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A corpus-based study of grammatical post-metaphorical expressions

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Abstract: In Systemic Functional Linguistics, meanings in semantic stratum could be realized by congruent/premetaphorical, metaphorical, or demetaphorical/post-metaphorical expressions in lexico-grammatical stratum. This paper, evidenced from the Corpus of Historical American English (COHA), explores the specific pathway from metaphorical expressions to post-metaphorical ones guided by principles of Context-first and AS IF and the principle of double functionality. The findings show that grammatical postmetaphorization is mainly realized by post-metaphor of ideation and that of modality. The former finds its expressions from common nouns to proper nouns (e.g. from *security* to *Security*), or from uncountable nouns to countable nouns (e.g. from *security* to *securities*), and the latter is evidenced by expressions shifting from explicit objective orientation to its explicit subjective counterpart (e.g. from *it is possible that* to *it might be possible that*), or by modal probability of *I think* type shifting from clausal initial position to clausal medial or final position (e.g. *I think* in the medial or final position of the clause).

Keywords: grammatical metaphor; grammatical post-metaphor; metaphor of ideation; metaphor of modality; pathway of metaphorization

1 Introduction

Grammatical post-metaphor (hereafter GPM) denotes that the metaphorical expression has been developed into a new phase that its original characteristics of being a metaphor have been blurred or cannot be captured explicitly. It could be identified by addition of new grammatical features to the metaphorical expression. Specifically, if a metaphorical expression (e.g. *consideration*) is added with the grammatical feature of plurality (e.g. *considerations*), then GPM occurs. This

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“nomenclature” is semantically similar to such terms as “dead metaphor” or “demetaphorical expression” employed by other scholars (cf. Lakoff and Jonhson 1980; Liu 2013; Mo 2013; Mo and Liu 2014; Meng 2009; etc.). The term “dead metaphor” is mostly favored by scholars who investigate the traditional metaphor (cf. Goldstein et al. 2012; Reimer 1996) or metaphor in the sense of Cognitive Linguistics (Meng 2009; Mo 2013; Mo and Liu 2014). There are also scholars in Systemic Functional Linguistics (hereafter SFL) (Halliday 1985, 1994; Liu 2013), employing the term “demetaphorization” to denote the phenomenon that characteristics of a metaphorical expression fade away gradually.¹ However, being “dead” seems to reject any new grammatical features (although itself might be a grammatical feature), and the “reanimation” from “dead”, to some extent, does not comply with the natural law, either; being “demetaphorization” also fails to associate itself with the previous metaphorical phase explicitly, or the implication of the association by the prefix “de-” is not as direct as that by the prefix “post-”. Accordingly, GPM is used in this paper to directly presuppose its previous metaphorical or non-congruent phase and the premetaphorical or congruent phase with the implication of the prefix “post-”.

GPM in this paper follows the identifying principles of Grammatical Metaphor (hereafter GM). That is to say, principles of Context and AS IF proposed by Yang (2019) and the principle of double functionality by Fan (2007) and He and Wen (2017) are employed to facilitate telling whether the expressions in question, are still characteristic of GM features. One possibility is that GM features are backgrounded while new grammatical features are foregrounded. These new grammatical features are regarded as features of GPM. Therefore, GPM, throughout this paper, refers to expressions whose new grammatical features are foregrounded with their original GM features backgrounded. This working definition is different from Halliday’s sense of GPM (demetaphorization in his term) (Halliday 1994: 348), which is expounded as the phenomenon that a metaphorical expression gradually loses its metaphorical character, in that it is more plausible to explain the phenomenon that new GM features are identified. The GPM features are delineated by examples (1a)–(1c).

- (1) a. Last fall, for example, when Senator Kennedy, then his party’s presidential nominee, failed to win Senate approval for his medical care plan tied to *Social Security*, he won only a single GOP vote, that of Senator Case. (COHA)

¹ According to the definition, demetaphorization emphasizes the gradual losing features of GM. However, instances from the COHA demonstrate that features of GM are not losing but backgrounded and some other new grammatical features are foregrounded.

- b. All these *securities*, however, would be found very insufficient without the restraint of frequent elections. (COHA)
- c. Abdel Abdel Mahadi He could not, *I think*, have escaped in this way. (COHA)

Security in (1a) is a proper noun, which marks little metaphorical feature of class shift from the adjective *secure* to the common noun *security*. Being different from *Security* in (1a), *securities* in (1b) still keeps the grammatical feature of a de-adjectival noun, and acquires, at the same time, the plural feature. The projecting clause *I think* in (1c) functions as a modal element and is employed as a GM. Besides, this modal element is interpolated in the clause and captures a feature of discourse marker. Both clauses (1a) and (1b) are incorporated into the scope of ideational metaphor, while (1c) pertains to what Halliday terms as interpersonal metaphor, specifically, the metaphor of modality. In other words, examples (1a)–(1b) are GPM in the ideational domain, and (1c) is an instance of GPM articulating interpersonal metafunction. This paper, therefore, attempts to delineate the pathway of GPM drawing on instances retrieved from COHA.

The following sections are outlined as follows: Section 2 briefly reviews GM and the newly proposed principles of identifying GM; Section 3 sketches the corpus adopted and what research materials will be employed to retrieve GPM instances; Sections 4 and 5 analyze and discuss the major two pathways of GPM; before making a putative conclusion in Section 7, Section 6 tries to visualize the pathway of metaphorization.

2 GM and its identifying principles

GM is an important construct in the semiotic system in Halliday's SFL enterprise. It was first outlined in Halliday (1984) and then theorized in his monograph *An Introduction to Functional Grammar* (Halliday 1985). GM, according to him, is defined as in some respect transferred variants of the congruent realizations in the lexicogrammar for a certain semantic configuration (Halliday 1985: 321). Hence a GM expression cannot be articulated without relating it to its congruent mode. Halliday (1985, 1994), Halliday and Matthiessen (1999), and Halliday and Matthiessen (2004, 2014) have incorporated ideational metaphor and interpersonal metaphor into the GM system,² which is sympathized by authors of this research to

² Halliday keeps silent in many occasions about Martin's Textual metaphor (Martin 1992) in correspondent to the three metafunctions, although it is, for various reasons, sided by some other systemicists such as Derewianka (2003), He et al. (2015), Lassen (2003a, 2003b), O'Halloran (1996), Taverniers (2002), and Thompson (1996).

explore the categorization of GPM. The two concepts in GM can find their expressions in the following examples:

- (2) a. Because these tasks were difficult they needed to allocate One extra packer.
b. These difficulties necessitated the allocation of one extra packer.
(Halliday 1994: 349)
- (3) a. Mary saw something wonderful.
b. Mary came upon a wonderful sight.
(Halliday 1994: 344)
- (4) a. Pass me the salt.
b. Could you pass me the salt?
(Yang 2019: 207)
- (5) a. It probably is so.
b. I think it is so.
(Halliday 1994: 354)

Examples (2) and (3) pertain to the domain of ideational metaphor, among which (2a) and (3a) are congruently expressed while their corresponding (2b) and (3b) are realized in more metaphorical mode. As in (2), the sequence³ realized by a clause complex in (2a) is down rank-shifted into an independent clause in (2b), more specifically, the cause and effect relation in the clause complex is transferred into a simple clause with a material process realized by *necessitate*. Whereas in (3), the metaphorical feature is demonstrated by the transcategorization among various elements. The process of perception, which is realized by the verb *see* in (3a) is turned into a nominalized participant *sight* in (3b), in which the clause is composed of a material process *came upon*. Different from (2) and (3), which are instances of ideational metaphor, instances in (4) and (5) fall into the scope of interpersonal metaphor. Specifically, the clause in (4b) exemplifies interpersonal metaphor of mood, and that in (5b) is an instance of interpersonal metaphor of modality. The speech function of a command in (4a) is carried out by means of a question in (4b), hence interpersonal metaphor of mood occurs; similarly, modality of probability

³ “Sequence” and the following “figure” are terms employed in the semantic plane by Halliday and Matthiessen to refer to the “[constitution of] a model of how figures can be related” (Halliday and Matthiessen 1999: 104), and “phenomenal units that are formed by configurations of other phenomena (elements)” (Halliday and Matthiessen 1999: 128) respectively.

denoted by the modal adverb *probably* in (5a) is upgraded to a mental projecting clause *I think* in (5b), and thus metaphor of modality appears.

