Zhang argued that all these structures are empty, for they possess neither substance, nor its qualities. The level of material being (*wu* 物) is thus a merely physical substantial phenomenality which cannot be equated with material substance, but, at the most, with structural relations and the physical laws which determine its existence. For him, "matter" is a general concept comprising a total domain of many specific concepts about physical properties. There is nothing in matter itself which corresponds to our concept of matter. It is not the colour, fragrance, sound or size that we perceive through our senses, because they tend to be subjective. Therefore, by "matter" he understood an object's volume, density, or speed. Thus, in his view, matter becomes little more than a set of physics formulas. Therefore, there are only physical laws, but no matter (Jiang, 2002, 64).

All external structures are manifested in our mind, which (re-)establishes them in the process of forming structural patterns of thought and comprehension. However, Zhang's theory is not solipsistic, since the external reality for him is not an exclusive product of our recognition (Zhang, 1995, 171). Thus, similar to the holistic approaches that have prevailed in classical Chinese philosophy, Zhang also presumes that the relation between the external world and our subjectivity is interactive and correlative (ibid, 218).

8 These aspects are atomicity (*yuanzixing* 原子性), continuity (*lianxuxing* 連續性) and creativity (*chuangbianxing* 創變性). The cosmos also possesses the quality of (latent) plasticity (*kesuxing* 可塑性), which is passive in nature and does not belong to the external order; therefore, it cannot be perceived or comprehended directly. (Zhang, 1995, 168)

## 5 Two kinds of structural epistemology

As we have seen, in Zhang's epistemology the external cause of our sensation is not a substance, but the structural order of the external world. What is transmitted to us through our sensory impressions are modifications of this external order (Jiang, 2002, 59). Russell had proposed a similar idea (1919) in his *Introduction to Mathematical Philosophy*:

Against the then dominant claims that only the phenomena (“the world of percepts”) can be known and that, even if they exist, their “objective counterparts” are unknowable, Russell (1919, 61) suggested that “the objective counterparts would form a world having the same structure as the phenomenal world, [a fact which would allow us] to infer from the phenomena the truth of all propositions that can be formulated in abstract terms and which are known to be true of the phenomena. (Psillos, 2001, 14)

But while, based on this supposition, Russell concluded that the recognition of external objects could allow us to infer the reality of all propositions that can be expressed on this abstract level, Zhang cautioned that this problem could not be solved so easily, since all things that were transmitted to us through our sense-conditioned impressions were modifications of this external structural order. Therefore, because objects cannot be recognized in a one-dimensional way, we are incapable of comprehending the internal nature (or essence) of the external reality, but can only recognize its relations, which form a relatively fixed structure. And this impossibility of recognizing the substance of external objects is due not only to the limits of our sense organs, but also the fact that these objects as such, even though they exist objectively, do not possess any substance.

若我們暫假定物質并無 內性，而只是架構，則我們已可謂知道外物了。(Zhang Dongsun, 1929, 32)

If we assume that the qualities of things do not possess any inner nature (essence), and that things only exist as a structure, we have already recognized the external reality.

In this respect, Zhang's epistemology differs considerably from Russell's (1919) system, which only presumes the possibility of *inferences* leading from the structure of the phenomenal world to the structure of objective reality. It does, however, resemble Russell's later, more elaborated thesis (1929) on the objective nature of conceptions within the mind.

By 1921, Russell had assigned the role of logical atoms to events, the more neutral, neither definitely physical nor definitely mental elements, that fitted nicely with his newly discovered affection for neutral monism. Moreover, he had assigned the role of the objects of direct recognition to percepts, or those events that occurred within one's head. (Votsist, 200, 879)

But Russell's structural theory of perception, which he introduced in his book *The Analysis of Matter* (1927), remains focused upon logical inferences as the only possible link between objective reality and consciousness. In this work, he advocates a causal theory of perception, asserting that even though it is reasonable to presuppose the existence of causes (entities) outside our mind, we still cannot expect proof for the supposition that things perceived by us are necessarily produced by external causes. And while we can directly recognize the inner nature or quality (the first order of properties and relations) of the objects perceived, this in no way means that the same holds true for the entities of external reality. Zhang Dongsun pursued a similar line of reasoning, claiming that the contents of our comprehension did not correspond to the actual state of the objects of recognition.

