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Heterogeneous Isomorphism Principles in Cultural Linguistic Methodology

El principio de homogeneidad en la metodología lingüística cultural

文化语言学方法论中的异质同构性原则

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Abstract: Isomorphism can refer to the same or similar structure between different systems or subject systems, or to the similarity between the internal components of the system and the whole system in a certain way, that is, the corresponding relationship between the parts and the whole. The isomorphism indicates that complex system itself has its universal characteristics and universal rules. The principles of heterogeneous isomorphism apply to the study of language ontology, language and culture, language teaching and other aspects by means of set, analogy and simplification.

Key Words: Cultural linguistics; Methodology; Heterogeneous isomorphism.

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Resumen: el isomorfismo, que puede referirse a la misma estructura o similar entre diferentes sistemas o diferentes sistemas de disciplina, también puede referirse a la similitud entre los componentes internos del sistema y todo el sistema de una determinada manera, es decir, entre la parte y el todo Correspondencia El isomorfismo muestra que los sistemas complejos tienen sus propias características y leyes universales. El principio del isomorfismo heterogéneo es aplicable a la investigación relacionada con la ontología del lenguaje, el lenguaje y la cultura, la enseñanza del idioma, etc., mediante la recopilación, la analogía y la simplificación.

Palabras clave: Lingüística cultural; metodología; isomorfismo heterogéneo.

摘要：同构性，可以指不同系统或不同学科系统之间具有相同或相似的结构，也可以指在系统内部组成部分与整个系统有某种方式的相似性，即部分与整体之间的对应关系。同构性表明，复杂系统本身有其普遍特征和普遍规律。异质同构原则以集合、类比和简化的手段适用于对语言本体、语言与文化、语言教学等方面的相关研究。

［**关键词**］文化语言学；方法论；异质同构

Chaos is a leap from human previous understanding of nature. It finds a new, more general, both definite and random chaotic phenomenon and its nonlinear law in nature. It is a major discovery of theoretical natural science in science. These new phenomena and laws will inevitably lead to the transformation of the concept of nature and epistemology, and lead to the innovation of methodology. Zhang GongJin (2010) draws on the ideological methods of chaos in the construction of the methodology of cultural linguistics and puts forward a series of specific methodological principles. These principles include: system balance principle, heterogeneous association principle, nominal relevance principle, foreign object isomorphism principle, central edge dependence principle, language thinking identity principle, initial value continuity principle, evolution randomness principle and the principle of integrity and so on. Due to space limitations, this article only provides a preliminary explanation of the principle of foreign matter isomorphism.

1. Structure, isomorphism and isomorphism

The phenomenon of isomorphism of foreign objects can be found in ancient myths and totems. “Totem” is derived from Ototeman, a dialect of the Ojibwa Indians in North America, meaning “his relative” or “his clan”. In Australia, the word “Kobong” agrees with the totem, which is equivalent to the mark of the entire tribe. Many clans are often named after it. The ancestors of all the nations of the world have worshiped totems, and the totems of these nations are all real animals, plants or other natural objects,

such as Persian cats, Indian elephants, and so on. During the evolution of Roman civilization, the process of the totem changed from a wolf to a solitary eagle and a double-headed eagle. However, the "dragon" totem finally formed by the Chinese people's ethnic changes is a compound totem constructed by integrating features of many different totem. The basic composition of the dragon shape is: horse head, horse mane, horse tail, bull ears, horns, snake body, eagle claws, and fish scales. It is also said that dragons also contain lion, tiger, pig, rabbit and other animal characteristics.

The structure is the collocation and arrangement of the various components, and is the way of interrelation and interaction between the various components of the material system. Objective things exist, move, and change in a certain structural form. Structure is the ideological language that describes the organization and synthesis of things. Both ideologically and physically. The material structure is diverse and can be divided into spatial structure and temporal structure.

In general, structure refers to the orderly matching between the various components of a thing. Everything in the world has a structure. It is various and determines the nature of the existence of things. The "structure" of linguistics refers to the organization of various linguistic components into meaningful models. Saussure once said: "Language is both a system, its various elements have a collateral relationship, and the value of each of the elements is only because There are results of other elements at the same time."[1] Language is a functional system with complex structures, such as a statement, which can be regarded as a different level of structure: syntactic level, morphological level, phonetic level, vocabulary level. Piaget said: "Structure is a system composed of various transformation laws. ..., a structure consists of three characteristics: integrity, transformation and self-adjustment."[2] Integrity refers to a phenomenon consisting of many common phenomena In the whole, each phenomenon is dependent on other phenomena and can only exist in the relationship with other phenomena; conversion refers to a substructure based on generating rules, orderly into another substructure; the ability of self-adjustment means that various rules work within the scope of the

[1] Saussure.1980. *Course in General Linguistics*. Beijing: The Commercial Press.