After the theory of GM has been proposed, some systemicists are delving into the means of identification, among which are Yang's principles of Context first and AS IF, and the principle of double functionality by Fan (2007), He et al. (2015), and He and Wen (2017). Therefore, the next section will detail these principles.

2.1 Principles of Context first and AS IF

Principles of Context first and AS IF are proposed by Yang (2019) chiefly for the purpose of identifying interpersonal metaphor of mood and modality, although principle of Context first could be applied to the other kinds of GM. According to Yang (2019), the specific context, in which the speech event occurs, shall play an important role in determining the occurrence of interpersonal metaphor. Although the Context first principle has not been elicited as a means of identifying GM, this principle *de facto* has been indicated by Halliday (1994) and some other systemicists (Lassen 2003a, 2003b; White 2008).⁴ Yang (2019: 193) quoted the two clauses in (6), which were employed by Halliday (1994: 366) to exemplify the necessity of considering context while getting a full understanding of them, and expounded that either clause can be regarded as the metaphorical expression of the other. In other words, the imperative (6a), in the context of demanding goods-&-services, fulfills the speech function of command in a natural way, and hence (6b) is an instance of metaphor of mood. However, the declarative clause in (6b), while in the context of giving information, is realized congruently, and (6a), therefore, is metaphorical.

- (6) a. [C]onsider the way they cheated before.
 b. [T]he evidence is (the fact) that they cheated before.
 (Halliday 1994: 366)

The principle of Context first can also be employed to identify cases of interpersonal metaphor of modality. Considering the two instances in (7), *I think* in (7a) is an instance of metaphor of probability,⁵ but it, in the situational context of a doctor giving advice to an advice-seeker, can be understood as an interpersonal metaphor of obligation, because, in so doing, it is easier for the advice-seeker to accept the

4 Lassen (2003a, 2003b) suggests that passives and imperatives in a certain context should be taken into consideration as interpersonal metaphors, and White (2008) also argues that every utterance occurs in a context of another.

5 In Halliday's sense, the mental projecting clause *I think* can be regarded as the metaphorical expression of such adverbial elements as *possibly* or *probably* (Halliday 1985, 1994).

doctor's advice. Similarly, this explanation also applies to (7b). From the vantage point of linguistic context, the parenthetical construction *I think* and *I hope* in (7a) and (7b) respectively attenuate the obligatory force of the corresponding proposition of *it is a great time to try the pill* in (7a) and *you consider posting a follow up* in (7b).⁶ Specifically, the modal expressions of probability *I think* in (7a) and *I hope* in (7b), together with the linguistic context, realize the modality of obligation denoted by *it is obligatory for you to take the pill* and *it is obligatory for you to consider posting a follow up* respectively, and thus metaphor of modality occurs.

- (7) a. I think now would be a great time to try the pill.
 b. I hope that when your time permits that you will consider posting a follow up.
 (Yang 2019: 194)

Besides the principle of Context first, the principle of AS IF can also be employed to identify interpersonal metaphor. According to Yang, the principle of AS IF can be defined as the determination of interpersonal metaphor “by an AS IF relation between the default congruent utterance and the metaphorical counterpart” (Yang 2019: 194). With respect to speech functions, giving or demanding goods-&-services are congruently realized by an offer in the form of a declarative or a command in the form of an imperative respectively, while giving or demanding information are congruently fulfilled with the forms of a declarative functioning as a statement or an interrogative functioning as a question respectively. The speech functions can find their congruent expressions exemplified in (8), which is a conversation between a detective and a little girl who are talking about the bad guy Max.

- (8) – Is something the matter here? I'm [the detective] in charge of security.
 – Are you a policeman?
 – No, honey. Well, sort of, I guess. I'm the police officer of the store, I suppose you could say.
 – He's [Max] a bad man, make him go away.
 (COHA)

The interrogatives *Is something the matter here* and *Are you a policeman* perform the function of questions in demanding information, while the declaratives *I'm the police officer of the store* and *He's a bad man* function as statements in (8). The imperative *make him go away* is an instance of congruently realizing the function of a command.

⁶ For more information about parenthetical mental projecting clauses, please refer to Aijmer (1997), Fetzer (2014), and Shinzato (2004).

In social communications, these congruent expressions can be expressed alternatively. To be more specific, a command in the form of an imperative can be employed to function AS IF it was used as a question, a statement AS IF it was a question, or a question AS IF it was a command. For instance, the statement in (9a) can be understood AS IF it was a question *do you have any trouble* or *do you need any help*. Similarly, the question *can you take him away* in (9b) is expressed AS IF it served as a command denoting *take him away*. Thus, interpersonal metaphors of mood occur.

- (9) a. I'm [the detective] in charge of security. (COHA)
- b. He's [Max] a bad man, can you take him away? (COHA)

The principle of AS IF is also applicable to interpersonal metaphors of modality (Yang 2019). Metaphor of probability is defined as the phenomenon that the clause in (10b), which is used in a context of explicit subjective projection, is employed AS IF it was an implicit subjective clause in (10a), and an explicit objective projection clause in (10d) is adopted AS IF it was an implicit objective clause as in (10c). Metaphor of usuality refers to an explicit objective projection clause as in (11b) is used AS IF it was a usuality realized in the form of an implicit objective clause as in (11a). Obligatory metaphor is articulated in a context that an explicit subjective clause as in (12b) is used AS IF it was an obligatory clause which is realized by an implicit subjective clause as in (12a), and that an explicit objective projection exemplified in (12d) is used AS IF it was an implicit objective clause in (12c). Metaphor of inclination⁷ can find its expression in (13b). An explicit objective clause is used AS IF it was an inclination realized by an implicit objective clause as in (13a).

- (10) a. He will have read for hours.⁸
- b. I think he reads for hours.
- c. He probably read for hours.
- d. It is likely he reads for hours.
- (11) a. He usually reads for hours.
- b. It is usual for him to read for hours.
- (12) a. You should read for hours.
- b. I allow you to read for hours.
- c. You are supposed to read for hours.
- d. It is expected that you read for hours/of you to read for hours.

⁷ Although Professor Christian Matthiessen does not mention the existence of metaphor of inclination, I sympathize with Professor Yang (2019) its existence.

⁸ Examples (10)–(12) was provided by Professor Christian Matthiessen via email.

- (13) a. Their [the revengeful warriors] youthful queen might be determined to take the captive for her husband, in the place of her kinsman who was slain. (COHA)
- b. Another council was immediately held, at which it was determined that their [the revengeful warriors] youthful queen, might according to the usages of the nation take the captive for her husband, in the place of her kinsman who was slain. (COHA)

It is evident from these instances that the principles of Context first and AS IF are applicable to the analysis of interpersonal metaphor, but there is little evidence showing its applicability to the analysis of ideational metaphor. The principle of double functionality, therefore, is employed to identify instances of ideational metaphor.

2.2 Principle of double functionality

GM is one of the items *de facto* on the lexical-grammatical stratum realizing double functions (He and Wen 2017; He et al. 2015), and hence double functionality can be employed as a principle to identify GM (Fan 2007). In other words, GM occurs on the condition that the acquisition of an extra meaning happens in the ideational domain. Examples (14) and (15) will be adopted to expound this type of phenomenon.

