On Modeling Systems in Chinese

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Abstract: The paper studies semiotic phenomena as modeling process, and discusses the forms of representation of modeling actions in all life forms and cross-life forms, and based on Sebeok and Danesi's Modeling Systems Theory which includes three modeling systems, i. e., Primary modeling, Secondary modeling and Tertiary modeling, analyzes them in detail with Chinese examples.

Linguistics is part of semiotics. Inside semiotics an important branch is biosemiotics, which studies manifestations of modeling in all lives, and is concerned with modeling and forms. E. Cassirer (1957) suggested the notion of "symbolic forms", among which linguistic expressions are more than mere representational "copies" of reality. Members of the Moscow-Tartu School of semiotics of culture (notably, J. M. Lotman, V. V. Ivanov and B. A. Uspenskij) conceived the concept of "semiotic modeling systems", primary and secondary, and ordinary language is singled out as being the only primary "modeling system". T. A. Sebeok is a great semiotician (Sebeok 1972, 1976, 1979, 1981, 1986, 1991a, 1991b, 1994). His idea of semiotic "modeling system", which includes three modeling systems, i. e., Primary Modeling System (PMS), Secondary Modeling System (SMS) and Tertiary Modeling System (TMS), is elaborated in Sebeok and Danesi (2000). Henrik Birnbaum (1990) suggested that natural language is only one—albeit perhaps the most sophisticated—among several "primary modeling systems" underlying a variety of manifestations of human civilization, both ontogenetically and phylogenetically. We agree with him to some extent. However, we suggest that secondary and tertiary modeling be involved in natural language. In this paper, we shall take Chinese language as an example to study Chinese modeling systems.

1. Forms

Forms are products of modeling. They represent things, events, emotions, actions, situations or thoughts with some meanings, purposes, or useful functions, and they can be either imaginary (mental schema) or some

externalized things (representations).

Four kinds of forms are studied in semiotics. They are (1) signs, including words and gestures, which are singularized forms; (2) texts, including stories and theories, which are composite forms; (3) codes, including languages and music, which are cohesive forms; and (4) figural assemblages, including metaphors and synecdoche, which are connective forms.

2. Modeling

2.1 Definition of modeling

Modeling, as a native capability, is an activity of actually producing forms, and thus resulting in forms. Modeling is not only the characteristic of human society, but also that of the whole organic world. As far as we know, language, metaform and meta-symbol are unique to anthroposemiosis, the study of semiosis in humans, which allows human beings to express the immediate reality, but also to form a limitless number of possible worlds. In a word, modeling represents various areas of human cognition and social life, forming a really amazing evolutionary achievement.

Semiosis is biological capacity to produce and comprehend forms, and can be divided into anthroposemiosis and zoosemiosis. Representation is the capacity to refer to the world in terms of singularized, composite, cohesive, and connective forms. As to the relation between perception, semiosis, modeling, and representation, the order is agreed to be: perception→ semiosis→ modeling → representation (Sebeok and Danesi 2000, p.6).

2.2 Kinds of modeling

Representations are the ability to represent the world, and can be divided into four kinds: singularized, composite, cohesive and connective. In terms of the four kinds of representations, modeling can correspondingly be divided into singularized modeling, composite modeling, cohesive modeling and connective modeling. We shall talk about the four kinds of modeling in turn.

2.2.1 Singularized modeling

Signs are singularized forms. They are most basic kinds of human representational forms, and form a simple model to include single referent or referring domain. Singularized modeling functions in giving an overall strategy of a single thing, a whole event, or certain known forms perceived by an individual emotion. According to Sebeok and Danesi (2000, pp.20—21), the definition of sign involves in three implied dimensions: (1) a physical dimension termed signifier (=[A], sounds, hand movements, etc.); (2) a conceptual dimension termed signified (=[B], eliciting a singular referent or referential domain); (3) an interpretative dimension termed significance (=[A? B], i.e., the meaning(s)

extracted from a sign).

Sebeok and Danesi (2000, pp. 21—27) recognized six general categories of sign-making: the symptom, the signal, the icon, the index, the symbol and the name. A symptom is a natural sign, recognizable by virtue of the fact that its signifier is coupled with its signified inside the body's morphology. It is a manifestation of some altered physical process, ranging from a painful sensation to a visible condition, or change in body temperature.

