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Research article

## Hermeneutic Analysis of Ancient Chinese Conceptions of Technology

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### Abstract

The etymological and historical investigation shows that ‘Jì Shù’ [Technology] in ancient China appeared in two Chinese characters: ‘Jì’ and ‘Shù’, which have different meaning, but have something in common. Both of them refer to art and skills, while ‘Jì’ sometimes refers to the craftsman, the bearer of the skill, and ‘Shù’ generally refers to the method, tactics, way, procedure and path to skillfully reach a certain state. Alongside this, we need to distinguish two forms of technological knowledge. One is cognitive in nature, the dominant ‘Shù,’ the knowledge that comes from experience; the other is ‘Qì’ as the object itself in its material articulation and function. This paper will show that ‘Dào’ has a very close relationship both with ‘Jì’ [Skills] and ‘Qì’ [Utensils]. ‘Dào’ is the root of all things and also the root of ‘Jì.’ ‘Jì’ bears ‘Dào,’ meaning that ‘Jì’ itself conforms to the way of nature. The evolution of the relationship between ‘Dào’ and ‘Qì’ will also be considered. Initially, ancient Chinese scholars in the Zhou, Qin, Han, and Early Tang Dynasties stated that ‘Dào’ stands for ‘Tǐ’ [Noumenon/Thing-in-itself], and ‘Qì’ for ‘Yòng’ [Utility]. The relationship between ‘Dào’ and ‘Qì’ would then be entirely reversed by the notion according to which ‘Dào’ stands for ‘Yòng’ [Utility], and ‘Qì’ stands for ‘Tǐ.’ The last stage of evolution, as we will argue, is that, taking ‘Xiàng’ [Image] as the medium, ‘Dào’[Thing-in-itself] and ‘Qì’[Utensils] would become fused together.

**Keywords:** The Forms of Ancient Chinese Technology; ‘Qì’; ‘Dào’; ‘Xiàng’; Technology

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Научная статья

## Герменевтический анализ древнекитайских концепций технологии

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### Аннотация

Этимологическое и историческое исследование показывает, что “Цзи Шу” [Технология] в Древнем Китае выражалось двумя китайскими иероглифами: “Цзи” и “Шу”, имеющими разное значение, но имеющими нечто общее. Оба они относятся к искусству и навыкам, тогда как “Цзи” иногда относится к мастеру, обладающему навыками, а “Шу” обычно относится к методу, тактике, способу, процедуре и пути. Существуют две формы знания древней китайской технологии: доминантная “Шу” и рецессивная, а “Ци” – это ее материальная форма со своей определенной структурой и функцией. “Дао” имеет очень тесную связь с “Цзи” [Мастерством] и “Ци” [Утварью]. “Дао” – это корень всех вещей, а также корень “Цзи”. “Цзи” несет в себе “Дао”. “Цзи” соответствует пути природы. Отношения между “Дао” и “Ци” на уровне теории претерпели два этапа эволюции. Древние китайские учёные времен Чжоу, Цинь, Хань и ранней династии Тан утверждали, что “Дао” означает “Ти” [Ноумен/Вещь в себе], а “Ци” – “Юн” [Полезность]. Отношения между “Дао” и “Ци” тогда были бы полностью противоположны представлению, согласно которому “Дао” означает “Юн” [Полезность], а “Ци” означает “Ти”. На уровне практики, если принять “Сян” [Образ] в качестве медиума, “Дао” [Вещь в себе] и “Ци” [Утварь] сольются воедино.

**Ключевые слова:** Формы древней китайской технологии; “Ци”; “Дао”; “Сян”;  
Технология

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## INTRODUCTION

Monosyllabic words were the main body of ancient Chinese vocabulary, which developed into disyllabic words. In Classical Chinese, a character often corresponded a word, and there were many meanings for one word. In Classical Chinese, the words expressing ‘Technology’ mainly included ‘Jì,’ ‘Shù,’ ‘Qì,’ ‘Qiǎo,’ ‘Yì,’ ‘Jì Shù,’ ‘Jì Qiǎo,’ ‘Jì Yì,’ ‘Qì Jù,’ and so on. Of these, we are going to talk about their defining features and differences throughout the paper. However, there is also another conceptual dimension that we cannot overlook. one that is invoked by the character ‘Dào.’ ‘Dào’ was not only an important category of ancient Chinese philosophy, but also the core category of shaping Chinese traditional thought and culture. A series of categories and concepts are associated with ‘Dào,’ for example, ‘Tǐ,’ ‘Yòng,’ and ‘Xiàng,’ which were often used by ancient Chinese scholars to expound their speculations about technology. The purpose of this paper is then to propose an interpretation of ancient Chinese technological thinking through the lenses of etymology, philosophy, and cultural studies.

