

Study on Morphological Motivation on English and Chinese Noun Derivatives: Taking *American National Geographic* and *Chinese National Geography* as Examples

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Abstract

Linguistic motivation remains an important theoretical issue in language research. Lexical motivation, as the most basic level of linguistic motivation, has always been a hot-discussed topic in the study of motivation, but there is little study on the comparison of lexical motivation between English and Chinese, especially on noun derivatives. Therefore, this article, using corpus research and qualitative analysis, aims at finding, describing, and explaining the similarities and differences between English and Chinese noun derivatives in morphological motivation. The corpus, selected by the principle of authority, equivalence, timeliness and feasibility, is built on *American National Geographic* and *Chinese National Geography* on which a few researchers delve from the perspective of motivation, so it is worthy of more exploration. Theoretically, this study will explain the inherent laws of language and promote the further development of linguistic motivation theory. Practically, this study may improve the efficiency of vocabulary teaching and learning.

Keywords: Morphological motivation, noun derivatives, contrastive study.

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1. INTRODUCTION

If the classification and description of language system answer the question: “What is language?”, then exploring linguistic motivation answers the proposition “Why is language so?”. The view of motivation encourages us to constantly explore the law hidden behind the phenomenon, which is “the gene of language” (Wang & Si, 2002: 1). Vocabulary, as the “building’s material” of language (Xu, 2002: 73), is one of the basic elements of language. Nouns, as the reference of people, things, places, concepts and other abstract things, are the key to linguistic expression, while derivation is one of the most indispensable ways to coin nouns, so the analysis of noun derivatives’ motivation is pertinent and representative. In addition, English is the most popular language and Chinese is the language with the largest number of users in the world. They are influential, and there are great differences in vocabulary between English and Chinese from the perspectives of typology and etymology, so they are very different in types, distribution, and degree of motivation. Therefore, it is necessary and feasible to make a comparative study of lexical motivation between English and Chinese noun derivatives. The Chinese-English corpus of this study

comes from *Chinese National Geography* and *National Geographic*. They were founded in 1950 and 1888 respectively, with a long history of publication, concise language, and authority. What’s more, both of them are popular science journals and update their content periodically. Besides, the two journals can be procured from the internet directly, so we can collect the first-hand corpus, being feasible. More importantly, few research is based on the two journals from the perspective of motivation, so it is worthy of more exploration.

It is agreed that motivation basically falls into three categories: phonetic motivation, morphological motivation, and semantic motivation. As to make it pertinent and insightful, the article will dissect the morphological motivation in terms of the noun derivatives between English and Chinese. The comparison of English and Chinese noun derivatives explains the internal laws of languages, promotes the development of language motivation theory and improves the efficiency of vocabulary teaching and learning. Given this, the article is committed to revealing the similarities and differences between Chinese and English noun derivatives in morphological motivation

and the corresponding reasons, and also the practical significance it brought about.

2. LITERATURE REVIEW

The relationship between linguistic signs and their meanings has long been of interest to many linguistic scholars. Saussure (1959:147) first puts forward the arbitrariness principle. Later motivation was posed as a contradictory concept with “arbitrariness” (Yule, 2013). However, as said by many scholars (e.g. Zhao, 2011; Zhang, 2012; Zhao, 2013), arbitrariness and motivation are not opposed to each other, but dialectically unified. From the author’s perspective, language is arbitrary in essence but it is motivated by surface structure.

Regarding the categories of motivation, Ullman (1963) divided motivation into three types: phonetic motivation, morphological motivation, and semantic motivation. Morphological motivation means that there is an intrinsic relation between a word’s form and its meaning, in other words, we can infer the word meaning from the analysis of the word formation. Derivatives, as one of the main ways of word formation, are the words formed by affixes and roots, which can be representative of explaining the morphological motivation of words. Scholars generally analyze the morphological motivation of derivatives by decomposing the affixes (Zhou & Chen, 2013; Li, 2013; Li, 2016). Zhou & Chen (2013) claims that a derivative word is formed by a stem and at least one affix. According to morphological motivation, analyzing the affixes of derivative words can help to some extent in understanding their meanings. According to Quirk (1989), English affixes generally can be divided into two sub-types: prefix and suffix based on the position the affix is placed. Much the same way as English, from the position of affixes in words, Chinese affixes can be divided into prefixes, suffixes, and infixes. Note that, few nouns are derived from infix, and there is no infix in the corpus selected, so the author will not discuss it any more in this article (Yang, 2009; Cai, 2016).