[2] Jean Piaget. 1979. *Le Structuralisme*. Beijing: The Commercial Press.

system. Levi Strauss[3] emphasizes that "structure" has its own integrity, emphasizing that it is necessary to start from the whole, to understand and grasp the relationship between things, which undoubtedly has a broader perspective than other philosophical factions. He believes that the structure has four characteristics, namely systemicity, transformability, predictability and comprehensibility, and applies it to anthropological research and sociocultural research. Structuralism seeks the invariant in cultural variants and the isomorphism of human culture in the structural sense. This enlightens people from the single atmosphere of the linear description of traditional historicism and the phenomenon of empiricism, and in the multi-layered aspects of the vertical and horizontal layout of history and culture, to find new connections in the deep structure of history and culture.

Isomorphism in mathematics refers to a bijection that maintains the structure. In the more general category theory language, isomorphism refers to one morphism and exists along with another morphism, so that the recombination of the two is an identity morphism. Isomorphism is a type of mapping defining between mathematical objects that reveals the relationships between the properties or operations of these objects. If there is a homomorphic mapping between two mathematical structures, then the two structures are called isomorphic. In general, if you ignore the specific definition of the properties or operations of an isomorphic object, structurally, homogeneous objects are completely equivalent. "Isomorphic relationship" means that in an A domain, the elements in A collectively have the property of R. In a B domain, the elements in B have the property of R', then R and R` have a "substitution relationship". The so-called "substitution relationship" can generally be explained in the transformation of Euclidean geometry and linear algebra. When R and R` have this "substitution relationship", we say that A and B are "isomorphic".

The main purpose of studying isomorphism in mathematics is to apply mathematical theory to different fields. If the two structures are isomorphic, then the objects on them will have similar properties and operations, and the propositions that are true for one structure will hold on to the other. Therefore, if an object structure is found to be isomorphic to

[3] See Strauss's Social Structure, The Barbarian's Mind, The Basic Structure of Relatives, and Structural Anthropology.

a structure in a certain mathematical field, and many theorems have been proved for the structure, then these theorems can be applied to the field immediately. If some mathematical methods can be used for the structure, then these methods can also be used for structures in new fields. This makes it easy to understand and process the object structure, and often allows mathematicians to have a deeper understanding of the field.

The "isomorphic relationship" can also explain the presupposition of "object self". A system of the human body, such as vision, must be self-constructed in order to observe foreign objects before it can function. Then, for the "self-contained body", only the reflection within the self-structure can be obtained. But this "ignorance" of "self-containment" is not to acquire metaphysical cognition, that is, "God-like cognition." On the contrary, this foreign object is considered to be recognized only by the person's own reflection. For these two systems to have a relationship, they must also have the "isomorphic" condition.

Human cognition develops with the development of human social practice. People perceive the world through various practical activities to generate cognitive activities, which in turn lead to the isomorphism of human thinking and the world.

2. Heterogeneous isomorphism

"Heterogeneous isomorphism" is the theoretical core of "Gestalt" psychology. The representative of this school is Rudolf Arnheim. His work "Art and Visual Perception"[4] (1954) made a lot of analysis of the visual perception structure and used it as a basis for analyzing the plastic art, and believed that there was a structural similarity between the non-physical psychological facts and the material physical facts. Such similarity is called "heterogeneous isomorphism." Gestalt is a transliteration of German (Gestalt), which is usually translated as "finished". Gestalt often implies: (1) the shape or form of a thing, a characteristic of the thing, and (2) the specific personality and unique entity that exists as something that is separated and has the property of shape. Gestalt psychology uses the second meaning. Xiao Xiaoxuan[5] (1934) believes that the Gestalt is neither a

[4] Rudolf Arnheim. 1984. *Art and Visual Perception*. Beijing: China Social Sciences Press, 1984.

[5] Xiao Xiaoxuan.1934. P*rinciples of Gestalt Psychology*. Beijing: The Commercial Press: 4-12.

combination of things nor a chaotic phenomenon; the nature of the Gestalt is not contained in its parts; the various parts of the Gestalt have functional connections; not everything The format towers have the characteristics of shift invariance; the format tower is affected by the things around it; the meaning of the format tower is not equal to the meaning of the form; the format tower refers to specific things, not to the abstract nature of things; It is not limited to the field of perception, and all the situations and processes studied in psychology are included.

Saussure's arguments about language originated from the heterogeneity of his linguistic and verbal activities. Cognitive linguistics believe that the concept system of human beings is constructed through metaphor. Metaphor is the experience of understanding another conceptual domain with the experience of a conceptual domain. Lakoff and Johnson's [6](1980) "The Metaphor We Live by" argues that human cognitive processes often recognize and treat strange, intangible, abstract concepts and things with reference to well-known, tangible, concrete concepts and things, forming a mutual relationship with each other, and forming a multi-dimensional, heterogeneous isomorphism.

Fractal refers to the similarity between a component of a geometric figure and the whole figure in the sense of chaos. When applied to the humanities, it refers to the relationship between part and the whole. The most important feature of fractals is that they must have self-similarity. Zhang Gongjin[7](2011) believes that the principle of foreign body isomorphism means that there are certain self-similarities in structure between different things, and they can be studied in the same way. This is how we apply the theory of chaos to cultural linguistics, one of the methodological principles.