## THE CONNOTATIONS OF ANCIENT CHINESE TECHNOLOGY

The English word ‘technology’ was translated as ‘Jì Shù’ in Chinese. But ‘Jì Shù’ did not appear as a distinct concept during the Pre-Qin period of China (the period from the 21st century B.C. to 221 B.C.). They appeared and were used separately as individual Chinese characters: ‘Jì’ and ‘Shù.’ These two ancient Chinese characters had their own meanings.

First of all, there are two meanings of the term ‘Jì.’

(1) One meaning refers to the art, skill, or deftness possessed by the subject in general. For example, in the *Shuó Wén Jiě Zì* [The Analytical Dictionary of Chinese Characters] we find the definition:

‘Jì, Qiǎo Yě’  
[‘Jì’ is skill] (Xu, 1985, p. 406)

In the *Shàng Shū·Qín Shì* [The Book of History: The speech at Qin] it is clear that ‘Jì’ is something that can be predicated as an attribute of a subject, without implying a specific content:

‘Rěn Zhī Yǒu Jì, Ruò Jǐ Zhǐ Yǒu’  
[Others have skills, just like I have one, too] (Zhang, 2009, p. 329)

(2) the other meaning refers directly to the person who is in possession of a given skill, the craftsman. It is clearly illustrated by this excerpt from the *Xún Zī·Fù Guó* [Xunzi ·Rich Country]:

‘Gù Bái Jì Suó Chéng, Suó Yí Yǎng Yī Rén Yě’  
[Therefore, the products produced by craftsmen are used to support one person (the King)] (Zhang, 2012, p. 117)

Secondly, also in the use of the other key term, ‘Shù,’ we find two distinct meanings.



(1) One generally refers to the method, tactics, way, procedure, and path that the subject must employ to achieve mastery of an area that is related to the mind and heart. We can see this use in an affirmation taken from the *Zhàn Guó Cè·Wèi Cè* [Strategies of the Warring States: The Strategies of Wei]:

‘Chén Yǒu Bǎi Zhàn Zhī Shù’  
[I have methods/tactics to be always victorious]

(2) The other refers directly to art, skill, or technique. For example, we find the following in the *Lǐ Jì ·Xiǎng Yǐng Jiǔ Yì* [The Book of Rites: The Significance of the Drinking Festivity in the Districts]:

‘Gú Zhī Xué Shù Dào Zhē, Jiáng Yí Dē Shēn Yě’  
[In ancient times, people gained the skill or technique from practice]

To sum up, ‘Jì’ and ‘Shù,’ while having two distinct uses in ancient Chinese, retained a very similar meaning in at least one on of their employments. These two characters were combined into ‘Jì Shù.’ Its meaning didn’t encompass ancient technique or technology until Han Dynasty (202 BC–220 AD). For example, in Sima Qian’s *Shǐ Jì ·Huò Zhí Liè Zhuàn* [Records of the Grand Historian Biographies of commodity traders] - a text that was written from 104 to 90 BC - one can read:

‘Yī Fāng Zhū Shǐ Jì Shù Zhī Rén, Jiāo Shén Jí Néng, Wéi Zhòng Xǔ Yě’  
[Doctors, alchemist, and all kinds of people who make a living by their craft or skills work hard and do their best to get more money]

## THE FORMS OF ANCIENT CHINESE TECHNOLOGY

There were two basic forms of ancient Chinese technology: the knowledge form and the physical form.

1. The knowledge form of technology in ancient China: ‘Shù’ refers to this form in an explicit and implicit manner.

The technological inventions and manufacturing techniques as well as operation skills and techniques in ancient China were usually recorded and handed down in the form of language under the name of ‘Shù.’ For example, *Zào Zhǐ Shù* [paper-making technology], *Yìn Shuā Shù* [art of printing], *Qí Mǐn Yào Shù* [important methods to condition the people’s living]. This kind of technology, which could be written down or expressed in language, was also understood as explicit empirical knowledge (Wang, 2021). This explicit ‘Shù’ generally needed to be based on the mind and understanding of the subject, on repeated operation and diligent practice, in order to be transformed into the ‘Shù’ of the subject’s operational skills.