All in all, the researches on morphological motivation has never been interrupted and the key to approaching morphological motivation in noun derivatives is to decompose their affixes, that is, prefixes and suffixes.

3. Data Collection and Research Methods

In this article, contrastive analysis is adopted to compare the motivation between English and Chinese noun derivatives in a synchronic way. The corpora are *Chinese National Geography* and *National Geographic*, and the “Environment” section will be focused on, with the time ranging from July 1, 2023, to August 31, 2023. Employing TreeTagger and CorpusWordParser to annotate the nouns of the English articles and Chinese articles respectively, the author randomly selected two English passages and one Chinese passage as it seeks to

make the English and Chinese nouns relatively equal in number, which turns out that there are 1169 nouns in English corpora and 1105 nouns in Chinese corpora, with 178 English derivative nouns and 117 Chinese derivative nouns found.

The selected articles are as follows: *One of the most resilient trees on Earth is dying in droves* (written by Joelk. K. Bourne, JR, published on August 15, 2023); *Wildfires can move shockingly fast. Here’s how they start—and how to stop them* (written by Claire Wolters, published August 11, 2023); 《去戈壁，看哈密》 (written by Shan ZhiQiang, published in No.7, 2023).

4. Contrastive Analysis of Morphological Motivation on Chinese and English Noun Derivatives

As illustrated by motivation theory, a word has morphological motivation if its formation uncovers its meaning. Therefore, the key to perceiving morphological motivation of a noun derivative is to dissect its formation. Formation of noun derivatives is generally analyzed by their affixes and roots in either English or Chinese. The roots undoubtedly are decisive in forming their meanings, but affixes significantly contribute to their meanings as well and analysis of prefix and suffix is the most efficient approach to uncovering motivation of noun derivatives.

4.1 The Motivation Rules of English and Chinese Noun Derivatives

In search of English corpus, there are 11 kinds of prefixes: “pro-, tri-, micro-, re-, con-, eco-, ex-, mega-, dis-, in-, de-” and 17 suffixes: “-ist, -ant, -er, -or, -ent, -ment, -ion, -ity, -ancy, -ology, -ory, -ledge, -et, -ture, -ness, -hood, -age”. Among all English noun derivatives in the corpus, the following patterns indicate how affixes contribute to the meanings of English noun derivatives, namely, how word formation motivates their meanings: 1) The meaning of a prefix defines the boundary or domain of things. For instance, microcosm: micro- (small) plus -cosm (world). The prefix “micro-” makes the noun derivative “microcosm” (society or place on a small scale) carry the meaning of “small”, so “microcosm” is a noun derivative with motivation. It can be seen that the constituents of word-formation-prefix “micro-” uncover the meaning of noun derivative “microcosm” that can be identified as the noun derivative with motivation. 2) The meaning of a prefix defines the number of things. For example, triangle: tri- (three) plus -angle (corner). The prefix “tri-” makes the noun derivative “triangle” (a flat shape with three straight sides and three angles) carry the meaning of “three”, so the noun derivatives “triangle” is motivated. 3) The meaning of a suffix defines the subject and object of action. For example, the suffix “-ist” in “scientist”: science- (discipline or branch of knowledge) plus -ist (someone who is expertized in some realm), the suffix “-ist” constitutes the meanings of noun derivatives “scientist (someone who works or is trained in science). To cite another example, the suffix “-er” in “container”:

contain- (to hold) plus -er (someone or something), the issue about whether the suffix “-er” denotes “someone” or “something” requires analysis of it in the context. As in “Close all doors and windows and fill sinks, tubs, and other containers with water to discourage fire.”, the word “container” is paralleled with “sink” and “tub”, and also the simple pattern is “fill containers with water to do sth”, so we can figure out it is “something” that is filled with water, not “someone” by analyzing a word in the context when the affix of a word has multiple meaning. Therefore, the suffix “-er” here refers to “something” that constitutes the meanings of noun derivatives “container” (a box or bottle). It can be seen that the constituents of word-formation-suffixes “-er-, -ist” uncover the meaning of noun derivatives “scientist, container” that can be identified as the noun derivatives with motivation. 4) The meaning of a suffix defines the state of being of action or things. For example, adventure: advent- (come) plus -ture (the state of being), damage: damn- (harm) plus -age (the state of being). The suffix “-ture, -age” makes the noun derivative “adventure” (an unusual, exciting or dangerous experience), “damage” (harm) become a state of being. Therefore, they are of motivation. 5) The meaning of a suffix defines the attribute of things. To illustrate, ecology: eco- (environment) plus -ology (of study or science), knowledge: know- (learn or see) plus -ledge (of learning). The suffix “-ology” and “-ledge” make the noun derivatives “ecology” (the science of environment) and “knowledge” (the information of learning) carry the certain attributes. Suffice it to say, the patterns above reflect the role of the affixes or constituents of English noun derivatives in forming their meanings, alternatively, the patterns above are indicative of how word-formation in what way relates to the meaning of English noun derivatives. Therefore, these patterns can be seen as the motivation principles by which English noun derivatives are formed.