Heterogeneous isomorphism has been verified and promoted in many research fields. Wang Yan and Wu Jun (2012) said that from the perspective of communication, the ancient and modern products of notes and blogs share some common fulcrums: the two bear the content, the form of performance, the functions to be undertaken, etc. all have great similarities. From the perspective of communication, although the two are different in contents, the forms show the characteristics of heterogeneity and isomorphism.

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[6] Lakoff, G. and M. Johnson. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press.

[7] Zhang Gongjin. 2011. Preface. *The New Exploration of Chaotic Science and Language Culture Research*. Beijing: Central University for Nationalities Press.

Sun Kecheng (2008) analyzes and believes that there are divine births in the narrative mode of "Journey to the West" and "Water Margin" - rebellious self-reliance - surrender and surrender - to conquer the aliens - to forsake the flesh - to become a god Heterogeneous isomorphism.

There is a homomorphic relationship between the physical phenomenon as a subject and the physiological phenomenon of the brain as a cognitive subject. Therefore, poets often use their foreign objects to express their feelings. Especially in Chinese ancient poetry, the phenomenon of borrowing scenery and cherishing things is everywhere. In the Tang Dynasty poet Cui Hu's "Write at the Southern Suburb of the Capital City（《题都城南庄》）", you can see many heterogeneous isomorphisms:

Table: Heterogeneous isomorphisms in "Write at the Southern Suburb of the Capital City"

Poetry image	Natural image	isomorphic point 1	isomorphic point 2	isomorphic point 3	isomorphic point 4	Philosophy
		Action	color	texture	season	Cherish Spring, Cherish Time
Peach blossom	spring peach blossom	smile	pink	delicate	spring	Peach blossoms faded
Face	young girl' face	smile	pink	delicate	youth	People are gone

Gao Yuan and Lin Yongle (2004) believe that the isomorphism of Chinese classical gardens is represented by two different levels: the surface layer is the homomorphic isomorphism of the regularity; the deep layer is the heterogeneous isomorphism of the subjectivity. The apparent physical similarity of ancient Chinese architecture, that is, homomorphism is only its appearance. The root cause is still the influence of the "ritual" culture on the material world, which is also in line with the principle of heterogeneity.

3. Isomorphism and heterogeneous isomorphism in language

In Laozi's *Tao Te Ching*, "Dao Sheng yi, Yi Sheng Er, Er Sheng San, San Sheng Wan Wu" (one gives birth to two, two gives birth to three, three gives birth to infinity) contains the truth that language and the world are

isomorphic. Humboldt believes that because language is a brain's ability, speakers can use limited language to create unlimited language behavior. Language is a system generated by recursion. The law of generation is fixed, and the scope of the generation and the specific method of use are completely undefined. In the general characteristics of the language structure, the language seems to come from the same pattern. Chomsky puts forward the hypothesis of linguistic innate theory that people have a language acquisition mechanism (LAD) and universal grammar (UG) in the initial stage of language acquisition, and children are naturally exposed to language. Through unconscious hypothetical attempts and internalization, unconsciously correcting a set of linguistic rules, thereby gaining language skills and being able to use the native language freely. The "genius view" is an idealized consideration of the language mechanism. The whole language system is likened to a machine. The difference between each language is only the parameters, and the infinite language facts are explained by the limited abstract laws and principles. Ludwig Wittgenstein[8] believes that there is a correspondence (projection relationship) between language and facts because they have an isomorphism with each other. Language and culture are isomorphic, and Humboldt points out that language is not a thing, but it is often a concept of things. These concepts are created when people form words. For example, in Sanskrit, the word "elephant" can be called "two times drinking water", or "two teeth", or "hand feeding". Each name contains one. The special concept, but all the names represent the same thing, Humboldt thus closely linked the language form and the nation's views on the world around him.

The commonality of language is not in the form of language, but in the cognitive psychology of human beings. Since human beings have the same body structure and sensory organs, and they face almost the same material world, it can be said that human beings have the same perception and cognitive ability. The psychological lexicon is one of the important components of natural language mental representation. It is stored in the human brain in a certain structural form and unique way, encoded by language symbols, and then output in the form of speech. That is to say,

[8] Qu Shaobing. 2002. Language Image or Language Game——Wittgenstein's View of Language Philosophy from the Chinese Expression of Causal Concept. *Journal of Guangzhou University* (11): 52-56.

the psychological lexicon is essentially a linguistic symbol as an information carrier to reflect the objective world. From the perspective of discourse, the context structure of certain texts—the semantic field constructed by context or interlocutors—is also the basis of heterogeneous isomorphism.

The principle of heterogeneous isomorphism refers to the structural self-similarity between different things, and can be studied in the same way. This is one of the methodological principles applies to cultural linguistics. The isomorphism of language and the world is that we can re-interpret the evolution of the language system, of course, there are also nonlinear and irreversible. However, this possibility exists in our language system, providing a viable research method for language research.

The oral knowledge before the invention of the text has obvious shortcomings in the dissemination and accumulation. The primitive humans used the method of knotting, engraving, and drawing to assist the note, and later used the feature graphic to simplify and replace the picture. When the graphic symbol is reduced to a certain extent and a specific correspondence with the language is formed, the original text is formed. The text allows humans to extend the visual signal from only the auditory signal, allowing the language to break the limits of time and space. Chinese characters are the only words in the world's oldest three major writing systems (including Chinese characters, ancient Egyptian holy books and Sumerian cuneiforms).