The ‘Shù’ that was understood and mastered in the process of operation was regarded as implicit empirical knowledge.

2. The physical form of technology in ancient China: ‘Qì’ refers to this form.



*Zhōu Yì-Xī Cǐ* [*The Book of Changes, Hsi Tzu*] said: ‘Xíng ér Shàng zhě Wèi zhī Dào, Xíng ér Xià zhě Wèi zhī Qì’ [The metaphysical is ‘Dào’ and the physical is ‘Qì’] (Chen & Zhao, 2020, p. 639). The metaphysical ‘Dào’ refers to the abstract nature and law inside things, it was thought to be formless and immaterial. In contrast the physical ‘Qì’ was material and had exact shapes and forms that people could perceive. In other words, it was a kind of tangible substance or physical object that was perceptible by the senses, especially the sense of touch. In the *Shuó Wén Jiě Zì* [The Analytical Dictionary of Chinese Characters] we find the definition:

‘Qì, Mǐn Yě,’ ‘Mǐn, Fàn Shí zhī Yòng Qì Yě’.

[Qì is Mǐn, and Mǐn generally refers to the vessels or utensils for food, such as bowls, dishes, cups and plates] (Xu, 1985, p. 65, 157)

From the perspective of the pattern and structure of Chinese characters, ‘Qì’[器] contains four ‘Kǒu’[口/mouth], which means it is not a single device, but a structural system composed of multiple components or parts in a specific form. The same or similar functional attributes of the ‘utensils’ form the same series of ‘utensils’ or ‘tools’ with different series serving different functions in different scenes, such as furniture, kitchenware, tools, wine, lacquer, ritual, machinery, weapons, musical instruments and so on.

## THE RELATIONSHIP BETWEEN ‘Dào,’ ‘Jì,’ AND ‘Qì’

### 1. ‘Dào’ as the foundation of all things, and also the foundation of the ‘Jì’

At the macro-level ‘Dào’ was regarded as the origin of the world that existed before and beyond heaven and earth. It was the ontology of all things and the ‘highest category’ of ancient Chinese philosophy (Zhang & Cheng, 1990). Ancient Chinese thought generally regarded ‘Tián’ [Heaven] as the origin of all things, but Lao Tzu broke with this idea. He clarified this in the *Dào Dē Jīn* [‘Dào’ Te Ching]: ‘Dào’ was prior to the existence of heaven and earth, he said, namely ‘Yǒu Wù Hún Chéng, Xián Tián Dì Shēng’ [There is something undefined and complete, coming into existence before Heaven and Earth] (Chen, 2016, p. 169). Furthermore, in Lao Tzu’s opinion, ‘Dào’ produced all things, it is the origin of all things. For example, he said: ‘Dào Shēng Yī, Yī Shēng èr, èr Shēng sān, sān Shēng wàn wù’ [The ‘Dào’ produced One, One produced Two, Two produced Three, Three produced all things] (Chen, 2016, p. 233).

At the micro-level, there were multiple meanings of ‘Dào.’

(1) The word was used in an existential sense. For example, Lao Tzu said: ‘Dào Kě Dào, Fēi Cháng Dào’ [The ‘Dào’ that can be described is not the enduring and unchanging ‘Dào’] (Chen, 2016, p. 73).

(2) It referred to the inherent nature of all things and the laws of movement and change in nature: ‘The law of the Dào is its being or what it is.’ For example, ‘Dào’ *Te Ching* said: ‘Zhí Gú Zhī Dào, Yí Yù Jīn Zhī Yǒu. Néng Zhī Gǔ Shǐ, Shì Wèi Dào Jì’ [When we can lay hold of the ‘Dào’ of old to direct the things of the present day, and are able to know it as it was of old in the beginning, this is called (unwinding) the clue of ‘Dào’] (Chen, 2016, p. 126). Furthermore, in Lao Tzu’s opinion, ‘Tián’ [Heaven] was



nature. As he attached great importance to the ‘Dào’ of nature, he said: ‘Tián Nǎi Dào, Dào Nǎi Jiǔ’ [In that likeness to heaven he possesses the ‘Dào.’ Possessed of the ‘Dào,’ he endures long].

