Semantic Wave of Grammatical Metaphor: Dialogue between SFL and LCT

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Abstract—This paper is to explore the definition about the congruency and metaphoricity of Grammatical Metaphor in relation to the Semantics of Legitimation Code Theory which derives from the notion of Grammatical Metaphor and Technicality of Systemic Functional Linguistics, and further to look into relations between congruent form, metaphorical form within grammatical metaphor as process and semantic gravity and semantic density. It is concluded that the process of ideational metaphor is characterized as weakening semantic gravity and strengthening semantic density and that of interpersonal metaphor as strengthening semantic gravity and weakening semantic density. The congruent form is manifested with weak grammaticality and weak verticality and metaphorical form with strong grammaticality and verticality so as to provide a legitimate defining evidence for the definition of grammatical metaphor's congruency and metaphoricity.

Index Terms—Legitimate Code Theory, Grammatical Metaphor, semantic gravity, semantic density, semantic wave

I. INTRODUCTION

It has been 30 years since the notion of Grammatical Metaphor (hereafter GM) was proposed by Halliday, M.A.K. in the first edition of *An Introduction to Functional Grammar*. Many attempts are made from different perspectives to elaborate its semantic features, systemic organizations, metaphoric variations, transferring directions and so forth (Simon-Vandenbergen, A.M. et al., 2003). Hence, the development of GM explorations have undergone three stages as hold by Zhang and Dong(2014), namely, functional stage, stratificational and functional stage, and systemic stratificational and functional stage. Although GM is growing much more refined and delicate, its fundamental definition of congruency and metaphoricity still stays controversial and further clarified. "The current explorations and discussions are based mainly on within systemic functional linguistics. "New findings may be available if research on GM is undertaken from an interdisciplinary or trans-disciplinary perspective" (Zhang & Dong,2014, p.42).Therefore, based on the former relevant researches, this paper is to illustrate the semantic wave of GM within the theoretical framework of Legitimation Code Theory and intended to answer the following questions:

(1) What is the theoretical foundation of GM's Semantic Wave?
(2) What is the distinctive feature of GM variant?
(3) What significance the Semantic Wave plays towards the systemic functional linguistics?

II. LEGITIMATION CODE THEORY

Bernsteinian sociology of education is keeping an interactive dialogue with Systemic Functional Linguistics (hereafter, SFL), which bridges a way to interdisciplinary research between SFL and sociology of education. SFL, particularly, is regarding its counterpart as the theoretical evidence. Bernstein puts forward such linguistic notions as code and knowledge structure which are under fierce focus within researching field of SFL researchers (Halliday, 1978; Hasan, 2005, 2009; Martin, 2011; Painter, 1999; Hood, 2011; Zhang, 2011; Tang, 2014). Bernstein (1990) believes that code is a set of mediating principles, tacitly selecting and integrating relevant meanings, realizing forms and involving contexts. Code is at gaze for its semantic features and orientations and he establishes a dichotomy of codes, that is, restricted code and elaborated code. From linguistic level of predicting possibilities of speaker organizing his meaning with syntactic elements, restricted code is much more probable in linguistic forms than elaborated code (Bernstein, 1971/2003).

Grounding on the code theory, Bernstein divides discourse into horizontal discourse, which refers to concrete, segmentally organized structures, dependent on specific context, and vertical discourse, which refers to coherent, explicitly systematic organizations of hierarchical structures. Vertical discourse is in turn divided into horizontal knowledge structure and hierarchical knowledge structures which differentiates knowledge of natural science from that of human science.

With reference to Bernstein and Bourdieu, sociologist of education Karl Maton constructed the Legitimation Code

Theory (hereafter LCT) which entails five items of legitimation codes, respectively defined by the Autonomy, Density, Specialization, Temporality and Semantics. Of them, this paper is to simply focus on the Semantics of LCT in close relation to SFL. The Semantics of LCT is mainly concerned with the regularity of semantic changes manifested through language in order to provide theoretical evidence for exploring cumulative construction of knowledge. However, this principle of Semantics derives itself from the notion of GM in SFL. Maton (2011, p.65) has ever stated that "this dimension comes from contacts with systemic functional linguistics, particularly, the notion of grammatical metaphor and technicality". In other words, the Semantics in LCT in fact stays in rapport with the basic principles of semantic functions of SFL, which is concerned with the constellations of meaning potential within a semantic system on the part of social behavior. Enabling constellations of Semantics maps the relation realized between context and text, which thus corresponds to that between congruent form and metaphoric form in GM.As a result, the Semantics of LCT sets up new dimension for GM to probe into its working definition and intrinsic systemic properties.