In the process of using characters, human beings have evolved to form two main branches of phonetic and ideographic characters. Most of the text has developed into phonetic characters, and Chinese characters are "a stylized, simplified picture system" (L. R. Palmer, 1983)[9]. This text system is condensed into picture-by-picture characters—square Chinese, Took a different development path from most languages in the world. The glyph, structure, and characters of Chinese characters all conform to the principle of isomorphism of foreign objects.

In the early stage of the Chinese character system, the number of words was very small. The ways of making words usually combined pictograms and ideograms, and mainly focused on the individual characters with pictorial or ideogrammic meanings. A large number of things are represented in the form of rebus, which means to use the characters with

[9] L. R. Palmer. 1983. translated by Li Rong, *Introduction to Linguistics*. Beijing: Commercial Press: 99.

similar pronunciation or look as the substituted for other words and made the expression of the text relatively ambiguous. For example, the "wen (文, text)" of the pre-Qin and the function of the new word "wen (纹, pattern)" of later generations represented the laws and forms that constitute various kinds of affairs, not only the texts of the characters, but also the flowers "text" of the beasts and the weaving of the cloths. "Text", finger refers to "text" and other meanings. Due to the progress of civilization, these Chinese characters can't cope with complicated personnel exchanges, so there are methods such as pointing things, meeting meanings, voices, and transferring money and borrowing.

From the beginning of the Otaru era to the modern era, Chinese characters have developed a group of characters based on the basic pictograms. They have combined the way to refine a large number of words, making the records on the documents more and more precise and have been the main force in making words to this day. The earliest means of transport on the sea was only one type of "zhou (舟, boat)"; but it has evolved to the present, and is further divided in to specific subgroups such as "ban (舨)", "zhou (舟)", "ting(艇)", "chuan (船)"," jian (舰)", in order to describe ships in different sizes and types.

The construction process of pictographs can be said to be "regeneration of images". For example, "Mu (木, wood)" deletes the complicated branches and leaves, and only shows the overall characteristics shared by the trees. On the basis of pictograms, the words use abstract symbols to express abstract concepts. For example, adding "one" to the lower part of "wood" is the "book" of "root". If you can neither graphically representing nor refer to things, you can use the method of knowing to create more complex Chinese characters, such as "Xiu (休，rest)" and "Sen (森, forest)". The phonetic words include: visual and auditory image isomorphism. The structure of Chinese characters is basically developed along the characteristics of the overall characteristics - the key things - the intentional combination - the imagery of the imagery, reflecting the Chinese characters from simple to complex, from individual to whole, from plane to multidimensional The overall thinking of the structure.

Chinese characters are square characters and have integrity. But the Chinese characters are indeed full of change, and their internal structure has a solitary structure, The complexity (or degree of freedom) of the font structure (or degree of freedom) such as top (middle) bottom, left (middle) right, inside and outside, and enclosing (semi-enclosing) types is much

more complicated than that of pinyin text. The character form of Chinese characters can be divided into three Level: stroke, Chinese character component, character. Generally speaking, dozens of strokes make up hundreds of parts, and hundreds of parts make up tens of thousands of Chinese characters. Some the stroke itself is both a part and a character (such as: one). Some parts are also characters, which are called word-forming parts (such as: 口、木、日、心).

In contrast, letters / pinyin characters use dozens of different letters to form words, as many as dozens or even hundreds, and as few as one letter, but they are arranged linearly. Chinese characters are constructed using the six basic strokes of dots (点：丶), horizontal (横：一), vertical (竖：丨), skimmer (撇：丿), press down (捺：乀), and lift (提:㇀) strokes, but the strokes and component combinations of Chinese characters are not A simple linear arrangement, but combining those strokes with independent, up and down, left and right, and enclosing structures to form a two-dimensional square structure (picture). This square structure maintains a kind of influence under the influence of printing. A geometric block of uniform size is called a "block character." Each Chinese character, regardless of its number of parts, requires that the Chinese character be written as a quadrilateral box. The Pinyin text is arranged in order from left to right or right to left to form a sequence of letters.

Chinese character component is a basic perceptual block that forms Chinese characters. They are basically composed of some intersecting, connected or adjacent strokes at the physical location, and are relatively independent and complete in the perception. On the one hand, they are related to the spatial composition information of the strokes; on the other hand, they may be related to semantics or speech. Information related, such as radicals or radicals.

From the perspective of similarity, Chinese characters can maximize the similarity between members of the same category and minimize the similarity of members in different categories. Therefore, the behavior of a Chinese character system described by a deterministic theory, however, manifests itself as uncertainty-non-repeatable and unpredictable. The strokes of Chinese characters have little meaning in terms of "information" and "function", of course, there are special ones, such as "一".