(3) It also referred to the codes and rules of conduct. *‘Dào’ Te Ching* said: ‘Tián Zhī Dào, Lì ér Bù Hài, Shèng Rén Zhī Dào, Wéi ér Bù Zhēng’ [The law of nature is good for things, but harmless to things. The law of the sages is alms, not contention] (Chen, 2016, p. 349).

Besides, Lao Tzu did not separate humans from nature, and did not neglect human subjectivity. He said in *‘Dào’ Te Ching* that: ‘Gù Dào Dà, Tián Dà, Dì Dà, Rén Yì Dà. Yù Zhōng Yǒu Sì Dà, ér Rén Jū Qī Yī Yān’ [Therefore, ‘Dào’ is great, Heaven is great, Earth is great, and the human is also great. In the universe, there are four great things, and the king/human is one of them]. At the same time, in Lao Tzu's opinion, ‘Dào’ was not far-fetched. In technological activities, artisans followed ‘Dào’, and ‘Dào’ was presented in the experiential world in the form of objects through technological activities, artisans could get in touch with it in the process of making artifacts with superb skills. For example, there was a dialog in the book of *Chuang Tzu* [Nourishing the Lord of Life] as following:

The ruler Wan-hui said: ‘your art should have become so perfect!’

The cook replied to the remark, ‘what your servant loves is the method of the ‘Dào,’ something in advance of any art’ (Cao, 2000, p. 42-43).

## 2. ‘Ji’ serving to convey ‘Dào,’ ‘Ji’ conforming to natural law

‘Ji’ was for conveying ‘Dào,’ in other words, the invention of technology and the manufacture of utensils should follow and conform to naturalness. Craft, technique, utensils bore naturalness, and the latter lay in the former. *Kǎo Gōng Jì* [The Artificers Record] said: ‘Tián Yǒu Shī, Dì Yǒu Qì, Cǎi Yǒu Měi, Gōng Yǒu Qiào, Hé Cǐ Sì Zhě, Rán Hòu Kē Yī Wéi Liáng’ [The weather is limited by the season, the land is limited by the climate, artisans are skillful and clumsy, materials are good and bad, it is best to combine these four factors] (Wen, 2008, p. 4). Generally speaking, technical invention and manufacture of apparatus were thought to be affected by climate, geography, materials, and skills, it is best to conform to the timeliness and adapt to the climate, as well as the beauty of materials and the artistic attainments of the crafts.

## 3. Controlling the ‘Ji’ with ‘Dào,’ ‘Qì’ convey ‘Dào,’ governance of technology

Instruments made to meet a specific need carry not only the laws of nature and technology, but also the laws of society and morality. Making tools should follow the ‘Dào’ of nature and technology, using tools should conform to the ‘Dào’ of society, ‘Ji’ [skills] and ‘Qì’ [Utensils] should be restricted by the ‘Dào’ of different fields. *Jīng Shì Zhì Yòng* [Practical Knowledge of Managing State Affairs] was the basic stand and attitude of ancient Chinese thinkers on ‘Ji’ and ‘Qì.’ For example, *Zhōu Yì-Xì Cǐ* [The Book of Changes, Hsi Tzu] said: ‘Bèi Wù Zhì Yòng, Lì Chéng Qì Yī Wéi Tiān Xià Lì, Mò Dà Hū Shèng Rén’ [To produce goods for consumption, to set up works in which artisans can make utensils, and to profit the people in the world, no one has done these things more than a saint] (Chen & Zhao, 2020, p. 627). Confucianism did not completely





deny technology and suppress the development of technology, it affirmed the utility of the technology itself and emphasized the social significance of technology. In terms of technological development, it paid attention to ‘liù Fǔ Sān Shì’ that could be applied to the world. ‘Liù Fǔ’ [the six elements] included ‘Shuǐ, Huǒ Jīn Mù Tǔ Gǔ’ [Water, Fire, Metal, Wood, Soil, Grain] (Yang, 1990, p. 564). These correspond to six basic technical activities in the production and life of ancient Chinese society: canals, grass-burning, smelting, farming, grain cultivation. ‘Sān Shì’ [Three affairs] included integrity, utility, and well-being (Yang, 1990, p. 564), which meant that the development of technology should follow social moral norms and benefit the country and the people (Fang, 2016). Confucians attached great importance to the social ethics of technology. They opposed the king to play through life and have no serious ambition, and they opposed the people who indulged in pleasure and did not do business. They opposed and denigrated bizarre techniques and strange artifacts outside ‘liù Fǔ Sān Shì’ [Six elements and Three affairs] (Yang, 1990, p. 564)