III. GM

As a resource of expanding semantic potential, GM is manifested into two different representations at the level of lexicogrammatical level: congruent form versus metaphorical form. Of them, congruent form is the prototypical unmarked natural realization, whereas metaphorical form is unprototypical marked unnatural realization (Halliday, 1985, 1994; Halliday & Matthiessen, 2004, 2014). At different stages, Halliday has ever elaborated the markedness, stratum, function of GM in terms of probabilistic and systemic principles, emphasizing the systemic syndrome and metaphorical classification of 13 forms (Halliday & Matthiessen, 1999).

A. The Defining Dimension of GM

In terms of the definition of GM, two dimensions can be concluded to define GM: the one is to approach from form to meaning as far as the meaning and system of congruent form and grammatical form are concerned; highlighting that form is to realize meaning. The other is to approach from meaning to form as far as the structure and meaning of congruent and grammatical form are concerned; highlighting that meaning is to select form. It is apparent that GM is not a notion of form but that of meaning; GM is not only an evolving product of evolution, but also an evolving process. Therefore, GM is defined in SFL from top-down direction, that is to say, it is approached from semantic level to lexicogrammatical realization and further involve the phonological expressions. However, it is possible to explore upward from form since phonological expressions manifest the semantic junctions of meaning potential. It is controversial that GM is variety of form or meaning (He, 2008). Form is the realization of meaning because semantic junctions provide semogenesis environment for form. In other word, meaning is the content while form is instance. In this way it could be that one form may be realizing two meaning potentials. On the other hand, approaching from form also seems to conform to the fuzzy definition of GM because one domain of wording may be realized within two semantic domains.

B. The Definition of Congruent Form and Metaphorical Form

In SFL, to define GM has to involve the process of semantic evolution between congruent semantic domain and metaphorical semantic domain. The semantic dimension between congruent form and metaphorical form is elaborated from such aspects as semantic agnation, transgrammatical semantic shift, semantic junction, semantic coupling and so forth (Halliday & Matthiessen, 1999), therefore, such intrinsic features as probability, rank scale, systemicity and markedness are naturally taken as the visible criteria to define the distinctions between congruent form and metaphorical form. In this way, the semantic features of two semantic domains are realized respectively as sequence, figure, element at semantic level and they are in turn realized as clause complex, clause, group (phrase), word, phoneme (morpheme) at lexicogrammatical level. When sequence is realized as clause complex, figure as clause, element as group or phrase, semantic potential is realized correspondingly at each level as a result of congruent form; when a mismatch occurs between semantic stratum and lexicogrammatical stratum, metaphorical form is brought forth as a result of sequence realized as clause, figure as group or phrase, element as word. The mismatch between shift of semantic potential and textual instantiation originated from the tension between semantic stratum and lexicogrammatical stratum in the process of evolution, which enables meaning potential to make different choices, leads to the loss or add-up of information and gives rise to metaphoric discourse or text.

C. Discussion

It is taken for granted that the congruent form in SFL has been defined as the prototypical and unmarked representation of meaning potential and the metaphorical form as the unprototypical and marked form. It is true that the definition of GM has been made a probabilistic manifestation, but it is still common sense lexicogrammatically and lack of an explicitly specified definition, which causes many doubts and controversies within or outside functional linguistics, e.g. Fawcett (2006), Hou (2008). Zhu (2006) claims that GM stays still under controversy for its inexplicit definition and Zhang and Dong (2014, p.41) hold that the meaning of process that congruent form and metaphorical form evolve are determined not by their linguistic features but in terms of the linguistically realized features of contextual variables.

IV.   SEMANTIC GRAVITY AND SEMANTIC DENSITY

In terms of LCT, social behaviors and practices are constructed into semantic structures by Semantics which further conceptualizes their organizing principles in codes consisting of semantic gravity and semantic density. Semantic gravity refers to the degree meaning is related to its context, thus the stronger the gravity becomes, the more dependent meaning is on its context; the weaker the gravity turns, the less depend meanings is on its context. By contrast, semantic density refers to the degree meaning is condensed in the social-cultural behavior. The stronger the density becomes, more meaning are condensed; the weaker the density turns, less meaning are condensed.