須知我們所有的感覺都不是外界存在的.所以我們絕對無法知道外界的'內容'. (Zhang, 1995, 171)

We should know that none of our sensations exist in the external world. Therefore, it is absolutely impossible for us to recognize the 'content' of the external world.

Both philosophers also shared the view that the spheres of reality and phenomena are ordered by the same structure. Russell (1919, 611927, 249) suggested that there was "a certain similarity of structure between cause and effect where both are complex", concluding that the objective counterparts would form a world having the same structure as the phenomenal world (Psillos 2001, 14). Moreover, similar to Zhang (and to the basic presumption of classical Chinese structural epistemologies), Russell also defined structure as a set of relations: "The first point is to be clear as to what we mean by structure. The notion is not applicable to classes, but only to relations or systems of relations" (ibid). In this context, Zhang Dongsun sustained the hypothesis of the structural compatibility of both systems:

因此我承認外界有其條理;內界(即心)亦有其立法. (Zhang, 1995, 165)

Therefore, I acknowledge that the external world is ordered and that our inwardness (i.e. our mind) also functions in accordance with particular laws.

An essential difference with Russell's system can be found in the method of recognition. As we have seen, based on the supposition that we are unable to recognize the inner nature of reality, Russell concluded that inferences were the only possible method of obtaining any knowledge about it.

The only way we can attain knowledge of the latter<sup>9</sup> is by drawing inferences from our perceptions. Assuming that similar causes (i.e. events) have similar effects (i.e. percepts) – with a roughly one-to-one correspondence between stimulus and percept – Russell argues that relations between effects mirror relations between causes (Votsis, 2003, 880).

Zhang's understanding of consciousness is, instead, much more multi-layered, thus allowing for more dimensions in the perception and comprehension of reality:

內界的立法又分兩種,一為直觀上的先驗方式,一為思維上的先驗方式...至於感覺,則不是真正的'存在者'。(Zhang, 1995, 165)

This regulated constitution of our inwardness can also be divided into two kinds: the first can be called the *a priori* form of direct sensory perception, and the second the *a priori* form of cognition.... However, the sensations are not identical with 'existing beings'.

One reason for our inability to recognize the essence of external things "as such" is thus to be found in the very nature of their existence. For Zhang, who did not acknowledge the existence of substance, reality was a process of constant change that manifested itself in the inter-relations of particular entities. Although in his pluralistic epistemology he rejected "substance", he still considered the dualistic theories of idealism and materialism to be completely wrong (Zhang, 1995, 214). While elements of both approaches can be found in his model, it cannot be identified with either one of them. As he explicitly stated (*ibid*), his system was not solipsistic and did not even differentiate between matter and idea or substance and phenomena. Yet, in his view, both existed objectively.

## 6 The dynamic structure of time and space

This is where Zhang's epistemology differs in a fundamental and radical way not only from Russell's theory, but even from Chan Buddhism. Taken as a whole, (Neo)-Confucian epistemology also differs in various ways from pan-structuralist approaches: while the former was based upon structural

9 Here, Russell refers to the objective reality.

relations that were fixed and unchangeable, always tending towards the “proper” (*zheng* 正), Zhang’s pan-structuralism gives much greater priority to movement and change. In effect, he implemented the static regularity of the Neo-Confucian constructs through a new, dynamic, interferential structure of continuous, indefinable and never completely understandable amalgamations and dispersions of imagined, phenomenal and actual worlds. In this respect, his approaches recall classical Chinese (especially Daoist and Chan Buddhist) cosmologies, as well as certain recent Western ontological systems based on quantum theory or the theory of relativity, which assume that time and space are not absolute and unchangeable. This is why his constitution of time and space is also structural.

In any case, in so doing, Zhang avoided the dilemma of a complete structural identity between the external world and human mind. Russell did not presuppose a complete identity of external objects and our perception. He spoke of a “roughly one-to-one relation”:

What we assume is, formally, something like this: there is a roughly one-one relation between stimulus and percept, i.e. between the events just outside the sense-organ and the event which we call a perception. This enables us to infer certain mathematical properties of the stimulus when we know the percept, and conversely enables us to infer the percept when we know these mathematical properties of the stimulus. (Russell 227)

This supposition is somehow tricky. In his critique of idealism, Kant wrote some centuries earlier that the method of inference in epistemology is scientifically problematic:

Idealism assumed that the only immediate experience is inner experience, and that from that outer things could only be **inferred**, as in any case in which one infers from given effects to **determinate** causes, only unreliably, since the cause of the representations that we perhaps falsely ascribe to outer things can also lie in us. Yet here it is proved that outer experience is really immediate. (Kant 1998, 327 (B 277))

Several contemporary theoreticians also doubt the reliability of such proposals. As the Greek philosopher, Stathis Psillos, notes in his study on Russell’s epistemological approaches:

Precisely because Russell does not have the converse principle, he speaks of a “roughly one-to-one relation”. Yet he failed to justify why this should be so. (For example, why cannot the same stimuli produce



different perceptions at different times?) Further, does it make sense to speak of a “roughly one-to-one relation”? Either it is or it is not one-to-one. If it is, we have structure-transference. But if not, then we do not. (Psillos, 2001, 15)

Here, Zhang Dongsun's suppositions recall certain approaches of so-called eliminative structural realism (ibid. 22), which assumes that all we can perceive is structure. But this approach has led Western theorists to metaphysical explanations for the ontological foundations of structure (ibid), based upon the thesis that structure is primary and ontologically subsistent (Ladymann, 1998, 420). This thesis is still the subject of intense theoretical debates:

Note that if structures “carry the ontological weight” (French, 1999, 204), we can only view the identity of structures as being ontologically primitive (since the notion of isomorphism requires different domains of individuals which are paired-off). But I am not sure whether we can even make sense of this primitive structural identity. (Psillos, 2001, 22-23)

Zhang Dongsun tried to circumvent this dilemma by postulating dynamics and changeability (in time and space) as essential characteristics of his comprehension of structure. Here we can also detect the influence of certain fundamental assumptions of classical Chinese philosophy, in which all that exists manifests itself in continuous alterations of structural connections in the formation and expiration of particular existing entities, as well as the quality of their “essence” (Rošker, 2012, 103-110).

## 7 The problem of phenomenality

However, Zhang affirmed that our mind can only recognize certain aspects of these manifest changes. All structures are empty, for they possess neither substance, nor its qualities. The level of material being (*wu* 物) is thus a merely physical substantial phenomenality which cannot be equated with material substance but, at best, with structural relations and the physical laws which determine its existence. Here, one might be tempted to compare him with the radical ontological realists who claim that structure is ontologically primary because objects as such do not exist (Psillos, 2006, 561). But Zhang's views differ substantially from such positions as well, for in his system objects do objectively exist, even though their status is not a material (physical) one in the traditional Western sense of the word. Instead, for Zhang, “matter” is a general concept covering a total domain of many specific concepts that refer to physical properties. Hence, there is no “matter”

as such, which corresponds to our concept of this term. In his discussion of matter, Zhang Dongsun argues that matter is not the colour, smell, sound or dimensions that we perceive through our senses, because these tend to be subjective. By “matter” he intends an object’s volume, density, velocity, etc. Matter thus becomes a series of physics formulas and, ultimately, there are only physical laws, but no matter (Jiang, 2002, 64). Zhang even suggested that we should replace the term “matter” with “physical laws”, “life” with “biological principles” and “mind” with “psychology”. In other words, terms for substance as bearers of attributes should be replaced by terms for structures or orders (Rošker, 2008, 210).

The structure of the external world was thus formed by relations among objective, existing, non-substantial entities. This concept of relation as a crucial feature of structure has also been stressed by many modern Western theorists:

Newman correctly points out “that it is meaningless to speak of the structure of a mere collection of things, not provided with a set of relations” and thus “the only important statements about structure are those concerned with the structure’s make-up ...” (Votsis, 2003, 882) But what exactly did Russell mean by “structure” when he said that we can infer the structure of the external world from the structure of our perceptions? Discussions on “structure” or “relation-number” (Russell uses these concepts interchangeably) are invariably discussions on the structure of a relation or of a system of relations – this latter notion signifying one or more relations defined over a single domain (ibid, 880).

But what is also important in the context of Zhang’s philosophy are the dynamics of these structural relations that unite with one another and separate again in countless ways and on countless different levels. He compares this to cosmic emptiness, which, as in the Buddhist view, cannot be equated with “nothingness”, but only with the absence of a substance, an unchangeable nature, or a self-contained, self-sufficient being. Since the cosmos is composed exclusively of relational connections, it does not imply any independent, autonomous entity. This is also one of the main reasons why the existence of substance is impossible: the world is a series of functional relations. In Buddhist cosmology, the world, which is void in itself, is a universal, eternal and unchangeable law of causal relations (*yinyuan* 因緣). Zhang Dongsun equated this law with the real objectivity of being (Jiang, 2002, 65).

