

# A Cognitive Approach to the Formalization of City and County Names in China's Hunan Province

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**Abstract:** There were mainly six types of formalization models found in the study for 95 city and county names in China's Hunan province, namely, the environment in a place for the place, the wish of the nomenclator for the place, the relative position of a place for the place, the resident for the place, the legend for the place, and the function of a place for the place. In the six formalization models, environment in a place for the place was the most in number, forging 47 names. Besides, the wish of the nomenclator for the place and the relative position of a place for the place came the second, taking 20 names respectively. The cognitive operation participating in the formalization was primarily single metonymy with only a few complex metonymies. Metaphtonymy could be only noted in the model of the wish of the nomenclator for the place. It was notable that single metaphor was missing in the cognitive operations.

**Keywords:** City and county names; Formalization models; Cognitive operation; Cognitive study; semantic frames; Conceptual theory

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## 1 Introduction

There are 95 city and county names in Hunan Province of China, within which Changsha, Zhuzhou, Xiangtan, Shaoyang, Yueyang, and Hengyang function as both the county and the city names. The names of places in Hunan Province contain rich cultural connotation and regional characteristics, reflecting the cognitive activities of human beings in the formalization process. For the studies of the origin of Hunan geographical

names, many Chinese scholars have simply explained it from the perspective of culture (Xie Yuanchun, 2010; Tang Lei, 2014), and some scholars have analyzed the names from both the language structure and culture (Deng Xianjun, 2006; Tian Feng, 2011; Wen Hong, 2015), but few have explored the cognitive operations and formalization patterns in the formalization process. From the angle of language generation, this article is devoted to studying the patterns and models of cognitive operations in the formalization process, taking 95 names of Hunan's cities and counties as the research objects. All the county and city names to be studied are the names officially utilized currently.

## 2 Theoretical Basis and Formalization

### 2.1 Conceptual metaphor and metonymy

Since the age of Aristotle, metaphor had been extensively deemed as the rhetorical device of language before the 1950s, and it had been considered that metonymy was merely to replace one thing with another with the substitution between the names of things. With the advance of cognitive science, the study of cognitive linguistics has recommended metaphor is more than a rhetorical device of language, but a way by which human think and behave to percept the world, both physical and spiritual. Metaphor is existent in the process when human conceptualize anything from a conceptual domain to another. It is considered that metaphor is ubiquitous, not only in language, but also in thoughts and behaviors, covering all aspects of human life<sup>[1]</sup>. Many basic concepts and thinking patterns on which human beings live, even the way individuals act is metaphorical in nature<sup>[2]</sup>. Lakoff (1993) pointed out that metaphor is the mapping between two conceptual domains. Under the invariant principle, the concept

domain is mapped unidirectionally from the source domain to the target domain. The source domain is generally concrete and familiar, while the target domain is abstract and relatively unfamiliar to human beings. The concept domain can be regarded as the existing concept structures, perceptual experiences structure or knowledge structures. The mapping in metaphor is fundamentally based on the similarity between disparate conceptual domains, and the content of the mapping is not only limited to the elements, but also the structures in the domain. In the target domain, the highlighted elements are generally acting as the cognitive objects, while the non-highlighted elements are hidden<sup>[3]</sup>.

Similar to metaphor, metonymy is a cognitive instrument in the human conceptual system. Metonymy is a conceptual mapping within a domain which is used primarily for reference and involves a "stand-for" relationship between the source and target domains (Lakoff & Turner 1989:103). Metonymy is a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same domain or ICM<sup>[4]</sup>. Metonymy occurs at the conceptual level on the basis of personal embodied experience, involving mental strategies such as reasoning and analogy. In metonymy, based on proximity, elements within the same conceptual domain or frame are activated to be highlighted while other elements are hidden under the principle of highlighting. For example, in "big eye is on the phone," "big eye" is the most prominent characteristic of the person, therefore, "big eye" is highlighted as a part in the concept domain of "man," therefore, the "part" of "big eye" has gone through metonymy. i.e., "part" stands for the "whole", the "man."