The signal is a sign that naturally or conventionally (artificially) triggers some reaction on the part of a receiver (Sebeok 1972, p. 514). All animals are endowed with the capacity to use and respond to species-specific signals for survival. Most signals are emitted instinctively in response to particular types of stimuli and effective states.

A sign is said to be iconic when the modeling process employed in its creation involves some form of stimulation. Iconic modeling produces singularized forms that display a perceptible resemblance between the signifier and its signified (Sebeok and Danesi 2000, p. 24). An icon is a sign that is made to resemble its referent in some way.

A sign is said to be indexical when its representational focus is the location of a referent in space, time, or in relation to some other referent (Sebeok and Danesi 2000, p. 25). The most typical manifestation of indexicality is the pointing index finger. Indexicality is more technically a manifestation of deixis, the process of referring to something by pointing it out or specifying it in some way. There are three types of deixis: spatial deixis such as *this* or *that*, *here* or *there*, temporal deixis such as *before*, *after*, *now*, or *then*, and personal deixis such as *I*, *you*, *he*, *she*, *the one*, *the other.*

A singularized form is symbolic when the modeling process employed in its creation is constrained by cultural and historical factors (Sebeok and Danesi 2000, p. 26). Symbolicity is agreed to set human modeling apart from that of all other species, allowing human beings to represent things independently of stimulus-response situations. A cross figure can stand for the concept [Christianity].

A name is a form that identifies a human being or, by connotative extension, an object, or event (Sebeok and Danesi 2000, p. 27). A name has both indexical and symbolic properties: it is partly an indexical form because it identifies a person, and usually, points to his/her ethnic origin; it is partly a symbolic form because it is a product of conventionalized representation practices.

2.2.2 Composite modeling

According to Sebeok and Danesi (2000, p. 28), composite modeling is the activity of representing complex (non-unitary) referents by combining various

signifiers in some specifiable way, for example, drawings, narratives, theories, conversations, etc. Texts incorporate the structural properties of the signifiers with which they are constructed, but they are not conceptually equivalent to the aggregate of their signifiers, for example, a novel is made up of words following one after the other, but conventionally it is not just the sum of the meanings of the words, rather a novel constitutes a composite form that generates its own signified(s).

As to types of composite forms, their number is as many as that of singularized ones. For example, syndromes are composite symptoms. Composite signaling is found in courtship behavior where various sensory signals often coalesce to stimulate mating urges. An imitative drawing of a scene is an example of an iconic composite form. An indexical composite form is a typical map, one that is constructed to refer to spatial or temporal phenomena in an integrative relational way. A symbolic composite form, such as a mathematical theory, is a text that is made with the symbolic resources of a culture. A composite name consists of several identifiers providing various kinds of culture-specific information.

Composite modeling occurs in all facets of human life, allowing people to envision distinct bits of information and real-world phenomena as integrated wholes, but it is not a specific capacity of anthroposemiosis, for it is found in other species, such as honeybee dance.

2.2.3 Cohesive modeling

According to Sebeok and Danesi (2000, p. 32), a cohesive modeling system is called a code in traditional semiotic theory, and it is a system providing particular types of signifiers that can be used in various ways and for diverse representational purposes. A perfect example of what constitutes a code is the system of Cartesian coordinate geometry, which makes it possible to model geometric concepts in specific ways, and this code is an example of a cohesive modeling system of two-dimensional space. The use of a code to make signs or texts is called encoding, while the reception and interpretation of signs or texts is called decoding.

The types of codes are as many as those of signs or texts. A natural code is the body's immune system which consists of interacting organs, tissues, cells, and cell products such as antibodies. Codes are also interconnected to each other in a culture, and this manifestation of interconnectedness is called intercodality, for example, understanding language texts involves knowledge of several other codes such as phonemic code, discourse code, gesture code.

2.2.4 Connective modeling

Connective forms are the result of metaphorical reasoning processes (Sebeok and Danesi 2000, p. 37). An example of connective form is a metaphor

that results when abstract concepts are represented in terms of concrete ones. A metaform is the formula [thinking = seeing], because it delivers the abstract concept of [thinking] in terms of the signifieds associated with the concrete concept of [seeing]. A metaform has two parts, each of which is called a *domain*, target domain and source domain. In the above example of [thinking = seeing], [thinking] is the target domain because it is the abstract topic itself, while [seeing] is the source domain because it enfolds the class of vehicles (forms with concrete signifieds) that deliver the meaning of the metaform.