In search of Chinese corpus, there are 4 kinds of prefixes: 老、全、小、大 and 15 kinds of suffixes: 头、子、家、性、们、员、度、人、师、物、者、面、部、边、具. From the examples found in Chinese corpus, we can also conclude patterns that reflect how word formation motivates their meanings: 1) The meaning of a prefix defines the boundary or domain of things. For example, 小山弯: 小-(small) plus -山弯 (the bend of mountain); 全貌: 全- (whole) plus -貌 (landscape), the prefixes “小-, 全-” convey the meaning of “boundary” to noun derivatives “小山弯 (the small bend of mountain), 全貌 (the whole landscape)”. The constituents of word-formation-prefixes “小-, 全-” uncover the meaning of noun derivatives “小山弯, 全貌” and thus they can be identified as the noun derivatives with motivation. 2) The meaning of a suffix defines the subject and object of action. For example, the suffix “-家” in “探险家”: 探险- (explore) plus -家 (someone who is expertized in some realm), the suffix “-

物” in “货物”: 货- (ware) plus -物 (something). The suffixes “-家, -物” convey the meaning of “someone or something” that constitutes the meanings of noun derivatives “探险家 (explorer), 货物 (something of ware)”. The constituents of word-formation-suffixes “-家, -物” uncover the meaning of noun derivatives “探险家, 货物” and thus they can be identified as the noun derivatives with motivation. 3) The meaning of a suffix defines the numbers of things. For example, 人们: 人- (person) plus -们 (plural meaning), the suffix “-们” convey the plural meaning to noun derivative “人们 (people)”. 4) The meaning of a suffix defines the attributes of things. For example, 放射性: 放射- (radiate) plus -性 (quality), the suffix “-性” delivers the meaning of “quality” to noun derivatives “放射性 (radioactivity). Much the same way as English, these patterns elaborate how word-formation in what way relates the meaning of Chinese noun derivatives. Therefore, these patterns are deemed as the principles by which Chinese noun derivatives are coined.

All in all, both English and Chinese noun derivatives are created by following the word-formation rules, that is, the motivation of prefixes and suffixes. They share 4 kinds of motivation principles, specifically, constituents of formation of both English and Chinese noun derivatives can define 1) the subject and object of action, 2) the domain or boundary of things, 3) the attributes of things and 4) the number of things. What’s more, although English and Chinese belong to completely different language families, they share four motivation rules, which shows that motivation is ubiquitous and the motivation of different languages has something in common.

Although English and Chinese noun derivatives have similarities, there is a difference. Chinese noun derivatives formed by the prefix “老-” and suffix “-子” do not follow the motivation patterns listed above and thus they are more conventionalized or arbitrary than English noun derivatives. The Chinese prefix “老-” (old) in “老虎” (tiger) does not mean that the animal “tiger” is old and the Chinese suffix “-子” (son) in “石子” (stone) does not mean “son of stone”. This kind of Chinese affixes has no obvious function in expressing the meaning. As opposed to Chinese affixes, English affixes carry meanings grammatically or semantically. For example, the prefix “in-” in “inhalation” contributes the “inside” meaning to “inhalation” (breathing in). To cite another example, as in “wildness”, the suffixes “-ness” seems to carry no substantive meaning, but it has a grammatical function. In this regard, Chinese noun derivatives formed by the prefix “老-” and suffix “-子” are coined with the development of language and the needs of reality, so they are more conventionalized than English noun derivatives. As for the reason why it is so, it might be in line with Chinese people’s harmonious symmetry

psychology—“Even number of characters is more comfortable and uneven the opposite way.” (“偶字易安，奇字难适”).

4.2 The Degree of Motivation among English and Chinese Noun Derivatives

What comes next is the degree of motivation among English and Chinese noun derivatives since we have got hold of some motivation principles of English and Chinese noun derivatives, that is, the main focus in this part will be the issue concerning high or low motivation of English and Chinese noun derivatives.

