CSCanada
Canadian Social Science
Vol. 9, No. 5, 2013, pp. 162-168
DOI:10.3968/j.css.1923669720130905.2739

ISSN 1712-8056[Print]
ISSN 1923-6697[Online]
www.cscanada.net
www.cscanada.org

Complementarity of Systemic Functional Grammar and Constructional Grammar

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Received 23 June 2013; accepted 16 September 2013

Abstract

Construction Grammar (CG) as developed by Fillmore, Goldberg and others is a recent development in syntactic theory, which has become more and more influential. Its central claim is that in a language there are a large number of grammatical units, called constructions, which are the basic forms for the speakers to express their meanings. Systemic Functional Grammar (SFG), put forward by Halliday, also pays great attention to how the speakers generate utterances and texts to convey their intended meanings. This paper explores the relationship between CG and SFG. It argues that the concept of constructions should be introduced in SFG and reflected in the transitivity network. It also suggests that main ideas from SFG be used in CG to describe language more adequately. The objective is to make SFG and CG better theories of language, by combining their strengths.

Key words: Construction grammar; Systemic functional frammar; Way construction; Resultative construction

XING Xiaoyu, CAO Duxin (2013). Complementarity of Systemic Functional Grammar and Constructional Grammar. *Canadian Social Science*, *9*(5), 162-168. Available from: http://www.cscanada.net/index.php/css/article/view/j.css.1923669720130905.2739
DOI: http://dx.doi.org/10.3968/j.css.1923669720130905.2739.

INTRODUCTION

Construction Grammar (CG) as developed by Fillmore, Goldberg and others (Kay & Fillmore, 1999; Goldberg, 1995, 2006; Fillmore et al. forthcoming) is a recent development in syntactic theory, which has become more and more influential. Its central claim is that in a language there are a large number of grammatical units, called constructions, which are the basic forms for the speakers to express their meanings. Constructions are language-specific, as different languages have different means of expressing the same (or similar) meanings. Children on their way of fully mastering a language acquire an increasing number of constructions, and become more skillful in using language (Wang & Liu, 2010).

Systemic Functional Grammar (SFG), put forward by Halliday (Halliday 1994; Halliday & Matthiessen, 2004), also pays great attention to how the speakers generate utterances and texts to convey their intended meanings. According to SFG, language has three metafunctions, namely, the ideational, interpersonal, and textual metafunctions. All the three metafunctions are reflected in a huge system network, which specifies all the meaning potentials (Huang, 2000). The system network consists of several subnetworks, such as the Transitivity network, the Thing network, and the Quality network. A network is made up of a number of the so-called "systems", each consisting of a set of semantic features. To generate an utterance, the system network is traversed, certain semantic features are selected, and the relevant realization rules are fired (Fawcett, Tucker, & Lin, 1993; Mann & Matthiessen, 1985). From the perspective of SFG, children gradually acquire a full system network, and use it to produce a large number of sentences.

The similarity between CG and SFG is thus clear. Both model a speaker's grammatical knowledge (Li & Zhang, 2012; Chen, 2009). In CG, grammatical knowledge is knowledge of a large number of constructions, which form a structured inventory of speakers' knowledge of the conventions of their language (Langacker, 1987, pp.63-66; Goldberg, 2006, p.18); and in SFG it is knowledge of a huge system network. But there are also many differences between the two theories. A major difference is in the process of sentence generation (Chai, 2007). According to CG, a speaker has a list of constructions at his disposal and he just selects one of them as the blueprint for making his utterance. For example, a speaker may need to select the so called Way construction, when needing to utter *John whistled his way home* or *He belched his way out of the restaurant.* But according to SFG, a speaker must traverse the system network, making various types of choices. In SFG, there is no explicit notion of constructions. And there is little research on how such sentences can be generated in the system network.

It is important to incorporate the idea of sentence constructions into SFG. There are two major reasons for doing so. One is this. It is a fact that there are various constructions in a language. For SFG to describe languages faithfully and adequately, it must not ignore this fact and must somehow account for it. The second reason may have to do with technicality. The constructions in a language are large in number. For example, in English, apart from the Way construction discussed above, there are other constructions such as the Resultative construction (e.g. *Mary wiped the table clean*), *the the X-er, the Y-er construction* (e.g. *The more you read it, the better you will understand it*), to name a few. It would be very difficult to incorporate all such constructions into the existing system network. The organization of the system network needs to be carefully rethought in order to account for such sentence constructions, which are facts of language.