## 2.2 Frame theory

By the term "frame" I have in mind any system of concepts related in such a way that to understand any of them you have to understand the whole structure in which it fits (Fillmore in Geeraerts, Dirven and Taylor, 2006: 373). Frame formed in the embodied experience, is a cognitive concept system, not only the knowledge structure or the system schemata of experience, but also a cognitive structure and conceptual instrument. Cognitive frame is also considered as a semantic frame, which can be exploited to comprehend meanings<sup>[5]</sup>. Frame is mainly composed of elements such as "lexical elements" and "frame elements." "lexical element" is a linguistic unit that can evoke the semantic frame. "Frame element" refers to the participants and

conditions of the scene, etc. In a specific frame, the core element is typically activated as the figure, and other elements are hidden as the background. The frame can be subdivided into matter frame and event frame. The matter frame can be divided into concrete matter frame and abstract matter frame. There are four types of event frames: behavior, presence, ownership, and state<sup>[6]</sup>.

## 2.3 Formalization

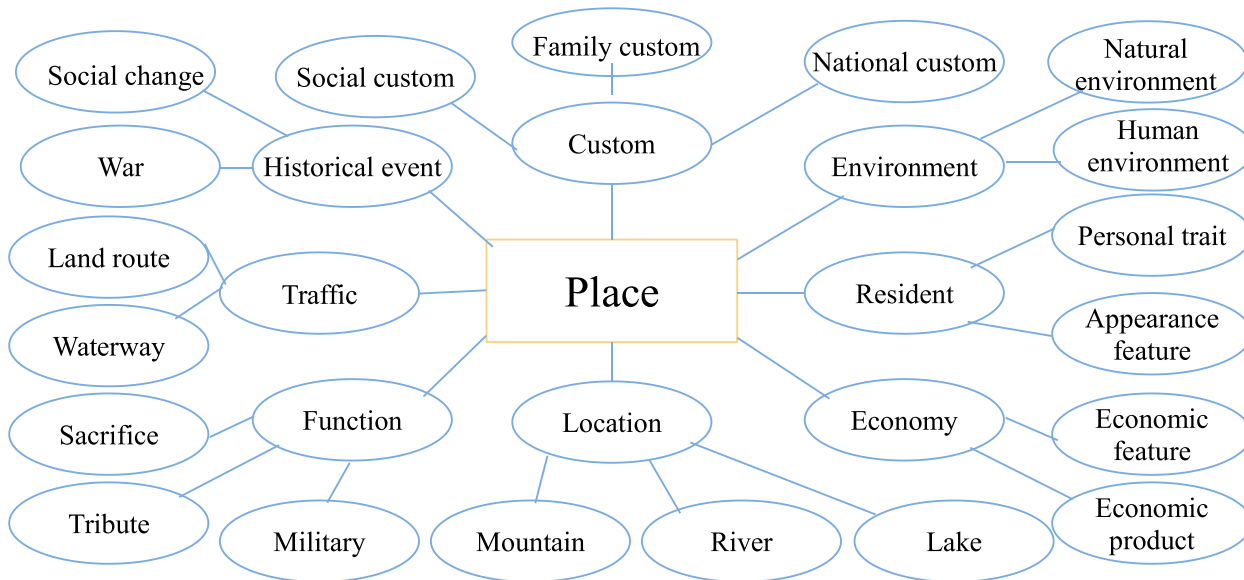
Formalization is the process in which concepts of things or events are paired with linguistic units. Things or events are the formalized objects, and the elements in the conceptual frame of things or events and elements in the cognitive subjects' knowledge structure act as starting points of cognitive activity. Individuals highlight some elements, and hide others in frames of things and events or in the frame stored in the mind. These highlighted elements are cognitively processed, based on certain linguistic regulations, to match the thing or event frame to be formalized with existing linguistic units or new linguistic units to be created, resulting in the final formalized unit. In the process of formalization, the frames are chosen by the cognitive subject from two types of frames. The one is the conceptual frame of the thing or event itself, and the other is the conceptual frame stored in the subject's brain, which may or may not be related to the conceptual frame of the thing or event itself.