- (14) a. A lot of leaves have collected on the roof.
 b. The roof has collected a lot of leaves.
 c. He has collected a lot of leaves.
 (Fan 2007: 15)
- (15) a. The patrons were Exasperated before you gambled all their lives.
 (COHA)
 b. The exasperation of the patrons preceded the gambling of all their lives. (COHA)

(14b) is the metaphorical expression of (14a) while (14c) is not, for the reason that *roof* in (14b) functions not only as a participant, but also as a circumstantial element, and thus a double functionality; whereas there is no element in (14c) realizing the double functionality, and hence it is not a metaphorical expression. Comparing with (14), which is an instance of double functionality occurring in different elements in the clause rank, (15) can be exemplified as an ideational metaphor rank-shifting from a clause complex to a simple clause. That is to say, the

sequence realized by clause complex in (15a) is remapped by a clause in (15b). In other words, the nominal groups, functioning as elements, *the exasperation of the patrons* and *the gambling of all their lives* also function as two figures. The lexical verb *preceded* functions as a material process and a relator as well. Accordingly, all three elements in (15b) are of double functionality.

2.3 GM cline

The concept of being a GM is relative. Compared with a more congruent expression, it is regarded as a metaphorical one, while compared with a more metaphorical one, the same expression may be treated as a congruent one. Therefore, the development, from congruent expression to metaphorical one and then to a new congruent one, constructs a cline (He 2019; Yang 2018, 2019). See example (16).

- (16)
- a. Because osmolarity increases, putrescine is rapidly excreted.
 - b. Increases of osmolarity cause rapid excretions of putrescine.
 - c. Rapid excretions of putrescine through increases of osmolarity.

(16b) is more metaphorical than (16a) in that the two clauses in (16a) is down rank-shifted into two nominal groups in (16b) and the relator *because* is class-shifted into a verb realizing the material process; whereas (16c) is more metaphorical if compared with (16b) underlying the fact that the clause in (16b) is further realized by a nominal group. Hence the sequence from the most congruent end to the most metaphorical end forms a cline.

It seems that the GM cline, to some extent, can be employed to account for the pathway that the GPM undergoes. Actually, only part of the whole pathway has been enunciated. That is to say, the rank-shifting from clause complex to clause or from clause to group is made clear. However, GM cline precludes the analysis of componential elements in ideational metaphor and interpersonal metaphor. This research therefore aims at investigating GPM by the analysis of componential elements in GM.

3 Methodology

3.1 Corpus

In order to explore the pathway from metaphorical expressions to post-metaphorical ones, we need consider the evolvement of GM to GPM along the time. It is the Corpus of Historical American English or COHA that serves this purpose very well in that COHA contains all together 400 million words, spanning

almost two hundred years from 1910 to 2009. Furthermore, it incorporates a wide range of genres such as Fiction, Magazines, Newspaper, and Non-Fiction Books. Genres and sub-genres are balanced in each decade. For instance, in each decade, non-fiction (e.g. history, religion, and technology) accounts for approximately 15% of the total number of all genres, and fiction, including its sub-genres like prose, poetry, and drama, takes amount of 48–55% of the total (Davies 2012). These balanced genres and sub-genres will enable the findings of the investigation to be closer to the changes of actual reality or ‘real world’.

3.2 Data collection

In this sub-section, materials employed for investigation are identified, and procedures that are conducted to elicit the research data are explained. As for materials of identifying GPM features, those of examining the post-ideational metaphor are firstly collected, and those for post-interpersonal metaphor ensued.

3.2.1 Materials for investigation of post-ideational metaphor

Examples, which are employed by Halliday and Matthiessen (1999: 246–248) to represent the shifting processes from congruent to metaphorical expressions, are taken as materials to testify what post-metaphorical features they possess.⁹ For example, with respect to the congruent form *unstable*, *secure*, and *quick(ly)*, their corresponding metaphorical forms *instability*, *security*, and *speed* are examined on COHA with the search query(SQ) shown below respectively.

SQ1: [instability].[nn*]
 [security].[nn*]
 [speed].[nn*]

SQ1 can be described as any form of *instability* or *security* or *speed* used as a noun. In a similar vein, materials, which are employed to testify the GPM features, are collected in terms of examples provided by Halliday and Matthiessen (1999) while illustrating the 13 types of GM, which is presented in Table 1.

All examples of metaphorical mode listed in Table 1 will be retrieved one by one in COHA by search queries written in the same way as SQ1. For instance, while

⁹ Some examples within the same type of grammatical metaphor are supplemented, for instance, the entity *security* out of the quality *secure*.

Table 1: Materials adapted from examples of the 13 types of GM by Halliday and Matthiessen (1999: 246–247).

Type	Semantic element		Examples
	congruent→	metaphorical	
1	quality	thing	unstable→instability; secure→security; quick(ly)→speed
2	process		transform→transformation; will/going to→prospect; can/could→possibility, potential; try to→attempt; want to→desire
3	circumstance		with→accompliment; to→destination; [dust is] on the surface→surface dust
4	relator		so→cause, proof; if→condition
5	process	quality	[poverty] increases→increasing [poverty]; was/used to→previous; must/will→constant; begin (to)→initial
6	circumstance		with→accompliment; [marks are] on the surface→superficial [marks]
7	relator		before→previous; so→resultant
8	circumstance	process	(be) about→concern; (be) instead of→replace; (go) across→traverse; (put) in the box/house→box/house
9	relator		then→follow; so→cause; and→complement
10	relator	circumstance	when→in times of; because→because of; so→as a result, in consequence; if [it snows]→under/in [snow(y)] conditions
11	(none)	thing	[x]→the fact/phenomenon of [x]
12	(none)/(agency &c)/(phase &c)	process	[x]→[x] occurs/exists; [x]→have, do [x] (e.g. impact→have an impact); make [x:y]→impose [y on x]; think [x=y]→credit [x with y]; started/wanted [to survey]→started/wanted [a survey]

Table 1: (continued)

Type	Semantic element		Examples
	congruent→	metaphorical	
13	thing/circumstance	expansion of thing	the government [decided]→[decision] of/by the government, the government's [decision], government(al) [decision]; [decided] hastily→hasty [decision]; [argued] for a long time→lengthy [argument]; [announced] yesterday→yesterday's announcement; [departed] for the airport→[department] for the airport

retrieving the exemplar items in the fifth and eighth types of GM, search queries are constructed as SQ2 and SQ3 respectively.

SQ2: [increasing].[j*]
[previous].[j*]
[constant].[j*]
[initial].[j*]

SQ3: [concern].[v*]
[replace].[v*]
[traverse].[v*]
[box].[v*]
[house].[v*]

Among all the concordances retrieved by each SQ, the top 200 ones are further scrutinized for the purpose of examining whether other grammatical features could be identified besides the GM feature. This point is expounded with the following example clauses (17a)–(17b). *priority* in (17a) is an instance of ideational GM, because its congruent form is *prior* and it can be transformed into *The idea of a Defensive war does not consist in a prior attack, but a prior injury*. Besides the feature of GM in this clause, no other grammatical feature could be identified. However, *priorities* in (17b), different from that in (17a), characterizes not only a backgrounded feature of GM in the clause, but also a feature of foregrounded plurality.