There are three main types of connective forms: metaforms, meta-metaforms, and meta-symbols. Metaforms are assemblages intended to deliver the meaning of abstract concepts on the basis of concrete source domains, as mentioned in the above paragraph. Meta-metaforms are assemblages forged among already-existing metaforms, for example, phrasal verbs *think up* or *think over* are products of an association of [thinking] with an [upward motion] and with a [scanning motion] respectively. A linkage of these two produces the meta-metaforms: [thinking = upward + scanning motions] in *That idea came out of nowhere.* Metasymbols are symbolic forms that result from specific types of linkages associated with particular metaforms, for example a rose is used as a symbol for love in Western culture because its physical features—rose = [sweet smell], [red color] and [plant]—also constitute source domain for [love].

Connective modeling is unique to anthroposemiosis. Culture can be defined as a connective macrocode, made up of different codes (language, gesture, music, etc.) and the signs, texts, and connective forms that are fashioned and used by people in specific social contexts (Sebeok and Danesi 2000, p. 42). This macrocode constitutes a signifying order, which can be defined as an interconnected system of signs, texts, codes, and connective forms. Signs are singularized forms, texts are composite forms, codes are cohesive forms, and metaforms are connective forms.

3. Modeling Systems Theory (MST)

3.1 Grade of modeling systems theory

Sebeok and Danesi (2000, p. 10) proposed modeling systems theory, and it consists of three modeling systems in terms of complexity. Primary Modeling System (PMS) is the system that predisposes the human infant to engage in sense-based forms of modeling. Secondary Modeling System (SMS) is the system that subsequently impels the child to engage in extensional and indexical forms of modeling. Tertiary Modeling System (TMS) is the system that allows the maturing child to engage in highly abstract (symbol-based) forms of modeling.

3.2 Axiom of modeling systems theory and its six principles

According to Sebeok and Danesi (2000, p. 10), modeling system theory has an elemental axiom that all representational phenomena can be regrouped into four broad types—singularized, composite, cohesive, connective. From this axiom six principles can follow.

> The modeling principle: Representation is the result-end of modeling.
>
> The representational principle: Knowledge is indistinguishable from how it is represented.
>
> The dimensionality principle: Modeling unfolds on three levels or dimensions, of which iconicity and indexicality are prior developmentally and cognitively to symbolicity.
>
> The extensionality principle: Complex (abstract) models are derivatives of simpler (more concrete) ones.
>
> The interconnectedness principle: Models and their meanings are interconnected to each other.
>
> The structuralist principle: All models display the same pattern of structural properties. These structural properties include paradigmaticity, syntagmaticitgy, analogy, synchronicity, diachronicity, and signification. (Sebeok and Danesi 2000, pp. 10—11)

These six principles govern the modeling of composite forms and cohesive forms, for example, the interconnectedness principle is represented as intertextuality in semiotic theories, i. e., meaning is represented in some specific context by individual text.

4. Primary Modeling System

4.1 Definition of PMS

PMS is the "default" system, allowing organisms to stimulate something in species-specific ways. The Chinese word "peng" (boom) was obviously coined initially as a primary singularized model in phonic stimulation of a [sudden deep resonant sound], and then this very same signifier can be applied to abstract referents or referential domains (connotata) that are felt, by extension, to involve [suddenness]. Thus the modeling history of "peng" is shown as follows:

signifier: peng
↓
primary modeling of an acoustic property
↓
denotatum: [sudden deep resonant sound]
↓
extensional modeling (secondary modeling)
↓
connotatum: [sudden spurt of growth]

4.2 Kinds of PMS

PMS, in terms of the four general groups of representational phenomena, can be divided into primary singularized modeling, primary composite modeling, primary cohesive modeling, primary connective modeling.

4.2.1 Primary singularized modeling

Primary singularized modeling can be divided into primary nonverbal singularized modeling and primary verbal singularized modeling. Primary nonverbal singularized modeling behavior is found throughout the zoosemiotic realm (Wickler 1968). For example, different species of a highly interesting genus of spiders known as orb-weavers has the capacity to alter its very surroundings to fit its own image by fabricating a number of dummy copies of itself to misdirect predators away from its body, the live model, to one of the copies.