## 3 Construction of "Place" and "Naming" Frames

The frames of "place" and "naming" are constructed to facilitate the research, which makes the relationship within the elements in the frame far more lucid. Since the "place name" frame cannot be formed until the formalization process of "place" is completed, as a result, only the "place" frame is stored in the brain of the cognitive subject. Frame construction is characterized with subjectivity, and it varies regarding different people, but the main body of the construction should be substantially similar. In the diagram below, the box represents the core frame of "place", and the oval box is the sub-frame of the core frame. In addition, the sub-frame can also serve as the core frame of its sub-frames. For example, the "resident" frame directly related to the "place" frame, is the sub-frame of the "place" frame, but the "resident" frame also has its sub-frames, like the "appearance feature" frame and "personal trait". The elements within the frame are

infinite, and only a small portion of the elements are listed in the following construction. In a construction

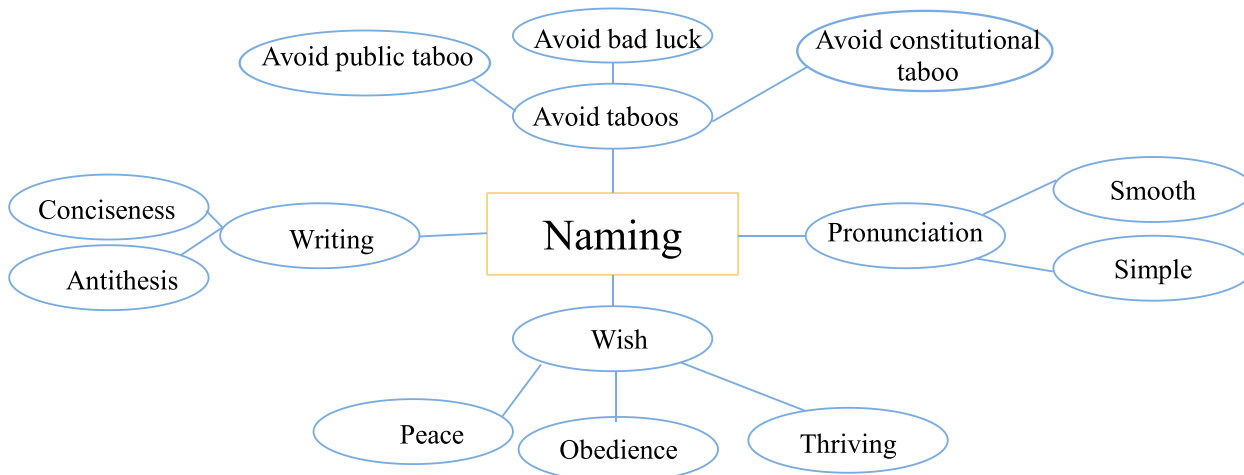
of frame, the direct connections between frames are connected by a solid line.



**Diagram 1.** Construction of the "Place" Frame

In the formation of the "place name" frame, in addition to the involvement of the "place" frame, the "naming" frame in the mind of the conceptualizing subject participates in the formalizing the "place".

"Naming" frame and "place" frame are interacted with each other, with the participation of various cognitive operations, a new conceptual frame of "place name" is created.



**Diagram 2.** Construction of "Naming" Frame

The elements within the conceptual frame are endless, and the objects of cognition and formalization are generally the elements highlighted within the conceptual frame. The frame participating in a formalization is not limited to a frame, but in most cases multiple conceptual frames are interrelated. The formalization of the "place"

primarily includes the conceptual frame of "place" about the physical place and "naming" stored in the cognitive mind. Specifically, some elements within these two frames are highlighted and are involved in the process of formalization. The formalization patterns of "place" were listed in the table below.