- (17) a. The idea of a Defensive war does not consist in priority of attack, but in priority of injury. (COHA)

- b. Commerce survey reported that they had felt the pinch of priorities.
(COHA)

After an automatic retrieving and a subsequent manual analysis of these clauses (200 clauses for each example), we noticed that the metaphorical forms denoting semantic ‘quality’, ‘process’, ‘circumstance’, and ‘expansion of thing’ are characteristic of GM feature solely, while the semantic shift from ‘quality’ and ‘process’ to ‘thing’, together with a GM feature, characterizes additional grammatical features such as plurality (countability, in the following, is employed for the purpose of incorporating singularity) and/or nominal properness. In order to make this research as exhaustive as possible, some other retrieving triggers, such as nominalizations suffixed by ‘-ion’, ‘-ment’, ‘-ity’, and ‘-ness’ (Biber 1988; He and Yang 2018), are supplemented to the present set, because suffixes ‘-ion’ and ‘-ment’ are mainly derived from verbs, and ‘-ity’ and ‘-ness’ mainly from adjectives. However, it is impossible to exhaustively analyze these clauses that are produced by the four suffixes, and hence the choice of the top five words among all the concordances retrieved by the four queries from SQ4 to SQ7 are further scrutinized. The GM feature and additional grammatical features of these triggers are shown in Table 2.

SQ4: [*ity].[nn*]

SQ5: [*ness].[nn*]

SQ6: [*ion].[nn*]

SQ7: [*ment].[nn*]

3.2.2 Materials for investigation of post-interpersonal metaphor

According to Halliday (1985, 1994), interpersonal metaphor incorporates metaphor of mood and metaphor of modality. The typical type of the former, such as an imperative is realized by an interrogative while demanding goods & services, is employed to examine whether there are occurrences of additional grammatical features besides the GM one. Based on this type of interpersonal metaphor of mood, the relevant search query is constructed as in SQ8, which is expressed as any form in the sequence of *be* or *do* or *have* or modal auxiliaries followed by any form of a noun or pronoun. Among the tens of thousands of concordances, we further scrutinized the first top 200 ones and found no additional grammatical

Table 2: GM feature and GPM features of countability and nominal properness attested in the COHA.

	GM feature	Countability	Nominal properness
Instability	+	+	–
Speed	+	+	+
Security	+	+	+
Capability	+	+	+
Stability	+	+	–
Maturity	+	+	–
Similarity	+	+	–
Happiness	+	+	–
Weakness	+	+	–
Bitterness	+	+	–
Willingness	+	+	–
Usefulness	+	+	–
Transformation	+	+	–
Prospect	+	+	+
Possibility ¹⁰	+	+	–
Potential	+	+	–
Attempt	+	+	+
Desire	+	+	+
Education	+	+	+
Expression	+	+	–
Consideration	+	+	–
Construction	+	+	–
Possession	+	+	+
Government	+	+	+
Agreement	+	+	–
Management	+	+	+
Improvement	+	+	–
Punishment	+	+	–

Note: “+” stands for attested features while “–” for unattested.

features except the GM one (see example 18). Therefore, this type of interpersonal metaphor is not further considered in this study.

SQ8: [vb*][vd*][vh*][vm*] [nn*][p*]

10 It is concerned here with the fact that *possibility* and *potential* are nominalized forms from the verbs *can* and *could* in Table 1.

- (18) Mr. Snow: Can you tell me whether it was closed or open?
 Linda: It was open.
 (COHA)

With respect of the metaphor of modality, orientations of explicit subjective (e.g. mental process projection) and explicit objective (e.g. *It+be+modal adj.+to/that*) are employed to examine whether additional grammatical features can be identified. The typical representatives of mental process verbs include *think*, *assume*, *believe*, *guess*, or *suppose* (Fetzer 2008; Halliday and Matthiessen 2014) (hereafter *I think* Type), while the typical modal adjectives in the construction of *It+(modal) be+modal adj.+to/that* (hereafter *It* Construction) mainly subsume the ones identified by Van Linden (2010, 2012), and Halliday and Matthiessen (2014), such as *possible*, *probable*, *usual*, *necessary*, *obligatory*. Underlying the two types of metaphorical patterns, relevant search queries, therefore, are constructed as follows:

SQ9: it [vb*] possible|probable|usual|necessary|obligatory to|that
 it [vm*] be possible|probable|usual|necessary|obligatory to|that

SQ10: [y*] [p*] think|assume|believe|guess|suppose that
 [y*] [p*] think|assume|believe|guess|suppose [pp*] [v*]
 [y*] [p*] think|assume|believe|guess|suppose [nn*] [v*]

SQ11: , [p*] think|assume|believe|guess|suppose,

SQ12: , [p*] think|assume|believe|guess|suppose.

SQ9 reads as a pronoun *it* and any form of *be*-verb or modalized *be*-verb, followed by either *possible* or *probable* or *usual* or *necessary* or *obligatory* and then by an infinitive clause or a *that*-clause; SQ10 is expressed as a pronoun followed by any one of *think*, *assume*, *believe*, *guess* or *suppose* with or without *that*, and then followed by a pronoun or noun and a verb. Generally, this search query is to retrieve the cases that the pattern locates in the initial position of the clause, and SQ11 for medial position and SQ12 for the final position. With these search queries, most occurrences of the typical representatives in the *It* construction of *It+(modal) be+modal adj.+to/that* and *I think* Type of mental process projection in clause initial, medial or final positions could be retrieved. With respect to search queries from SQ9 to SQ 12, the raw number of occurrences of *It* construction and *I think* Type retrieved from COHA are shown in Table 3, and examples are provided in (19a)–(19b) and (20a)–(20c).

Table 3: Occurrences of *It* construction and *I think* Type retrieved from COHA.

Metaphor of modality		Occurrences
<i>It</i> Construction	<i>to</i> clause	9,967 (2,051)
	<i>that</i> clause	5,002 (100)
<i>I think</i> Type	initial	20,494
	medial	17,793
	final	9,432

Note: Figures in brackets refer to modalized occurrences included in the total.

- (19) a. If it is necessary to wage the war individually, it can be done, but everything which will call or attract them must be cleaned up or eliminated. (COHA)
- b. It was obligatory that the civil rulers should be learned, even at the expense of those who carried on the business and the home. (COHA)
- (20) a. Grace demurred: “I don’t think I’m so strong. I think it’s just pure belief and love in this person.” (COHA)
- b. I love him, I think, but I hate to be here. (COHA)
- c. I only really remember her smell, I think. (COHA)

4 Post-metaphorization of nominalization

The theoretical base for identifying GM of nominalization is the principle of double functionality. Specifically, double functionality is of special significance in the stage of GPM in that, besides the grammatical features such as countability and properness, it is capable of examining the existence of grammatical metaphorical features. We employed Halliday and Matthiessen’s (1999: 246–247) examples for elucidating the 13 types of GM to investigate their pathways from GM to GPM, i.e. which type/types has/have experienced the stage of post-metaphorization, and in what way these post-metaphorical features are couched explicitly. A thorough examination of data from the COHA with relevant search queries demonstrates that only metaphorical types of ‘quality to thing’ and ‘process to thing’ out of the 13 types of GM are found to possess post-metaphorical features. In order to get a full understanding of the scope of this phenomenon, the two types of GM are enriched by an extension of another four suffixes (i.e. ‘-ity’, ‘-ness’, ‘-ion’, and ‘-ment’) which are typically characteristic of nominalization, and thus further detailed.

4.1 From quality to thing

GM of quality to thing refers to the phenomenon that the grammatical category of adjectives (mostly but not always) functioning as quality are transcategorized into nouns functioning as thing. In this study, together with the attested examples by Halliday and Matthiessen (1999: 246–247), the top five occurrences of words suffixed by ‘-ity’ and the other top five suffixed by ‘-ness’ are considered diachronically. The findings demonstrate that, except the GM feature, the grammatical features of countability and properness are also captured with evolvement of the language, which is shown in the first half of Table 2. According to the table, all attested items, transcategorized from quality to thing, are endowed with the grammatical feature of countability, while only *speed*, *security*, and *capability* among these items capture the feature of nominal properness. That is to say, the ensuing dominant grammatical feature after the GM one is countability, and the nominal properness might be a tendency following countability. These phenomena are exemplified by examples (21a)–(21c) ((21b) is reproduced from example (17b)) and further explicated by the principle of double functionality for the purpose of examining whether GM feature still retains after features of countability and properness are obtained.