But at the component level, different Chinese characters have different components, and the combination of components is very flexible,

and these components have become a meaningful symbol. For example, the symbol "氵" indicates that the meaning of the word belongs to the liquid range. To create a new character in the liquid category, simply use "氵" plus another component (preferably a combination of sound and sound) to form Chinese characters in the liquid category such as river (江), lake (湖), sea (海), ocean (洋), liquid (液), and wine (酒).

such as "讠(言)", which means the meaning of speech and discourse, and constitutes words such as recognition (认), information (讯), discussion (议), speaking (讲), thanks (谢), and debate (辩); "口" means an organ that eats or sounds, Composition of ancient(古), leaves (叶), know (知), sentence (句), question (问), etc. "疒" is related to the disease, which is combined into the words such as disease(病), illness (症), therapy (疗), and cancer (癌), etc. "阝" is on the left, mostly related to mountains and terrain ,words such as team(队), yang (阳), and yin (阴); "阝" on the right, mostly related to towns and place names, forming outer city wall (郭), capital (都), and suburbs (郊). In contrast to English, English words and Chinese characters have certain similarities in their composition. Both the root affixes and the parts of Chinese characters in English words can convey or understand some of the information and functions of words or words.

Based on the research of cognitive psychology[10], the mental processing of Chinese character recognition is mainly top-down, that is, the overall outline first, the macrostructure, the local structure, and the specific strokes. The organization of Chinese morphological information is also top-down. Parts are extracted from large structures, and strokes and stroke orders are generated from the parts. In addition to the organizational clues of the form itself, the psychological retrieval process of the morphological information of Chinese characters also has organizational clues of semantic speech.

Chinese characters are constructed using parts, which show certain clues of semantic information and ensure the productiveness of Chinese characters. At the beginning, metal was only known as "Jin (金, gold)". However, with the development of metallurgical technology, the knowledge of metal was more abundant. "Gold" was classified and used,

[10] Xu Huohui. Wang lu. Cognitive Psychology of Chinese Character Morphology Coding. Chinese information. 1994 (6): 34-41.

and “Gold/钅” was used as the radical, and “Yin, (银, silver)”, “Tie (铁, iron)”; “Tong (铜, copper)”, and “Xi (锡, tin) and so on appeared. Taking the Chinese characters of the periodic table of chemical elements as an example, when Western technology entered China on a large scale, the foreign names of the elements were too difficult to remember, and the single characters in the Chinese environment were easier to read and write. Therefore, scholars decided to create characters to name them. New elements. On the one hand, they creatively created new words to name these elements based on the foreign pronunciation of the element plus the material state of the element. If there is a metal next to a gold character: gold (金), silver (银), copper (铜), iron (铁), lead (铅), tin (锡); the gaseous head represents a gaseous nonmetal: hydrogen(氢), helium (氦), nitrogen (氮）, oxy (氧) fluoride (氟), neon (氖), and the solid next to the stone character represents a solid nonmetal: boron (硼), carbon (碳), silicon (硅), phosphorus (磷),sulfur (硫),iodine (碘).

Chinese character parts can show the physical position or spatial relationship of Chinese characters. Chinese characters can be divided into different geometric structures according to the parts:

As shown in the figure above, they are: left and right structure (汉，Chinese); upper and lower structure (字，character); left, middle and right structure (做,do); upper, middle and lower structure (case); fully enclosed structure (back); upper enclosed structure (same); Lower enclosing structure (fierce); left enclosing structure (area); lower left enclosing structure (this); etc., according to the semantic and phonetic composition needs, the components of Chinese characters can be placed in different positions, and the size of the components can be scaled.

The use of Chinese characters also derives the functions of both the phonetic and phonetic characters of Chinese characters, that is, the pictophonetic characters of Chinese characters. Chinese glyphs can generally be divided into two parts: side by side and side by side. The side by side indicates the meaning of the character, and the side by side indicates its pronunciation. In the Chinese character system, pictophonetic characters account for the vast majority, and the number of pictophonetic characters in the current Chinese characters is large. It is certain, for

example, Li Yan (1992) ‘s statistics of 7 0 0 common characters in the “Modern Chinese Character List” , The result was 5636, accounting for 80.5%[11]; Shi Zhengyu (1992)[12] surveyed 2522 pictophonetic characters in 3500 commonly used characters in modern Chinese, and found that modern pictophonetic glyphs The effective expression rate is 83%. The study of the nature of Chinese characters, the development of Chinese characters, and the teaching of Chinese characters are all closely related to the study of pictophonetic characters.

Zhou Youguang (1997) pointed out that the discovery and interpretation of Qidan, Jurchen and Xixia made people see the mutated Chinese characters. The comparison between Japanese and Korean and Chinese has changed the concept of Chinese characters. The study of Vietnamese characters has caused the reappearance of Chinese characters of Chinese ethnic minorities. Since the 1950s, a large-scale investigation of the history and language of ethnic minorities has revealed more and more Chinese characters that are created from the derivation of etymeme. Studying these non-Chinese characters in similar structure of Chinese characters expands the horizon of Chinese characters. Mr. Zhou also said that the “nail head (wedge) word” in West Asia, the “sacred book” in North Africa, and the “Mayan” in South America all have the same internal structure.