**Table 1.** "Place" Formalization Patterns

Formalization pattern	Representation of "Place Name "	Quantity (95)
Place's Environment for the Place	Environment for the place Wangcheng, Youxian, Shaoshan, Shuangfeng, Yanling, Lianyuan, Huarong, Miluo, Hengshan, Wugang, Dongkou, Chengbu, Lixian, Taoyuan, Shimen, Jinshi, Nanxian, Taojiang, Yuanjiang, Zhangjiajie, Sangzhi, Luxi, Fenghuang, Huayuan, Guzhang, Longshan, Chenzhou, Yongzhou, Jiangyong, Zhongfang, Yuanling, Chenxi, Huitong, Xinhuang, Zhijiang, Xiangtan, Chaling, Zhuzhou, Xinshao, Shuangpao, Xintian	41
	Attributes of Environment for the Place Huarong, Lanshan, Liling, Hongjiang	4
	Environment and Avoidance of Taboos for Place Yizhang, Pingjiang	2
Blessing for Place	Ningxiang, Xinhua, Xinning, Changning, Suining, Changde, Anxiang, Hanshou, Anhua, Cili, Baojing, Yongshun, Zixing, Yongxing, Linwu, Rucheng, Anren, Dong'an, Ningyuan, Jingzhou	20
Position for Place	Liuyang, Lengshuijiang, Yueyang, Xiangyin, Linxiang, Hengyang, Hengnan, Qidong, Leiyang, Shaoyang, Shaodong, Linli, Yiyang, Guiyang, Qiyang, Jianghua, Xupu, Mayang	20
Resident for Place	Loudi, Daoxian, Xiangxiang	3
Legend for Place	Ronghui, Jishou, Jiahe	3
Function for Place	Changsha, Tongdao	2

As can be seen from the above table, of the 95 formal representations of "place names," there are six formalization patterns, namely, place's environment for the place, blessing for place, position for place, resident for place, legend for place, and function for place. In the pattern of environment for the place, there are 47 place names were obtained, including 41 place names from its the environment, four place names from the environmental attributes, and two place names from the combination of environment and avoidance of taboo. There were 20 place names derived from the pattern of blessing for place, and there were 20 place names from position for place. Place names from the patterns of legend for place and residents for place account for only a small portion, taking up three place names respectively. Place names from the pattern of function for place were the least, merely two names. In the formalization process of "place name" in Hunan cities and counties, the nomenclator tended to utilize the patterns of environment, blessing and position for place, while the patterns of resident, legend and function for place, were less applied.

#### 4 Cognitive Operations in Formalizing City and County Names of Hunan Province

In the formalization of Hunan city and county names, the cognitive operations of conceptual metonymy and metaphonymy. According to the times metaphor and metonymy operated and interacted, it can be classified into simple metaphor, complex metaphor, simple metonymy, complex metonymy, and metaphonymy. In terms of quantity of cognitive operations in formalizing "place", the number of single metonymy is the largest, followed by metaphonymy. From the above table, it can be seen that there are six formalization patterns of Hunan county and city names: place's environment for the place, blessing for place, position for place, resident for place, legend for place, and function for place. In the five patterns of place's environment for the place, position for place, resident for place, legend for place, and function for place, the cognitive operation of simple metonymy was most frequently applied with only a few complex metaphors. However, in the patterns of blessing for place, metaphonymy is the cognitive

operation that mostly performed. It is worth noting that in these six formalization patterns, the cognitive operation of single metaphor is missing.