Primary verbal singularized modeling include alliteration, or the repetition of sounds, for various imitative effects, for example, Chinese "ding-dong" (the sound of spring water), "bang-lang" (banging sound), "fang-fu" (as if), "shang-liang" (discuss) (Si 2003).

4.2.2 Primary composite modeling

Primary composite modeling is a representational strategy whereby various iconic signifiers are combined in order to encode complex (non-unitary) referents, for example, poetic texts, maps and most diagrams (Sebeok and Danesi 2000, p. 58). Primary composite modeling can be divided into primary nonverbal composite modeling and primary verbal composite modeling. Primary nonverbal composite modeling can be manifested in the honeybee dance and mimics of some snakes.

Primary verbal composite modeling is unique to anthroposemiosis. Poem belongs to an iconic verbal text, i. e., a primary verbal composite model composed. Poetry was originally onomatopoeic in its overall representational character. The presence of primary verbal composite modeling can also be

detected in how the speakers of some language organize the words they use in sentences, for example, word order in some inflected languages such as Latin or Russian is flexible.

4.2.3 Primary cohesive modeling

A primary cohesive modeling system is a code composed of particular types of iconic signifiers that serve various stimulative representational purposes (Sebeok and Danesi 2000, p.64). We look at cohesive modeling of sentences.

According to Langacker (1987), word order in sentences can be said to tend to stimulate real-world sequential or cause-and-effect phenomena: i. e., sentence structure largely mirrors the structure of experience as it represents itself to consciousness. For instance,

Zhang Chuan he Wang Xia jie hun le, sheng le haizi.
Name 1 and Name 2 married PAST, gave birth to PAST child
Zhang Chuan and Wang Xia got married and gave birth to children.

This sentence expresses that both of them got married first, and then had children, which reflects the normal experiential structure. However,

Zhang Chuan he Wang Xia sheng le haizi, jie hun le.
Name 1 and Name 2 gave birth to PAST child, married PAST
Zhang Chuan and Wang Xia gave birth to children and got married.

This sentence expresses that both of them had children first, and then got married, which reflects the abnormal experiential structure.

Another case in point is that

Cui Yulin he qita ren jin le fanguan chifan.
Name and other people enter PAST restaurant eat
Cui Yulin and other people entered into a restaurant and had dinner.

which expresses that they entered the restaurant first, and then had dinner, while

Cui Yulin he qita ren chi le fan jin fanguan.
Name and other people eat PAST enter restaurant
Cui Yulin and other people had dinner and entered into a restaurant.

which expresses that they had dinner first, and then entered the restaurant, so it is not in accordance with our experiential structure and such a sentence appears semantically odd.

An active sentence and a passive sentence encode an iconic property of referents—their relative location to each other in terms of a mental [foreground]. For example,

Xiaotou tou le wode zixingche.
thief steal PAST my bike

A thief stole my bike. (Si 2003)

It is an active sentence, where [foreground] is "xiaotou", an actor/agent, [-foreground] is "wode zixingche", a receiver/patient, and the action is "tou" that is done to "wode zixingche" by "xiaotou". When such a sentence is changed into a passive sentence, we obtain

Wode	zixingche	bei	xiaotou	tou	le.
my	bike	by	thief	steal	PAST

My bike was stolen by a thief.

It brings "wode zixingche" to the mental [+ foreground], relegating the actor "xiaotou" to the [-foreground], and even cannot be mentioned, and the action of stealing is now spotlighted on the receiver of the action, "wode zixingche".

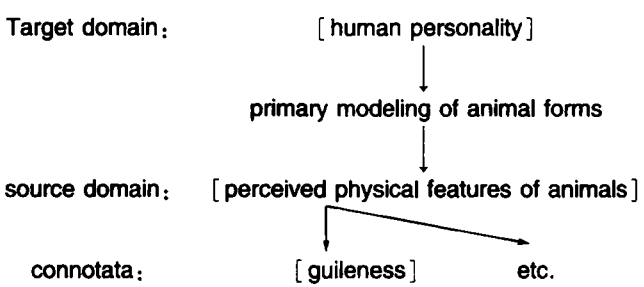
4.2.4 Primary connective modeling

A primary connective model is a metaform. Primary connective models never encode denotata, but they encode only connotata, for instance,

Nage	yisheng	shi	zhi	lao	huli.
that	doctor	BE	QUANTIFIER	old	fox

That doctor is an old fox. (Si 2003)