This paper aims to combine the strengths of SFG and CG, especially by incorporating the idea of constructions from CG into SFG. Section 2 explicates the idea of constructions. Section 3 compares SFG and CG, pointing out their similarities in treating simple sentence constructions. Section 4 compares how SFG and CG deal with complex sentence constructions. Section 5 suggests a way of incorporating the idea of constructions into SFG. Section 6 concludes this paper and discusses some related issues.

1. CONSTRUCTIONS

According to CG, constructions are "conventionalized parings of form and function" (Goldberg, 2006, p.3). Constructions vary in size and complexity, ranging from morphemes or words, through idioms, phrases, to sentences (Goldberg, 2006, p.5). In this paper we only concentrate on constructions at the sentence level. We distinguish between two types of sentence constructions: "simple constructions" and "complex constructions".

A simple sentence construction consists of at least a main verb V. It often also has a subject; it may also have an object, which may be a thing, a location, an attribute etc.. So, typical simple sentence constructions are of the form: S V, and S V O. And typical simple sentences are *John smiles, Peter kicked a ball, His house is in London*, *She is very pretty,* etc..

Simple constructions are closely related to the valency structure of the verbs (Gao & Shi, 2010). But there are also constructions which are not determined by the valency structures. For example, the verb *wipe* has the valency structure *X wipe Y*. But we can say *She wiped the table clean*, which is of the construction *X wipe Y ADJ*. Similarly, there are many other such complex constructions, such as the Way construction, the the X-er, the Y-er construction, and so on.

The paper will first compare the analyses of simple constructions in SFG and in CG, and then the treatments of simple constructions in the two theories.

2. SIMPLE CONSTRUCTIONS: SFG AND CG CONTRASTED

2.1 The SFG Treatment

In generating a simple sentence (e.g. *Peter kicked a ball*), the transitivity network is traversed first (Zhang & Lei, 2013). The result is a skeleton sentence, e.g.:

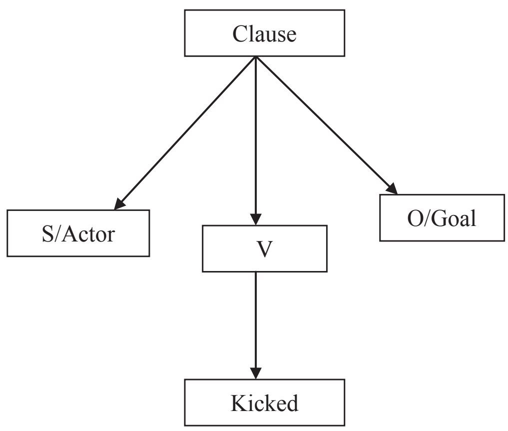

Figure 1
A Sample Skeleton Sentence

The subject S (e.g. *Peter*), which is the Actor of the kicking process, will be generated by traversing the thing network. So will be the object (e.g. *a ball*), which is the Goal of the kicking the process (Fawcett, Tucker, & Lin, 1993; Fawcett, 2000)

This skeleton sentence is a mixture of semantic structure and syntactic structure, which can be depicted in Table 1 below (Halliday, 1994; Halliday & Matthiessen, 2004):

Table 1
SFG Analysis of *Peter Kicked a Ball*

Sentence	*Peter*	*Kicked*	*A ball*
Semantic Structure	Actor	Process	Goal
Syntactic Structure	Subject	Main Verb	Object

2.2 The CG Treatment

CG claims that the basic units of language are constructions. In order to generate a simple sentence, a simple construction is first selected, which has a corresponding semantics (Lu, 2013). For example, to generate *Peter kicked a ball,* the construction S V O is selected, which has the semantics <Agent Predicate Goal>. The relationship between the syntax and semantics of the sentence can be depicted as below (see Goldberg 1995, p.117):

Semantics	KICKING	< agent patient >	
Syntax	V	SUBJ	OBJ

Figure 2
CG Analysis of *Peter Kicked a Ball*

The construction S V O is not yet a concrete sentence. In order to produce *Peter kicked a ball,* S will need to be filled by *Peter*, V by *kicked,* and O by *a ball*. The production of *Peter, kicked,* and *a ball* will involve the selection of certain semantic features, such as [name_for_man], [hitting_with_foot], [singular, round_object], respectively.