## 8 Perception as a result of structural changes

The structural systems that were developed in Western philosophy during this period were based upon the supposition that we cannot recognize the real nature of (objects in) external reality. This supposition was shared by Zhang Dongsun, but in contrast to Russell's hypothesis, his theory of comprehension is not rooted in the method of inference, which can only lead us to a recognition of the structural order of the external world.

Russell argues that relations between effects mirror relations between causes. Thus, from the structure of our perceptions we can "infer a great deal as to the structure of the physical world, but not as to its intrinsic character" ([1927] 1992, 400). At most, what can be known is the logical form or structure, i.e., the second or higher-order properties and relations, of events in the external world (Votsis, 2003, 880).

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Zhang affirms that there must be some reason for the changes we perceive, and that this reason is to be found precisely in the factual, structural changes of the external reality, which are consciously comprehended as structural changes by the correlation of the external order with the laws of the mind. This also holds true in the opposite sense: each change in our consciousness is structurally conditioned and has likewise been expressed in structural changes of the external order. In this respect, Zhang's assumptions were founded upon the interdependence, co-relativity and interactivity of the inner and external worlds. Furthermore, the Chinese theorist never considered atomicity, continuity and creativity as elements which belonged exclusively to the external order; rather, he saw these structural qualities as a kind of bridge, linking the external and inner spheres (Zhang 1995, 170 - 171).

Zhang Dongsun clearly proceeded not only from modern European (especially Kantian) philosophy, but also from certain specific foundations of the Chinese tradition of thought. In addition to the structural compatibility of the external world and the mind, which can already be found in ancient Chinese epistemology, his work was also greatly influenced by Chan Buddhism, which was defined by the concepts of the emptiness of all phenomena, and their illusory, transitory nature that not only included external actuality, but the Self and its identity. Thus, one of the basic differences between Western structural realism (Psillos, 2001, 513) and Zhang Dongsun's pan-structural system is the latter's view that not only is structure all we can recognize, but that the external world includes no substantial objects. Consequently, the world is situated within a non-substantial structure that is (in a strictly physical sense) empty, since it exists as continuous change.

A logical consequence of the epistemological structural realism of the Western type is the assumption that the reality of what is not empirically perceivable can be inferred from the actuality of the empirical world. Russell, for example, claimed that in terms of the knowability of the objective external world, given that phenomena and substance shared a common structure, it was not only possible, but also legitimate, to infer the latter from the former.

Russell (1919, 61) suggested that the objective counterparts formed a world having the same structure as the phenomenal world, (a fact which would allow us) to infer from phenomena the truth of all propositions that could be stated in abstract terms and which were known to be true of phenomena. (Psillos, 2001, 514)

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However, traditional Chinese analogical inferences were, from the time of the most ancient disputes, defined by semantic connotations (Rošker, 2012, 16-17) which could place in question the very nature of the formal inferences that have dominated traditional European logic. We must also bear in mind that Zhang's pan-structuralism rested upon the structural compatibility, but not the structural identity, of the external and internal world. In his view, it was precisely the structure of comprehension which was much more complex, and it was only for the sake of facilitating his exposition that he maintained the schematic division between the subject and object of comprehension. As is well known, both poles are seen by naturalistic epistemologies as defining the process of comprehension and the theoretical mode of its framework. Zhang, however, posited the existence of vital connections between the subject (with its empirical mechanisms), on the one hand, and the objective sphere of the empirically (or rationally) unseizable world, on the other<sup>10</sup>. In this context, he was definitely guided by certain, specific implications of traditional Chinese concepts of knowledge or cognizance that are rooted in a model of structural relations, relations which are essentially not grounded upon a formal equivalence but, at most, upon the compatibility of the structures they are forming (ibid, 103). Therefore, they cannot be seized by formal means, but only through semantic inferences.

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10 這個中間普通人認為沒有東西存在, 即好像是空的. 所以能知與所知得以直接發生關係. 我則以為在這個中間 內卻有許多東西, 換言之, 即是複雜的. (Zhang, 1995, 213)  
People commonly think that there is nothing between these two poles, that between them there is only empty space. This would mean that the subject and object of recognition were in direct relation with each other. But I believe that there are many things between them, that this "middle" in other words, is very complex.