In English noun derivatives, There are two scenarios summarized from the examples in the corpus: 1) The English noun derivatives with full motivation, that is, the meaning of the English noun derivatives are absolutely equal to the combination of roots and affixes. For example, the prefix “mega-” means “big”, and a new noun derivative “megadrought” is coined to convey the “serious drought” when the prefix “mega-” is added to the root “drought”. The meaning of English noun derivatives of this kind is transparent, thus these English noun derivatives are fully motivated. 2) The English noun derivatives with partial motivation, namely, the meanings of English noun derivatives are associated with a combination of constituents of noun derivatives to some degree, but not so much. As in “crusader”, the root “curs-” refers to “cross” and “-er” meaning “a person”, so its literal meaning is “warrior” during the historical event Crusades (11th- 12th century). However, as the Crusades’ influence has been going viral, “crusader” has been employed as a common word to refer to the “reformist”, therefore, the meaning of “crusader” has been enlarged. On the other hand, the meanings of noun derivatives could be narrower than the meanings of the combination of the noun derivatives. For example, in “orator” the root “orat-” is equal to “say” and the suffix “-or” means “a person”, so the meaning of “orator” should be “someone to say”. Nonetheless, the meaning of “orator” refers especially to “speech-maker” from which we can see that the meaning of “orator” has been narrowed down. In conclusion, the meanings of noun derivatives may have been enlarged or narrowed down as English develops. The motivation of these English noun derivatives is relatively lower than the English noun derivatives with full motivation.

Chinese noun derivatives, however, are generally presented with full motivation, namely, the meanings of most Chinese noun derivatives are absolutely equal to the combination of their roots and affixes. As in “大标语”, “科学家”, “植物” and “行人”, the prefix “大-”, and suffixes “-家”, “-物”, “-人” respectively mean “big or great”, “an expert in some certain realm”, “an entity”, and “a person”, and the roots respectively refer to “slogan”, “science”, “plant”, and “walk”. It is evident that the meaning of “大标语”(“big slogan”) is equivalent to the combination of the prefix “

大-” and root “-标语”, so do “科学家”(“scientist”), “植物” (“plant”) and “行人”(“walker or pedestrian”). Among the Chinese corpus, 94% of Chinese noun derivatives are of full motivation. As a result, the meanings of Chinese noun derivatives are enormously transparent. However, Chinese noun derivatives with the prefix “老-” and suffix “-子” are generally conventionalized, which means they are of no motivation.

All in all, it is censused that there are 52% of English noun derivatives and 94% of Chinese noun derivatives are of full motivation based on corpus built, so there will be more Chinese noun derivatives with absolute transparency than that of English noun derivatives concerning the degree of motivation. In other words, in most cases, we can figure out Chinese noun derivatives’ meanings from their formation more easily when compared with English noun derivatives. In addition, all of the English noun derivatives are more or less motivated while 6% of Chinese noun derivatives have no morphological motivation. As a result, there will be more English noun derivatives with morphological motivation in comparison with Chinese noun derivatives.

4.3 Analysis of the Motivation of English and Chinese Noun Derivatives in Other Aspects

On the top of prefixes and suffixes that are categorized by the position where they are located, affixes can be classified into different sub-types, which gives insight into the motivation of Chinese and English noun derivatives in terms of different perspectives. Based on the source of affixes, Chinese and English affixes fall into native affixes and borrowed affixes.

In the English corpus, there are borrowed affixes from Latin: pro-, re-, con-, ex-, dis-, in-, de-, -age, -ture, -ity, -ion, -ment, -ent, -or, -ant; borrowed affixes from Greek: tri-, micro-, eco-, mega-, -ist, -ology; native affixes: -ledge, -ness, hood, -er. It can be seen that affixes from Latin and Greek are the main sources of English borrowed affixes. English noun derivatives formed by Greek affixes could be “dendrochronologist, technology, triangle”, which shows that these noun derivatives belong to a certain realm. English uses Greek affixes to form thousands of noun derivatives to meet the needs of the development of science, technology, and social life. Besides, Greek affixes have fixed forms without variants, which makes their meanings fixed or stable. Therefore, the meaning of noun derivatives formed by affixes from Greek is rather transparent, having high motivation. English noun derivatives formed by Latin affixes are “resident, nutrient, visitor, respirator”, and it can be seen that the suffix “-ent” and “-or” have more than one meaning despite having the same form. In line with Li (2016), affixes from Latin have been assimilated by English as they melt into