In the formalization pattern of environment for place, the main cognitive operation was metonymy, especially the single metonymy. There were a few complex metonymies. For example, the county name, Shuangfeng (two high mountains) derived through a single metonymy, originating from the county's natural environment: Two high mountains standing face to face. There were numerous elements in the "place" frame and "environment" frame was contained therein, and the "shuangfeng" (two high mountains) was the most prominent one in "environment" frame, which incurred the greatest impact in the mind of the nomenclator. The nomenclator applied the cognitive operation of metonymy to highlight the element "shuangfeng" (two high mountains) to stand for the "place" frame. Besides, the existing formal unit, "shuangfeng" (two high mountains), was utilized to match the "place" frame to acquire the county name, "Shuangfeng" (two high mountains). There were some complex metonymies as well in this formalization pattern. For example, "Lianyuan," (the source of River Lian) was obtained after metonymy operated twice, from the county's natural environment: the source of River Lian. Although there were many elements in the conceptual frame of "place", the element of "Lianshui yuantou," (the source of River Lian) was the most prominent. Therefore, The nomenclator names the place, "Lianshui yuantou," (the source of River Lian) by the first operation of meronymy of environment for place. At the meantime, considering the conciseness of the county name, the nomenclator carried out the second operation of metonymy, and highlighted the elements "Lian" in "Lianshui " (River Lian), and "yuan" (source) in " yuantou," (the source). As a result, "Lianyuan" is for "Lianshui yuantou" (the source of River Lian) and for the whole "place" concept frame. Finally, the existing formal unit of "lianyuan" was applied to match the "place" frame to obtain the county name, "Lianyuan". The cognitive operation in the formalization pattern of environment attribute for place was also single metonymy. For example, "Lanshan" (blue mountain) had the natural environment of blue mountains in the county, which had the greatest impact on the nomenclator<sup>[7]</sup>. Therefore, the natural nature of the place was highlighted, and after the single metonymy, attribute of "place" frame, "lanshan"

(blue mountain), was metonymized to stand for the whole "place" frame. The nomenclator named the place in the existing language formal unit "lanshan" (blue mountain), and the county possessed the name of "Lanshan" (blue mountain) ever since. Likewise, the cognitive operation in the formalization pattern of environment and avoidance of taboo for place was single metonymy, but due to the unique Chinese "taboo" culture in feudal society where words the same as the name of the emperor were legally forbidden to be used in sound or spelling, county names were produced in a slightly disparate way. For example, the names of "Yizhang" (Yi is in its second tone, raising tone) and "Pingjiang," which came from "dazhang and xiaozhang Rivers" and "Changjiang" (Chang River) by means of metonymy in their local environment, were originally called "Yizhang" (Yi is in its fourth tone, falling tone) and "Changjiang." Since there were two emperors named Yi (Yi is in its fourth tone, falling tone) and Chang, "Yizhang" (Yi is in its fourth tone, falling tone) was renamed Yizhang (Yi is in its second tone, raising tone) and "Changjiang" was renamed "Pingjiang" to avoid the violation of emperors' names.

In formalization patterns of position for place, resident for place, and function for place, the cognitive operation was similar to that of environment for place, which was primarily single metonymy. Only in the pattern of legend for place, the operation is complex metonymy. For example, in the pattern of position for place, "Hengyang" came from the "position" frame in the "place" frame by the means of metonymy. The nomenclator took one of the most famous mountains in China, Nanyue Hengshan, as the reference. In ancient China, people regarded the southern position of a river and northern position of a mountain as Yang. After the cognitive operation of metonymy, the place in the "south of Hengshan" was named after "Hengshan yang", and then meronymy performed for the second time that Heng stood for Hengshan. Therefore, the "position" Hengyang was stand for the "place" from the complex metonymy. In addition, in the formalization pattern of resident for place, take "Loudi," as an example, it was derived from the name of a boy who was a "child prodigy" in the tenth year of Nansong Dynasty and the name was from the constellation Louxing and Dixing in ancient China. The nomenclator highlighted the "resident" in the "place" frame and named the place after the boy's name, Loudi, by means of metonymy that the resident was for the place. The