Chinese characters and Japanese characters and pseudonyms are isomorphic. In Japanese, it is divided into Chinese characters and pseudonyms, while the pseudonyms are divided into hiragana and katakana. Originally, Japan did not have its own writing system. Later, borrowing from Chinese characters, the Chinese cursive script was derived into hiragana, and the Chinese proverbial book was changed to a katakana. For example, the “あ” of the hiragana is simplified by the “安” of the Chinese character; the “ア” of the katakana is part of the Chinese character “啊”. In present day, the Chinese characters commonly used in Japanese are about two thousand words. The katakana is mostly used to express foreign words, and the rest is mostly used in hiragana. It is worth noting that the reading of Chinese characters has a Chinese-style reading called “sound reading” and the Japanese-style reading method is called “training.”

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[11] Li Yan. 1992. *Research on Pictophonetics in Modern Chinese*. Language application(1):74-83

[12] Shi Zhengyu. 1994. *Analysis of the Meaning of Modern Pictophonetic Glyphs*. Language Teaching and Research (3):83-89.

Greenberg (1966) pointed out: "The order of the components in the language or the order of physical experience is parallel to the order of understanding of things." [13]The cognitive basis of sequential iconicity is narrative in chronological order between events, in line with people's simplicity Cognitive law. From the cognitive point of view, the causality between causality and time series, the first cause and the effect are a reflection of the time series relationship, and also have the pseudo-image-like nature.

The sequence of syntactics and the order of time have a corresponding relationship in many languages. For example, Roman Jokobson (1965) [14]quoted Caesar's famous phrase "veni, vidi, vici" (I come, I see, I conquer) to prove the sentence order and Iconicity between timings. In this classic example, the order of the three components is exactly the same as the order of historical events. Dai Haoyi and Ye Feisheng (1990) [15]believed that Chinese followed the chronological principle of imagery to a greater extent. He advocated the principle of chronological order and seized the "the most general trend of Chinese word order." Wu Ping (1996) [16]discusses the characteristics of time expression from Chinese syntax. He believes that the order arrangement of concept structure determines the order principle of language form. The order of thinking is similar to the order of language units, and is closely related to cultural concepts.

Chinese grammar reflects the characteristics of isomorphism. In Chinese, words, phrases, and sentences have the types of structure such as subject, predicate, union, verb, and complement. Examples of subject-predicate structures are: Di Zhen (地震, earthquake), Nian Qing (年轻, young), Shuang Jiang (霜降, frost), Xin Suan (心酸, heart-rending), Liang Shi Feng Shou (粮食丰收, grain harvest, Yang Guang Can Lan (阳光灿烂, sunny), Ming Tian Xing Qi San, (明天星期三, tomorrow is Wednesday), Jian Bang Mo Po Le (肩膀磨破了, shoulders worn out) and so on. Some examples of positive structure include: Qi Gong (气功, Qigong), Re Xin

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[13] Wen Xu. 2001. *Principle of sequential quasi-images in cognitive linguistics*. Fujian Foreign Languages (2): 7-11.

[14] Roamn Jokobson,1965. *Quest for the Essence of language*. Diogences.

[15] Dai Haoyi. Ye Feisheng. 1990, 1991. *Cognitive-based Chinese functional grammar (upper and lower)*. Foreign Linguistics (4): 21-27; (1): 25-33.

[16] Wu Ping. 1996. Time Expression of Chinese and Chinese Culture. *Journal of Beijing International Studies University*. (3): 133-137.

(热心，warm-hearted), Teng Fei (腾飞, soaring), Bi Zhi (笔直, straight), Xue Bai (雪白, snow white), Shan Dong Ren (山东人, Shandong people), Ye Sheng Dong Wu (野生动物, wild animals), Gong Tong Fen Dou (共同奋斗, fight together),Gang Hui Lai (刚回来, just come back), Wei Ren Min Fu Wu (为人民服务, serve the people), Hui Huang De Cheng Ji (辉煌的成绩, brilliant achievements), Huo Re De Xin (火热的心, fiery heart) etc.. Joint structures contains examples of : Jia Zhi (价值, value), Gu Rou (骨肉, bone and flesh), Guo Jia (国家, nation), Zhi Liang (质量, quality), Mei Hao (美好, wonderful), Kai Guan (开关, switch), Wang Ji (忘记, forget), Jin Tian He Ming Tian (今天和明天, today and tomorrow), Chai Mi You Yan (柴米油盐, firewood, rice, cooking oil, salt – refers to basic needs for life), Wei Da Er Zhi Pu (伟大而质朴, great and rustic), Tao Lun Bing Tong Guo (讨论并通过discuss and pass), Xiao Ming He Mama (小明和妈妈, Xiao Ming and mother), Li Xiang He Xian Shi (理想和现实, ideal and reality), Cheng Gong Yu Shi Bai (成功与失败, success and failure), etc. The verb-object structure contains : Zhan Gang (站岗, standing guard), Mei Rong (美容, beauty), Tou Zi (投资, investment), Zhu Yi (注意, attention), Xiang Ta (想他, thinking of him), Gai Bei Zi (盖被子, covering with quilt), Zeng Qiang Zi Xin (增强自信, enhancing confidence), Jie Shou Pi Ping (接受批评, accepting criticism), Xi Huang Qin Jing (liking quiet), Zhi Zao Ma Fan (制造麻烦, making trouble), Dong Yuan (动员, mobilizing everyone). The dynamic complement structure has examples such as: Ti Gao (提高, improve), Shui Fu (说服, persuade), Tui Fan (推翻, overthrow), Li Zheng (立正 stand straight), Tui Guang (推广, promote), Xue De Hao (学得好) learning well, Da Si (打死, beat to death), Kan Le Yi Ci (看了一次, watching once), Zou Dao Tian Ya Hai Jiao (走到天涯海角, walk to the ends of the earth), Gao Xing Ji Le (高兴极了, extremely happy), Chuang De Piao Liang (穿得漂亮, dressing beautifully), Zhang De Hao Kan (looking good), Wan De Gao Xing (玩得高兴, having fun).