English, during which these affixes gained other meanings and variants. As a result, the meaning of affixes from Latin may be diversified, and thereby the noun derivatives formed by them are not as transparent as noun derivatives formed by affixes from Greek. As for the native affixes, there are limited numbers of them. It is found in the native affixes in the corpus: “-ledge, -ness, hood, -er” and their corresponding noun derivatives: “knowledge, wildness, neighborhood, researcher”. These native affixes are generally attached with free roots that can stand alone and for another they have no other variants, which makes their meaning rather fixed. Accordingly, the formation of English noun derivatives formed by native affixes is easy to identify or recognize, which means that they are semantically transparent, with high motivation. However, most of the affixes in Chinese are indigenous morphemes, that is, they originated from ancient Chinese itself. In search of Chinese corpus, there are 4 kinds of prefixes: 老、全、小、大 and 15 kinds of suffixes: 头、子、家、性、们、员、度、人、师、物、者、面、部、边、具. All of them are from ancient Chinese. For example, the character “度” in ancient Chinese is related to “又” and “又” was originally written like the hand of people, so the meaning of “度” relates to measuring by hands and has gradually been grammaticalized as the suffix “-度” and gained its meaning “degree” that is “measured”. In conclusion, 75% of English affixes in the corpus come from foreign languages (57% Latin and 18% Greek), and 14% of English affixes are from old English. The motivation of English noun derivatives formed by affixes from Greek and Old English is higher than that by affixes from Latin. By comparison, it is the little influence from other languages that makes Chinese affixes relatively stable, and thus Chinese noun derivatives are semantically transparent, with high motivation.

Generally speaking, 11 kinds of prefixes and 17 kinds of suffixes have been discovered in the English corpus, and 4 kinds of prefixes and 15 kinds of suffixes in the Chinese corpus. English noun derivatives make up about 15.2% of all nouns while Chinese 10.6%. Therefore, there are more English derivative nouns with morphological motivation than of Chinese derivative nouns. In terms of the degree of motivation, there are 52% of English noun derivatives and 94% of Chinese noun derivatives are of full motivation based on corpus built, so there will be more Chinese noun derivatives with absolute transparency than English noun derivatives concerning the degree of motivation under equivalent condition. However, all of the English noun derivatives are more or less motivated while 6% of Chinese noun derivatives have no morphological motivation. As a result, there will be more English noun derivatives with morphological motivation in comparison with Chinese noun derivatives in general.

From the perspective of thinking patterns behind languages, Chinese culture is in a way an indistinct, general direction while English has a specific and concise direction. Chinese embody the philosophy of “unity of nature and man”, which thus emphasizes tacit understanding by heart more than linking in form. Besides, Confucianism emphasizes insight rather than analysis. The mainstream of Chinese culture is typical of intuition and insight. People create some linguistic signs right after they see the reality, which may be construed in part Chinese create some pictographic characters at the very beginning of Chinese. Whereas, Western culture believes that human beings and the natural world are parallel, instead of integrated thing. English explains the subject-object relation in Western philosophy—subject-object dichotomy, that is, there is a clear demarcation between subject and object. When a subject or human being is not connected with an object or world, language plays a role as the tie to link the subject and object. Therefore, many English linguistic signs’ forms reflect their meaning. Moreover, the culture of English-speaking countries has a set of thinking modes for expressing abstract concepts and squarely abstract thinking requires logical analysis or deduction. Also, logical analysis or deduction greatly avails derivation of words. As a result, English derivation takes more advantages than Chinese, and thus English is more highly motivated in terms of derivative nouns.

5. CONCLUSION

This article has compared the morphological motivation between Chinese and English in terms of nonderivatives that come from *Chinese National Geography* and *American National Geographic*. It was found that: 1) Chinese and English noun derivatives share motivation patterns and more than half of them are fully motivated. 2) Chinese noun derivatives have cases without motivation while English noun derivatives are more or less motivated. 3) Although there are more English noun derivatives with morphological motivation than Chinese, both languages’ word-formation is highly transparent.

Today, the study of morphological motivation in terms of derivative nouns plays a momentous role in second foreign language teaching. It enables language learners to understand the meaning of derivative nouns deeply and the relation between the word form and meaning and create a good many new words. In cognitive psychology, there is a hypothesis on the vocabulary memory model, that is, decompositional representation, which is also named as “morpheme access model” by Taft (1981). According to this model, morpheme is the basic element of a word, so when we try to understand a word we decompose all the affixes of a word first, and then activate the root and the related morphemes, which is squarely what lexical motivation is for. When teaching derivatives, the quintessence for teachers is to make students knowledgeable of roots, prefixes, and suffixes, especially the lower

grades who are supposed to accumulate knowledge about the roots and affixes gradually. Dissecting approaches to the process of how words are derived will make a great difference in acquiring words. Moreover, more neologisms will come into being to meet the needs in real life according to the law of morphological motivation.

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