Lao Tzu had a sense of anxiety, weariness and caution towards the ‘Qì,’ fearing that a large number of instruments would disturb the social order and cause moral anomie. Chuang Tzu affirmed the superb skills of artisans and the function of their skills, such as cooking meat, but he also worries about alienation by way of technology. In Chuang Tzu’s opinion, where there were ingenious contrivances, there were sure to be subtle doings, and that, where there was a scheming mind in the breast, its pure simplicity was impaired. When this pure simplicity was impaired, the spirit became unsettled, and the unsettled spirit was no longer the proper residence of the ‘Dào’ (Cao, 2000, p. 172).

Mohism believed that everything had a standard, and artisan technology also had its own internal laws and norms. For example, Mo Tzu said: ‘to accomplish anything whatsoever one must have standards’ (Li, 2007, p. 22). No one has yet accomplished anything without them. The honorable people fulfilling their duties as generals and councillors have their standards. Even the artisans performing their tasks have their standards. Mo Tzu also elaborated on the standard of artisans, he said that the artisans make square objects according to the square, circular objects according to the compass; they draw straight lines with the carpenters' line and find the perpendicular by a pendulum. All artisans, whether skilled or unskilled, employ these standards. Only the skilled workers are accurate. Though the unskilled laborers have not attained accuracy, they do better by following these standards than otherwise. Thus all artisans follow the standards in their work.

At the same time, Mohism, like Confucianism, examined technological activities from the level of social ethics, regulated the social attributes of technology with ‘Yì’ [righteousness], and stressed that technology should benefit people. In Mo Tzu’s opinion, nothing was more valuable than righteousness.

4. The development and evolution of the relationship between ‘Dào’ and ‘Qì’: from ‘Dào Tǐ Qì Yòng’ to ‘Dào Yòng Qì Tǐ’

There are two main stages that mark a profound shift in the relation of ‘Dào’ and ‘Qì.’



(1) The incubation and development of the doctrine on ‘Dào Tǐ Qì Yòng’ [‘Dào’ was for ‘Tǐ’ and ‘Qì’ was for ‘Yòng’] can be traced to *Zhōu Yì-Xī Cǐ* [The Book of Changes, Hsi Tzu] which states that the metaphysical was called ‘Dào’ and the physical was called ‘Qì.’ ‘Dào’ and ‘Qì’ officially appeared in the form of a pair of concepts. ‘Dào’ was the noumenon of metaphysics, It was the intrinsic nature, essential attribute as well as law and rule, etc. It was abstract and intangible, It was understood as ‘Tǐ’ [Noumenon] in Chinese, That was ‘Dào Tǐ’. ‘Qì’ was a physical artifact with physical structure, external shape and functional utility. Ancient Chinese paid attention to the ‘Yòng’ [Utility] of ‘Qì’ [Utensil] that was ‘Qì Yòng’. The annotators of Zhouyi in the different dynasties had little doubt about the understanding of ‘Qì.’ ‘Qì’ in the *Annotations of the Zhouyi* in the Han and Tang Dynasties was connected with ‘Xíng’ [Shape or Form] and ‘Zhì’ [Essence/Quality], that was, ‘Qì’ had shape and quality, so it was useful.