- (21) a. Always the haunting sense of a *happiness* which I was capable of feeling, faint glimpses of a paradise of which I was a born denizen, – and always, too, the stern knowledge of the restraints which held me prisoner, the idle longings of an exile. (COHA)
- b. Commerce survey reported that they had felt the pinch of *priorities*. (COHA)
- c. Last fall, for example, when Senator Kennedy, then his party’s presidential nominee, failed to win Senate approval for his medical care plan tied to *Social Security*, he won only a single GOP vote, that of Senator Case. (COHA)

According to the principle of double functionality, *happiness* in (21a) should realize both quality and thing but it in this clause in question has only obtained the grammatical feature of countability (here singularity) while its property of being ‘quality’ is blurred and denies any further effortless unpacking. Pertaining to the case of *priorities* in (21b), its grammatical feature of countability in dominance is foregrounded, and at the same time, the feature of being ‘quality’, although backgrounded, could also be regained, hence the nominal group *the pinch of priorities* can be unpacked to *the prior pinch*. With regard to *Securities* in (21c), the possible grammatical feature ascribed to it is nominal properness, and there seems

to be a distant contiguity to the feature of ‘quality’. From the above statements, the idea that grammatical features of countability and properness are GPM features is further confirmed. However, as to when GM of nominalization begins to capture features of countability and nominal properness and when these features are significantly foregrounded, it is necessary, pertaining to these later occurring features, to resort to a further quantitative scrutinization to the data of COHA, which will be delineated in the following paragraphs.

In order to get a clear outlook on the occurrence of GPM features, further examination of the frequency of occurrence is conducted. We firstly carried out an automatic search and then manually dealt with these raw frequencies. Taking *security* as an example, the specific process of obtaining frequency of GM and GPM features during 1810s are progressed as follows:

- Step 1: with search queries ‘[security].[nn*]’ and ‘[security].[np*]’, occurrences of singularity ($N = 153$), plurality ($N = 9$), and nominal properness ($N = 0$) are obtained. However, total occurrences of singularity are not solely cases of GM, but also include those of countability denoting GPM features, and hence a further step is adopted to elicit the actual occurrences of GM.
- Step 2: retrieve with the query ‘a security.[nn]’ for the occurrences that belong to the cases of countability ($N = 4$).
- Step 3: occurrences of GM equal to occurrences of singularity minus occurrences obtained in Step 2, i.e. $153 - 4 = 149$; occurrences of countability are occurrences of plurality added by the figure in Step 2, i.e. $9 + 4 = 13$.
- Step 4: when comparison is needed, the raw frequency is normalized to per million words.

In the same vein, the same method is implemented to all items that denote thing from quality and to all segments of different time periods. Raw frequencies are shown in Table 4.

With respect to nominal properness, although items such as *speed*, *security*, and *capability* have captured this grammatical feature in each of the 20 decadal phases, yet these occurrences are simply sporadic and generally obtained their status in the twentieth century, specifically, the second half of the century (see Figure 1). Pertaining to the GPM feature of countability, attested items such as *security*, *capability*, *similarity*, *happiness*, and *willingness* possess this feature with a large number of occurrences throughout the two centuries, and surprisingly with a gradual increase (see Figure 2). As far as the rest of these items are concerned, their occurrences are either sporadic or at the very inceptive phase. Therefore, it is still inceptive or even should be taken as tentative to claim that GPM is characteristic of nominal properness; nevertheless, countability can be regarded as a typical feature of GPM if compared with their corresponding GM counterpart.

Table 4: Raw frequencies of GM and GPM features in terms of items from quality to thing.

		1810s	1820s	1830s	1840s	1850s	1860s	1870s	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Total
Speed	GM	41	253	546	701	603	521	651	670	1,294	979	1,505	1,681	1,474	1,431	1,651	1,538	1,176	1,423	1,648	2,113	21,899
	C	1	3	2	2	3	1	1	5	23	21	35	49	83	91	134	142	97	141	184	223	1,241
	NP							3	1	4		2	16	5	3	17	3	3	1	6	4	16
Security	GM	149	467	787	679	684	624	585	536	387	599	546	855	1,798	2,409	3,185	2,123	3,036	3,676	2,673	4,614	30,412
	C	13	35	75	98	98	195	293	198	116	321	399	829	1,664	413	338	309	395	784	530	588	7,691
	NP						1	1			2											4
Capability	GM	1	15	23	31	58	34	24	25	22	22	23	15	9	11	64	203	222	257	170	204	1,433
	C	1	16	64	76	105	76	64	68	70	41	27	34	28	24	84	100	155	182	240	268	1,723
	NP				1												2	3	1	5	44	56
Instability	GM	4	8	19	31	16	21	14	20	24	21	66	66	75	104	56	83	94	133	121	103	1,079
	C									1						3	4	2	3	11	3	27
Stability	GM	26	58	113	106	100	129	84	123	103	133	187	258	385	265	379	391	443	472	422	502	4,679
	C			1	3	1	1	2	1	2	3	2	3	6	4	3	1	5	5	5	6	49
Maturity	GM	13	83	150	180	172	164	150	128	132	177	176	219	256	218	256	223	181	184	211	198	3,471
	C		2	2	2	1	2	1	4	4	1	5	18	42	10	26	5	23	22	13	181	18
Similarity	GM	4	37	61	86	73	51	88	88	90	116	99	120	99	101	105	86	112	108	96	77	1,697
	C	1	10	2	8	14	4	15	31	25	19	19	45	43	44	71	94	110	157	151	131	994
Happiness	GM	221	1,548	1,983	2,145	1,766	1,727	2,065	1,626	1,516	1,422	1,440	1,558	974	933	740	607	594	519	542	612	24,538
	C	2	8	18	15	24	25	29	21	18	17	21	13	9	5	6	11	9	7	5	3	266
Weakness	GM	76	407	511	577	681	704	766	768	668	662	676	607	540	456	502	425	394	441	329	339	10,529
	C	4	68	80	99	121	152	139	153	97	147	164	159	151	183	195	216	192	223	195	208	2,946
Bitterness	GM	18	193	312	280	354	351	404	380	306	424	343	391	359	347	348	294	234	257	205	157	5,957
	C		4	12	5	5	17	8	16	10	13	12	15	7	5	8	9	7	7	4	3	167
Willingness	GM		38	59	78	80	100	107	144	112	133	167	210	223	174	266	257	275	318	216	220	3,177
	C																					
Usefulness	GM		5	20	19	18	19	22	32	16	27	34	35	49	43	49	52	55	66	59	64	684
	C																					
		14	176	244	299	265	204	207	225	206	212	220	172	171	126	132	132	93	90	65	80	3,333
	C										1	1	2			1						5

Note: GM stands for grammatical metaphor, C for countability and NP for nominal properness.

Figure 1: GPM feature of nominal properness of *speed*, *security*, and *capability* in COHA (normalized).

Figure 2: GPM feature of countability of *security*, *capability*, *similarity*, *happiness*, and *willingness* in COHA (normalized).

4.2 From process to thing

The other source of nominalization considered in this study is the items of thing that are realized by derived nominals from verbs. This phenomenon is evidenced by the two most typical suffixes ‘-ment’ and ‘-tion’ together with items attested by Halliday and Matthiessen (1999: 246–247). Similar to the conduction of the previous two suffixes ‘-ity’ and ‘-ness’, retrieving procedures are employed and five

items that topped the list of each suffix are further scrutinized. The general features of countability and nominal properness are listed in the second half of Table 2 from *transformation* to *improvement*, which demonstrates that all the attested items characterize grammatical feature of countability, and items such as *prospect*, *attempt*, *desire*, *education possession*, *government*, and *management* are characteristic of nominal properness while the others are not. Witness this phenomenon in examples (22), which are expounded in the light of the principle of double functionality.