As mentioned above, words, phrases, and sentences are reflected in all five major structures of subjective, partial, joint, verb, and dynamic. This fully illustrates the existence of isomorphism in Chinese grammar. The isomorphism in Chinese grammar is derived from the balance of thinking of the Han nationality. In the Han culture, there are ideas of middle course and harmonious beauty, so the balance is particularly important. The balance of these five structural types in words, phrases, and sentences is the embodiment of cultural thinking.

Word order refers to the order in which sentence components are arranged. The role of word order is common in various languages. In Chinese,

word order plays a particularly important role. The reason is that because the word order brings not only the weight and strength of the semantics, but also the change of the whole sentence, the meaning expressed may be completely different. For example, “不怕辣，辣不怕，怕不辣”, the same three morphemes “no”, “fear” and “spicy”, in the case of the same meaning, can match the grammatical structure with different meanings. “Not afraid of spicy” is the dominant verb-dominated relationship, and the object is a descriptive word. “Spicy is not afraid” is a description of the relationship between the complement and the complement. “Afraid of not being hot” is a descriptive structure in which the affirmative verb-dominated relationship and the object is not fixed. “Not afraid of spicy” is a general statement, “spicy is not afraid” has emphasized, “fear is not spicy” emphasizes even worse. Such flexibility and freedom of Chinese word order give rise to the possibility of clarifying the logical order, and then reflect the isomorphism of word order, order of reason and semantics. Word order plays such an important role in Chinese language. Because the smallest grammatical unit lacks sufficient form to distinguishing different features, it has to rely more on the law of semantic operation. Semantic rules are obviously more constrained by human thinking and moral concepts. This is the cultural interpretation of Chinese grammar.

Chinese culture places great emphasis on the concepts of primary and secondary, young and old, power and noble. There are words such as country and home (国家)[17], Emperor and courtier (君臣) , father and son (父子),husband and wife/couple (夫妻), teachers and students (师生), officers and soldiers (官兵), cadres and masses (干群) and many more. Emphasizing symmetry, there are words such as east and west (东西) , left and right (左右), front and back (前后), up and down (上下), Advance and retreat (进退), Beauty and ugliness (美丑), and Success and failure (成败). This all reflects the two-way isomorphism of Chinese in word formation.

Word family is another unidirectional isomorphism in Chinese, such as :

1) electricity: electric lights (电灯), telephones (电话), tram (电车), televisions (电视), electric fans (电扇), computer (电脑) and so on. These are the supplies associated with electricity.

[17] The original meaning of a country in Chinese is the meaning of a country and a family, National priority.

2) ball: Basketball (篮球), football (足球), volleyball (排球), ice hockey (冰球), handball (手球), baseball (棒球), golf (高尔夫球), badminton (羽毛球), table tennis (乒乓球), billiards (桌球), Earth (地球), balloons (气球), Shot put (铅球) etc. These are all related to the circular shape of the object.

Translation has the characteristics of isomorphism and translatability, and the language also shows the principle of isomorphism of foreign bodies. Heterogeneous language culture makes the source language difficult to translate or untranslatable in the target text. For a truly successful translation, familiarity with two cultures is even more important than mastering two languages. Because words only make sense in the cultural context in which they function. Language is the carrier of culture. Culture forms the connotation of language, and the development of culture promotes and promotes the development of language. Conversely, culture restricts the form of language and becomes the basic content of language. Culture reflects human history, lifestyle, literature and art, norms of behavior, thinking mode, and values. There are differences between different cultures. This difficult to reconcile differences between cultures reflects the heterogeneous nature of culture. Cultural differences inevitably lead to differences in word understanding and translation, and the heterogeneity of translation largely stems from the heterogeneous nature of culture. Different cultures are mutually tolerant, and at the same time they are mutually exclusive and struggling. In the process of constant collision, heterogeneous cultures merge and influence each other.