Semantic gravity and semantic density describe the relation the meaning potential of various social-cultural semiotics in their social-cultural behaviors bears with its semantic features as well as its context, and different context and semantic relations are manifested as different semantic waves. Maton (2013, 2014) draws three different semantic profiles as follows:
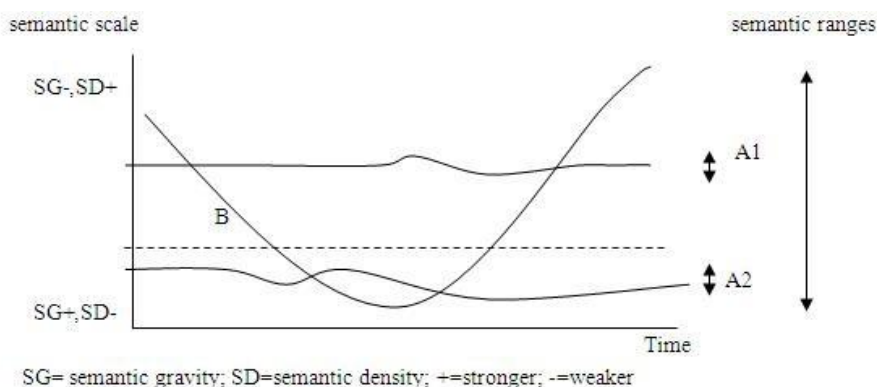

Figure 1 Semantic Wave and Semantic Profile

The vertical axis refers to the semantic scale and horizontal axis means the time line. It is represented as SG+ when semantic gravity strengthens and SG- when weakening. When semantic density strengthens, it is represented as SD+ and SD- when it is weakening semantic density. Thus, when semantic density is strengthening, semantic gravity is weakening and vice versa. They are manifested as moving naturally within two poles between SG+/SD- and SG-/SD+. In this way, the semantic wave of linguistic behavior is moving up and down within the two poles as time passes by.

As the Figure1 above demonstrates, meaning potential of A1 could be regarded as moving on a certain scale and manifesting a limited semantic range, characterized of strong semantic density and weak semantic gravity (SD+, SG-) and reflecting less dependence on its context. Comparatively, meaning potential of A2 could be taken as stronger semantic gravity and weaker semantic density with higher dependence on its context. Compared with A1and A2, B manifests its regularity of change in sharp turns, semantic gravity from weakening to strengthening and then weakening while semantic density from strengthening to weakening and then strengthening, which illustrates its strong dependency their meaning shows upon context.

A.   The Gravity and Density of GM

The semantics of LCT is closely related to the context of situation where GM is construed and enacted. Therefore, the semantic gravity and semantic density can be applied to elaborate the contextual features the congruent form and metaphorical form give rise to, and also help to provide support for the definition of GM. See the following examples:

(1) We saw them arrive at the top of mountain on the fifth day.

(2) The fifth day saw them arrive at the top of mountain.

(3) Their arrival at the top of mountain occurs on the fifth day.

In terms of grammatical features of congruent form and metaphorical form within the framework of SFL, example (1) is the congruent form, whereas example (2) and (3) are metaphorical forms. The distinctions of them lie in the realization of grammatical syndrome, particularly, the circumstantial element *the fifth day* and the process group *arrive at*. As we know, the element of grammatical metaphor in example(2) lies in the subject *the fifth day* which is congruently construed as the circumstance of temporality in the clause, which is in this manner against the common sense that in the mental process participant *sensor* should be normally as nominal group rather than temporal circumstance. In example(3), the element of grammatical metaphor lies in the abstract nominal group *their arrival* which is nominalised as participant realizing the semantic junction of process and participant and at the same time, the change of process type also co-occurs. It seems impossible to make a further differentiation on the degree of metaphoricity of the three examples above within current SFL.

However, in combination with the notion of Semantics in LCT as illustrated above, the semantic gravity and semantic density of the three examples can be taken to see which one is closer to the congruent form or metaphorical form. In example (1), no any uncommon sense elements occur to the clausal participants, process groups or circumstantial elements, therefore, its semantic gravity is strongest and semantic density is lowest which can be represented as

SG+,SD-; in example (2), any metaphorical elements do not occur either except the participant which should have been nominal in common sense instead of temporal circumstance. "In vertical discourse, the classification and composition of uncommon sense relies on entities" (Martin, 2007, p.53). Here it can be seen that some decrease of semantic gravity happens to example (2) but no change co-occurs to its semantic density, which can be represented as SG↓,SD-; in example(3), due to some co-occurrence of nominalised elements and process types which lead to add-up of clausal information, the semantic gravity is weakened more sharply and semantic density strengthens more highly, which can be represented as SG-,SD+.