The meaning of "huli" that this statement encodes is not its denotative one—[an animal]—but rather, the complex of connotative meanings that we associate with "huli": namely, [guileness] etc. The selection of a vehicle from the [perceived physical features of animals] source domain produces different connotata: That doctor is guile. So we can obtain the modeling history of this metaform:

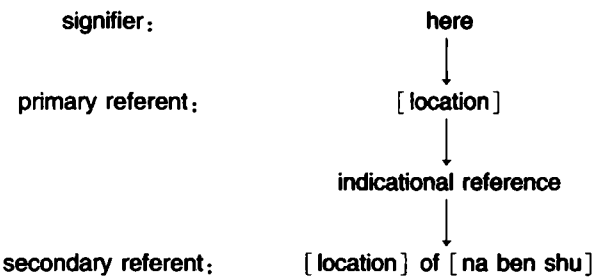


5. Secondary Modeling System

5.1 Definition of SMS

The SMS is the system that undergirds both indexical (or indicational) and extensional modeling processes. Extensional modeling inheres in the ability to extend primary models both morphologically and connotatively for further representational uses, for instance, "hehuyufade" (grammatical) can be added with the affix "bu" (not) to form "bu hehuyufade" (ungrammatical), blending the meaning of "hehuyufade" and the affix. Extensional modeling is a unique human capacity, but the nonverbal form of indicational modeling has been documented in various species.

According to Sebeok and Danesi (2000, p. 87), indicational modeling serves a different kind of referential function: directing attention to the location of referents in some contextual way. Indicational models specify such things as the [location], [situation], [presence], [absence], [distance], [occurrence], [directionality], [orientation], etc. of some referent with respect to other referents or to its context of occurrence, for example, Chinese "zheli" (here) in the sentence "na ben shu zai wojia zheli" (That book is here in my home). The indicational feature encoded by this word with reference to "na ben shu" is its [location]. We can obtain its modeling history as follows:



5.2 Kinds of SMS

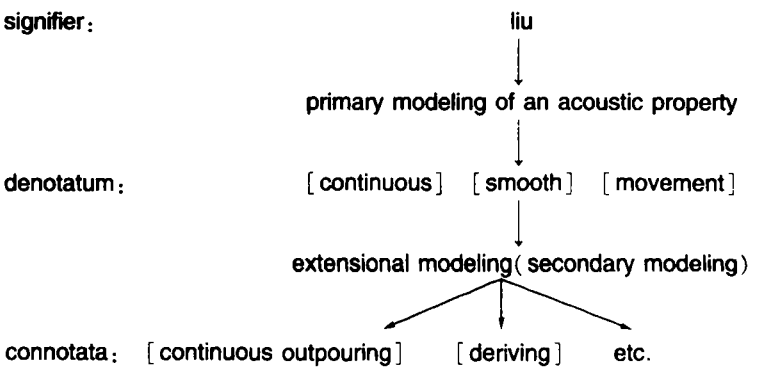
Similar to PMS, SMS can be divided into secondary singularized modeling, secondary composite modeling, secondary cohesive modeling, secondary connective modeling.

5.2.1 Secondary singularized modeling

Secondary singularized forms are products of either extensional (morphological or connotative) or indicational modeling processes. The morphological extension of singularized forms does not generate new signifieds, but allows form-users to modify the meaning of a form in a regular way. For instance, Chinese "shi" (view, sight) can be combined with some words or

affixes such as "duan" (short) or "hou" (back) to form "duanshi" (short-sight) or "houshi" (backview).

Connotative extensional modeling testifies to the propensity of human beings to extend primary forms to encompass abstract referents, for example, Chinese word "liu" (flow) was coined iconically to stimulate the sound made by the movement of water ("na tiao he zongshi pinghuade liudong"—That river always flows smoothly) and of fluid pouring forth ("shujiang cong shu shangde gekou liuchu"—Sap flowed from the gash in the tree). This word "liu" encodes the distinctive features—[continuous], [smooth], [movement], providing a "signifying template" for representing certain abstract referents. We can get the modeling history of "liu":



5.2.2 Secondary composite modeling

Secondary composite modeling can also be extended morphologically and connotatively. A map can be defined as an artificial indexical composite form, though it is not solely indexical, for it also represents places in topographical relation to each other according to some scale (iconicity), and it involves the use of legends (symbolicity). A map can be extended morphologically to produce different versions of the same map-space such as political boundaries, landmarks, etc.