existing language formal unit "Loudi" was matched with the "place" frame and the city obtained the name of "Loudi". But in the pattern of the legend for place, "Longhui" (Dragons coming back) originated from the legend. There were many legends about the place, but all of them were related to "Longhui" (Dragons coming back). The popular legend was that in ancient times there was a dragon with eight little dragons flew starting from the foot of the Jiulong Mountains to the East China Sea. When the dragons looked back at their hometown, they all felt nostalgia and flew back. "Legend" was one of the elements in the "place" frame. The nomenclator, in order to highlight the two elements of "long" (dragon) and "hui" (coming back) in the frame of "legend," hiding other elements, adopted metonymic operation by the means of "part" for the "whole" that "longhui," was for "legend" frame. Afterwards, the cognitive operation of metonymy was performed twice that "legend" frame stood for the "place" frame. As a consequence, the existing formal unit "longhui" was matched with the "place" frame, and the place was named "Longhui". Nowadays, "Longhui" has different spelling in Chinese but has the same pronunciation and meaning.

The formalization pattern of the nomenclator's blessing for place is the second following that of the environment for place, and the cognitive operation of this formalization pattern was metaphonymy. For example, "Hanshou" (long live the Han Dynasty), abbreviated from "Han Dynasty Wanshou Wujiang" (long live the Han Dynasty), underwent metonymy that elements of "Han" (Han Dynasty) and "Shou"(long live) in the frame of "blessing" were highlighted by the nomenclator to represent "Han Dynasty Wanshou Wujiang" (long live the Han Dynasty). After the operation of metonymy came the metaphor that "Hanshou" in "blessing" frame was projected to "place" frame to subjectively highlight the blessing for Han Dynasty. Consequently, "Hanshou" was for the "place", and the county was named Hanshou. There were also cognitive operations of metaphonymy that metaphor came before metonymy, such as "Jingzhou" (stable and peaceful place). In the "Naming" knowledge structure in nomenclator's mind, "Jing" was one of the many elements contained in "blessing" frame. "Jing" in Chinese meant stable and peaceful. In naming the place, "Jing" frame was first projected to the "attribute" frame of "place" frame through metaphor, then "attribute" frame stood for the "place" frame through metonymy.

The nomenclator matched the formal unit of "Jing" with the "place" and named the county Jingzhou.

In the six formalization patterns of place's environment for the place, blessing for place, position for place, resident for place, legend for place, and function for place, the cognitive operation patterns were fundamentally single metonymy and metaphonymy, among which there were few complex metonymies, but the cognitive operation of single metaphor was missing.

## 5 Conclusion

In addition to five cities and counties with the same name, Hunan has a total of 95 names for counties and cities. In formalizing "place", there were 6 patterns of formalization, environment in a place for the place, the wish of the nomenclator for the place, the relative position of a place for the place, the resident for the place, the legend for the place, and the function of a place for the place. In the six types of formalization models, environment in a place for the place was the most, forging 47 names. Besides, the wish of the nomenclator for the place, the relative position of a place for the place came the second, taking 20 names respectively. The cognitive operations used in the formalization were mainly single metonymy and only a few complex metonymies. The combinations of metaphor and metonymy could be only seen in the model of the wish of the nomenclator for the place. It was notable that single metaphor was missing in these cognitive operations.

Environment in a place for the place was the most frequently employed pattern in the formalization of "place", and single metonymy was the most commonly applied cognitive operation, followed by metaphonymy. The reason why the model of "environment in a place for the place" adopted mostly by the nomenclator might be that the natural environment possessed by the place was the most prominent element in the "place" frame, and the most directly accessible concrete thing in the human experience. The single metonymy of cognitive operation begot the least cognitive burden for the "place" nomenclator to name the place and the least burden for individuals to understand and recite the names, therefore, the main cognitive operation was single metonymy. But in the formalization process, not only the elements of the "place" frame, but also the subjectivity of the nomenclator participated in. Hence, the subjective factors of nomenclator could not be ignored, especially in ancient China, place names

were often related to the grace and benediction from the imperial court, by which the name bears poor cognitive iconicity economy and metaphonymy was used to balance the cognitive iconicity and economy.

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