Please see the following three daily texts chosen at random on line, one is Chinese and others are translated into English by online translating tools of Baidu and Youdao:

原文：如果我是科学家，我一定会去了解恐龙的生活，去观看恐龙的世界，去探求它们灭亡的原因，为人类的生存发展提供借鉴。

Yuan weng: ru guo wo shi kexuejia,wo yi ding hui qu le jie konglong de shenghuo, qu guankan konglong shijie, qu tanqiu tamen miewang de yuanyin, wei renlei de shengcun fazhan tigong jiejian.

Text 1. (Baidu) If I were a scientist, I will① <u>go to the understanding of dinosaur life</u>, to see the dinosaur world, <u>causes to ②find they perish</u> (to find the causes they perish), and provide reference for human survival and development.

Text 2. (Youdao) If I were a scientist, I would have to③ <u>understand what the dinosaur life is</u>, to see a world of dinosaurs, to ④<u>explore the cause of their destruction</u>, serve as a reference for human survival and development.

In comparison with differences in each target text, it can be found out in underlined parts that line ①in text 1 is material process, with logical structure of grammatical metaphor and postmodifier; line ③ in text 2 is mental process, with embedding projection which is accordingly closer to congruent form because its semantic gravity is stronger and semantic density weaker. Line ② in text 2 meets with grammatical mistakes which should be corrected into realizing material process with embedding structure for logical relation as shown in bracket. Similarly, line ④ is also material process, with logical relation of nominalization and postmodifier. Comparatively, line ② is closer to congruent form for its stronger semantic gravity and weaker semantic density, namely, SG+, SD-. It is thus concluded that the relation between GM and its semantic gravity and semantic density is interpreted as follows:

(1) The clause is inclining to the congruent form when its semantic gravity is strengthened and semantic density weakened;

(2) The clause is more inclining to Metaphorical form when its semantic gravity is weakened and semantic density strengthened.

Thus, it can be concluded that the semantic wave of semantic gravity and semantic density realises, in full force as it is, the features of context and meaning potential where GM occurs.

B.   Semantic Density, Gravity and GM

It is true that Karl Maton (2011) has ever mentioned that the notion of semantic wave derives from the relevant notions of GM and Technicality in SFL, particularly the GM, no detailed interpretation has ever been made to describe or elaborate in details the specific relation between semantic wave and GM. In terms of semantic gravity and semantic density within semantic wave, it can be seen that the notion of semantic gravity in fact deals with the relations of GM from semantic stratum to contextual stratum; the notion of semantic density deals with the relation of GM between lexicogrammatical stratum and phonological (graphological) stratum. As far as ideational metaphor and interpersonal metaphor in GM are concerned, ideational metaphor is congruently realized as downgrading shift in rank-scale from semantic sequence to figure to element (Halliday & Matthiessen, 2014, p.719); that is to say, the wording process to realize the choice of meaning potential is manifesting in a top-down rank shift from clause complex to clause to group or phrase till word, characterizing of nominalised process. The metaphorical process of nominalization is actually a dynamic process of discursive choices meaning potential makes, with information loss or add-up discursively. In other word, it is a dynamic decontextualising and recontextualising process of semantic density strengthening consistently and semantic gravity weakening gradually. By contrast, the wording process of interpersonal metaphor is manifesting in an opposite direction, with a general trend of down-up rank shift, namely, from a word to group or phrase to clause, for example, *perhaps---may—I think—it is possible* (Halliday & Matthiessen, 2014). The upward process of interpersonal process is to expand its interpersonal system through adding up more specific meaning potentials as a result of specifying the interlocutor's orientation to subjective or objective appraisal, implicit or explicit stance, and so on. In the process the interpersonal variant is as a matter of fact reducing to its context, with weakened semantic gravity and strengthened semantic density. It is a dynamic process of recontextualisation and decontextualisation. In a word, ideational metaphor is realized as a semantic wave of SG-,SD+ while interpersonal metaphor is realized as a semantic wave of SG+,SD-.

C.   Verticality, Grammaticality and GM

Halliday (1989) has ever pointed out that the distinctive organizing principle of spoken and written discourse lies in the aspects of grammatical complexity of spoken discourse and semantic density of written discourse. Martin (2013) has ever explored the knowledge as semantic meaning and defines the potential by which technical discourse strengthened

semantic density as power words, knowledge to construe grammatical metaphor as power grammar. Power words and power grammar reflect the features of power and relationship between the power and vertical sequence within which the semantic gravity and density construct a metaphorical process.