Artificial indexical composite forms include the index sections put at the end of books, the flowchart diagrams, directories of all sorts, time-line diagrams, etc. Indicational representation is a feature of language, in grammar is stored a lot of literature devoted to the manifestations of indexicality.

Fictional texts such as novels and films are connotative composite forms relating events in time and space that are modeled on real-life events, and they are interpreted not as literal recounting of events, but as implying various psychological, sociological, or metaphysical meanings.

5.2.3 Secondary cohesive modeling

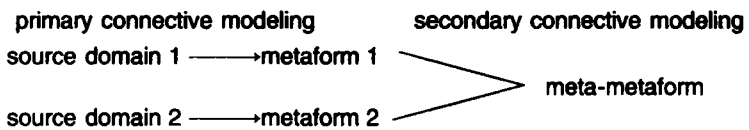
Codes such as language, personal name-giving, numeration, can be extended morphologically and connotatively through secondary modeling. Language is a secondary cohesive modeling providing humans with the resources for extending primary forms and infinitum. Language code is defined by Charles Morris (1946, p. 60) as a "lansign-system", a term that he applied not only to spoken and written languages but also to mathematics and symbolic logic. From the point of view of biosemiotics, the language code can be defined as the cohesive system providing the modeling resources for converting what Jakob von Uexküll (1909) called "concrete living existence" into "active plans".

The PMS and the SMS are intrinsically interwoven throughout the human life span, both complementing and supplementing one another. The two independent but subtly interwined modeling strategies are relied in anthroposemiosis.

5.2.4 Secondary connective modeling

Secondary connective modeling inheres in establishing linkages among the already-forged metaforms, and two types of secondary connective modeling processes can be recognized: layering and cultural.

Sebeok and Danesi (2000, p. 113) defined meta-metaforms as the result from layering. Once the first "layer" of abstract metaforms in a language has been formed, on the basis of concrete domains, this layer itself becomes a new productive source domain for creating higher layers of concepts, for example, the above-mentiond Chinese [xiang = upward movement] in "xiangchu" (think out) and [xiang = scanning motion] in "zixi xiang" (think carefully) are combined to form a meta-metaform of [xiang = upward + scanning movement] in "nage xiangfa meiyou chuchu" (That idea came out of nowhere). This process of secondary connective modeling can be shown as follows:



Cultural models are produced by the association of various source domains to a single target domain. For instance, a cultural model of "xiangfa" (ideas) is simple the complex of all possible source domains to which it is associated—[food], [fashion], [geometry], [seeing], etc.

6. Tertiary Modeling System

6.1 Definition of TMS

The TMS is the system that underlying highly abstract, symbol-based

modeling, and it is an extensional system, allowing for the further expansion of forms to encompass larger and more abstract domains of reference. Sebeok and Danesi (2000, p. 120) recognized human species' ability to represent the world in the form of complex symbols, and humanity has come to be regulated not by force of natural selection, but by "force of symbols", i. e., by the accumulation of the meanings that previous generations have encoded in the form of symbols and passed on in cultural settings. Creative tertiary modeling is not unique to anthroposemiosis, but is also found in gulls and male spiders.

The TMS can be found in the area of mathematical and scientific representation, for example the so-called Pythagorean Theorem (which is called gou-gu Theorem in China): $AB^2 = AC^2 + BC^2$.

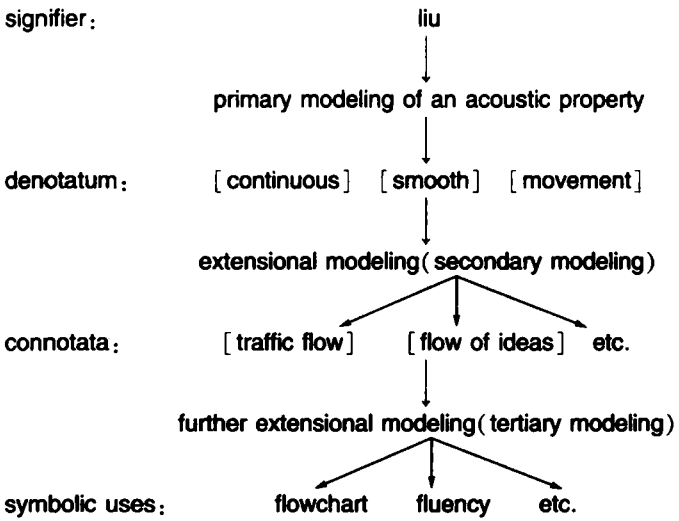
Book of Changes also includes a lot of tertiary modeling, for instance, in "qian san lian, kun liu duan" (*qian* is represented by three continuous lines ☰, while *kun* is represented by six cut lines ☷), symbols are used to represent humans or events in natural world. To be specific, *qian* represents [heaven], [ice], [hail], [frost], [northwest], [monarch], [father], [lord], [senior citizen], [the elder], [celebrity], [energetic], [head], [bone], [lung], [horse], [swan], [lion], [elephant], [building], [gold], [jade], etc.