- (22) a. Perhaps the most important of the architectural *constructions* of this time was the beginning of the new palace to replace the old Louvre which had been a Gothic fortified palace. (COHA)
- b. The *constructions* by Medunetskii and the Stenbergs were first shown in January 1921 at “The Constructivists” exhibition. (COHA)
- c. Nearby, the 1855 Southern Market/Old City Hall, just off *Government* Street, opens its doors to the Museum of Mobile. (COHA)

According to the principle of double functionality, the grammatical feature of nominalization, pertaining to *constructions* in (22a), can be captured, while its original feature of process realized by the grammatical category of a verb is blurred. That is to say, the clause with *construct* realizing process could not be recovered from the nominal group headed by *constructions*. The case in (22b) is to some extent different. *constructions* in this clause not only characterizes the function of being a nominal group with the grammatical feature of countability, but also has the potential of being used as a process recoverable. Hence this clause could be unpacked to its congruent form as *what Medunetskii and the Stenbergs constructed were first shown in January 1921 at “The Constructivists” exhibition*. What should be made clear is that the function of being a thing is foregrounded while that of being a process is backgrounded. In (22c), the nominalized *Government* possesses the grammatical feature of nominal properness solely, and its feature of GM countability could be by no means recoverable. In the light of the data listed in Table 2, it is still not clear with respect to the specific time period and popularity of the two grammatical features that occurred in COHA. The following paragraphs, therefore, are devoted to this respect.

Raw frequency of occurrences concerned with items mentioned above is outlined in Table 5. With respect to the grammatical feature of nominal properness, it can be shown from Table 5, quite surprisingly, that only *prospect* among all the items is gradually obtaining this GPM feature (101 occurrences) while the others attested are sporadic and inceptive (20 occurrences or even less). Therefore, it could be said that items from process to thing have been undergoing the inceptive phase. However, GPM feature of countability is considerably full-fledged. Except

for the three items *education*, *management*, and *potential*, which lag substantially behind their counterparts of GM (see Figure 3), the others are developing in a considerable number of occurrences. Although the three items are falling behind during the past two centuries, yet the general trend is gradually catching up with their counterparts, especially the beginning of the twentieth century has witnessed the rapid growth of this trend (see Figure 4). A subsequent Pearson's correlation test in RStudio shows that the GM feature and GPM feature of countability in *education* are not significantly correlated ($p = 0.6991 > 0.05$), while the two features in both *management* and *potential* are significantly positively correlated ($p = 0.000 < 0.01$; $p = 0.000 < 0.01$) respectively (see Table 6). This significant correlation indicates that the rapid growth of GPM feature of countability by and large is gradually foregrounded during the past two centuries.

In summary, concerning grammatical features for postmetaphorization of nominalization, the GPM feature of nominal properness is not developed fully or even in its inceptive phase; on the contrary, that of countability has been obviously increasingly captured during the last two hundred years and gradually preferred by language users.

5 Postmetaphorization of modality

With respect to postmetaphorization of modality, *It* Construction and *I think* type are further investigated in the following two subsections, and the theoretical foundation of telling whether GPM features could be captured relies on Yang's (2019) AS IF principle.¹¹

5.1 *It* Construction

Based on occurrences of *It* Construction attested in Table 3, we further sub-categorized the construction into modalized and non-modalized ones (see Table 7). The latter pattern is what Halliday (1985, 1994) defined as explicit objective GM of modality, and the former refers to the predicate verb in *It* Construction being qualified by modal auxiliaries. Once *It* Construction is qualified by modal auxiliaries, it is no longer characteristic of objectivity¹² (at least is gradually distant from

¹¹ Only principle of AS IF by Yang (2019) is employed here, because the other principle of Context first is implemented to identify interpersonal metaphor of mood, which has been testified that no GPM feature could be obtained.

¹² See Van Linden's (2012) subjective view of *It* construction from the perspective of the potentiality of its infinitival or *that* complement.

Table 5: Raw frequency of GM and GPM features in terms of items from process to thing.

		1810s	1820s	1830s	1840s	1850s	1860s	1870s	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Total
Prospect	GM	68	345	672	690	685	670	669	641	606	522	555	663	666	613	689	596	567	644	583	565	11,709
	C	29	245	376	386	390	339	321	350	290	242	253	414	417	410	467	460	373	475	419	63	6,719
	NP	1					2	6	1	5	6	5	16	7	1	8	8	9	4	11	11	101
Attempt	GM	50	459	845	909	959	969	1,105	1,162	1,161	1,098	1,191	1,400	1,075	994	1,018	1,015	1,016	1,035	862	780	19,103
	C	66	354	664	712	738	653	748	796	755	741	829	1,068	922	944	924	1,000	1,092	1,126	1,065	375	15,572
	NP	1																				1
Desire	GM	90	629	1,204	1,428	1,610	1,470	1,921	1,982	1,888	2,066	2,239	2,366	1,729	1,452	1,323	1,395	1,206	1,362	1,379	1,423	30,162
	C	18	157	277	342	290	206	277	203	247	336	321	375	311	309	197	218	210	193	219	212	4,918
	NP	2					4	7	1				3			2	1	1				22
Education	GM	105	1,466	2,048	2,021	2,397	1,672	1,982	2,214	2,690	2,289	3,005	2,677	2,679	2,200	3,044	4,261	3,080	2,605	4,212	4,312	50,959
	C	2	3	6	1	2	6	4	2	3	3	3	7	5	8	8	11	10	24	21	24	153
	NP																					3
Possession	GM	97	750	1,224	1,331	1,488	1,337	1,661	1,681	1,570	1,406	1,183	1,042	666	580	529	397	427	349	326	334	18,378
	C	45	141	224	246	249	240	219	263	338	384	303	387	291	301	187	196	151	223	216	33	4,637
	NP	1																				3
Government	GM	912	2,823	6,102	6,164	6,255	8,392	6,358	6,755	6,930	6,718	7,984	11,565	13,110	12,984	12,085	10,922	10,803	11,330	7,503	6,382	162,077
	C	283	494	925	928	1,008	1,302	698	773	627	666	880	1,232	1,396	1,452	1,376	1,205	1,281	1,197	1,096	287	19,106
	NP	1												1	1	2	3	1				16
Management	GM	35	212	505	508	580	493	657	720	635	760	737	1,000	1,311	1,105	1,075	1,264	1,464	2,114	2,511	1,892	19,578
	C	2			2	1		5		1	15	28	32	43	30	53	54	56	81	71	51	525
	NP																					3
Transformation	GM	5	19	28	38	48	67	125	137	156	187	180	176	121	176	141	173	208	316	443	444	3,188
	C	1	2	22	25	34	55	43	29	44	77	76	64	38	53	38	50	88	114	145	106	1,104
	NP	27	181	313	382	471	443	583	595	541	689	808	1,053	1,063	1,083	1,192	1,540	1,388	1,450	1,087	8	14,897
Possibility	GM	2	24	36	49	91	184	313	398	436	658	754	862	821	654	709	771	641	688	669	160	8,920
	C																					
	NP																					
Potential	GM																					
	C																					
	NP																					
Expression	GM	76	785	1,623	2,059	2,296	1,934	2,232	2,237	2,108	2,267	2,392	2,395	1,721	1,589	1,528	1,546	1,428	1,395	1,648	1,629	34,888
	C	51	404	782	846	827	693	759	680	638	649	685	618	622	505	472	474	478	480	582	673	11,918
	NP	127	604	1,119	1,268	1,261	1,135	1,217	1,351	1,269	1,279	1,388	1,600	1,381	1,254	1,012	833	638	490	500	400	20,126
Consideration	GM	103	300	527	508	461	432	469	478	378	408	420	397	436	371	389	451	330	380	305	173	7,716
	C	3	79	159	206	153	204	265	391	363	611	717	1,495	2,002	2,014	2,103	1,668	1,875	1,702	1,243	968	18,221
	NP																					
Agreement	GM	3	17	52	58	35	50	88	160	162	292	309	667	851	942	854	589	645	663	612	342	7,194
	C	3	17	52	58	35	50	88	160	162	292	309	667	851	942	854	589	645	663	612	342	7,194
	NP																					