## 9 Methods of comprehension

With respect to the methods of comprehension, Zhang was following the traditional Chinese concept of qualitative knowledge as it had already been defined by his contemporary Xiong Shili 熊十力 (1885-1968) who, based upon a solid command of Confucian and Daoist approaches, denoted it as a qualitative understanding (*xing zhi* 性智):

性智者, 即是真的自己的覺悟. 此中真的自己一詞, 即為本體... 即此本體, 以其為吾人所以生之理而言, 則亦名真的自己. 即此真己, 在量論中說明覺悟, 即所謂性智... 這種覺悟雖不離感官經驗, 要是不滯於感官經驗而恒自在離系的. (Xiong, 1992, 249)

Qualitative understanding is awareness of Self. The real Self in this sense can be called substance [...] From the viewpoint of the structure which enables us to live, it could also be denoted as the Real Self.<sup>11</sup> In the domain of quantitative methodologies, this Real Self is explained by consciousness and is also called qualitative understanding. Although this kind of consciousness is not separated from sensory experiences, it is not limited to such experience; moreover, it always exists independently, outside of all systems.

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The second type of comprehension, which also includes inferences (among other elements) and functions as a qualitative understanding or habituated mind, was called quantitative knowledge (*liangzhi* 量智)<sup>12</sup> by Xiong Shili.

This mode of quantitative understanding, which represented the basis of scientific comprehension for Xiong (Rošker, 2008, 198), likewise implied inferring from fixed, eternally “valid” assumptions. But the concept of qualitative understanding as described by Xiong and which is rooted in realistic currents within Confucian philosophy<sup>13</sup> cannot be equated with many other traditions of Confucian thought as developed in the solipsistic discourses of later Daoism and the Confucian School of Mind (*xin xue* 心學). For the latter, in fact, the external world had no objective existence, but was merely represented through numerous transformations within our mind.

11 Another possible translation of this term is “the True Self”.

12 Due to their identical pronunciation, we should not confuse Xiong's term *liangzhi* 量智, or quantitative understanding, with the Neo-Confucian term *liang zhi* 良知, which means innate knowledge.

13 In this context, Neo-Confucian theories of knowledge are especially valuable, especially when based on the binary category connecting the exploration of things (*gewu* 格物) with perfect or ultimate knowledge (*zhizhi* 至知).

In essence, Zhang Dongsun's pan-structuralism also belongs to the qualitative modes of understanding. Since it proceeds from the non-substantiality and continuous changing of all mutually connected structural patterns, the correlations between them are also non-substantial and not completely accessible through logic. None of these correlations can be said to have the statute of a rigid premise from which valid inferences can be drawn. Nonetheless, these correlations are the (only) possible connection between the Self and the. Knowledge is thus also a relation, for its formation has a strong impact upon these two poles of existence and comprehension. Since the structural connection between them is compatible with the structural connection between language and meaning (*yan yi* 言意), knowledge can be semantically transmitted.

## 10 Conclusion

The qualitative mode of understanding, the dynamic view of the world and the human mind as a network of incessantly changing relationships, and structural compatibility as a crucial condition for the perception and understanding of reality are the main elements of the divergences that separate Zhang's pan-structuralism from Russell's inference-based structural epistemology.

The question of possible debates between the two scientists, who represented different (i.e. Western and Chinese) models of epistemological thought, is still open. From our analysis of Zhang's model, it seems quite obvious that he did not adopt Russell's mode of structuralism, but was rather influenced in this respect by his own Chinese philosophical tradition. Nevertheless, he must have been familiar with Russell's model, as he accompanied him on his guest lecture tour through China. All this begs the question of whether Zhang also introduced to Russell his own view of a dynamic, diverse and qualitatively determined perception. In my opinion, this was either not the case, or Russell could not understand Zhang's model because he was not aware of the existence of different frames of reference. Had a substantive debate between the two theorists taken place in a mutually comprehensible manner, it would probably have influenced Russell's modifications of his own structural perception theory.

On the other hand, Zhang's major epistemological work *Renshi lun* 認識論 (*Epistemology*) was not published until 1934, more than a decade after Russell's *Introduction to Mathematical Philosophy*. It is possible, therefore, that his initial inspiration for establishing structural epistemology came from Western sources (especially Russell, who was its forerunner) and developed further in the process of his later reminiscences and recollections of his own intellectual tradition.

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