6.2 Kinds of TMS

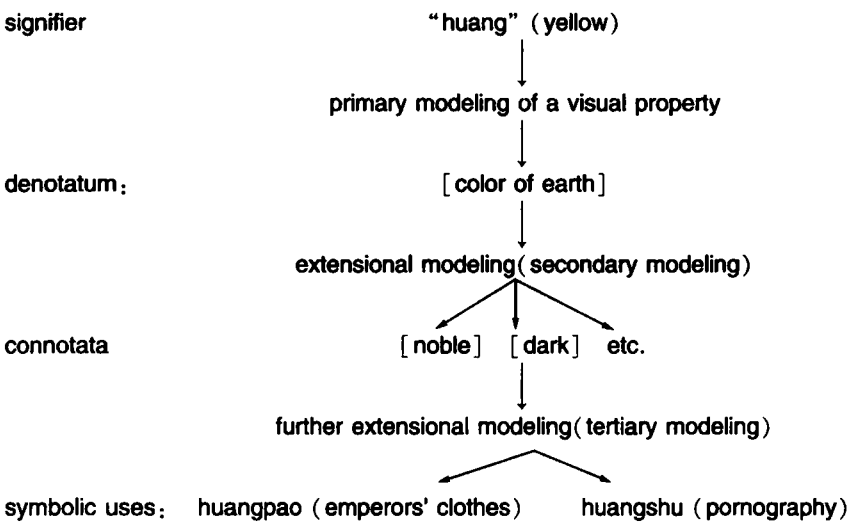
Similar to PMS and SMS, TMS can be divided into tertiary singularized modeling, tertiary composite modeling, tertiary cohesive modeling, tertiary connective modeling.

6.2.1 Tertiary singularized modeling

Tertiary singularized models are single symbols. According to extensionality principle, the tendency in human representation is to create singularized forms iconically first and then to extend them subsequently to encompass abstract referents (Sebeok and Danesi 2000, p. 130), for example, the above-mentioned Chinese "liu" can be further extended to include [flow chart] and [fluency], and thus its modeling history can be revised as follows:



Tertiary singularized modeling can be divided into tertiary nonverbal singularized modeling and tertiary verbal singularized modeling. A case in point of tertiary verbal singularized modeling is Berlin-Kay model of color-coding (Berlin & Kay 1969). One color is Chinese "huang" (yellow). Its history of modeling is as follows:



In primary modeling process, the initial meaning of the term "huang" is linked to some sense inference or denotata such as [color of earth], and in

secondary modeling process, it is extended to produce connotata [noble] and [dark], and finally, the connotata can be extended further to produce symbolic uses of the term "huangpao" and "huangshu".

Tertiary singularized modeling is also found in the nonverbal domain of representation, for example, visual singularized forms are often interpreted symbolically. Flowers have been adopted by cities as official emblems, for example, peony is the city flower of Luoyang city, Henan province of China.

6.2.2 Tertiary composite modeling

A tertiary composite modeling is a text that is imbued with a high degree of symbolicity. Scientific texts are tertiary composite forms. A mathematical equation is composed of symbols, known as variables or indeterminates, e. g., $x^2 + y^3 - 16 = 0$. Tertiary composite modeling can be divided into tertiary nonverbal composite modeling and tertiary verbal composite modeling.

An example of tertiary nonverbal composite modeling is the Pythagorean Theorem. All mathematical equations and theories are tertiary nonverbal composite models. Tertiary nonverbal composite modeling can be found in all domains of human social life, for example, "liu li" (six rites) in ancient China's courtship practice, it is not unique to anthroposemiosis, for it can be found in the zoosemiotic realm, such as the "wagging" dance of honeybees.