Table 5: (continued)

	1810s	1820s	1830s	1840s	1850s	1860s	1870s	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Total
Improvement																					
	54	557	1,024	837	935	627	568	548	648	613	477	769	854	528	559	588	451	486	538	441	12,102
C	23	264	491	484	495	323	375	389	401	345	356	450	460	386	403	397	340	363	414	420	7,579
Punishment																					
	86	416	795	868	694	618	712	703	613	611	607	538	460	406	512	709	482	456	445	661	11,392
C	13	102	209	186	125	107	99	90	75	82	89	84	51	62	68	60	66	71	70	104	1,813

Note: GM stands for grammatical metaphor, C for countability and NP for nominal properness.

Figure 3: GM feature for *education*, *management*, and *potential* (normalized).

Figure 4: GPM feature of countability for *education*, *management*, and *potential* (normalized).

Table 6: Correlation between GM feature and GPM feature of countability.

	<i>r</i>	<i>p</i> value
Education	−0.092	0.699
Management	0.807	0.000**
Potential	0.887	0.000**

Note: **indicates the significance at the level of 0.01.

objectivity if subjective-objective cline is considered). The underlying reason is that modal auxiliaries have experienced the process of grammaticalization whose typical mechanism is subjectification (Hopper and Traugott 1993, 2003; Krug 2000); furthermore, the modalized construction is speaker-related and the speaker's attitude towards the proposition is foregrounded, while the explicit objective of modality in Halliday's sense is backgrounded and could not be captured easily. This perspective is facilitated by employing the AS IF principle exemplified in (23).

- (23) a. *It is possible* that the entire unissued authorization may not be devoted to stock dividend purposes at this time, although there is. (COHA)
- b. *It would be possible* to satisfy their claims equally, as fairness requires, by denying the good to all of them. (COHA)

According to AS IF principle, the explicit objective *It* construction *It is possible* in (23a) is employed AS IF it was an implicit objective clause *possibly the entire unissued authorization may not be devoted to stock dividend purposes at this time, although there is*. Therefore, it is a GM of modality in Halliday's sense. Different from (23a), *It* construction *it would be possible* in (23b) does not necessarily display AS IF it was an implicit objective clause. Specifically, it is not a clause denoting explicit objective orientation, but a clause of explicit subjective *de facto*. That is to say, *It* construction denotes the GM of modality in the orientation of explicit objective during its non-modal phase, while the construction is being modalized by modal auxiliaries or in the modal phase, it is in explicit subjective orientation, which is also denoted by what will be elucidated in Section 5.2.

With respect to the items attested concerning *It* Construction, Table 7 profiles their non-modalized and modalized phases and occurrences of each decadal phase. Table 7 tells us that the five modal adjectives in *It* Construction are all undergoing the phase of GM of modality with the explicit objective orientation while not modalized. What they differ is that scant occurrences for *obligatory* ($N = 11$) and *usual* ($N = 147$) seem to be still in their inceptive stage. On the contrary, the other three modal adjectives *possible* ($N = 4,069$), *necessary* ($N = 3,991$), and *probable* ($N = 1,697$)¹³ are considerably developed and seem to be full-fledged, especially preferred by language users during 1920s and 1930s, as Figure 5 demonstrates visually. Surprisingly, among the five items, only the most frequent ones, comparatively, *possible* and *necessary* have identified *It* Construction which is

¹³ The number of 1,697 occurrences for *probable* obviously is not as full-fledged as *possible* (4,069) and *necessary* (3,991), which might account for its absence of modalized *It* construction in COHA.

Figure 5: Occurrences of attested modal adjectives in *It* Construction in COHA (normalized).

qualified by modal auxiliaries, while this GPM feature is unanimously absent from the other less frequent modal adjectives. Figure 6 diagrams normalized occurrences of modalized *It* Construction and shows that the growth is a gradual and to some extent levelled process, which is consonant with Hopper and Traugott's (1993, 2003) view of language change. Compared Figure 5 with Figure 6, we found that the two modal adjectives *possible* and *necessary* quickly acquired their GM feature at the very beginning of nineteenth century, while the obtaining of their GPM feature keeps plateauing except for the rapid decrease of *necessary* during the first two decades in the twentieth century. Another interesting phenomenon is that the GPM feature of *obligatory* also attested once during the 1890s (see example (24)), although its GM feature is still in the inceptive phase. This case is not considered because of its accidental occurrence.

Figure 6: Occurrences of modal adjectives *possible* and *necessary* in COHA (normalized).

- (24) It would sometimes defeat the end it aimed at, because in some cases the jury might be right, the accused person being actually a homicidal lunatic, and remaining such at the close of the maximum period of sentence; at which time, nevertheless, *it would be obligatory* to release him. (COHA)

In order to demonstrate the trend between GM feature of explicit objective orientation or non-modalized modal adjectives (i.e. *it is possible*) and GPM feature of explicit subjective orientation or modalized modal adjectives (i.e. *it would be possible*) in *possible* and *necessary*, the Pearson’s correlation test in RStudio is employed. The results are shown in Table 8, indicating that the two features in both modal adjectives are significantly correlated ($p = 0.010$ for *possible*, $p = 0.009$ for *necessary*). This correlation articulates that both features of GM and GPM are developing in a similar trend.

Table 8: Correlation between features of GM and GPM in modal adjectives *possible* and *necessary*.

	<i>r</i>	<i>p</i> value
Possible	0.558	0.010**
Necessary	0.570	0.009**

Note: **indicates the significance at the level of 0.01.

Although occurrences for *possible* and *necessary* are comparatively scant (see Table 7), it could be concluded from above discussion that the GM feature (non-modalized) of modal adjectives in *It* Construction precedes the GPM feature (modalized *It* Construction) and the two are developing towards the same direction. *It* Construction, however, is just one type of GM of modality, and what the other type, i.e. *I think* type, demonstrates is the motif being articulated in the following section.

5.2 *I think* type

The five mental verbs (i.e. *think*, *assume*, *believe*, *guess*, and *suppose*) have undergone a process from a simple clause to a modal element. They, in clausal rank, realize mental processes together with personal subjects, but the subjects are generally the first singular personal pronoun *I* if the projecting mental clauses are regarded as modal elements (Fetzer 2008), which is employed mainly to refer to the GM of modality in explicit subjective orientation in Halliday’s sense. By using SQs10–12, occurrences of initial, medial, and final positions of the five mental

Table 9: Occurrences of items of *I think* Type attested in COHA.