Bernstein divides discourse into horizontal discourse and vertical discourse. Vertical discourse is further divided into horizontal knowledge structure and hierarchical knowledge structure, in order to interpret the verticality and grammaticality of knowledge structure. In Bernsteinian sense, discourse and knowledge structure are at the same level of interface. Verticality (Maton & Muller, 2007, p.26) refers to "the degree to which the development of a knowledge structure is characterized by the integration and subsumption of knowledge into more overarching and generalizing propositions". The grammaticality highlights the role played by what Bernstein terms the strength of 'grammar' or degree to which forms of knowledge exhibit 'an explicit conceptual syntax capable of "relatively" precise empirical descriptions and/or of generating formal modeling of empirical relations' (Muller, 1999, p.164). Moreover, "the notion of GM in SFL is an essential part for exploring vertical knowledge structure" (Zhang & Qing, 2010, p.15). For Bernstein, a fundamental distinction between what he called horizontal and vertical discourse is that the latter is integrated at the level of meanings allowing decontextualisation, the former at the level of (culturally specialized) segments binding the language to context(Muller, 2007). In his contrast between 'everyday' and 'scientific' taxonomies, Martin makes the same point. Muller holds that horizontal discourse realizes weak grammaticality of ordinal features; vertical discourse manifests a strong grammaticality of integrative features. Starting from the perspective of SFL, vertical discourse is closely related to GM to the extent that the uncommon sense organization of participants in vertical discourse depends on grammatical metaphor. If no grammatical metaphor, then no verticality occurs. That is to say, congruent form is weak in grammaticality and lower in verticality, whereas metaphorical form is strong in grammaticality and high in verticality. In other word, the lower in verticality and weak in grammaticality a text is manifesting, the more probable it is for congruent form to shift toward its metaphorical form; the higher in verticality and stronger in grammaticality, the less probable it is for metaphorical form to be shifted towards its congruent form, which leads to decontextualisation and recontextualisation simultaneously.

If V is to symbolize verticality, V+ and V- represent strong in verticality and weak in verticality respectively; G is to symbolize grammaticality, G+ and G- represent strong in grammaticality and weak in grammaticality respectively, CF refers to congruent form and MF refers to metaphorical form, a figure of relation between GM and discourse structure can be made clear as follows:
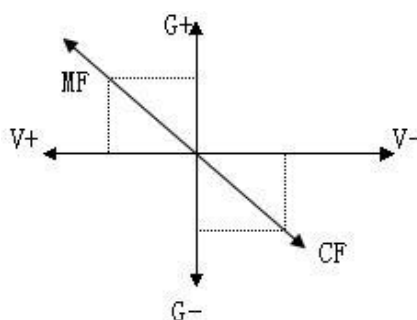

Figure 2 Grammaticality, Verticality and GM

It can be seen that the congruent form of SG+/SD- is easy to stand in a horizontal order with other segmental discourse structures for its weakness in grammaticality, however, without the power word of strengthening semantic density, it is of little probability to vertically integrate congruent form with other congruent forms into a metaphorical form at the level of lexicogrammatical stratum, namely, the transcategorization of the congruent to its metaphorical but a horizontal order of meaning potential at the lexicogrammatical stratum, which thus only leads to simple and prototypical horizontal discourse features in forming our commonsense knowledge. On the other hand, the metaphorical form of SG-/SD+ is hard to stand in a horizontal order with other congruent for metaphorical forms for its strong grammaticality. With semantically dense power words, the last access for integrating metaphorical form with other discourse forms can only be achieved through semantic integration or junction which leads to occurrence of metaphoricalised process and manifestation of inexplicit vertical discourse features and uncommon sense technicalised knowledge. Therefore, "who he is unable to use GM is excluded out of hierarchical knowledge structures and horizontal knowledge structures" (Maton, 2007, p.54-55).

V. CONCLUSION

This paper is to explore the definition about the congruency and metaphoricity of Grammatical Metaphor in relation to the Semantics of Legitimation Code Theory which derives from the notion of Grammatical Metaphor and Technicality of Systemic Functional Linguistics, and to look into relations between congruent form and metaphorical form within grammatical metaphor as process and semantic gravity and semantic density. It is concluded that the process of ideational metaphor is characterized as weakening semantic gravity and strengthening semantic density and

that of interpersonal metaphor as strengthening semantic gravity and weakening semantic density. The congruent form is manifesting with weak grammaticality and weak verticality, and metaphorical form with strong grammaticality and verticality so as to provide a legitimate defining evidence for the definition of grammatical metaphor's congruency and metaphoricity. Thus, the dialogue between SFL and Bernsteinian educational sociology provides the theoretical foundation for GM and semantic wave which turns back to maintain the ongoing dialogue between SFL and LCT at present.

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