In terms of treating foreign words, Chinese also embodies this principle of isomorphism of foreign objects. In the development of Chinese vocabulary, on the one hand, it is constantly enriched by its own evolution; on the other hand, it also absorbs new elements from other languages and is used by Chinese. Loan words are also called foreign words, borrowed words (usually referring to words imported from other languages by transliteration), or translated words (usually referring to words introduced by free translation). Loanwords have duality in Chinese, which retains some of the characteristics of foreign languages and cultures as well as the characteristics of Chinese languages and cultures. Almost all foreign words enter Chinese with a “Sinification” process. This is not created out of thin air, but is the result of “second word making” of foreign words by using existing language materials, that is, when foreign words enter Chinese, To be restricted by the norms of Chinese characteristics, Chinese should change

the phonetic and text forms of foreign words, and make corresponding adjustments in meaning as much as possible. Due to different cultural and psychological habits, the absorption of foreign words is greatly restricted. In addition to the language policy specified by the state for political and economic reasons, it is also restricted by the cultural and psychological characteristics of the Chinese language and the Chinese nation. Chinese is a monosyllabic morpheme language, with a strong ideographic tendency and strong word-forming ability. At the same time, the Chinese people's psychological depth is a culture of rationalization of syllables. It is a culture that has a strong tendency to decompose cognition at the word level. In the process of absorbing foreign words, for transliteration and free translation of the same word, people tend to accept or tend to accept concise and free translation.

The first way to absorb loanwords in Chinese is to borrow sounds, and to choose Chinese characters according to the principle of seeking for sounds and not for sounds. Chinese characters themselves are characterized by the unity of form, sound and meaning, which is conducive to the development of free translation.

Chinese characters in text form. Select words after borrowing sounds. After understanding the meaning of foreign words, or choose Chinese characters with near sounds, such as "Buddha", there are initially translated words such as "floating slaughter", "floating pictures" and "fotu"; Afrikaans created Chinese characters, such as "coffee" and "hydrogen"; or combined new words between Chinese characters, such as "beer", "champagne", "wine", "red wine". The basic principle of treating foreign words in Chinese is "localization". Most foreign words must be changed to Chinese characters for expression. (In recent years, the emergence of alphabetic words can reflect a certain degree of tolerance in Chinese culture, but who knows? Medical X-rays have defeated "爱克斯光", but the "X" in the computer operating system "XP", but lost to a mathematical symbol "×" chāi).

The compilation of bilingual dictionaries is the correspondence between two different linguistic symbol systems. It is a dialogue between two heterogeneous cultures and thoughts, but its essence is derived from the mapping of the human brain to the objective world. Therefore, the psychological lexicon and the bilingual dictionary definition have the homology in the epistemological nature, which originates from the human cognitive processing of the objective world.

Second language learning also demonstrates the principle of this heterogeneous isomorphism. The commonality of language is not in the form of language, but in the cognitive psychology of human beings. Human beings have the same body structure and sensory organs, and have the ability to perceive and recognize in the face of the physical world. The psychological lexicon is one of the important components of the natural language mental representation. It is stored in the human brain in a certain structural form and unique way, encoded by language symbols, and output in the form of speech. Regardless of which teaching method is adopted, the linguistic symbols should be systematic in the macro structure. After continuous input and output training, the psychological lexicon is used as the premise to identify, understand, transform and express. The isomorphism of human psychological lexicon.

In the second language teaching method, "heterogeneous isomorphism" can be fully applied to "collaborative teaching". The composition of collaborative learning group component design is more scientific and thorough, the composition is mainly heterogeneous, that is, to fully consider the gender, achievement level, character characteristics, ability tendency and other aspects of the differences of students to group collaborative teaching. But in general, the overall level of collaborative learning groups is basically the same, that is, "isomorphism", meaning the same level of composition. The "heterogeneous" difference within the group can be used to complement the advantages of the group members. The "isomorphism" between the groups can narrow the differences between the groups, which is beneficial to the mutual learning and reference of the groups. Collaborative learning is the use of small groups in teaching, where students work together to maximize their own learning and that of others. The most important characteristic of collaborative learning is that it is a goal-oriented activity designed by teachers to assign learning tasks and control the teaching process. The process of collaborative learning and teaching gives full play to students' initiative, arouses their interest in learning, and is conducive to the improvement of foreign language learning. In collaborative learning, the achievement of the team results from the joint efforts of the team members. Students know that they are not only responsible for their own learning, but also for the learning of other students in their group, thus stimulating students' enthusiasm and sense of mission to participate in classroom activities. Students' ability to solve problems

is relatively low, and some problems need to be solved by cooperation, mutual assistance and brainstorming. Collaborative learning helps students solve many problems that students cannot solve by themselves, etc.

4. Conclusion

Isomorphism shows that complex systems have their own universal characteristics and universal laws. This isomorphism can be described and analyzed. This isomorphism can refer to the same or similar structure between different systems or different discipline systems. It can also mean that there is some similarity between the internal components of the system and the whole system, that is, the corresponding relationship between the parts and the whole. The principle of heterogeneous isomorphism applies the methods of collecting, analogy, and simplification to the study of language ontology, language and culture, and language teaching, etc. For Chinese, this principle is embodied in the use of ideogrammatic and phono-semantic components to create a large number of new Chinese characters, phrase and newly made words and sentences. For the flexibility and meaning of syntax, and even the structure and composition of the text, we can learn to explain and describe based on this principle. Similarly, for the study and analysis of Chinese and culture, Chinese teaching, especially the study and practice of Chinese as a second language teaching, it is an effective way to operate with the same or similar system structure and system method.

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