	1810s	1820s	1830s	1840s	1850s	1860s	1870s	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Total	
Initial	I think	71	467	926	930	1,517	1,929	2,267	2,281	2,305	2,135	2,392	2,399	2,648	2,422	2,523	2,969	3,487	2,969	3,429	3,129	43,195
	I suppose	24	204	354	439	795	984	1,310	1,218	1,028	1,037	1,371	1,391	1,063	954	958	940	877	677	596	520	16,740
	I believe	43	481	708	707	777	814	1,031	999	884	953	998	1,024	793	709	653	657	699	540	516	615	14,601
	I guess	28	162	313	405	617	793	1,006	916	735	917	1,307	1,355	1,049	1,058	961	1,052	1,013	813	858	792	16,150
Medial	I assume		1	1	3	5	5	3	8	5	11	6	21	16	18	37	48	57	47	53	49	394
	I think	7	114	265	237	334	361	482	430	460	388	452	440	439	313	325	332	509	287	297	222	6,694
	I suppose	9	69	129	157	283	232	370	251	213	238	257	311	196	158	178	181	157	116	115	109	3,729
	I believe	12	211	284	270	245	264	309	269	227	205	234	258	191	119	138	126	115	92	77	73	3,719
Final	I guess	3	9	35	34	39	50	39	37	38	60	162	85	98	128	126	104	113	89	145	119	1,513
	I assume							2	1	2	2	2	3	4	4	7	8	3	5	5	46	5
	I think	4	11	28	35	64	132	137	123	134	144	184	146	191	168	179	158	263	257	260	207	2,825
	I suppose	1	22	28	47	75	161	192	153	117	146	199	225	137	140	150	174	161	139	113	100	2,480
	I believe	1	23	22	40	66	64	91	77	67	82	88	77	62	54	32	36	51	45	30	35	1,043
	I guess	2	6	17	23	38	73	52	55	43	99	224	198	255	283	279	267	251	243	294	247	2,949
	I assume							1					1	1	1	1	3		10	2	2	22

verbs with the first singular personal pronoun are detected. Table 9 concludes the raw frequency of these items of *I think* type attested.

As Table 9 shows, occurrences of initial position of *I think* type items dominate its counterparts of medial and final positions, which is consonant with Fetzer (2008) who identified that occurrences of initial position of *I think* outnumber those of other positions. With respect to grammatical features, if those items in the initial position are complemented by a clause with the complementizer *that*, they still denote ideational meanings of being mental processes; if not, they are regarded, by Halliday (1985, 1994), as explicit subjective GM of probability subsumed into GM of modality. When positioned medially and finally, *I think* type items are gradually losing their identities of being a modal element in the interpersonal domain, experiencing a process of grammatical change as discourse markers. As a discourse marker, it rarely collocates with TAM (tense, aspect, and modality) (Fetzer 2008). Consistently, these TAM features are hardly attested in the medial and final uses of *I think* type. Such cases positioned medially and finally are illustrated in example (25), in which *I think* in both clauses serves as discourse markers expressing pragmatic function of attenuating the propositions, instead of fully (it might be partially) denoting explicit subjective GM of probability. According to the principle of AS IF, *I think* in medial and final positions cannot be expounded AS IF they were denoting implicit subjective, because they themselves hardly denote explicit subjective expressing GM of probability.

- (25) a. That was my first encounter with the man who, *I think*, is loved by none but me. (COHA)
 b. [Jemima] I'm going to walk on down the path, *I think*. (COHA)

Pertaining to *I think* Type, the grammatical feature of being a discourse marker is regarded as a GPM feature after being used as GM in this study. In order to compare their distribution and paths of development of this GPM feature (being positioned medially and finally in question), a further analysis among those items are progressed. We will illustrate this viewpoint by employing the most typical item *I think*, and its distribution of occurrences of initial, medial and final position is presented in Figure 7. It shows that the GM use of *I think* in initial position is preferred by language users gradually and highly excels the other two positions. With respect to its GPM uses, medial position is more preferable than the final position, but both are to some extent increasing gradually. A further correlation test is employed to examine how the paths of development about GM and GPM features are associated. The results show that initial and final positions, although there is no significant correlation between initial and medial positions ($r = 0.249$ $p = 0.208 > 0.05$), are extremely positively correlated ($r = 0.902$ $p = 0.000 < 0.01$),

indicating that the gradually preferred use of GM/initial position is concomitant with the gradual increase of final GPM during the past two centuries in COHA (cf. Table 10).

Figure 7: Normalized distribution of occurrences of initial, medial, and final *I think* in COHA (equal totality).

Table 10: Correlations of *I think* type in initial-medial and initial-final positions in COHA.

		<i>r</i>	<i>p</i> value
<i>I think</i>	initial-medial	0.249	0.208
	initial-final	0.902	0.000**
<i>I suppose</i>	initial-medial	0.787	0.000**
	initial-final	0.868	0.000**
<i>I believe</i>	initial-medial	0.947	0.000**
	initial-final	0.709	0.000**
<i>I guess</i>	initial-medial	0.381	0.098
	initial-final	0.372	0.106
<i>I assume</i>	initial-medial	0.903	0.000**
	initial-final	0.534	0.015*

Note: *indicates the significance at the level of 0.05 and **at the level of 0.01.

A thorough examination of the other four items of *I think* type generally corroborates with the trend which is identified from the survey of *I think* except for that of *I guess*. Besides, initial and medial positions are also significantly correlated. Consequently, it is safe to conclude that the GM use of *I think* type in the initial position leads the path of development and the GPM use follows suit.

6 Pathway of metaphorization

With respect to these concepts profiled in the present study, they are visualized in Figure 8. The figure explicates that squares in the left column indicate the two subtypes of ideational metaphor (nominalization) and interpersonal metaphor of modality (*It* construction and *I think* type); ovals indicate either GM features in the middle column or GPM features in the right column; oval in gradient line means that the grammatical feature is not obviously detected or in its inceptive phase during the past two centuries in COHA; lines associate different concepts in one way or another and unidirectional arrows indicate the path or development of change from GM feature to GPM ones.

Figure 8 profiles that ideational GM of nominalization and interpersonal GM of modality are characteristic of GPM features. Pertaining to the former, trans-categorizing from quality to thing (e.g. from *happy* to *happiness*) or process to thing (e.g. from *transform* to *transformation*) characterizes GM features, while in the GPM phase, new grammatical feature of countability (e.g. from *happiness* to *a happiness*) is acquired fully and that of nominal properness is still in its inceptive phase (e.g. from *government* to *Government*). Pertaining to the latter, two subtypes of interpersonal metaphor of modality are considered. Specifically, metaphorical explicit objective clauses are realized by *it* construction without being modalized (e.g. *it is possible*), while after being modalized (*it would be possible*), explicit subjective metaphor which characterizes GPM feature occurs. As to *I think* type, when it is located initially, it is characteristic of GM feature; when it functions as a discourse marker positioning medially or finally, it captures the GPM feature.

Figure 8: Pathway of metaphorization.

7 Conclusion

Halliday's GM demonstrates that congruent expressions are employed by language users primarily and then these expressions are gradually substituted by grammatically metaphorical ones in adult language. Actually, this trend continues, and thus GPM occurs. As investigated in this study, both ideational metaphor of nominalization and interpersonal metaphor of probability bifurcating *it* construction and *I think* type are undergoing the pathway of change in terms of GPM features. With respect to nominalization, the GPM phase identifies grammatical features such as the typical countability and/or nominal properness; with respect to *it* construction, the path from GM to GPM is characteristic of the change of grammatical features from explicit objective to explicit subjective; and finally concerning *I think* type, items which are positioned initially are treated as metaphorical expressions while those that are positioned medially and finally mark the GPM phase.

The present study is significant theoretically in that it is enriching and enlarging the scope of what Halliday regarded as demetaphorization. Specifically, GPM features pertaining to ideational metaphor of nominalization and interpersonal metaphor of modality are identified. However, it should be cautious to overgeneralize the findings identified in this study, because the data we use are solely from COHA which is typical of American English. It is unknown that whether the findings are consonant with other regional Englishes such as British English or different indigenized Englishes in outer and expanding circles (Kackru 1982, 1992). In future researches concerning GPM, it is suggested that other diachronic and synchronic corpora be employed and different regional Englishes be considered.

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