Tertiary verbal composite modeling can be found in verbal texts, either factual or fictional. Fictional texts such as novels and films are interpreted as providing various psychological, sociological, or metaphysical meanings. We know that a fictional novel or movie's plot, characters, and setting are fictitious, and it is seen as modeling some real-life happening, for the entire narrative is interpreted as a single symbol.

6.2.3 Tertiary cohesive modeling

Tertiary cohesive modeling involves symbolicity. There are intellective codes and social codes (dress, gender, food, space, etc.). Intellective codes are those that have been designed to organize knowledge about some field, functioning as a mental template for understanding the world, for example the six trigonometric functions: *sin*, *cos*, *tan*, *csc*, *sec* and *cot*.

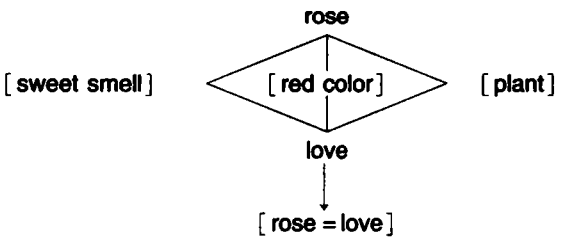
Social codes are interconnected with each other creating an overarching interpersonal regulatory system based on symbolicity. Clothing and food are two common types of social codes. Clothes, in terms of the dimensionality principle, denote firstly bodily protection; second, they take on specific connotative meanings in social settings; and third, these meanings form the basis of the symbolism that is associated with the clothes worn during certain ceremonies and rituals(Sebeok and Danesi 2000, p. 147). For example, Chinese people usually wear white clothes in funeral rites, and the bride and bridegroom wear red clothes in their wedding days. In Ancient China, people of different grades of officials

wore different clothes embedded with different designs of animals and plants and flowers to show their grades.

Food items are more symbol than substance, though they are survival substances. They have symbolic functions. Food symbolism is the center of the world's religious ceremonies. For example, *pork* and *beef* are used in ancestral worship in China. Food codes also determine edibility. The perception of a food's edibility has a basis in symbolism, not digestive processes, for example, *pork* is not eaten by Chinese Muslims, and dog meat is a delicious food in China.

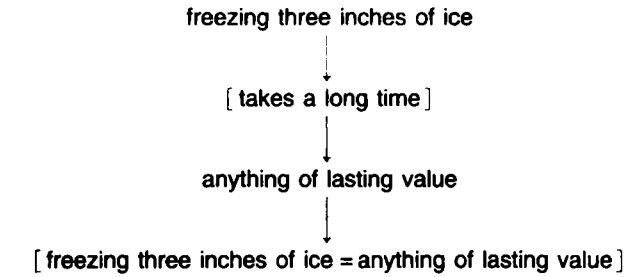
6.2.4 Tertiary connective modeling

Tertiary connective modeling involves linkage from which a symbolic form can be extracted, and this type of symbolic form can be designated as a "meta-symbol". In the world-wide culture including China, rose is the symbol for *love*, for the distinctive features associated with a *rose*—[sweet smell], [red color], and [plant]—constitutes source domains for conceptualizing *love*: [love = sweet smell] ("Tade wen hen xiang"—Her kisses are sweet), [love = red color] ("Ta hongsede zuichun hen youren"—Her red lips are inviting), [love = plant] ("tamende aiqing kaihua le henduo nian"—Their love has been blossoming for many years). So we can get the meta-symbol of [rose = love]:



In proverbial language we can find the meta-symbolic link to the past, for example, Chinese proverb "bing dong san chi fei yiri zhi han" (Three inches of ice was not frozen in a day) is used to suggest that people should be patient, for freezing three inches of ice will last a long time, so the implicit concrete feature associated with freezing three inches of ice is: [takes a long time], which is perceived as being true of anything that has lasting value such as [learning]:

The derivation of the meta-symbol [freezing three inches of ice = anything of lasting value] is as follows:



7. Conclusion

Chinese language, as any other natural language, involves in primary, secondary and tertiary modeling systems. The three different but interconnected and somewhat overlapped modeling systems, including singularized modeling, composite modeling, cohesive modeling, and connective modeling, produce many forms of meaning. Some forms are unique to human modeling, while other forms involve in semiotic areas such as zoosemiosis, phytosemiosis, and anthroposemiosis.

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