(2) The transformation of the relationship between ‘Dào’ and ‘Qì’ included the proposal of the doctrine on ‘Qì Tǐ Dào Yòng,’ and the development of its connotations. Cui Jing’s *Zhōu Yì Tàn Yuán* [The Exploration of Metaphysical Theory in the Zhouyi] is an incomplete book from the Tang Dynasty, part of its contents is preserved in Li Dingzuo’s *Zhōu Yì Jí Jiě* [The Collected Annotations of the Zhouyi], and they provide significant information for cultural historians. Cui Jing made comments on ‘Xíng ér Shàng Zhē Wèi Zhī Dào, Xíng ér Xià Zhē Qì’ [The Metaphysical was Dào and The physical was Qì]. In Cui Jing’s opinion, this sentence implied the principle of ‘Xíng Qì Biàn Tóng’ [the flexibility of shape and utensil] (Wang, 2020). Everything in the world has shape and quality, ‘Tǐ’ [Noumenon] was presented in the form of shape and quality, it was visible and formable, so ‘Tǐ’ was ‘Qì.’ The presentation of ‘Tǐ’ reflected the ‘Yòng’ [Utility] ‘Yong’ helped its ‘Tǐ,’ which was perceptible but invisible. Therefore, ‘Yòng’ was metaphysical, and it was ‘Dào’. That was ‘Qì Tǐ Dào Yòng’. This understanding completely overturned the basic conclusion of ‘Dào first and then Qì’ and ‘Dào Tǐ Qì Yòng’ for a long time. ‘Dào,’ which was anonymous, invisible and ubiquitous, was regarded as the function and role of shape and quality, by Cui Jing. In his opinion, if there was no ‘Qì,’ there would be no ‘Dào,’ so ‘Qì’ came into being before ‘Dào,’ that was ‘Dào Yòng Qì Tǐ’ (Wang, 2020). In the book of *Zhou Yi Tan Yuan* he took animals and plants as an example to prove his opinion. He said that animals took their body as ‘Tǐ’ and ‘Qì,’ and took their spirits as ‘Dào’ and ‘Yòng’; plants took their branches and stems as ‘Tǐ’ and ‘Qì,’ and ecological characteristics as ‘Dào’ and ‘Yòng’ (Li, 2016, p. 442-443 ). Since then, ‘Qì Tǐ Dào Yòng’ had been inherited and developed in the form of ‘Dào Bù Lí Qì’ [The invisible ‘Dào’ is inseparable from the visible ‘Qì’] and ‘Dào Yīn Qì Xiǎn’ [‘Qì’ bears Dào, ‘Dào’ is revealed through ‘Qì’]. For example, Yanwu Gu (1994) said: ‘Fēi Qì Zē Dào Wú Suō Yǔ’ [Without ‘Qì’, Dào has no sustenance] (p. 32). And Xuecheng Zhang (1994) said: ‘Dào Bù Lí Qì, Yōu Yǐng Bù Lí Xíng’ [‘Dào’ is inseparable from ‘Qì’, just like the shadow is inseparable from the body] (p. 132-133). In other words, the laws of things could not exist apart from objective things. Sitong Tan (1994) said: ‘Dào’ was ‘Yong’, ‘Qì’ was ‘Tǐ’, so that the functions (attributes) would appear only if the entity (substance) was established before; so if ‘Qì’ existed, ‘Dào’ would not disappear (p. 390).





#### 5. The fusion of ‘Dào’ and ‘Qì’: Taking ‘Xiàng’ as the medium

Ancient Chinese scholars divided the world into ‘Dào’ and ‘Qì.’ In order to explain the relationship between ‘Dào’ and ‘Qì’ and avoid their separation, Ancient Chinese scholars set up ‘Xiàng’ [Image] to express their intention. That is, although the words say nothing, the ‘Xiàng’ can. Words fail in conveying meaning, images help out. In other words, ancient Chinese scholars abstracted the images of everything in the objective world into ‘Guà Xiàng’ [the images of hexagrams which include paintings, pictures and numbers]), and the sixty-four hexagrams of *Zhōuyì* [The Book of Changes] were the symbolic system of ‘Guà Xiàng’. The makers who drew inspiration from ‘Guà Xiàng’ constructed and designed the structure and the model of ‘Qì,’ seeking the solution of technical problems, then creating the images of things that do not exist in the real world. With ‘Xiàng’ as the medium, the makers realized the combination of ‘Dào’ and ‘Qì.’ The world had evolved from the duality of ‘Dào’ – ‘Qì’ to the triad of ‘Dào’ – ‘Xiàng’ – ‘Qì.’

### CONCLUSIONS

To sum up, the ancient Chinese conceptions of technology are rich in connotation and diverse in form. Ancient Chinese thought and elaboration of the relationship between ‘Jì’ and ‘Dào’ and between ‘Dào’ and ‘Qì’ formed the unique tradition of technical thought in China. Ancient Chinese technology is not only production process and operation skills, but also an art of creation, and a wisdom that conforms to ‘Dào’ and thereby demonstrates its meaning and significance, reflecting not only the laws of nature and technology, but also social ethics and a value orientation.

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