2.3 Comparison Between CG and SFG

The above two subsections explicated the treatment of simple sentences in SFG and that in CG. We are now in a position to compare them. Take the sentence *Peter kicked a ball* for illustration.

Firstly, SFG and CG give the same semantic analysis, except with some terminological differences. SFG and CG agree that the sentence *Peter kicked a ball* describes a process (or a predicate), which involves two participant roles: an Actor (or Agent), and a Goal (Patient).

Secondly, SFG and CG provide the same syntactic analysis, except with some terminological differences. Both regard the sentence as consisting of a subject and an object.

Thirdly, SFG and CG provide the same linking relationship between the semantic structure and the syntactic structure. Both think that the subject plays the role Actor (or Agent), and object the role Goal (Patient).

Fourthly, both SFG and CG produce an incomplete sentence first, and then fills the empty slots with concrete words or phrases. In SFG, a skeleton sentence is first generated, which is a mixture of syntactic and semantic structure. In CG, a construction is first determined, which is the syntactic structure. A corresponding semantic structure is also provided, which may be used in the generation of a complete sentence (e.g. for ruling out some semantically bad sentences).

On the whole, SFG's treatment of simple sentences is similar to CG's. But a notable difference is in the way of how an incomplete sentence is first produced. In SFG, the transitivity network needs to be traversed, and only at the end of the traversal is a skeleton sentence produced (Li, 2007). In CG, a construction is determined directly, in one go (Yan, 2006). This difference will be further discussed in Section 5 below.

3. COMPLEX CONSTRUCTIONS: SFG AND CG CONTRASTED

In this section we first explicate how complex constructions are dealt with in SFG and in CG, and then we will compare the different treatments. For this purpose, we will focus on two complex constructions: the Resultative construction, and the Way construction.

3.1 The SFG Approach to the Resultative Construction and the Way Construction

Let us see how complex constructions are dealt with in SFG, taking the Resultative and the Way constructions as examples. We explain the SFG treatment of the Resultative construction first. On the whole, there has not been much research in SFG on the Resultative construction. But Halliday and Matthiessen (2004) provide a fragmentary treatment of it (see below).

Consider the generation of the sentence *Mary wiped the table clean*. The part, *Mary wiped the table*, is generated in the same way as discussed in Section 3 above. The transitivity network is traversed, semantic features such as [material_process], [transformative], [elaboration], [wiping], are selected. Wiping is seen as a type of "elaboration"; and other verbs of the group include *wash, play* and *cut*, etc.. The result of such a traversal is the generation of the following skeleton sentence:

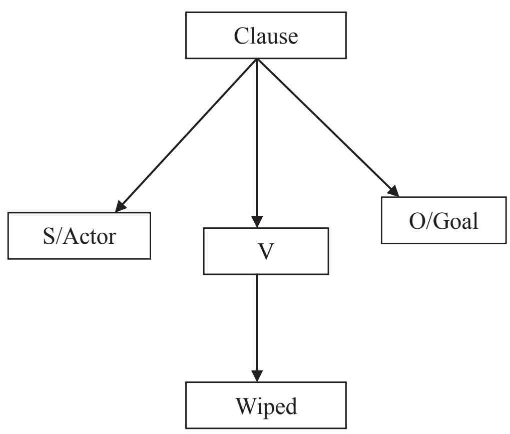

Figure 3
The Skeleton Sentence for *Mary Wiped the Table*

By traversing the Thing network twice, the subject and the object, e.g. *Mary* and *the table*, will be generated; yielding the sentence *Mary wiped the table*.

But what about the *clean* part in the sentence *Mary wiped the table clean?* According to Halliday and Matthiessen (2004, p.183, p.189), when an elaboration verb is selected another subnetwork is immediately entered, which specifies the result of the process.

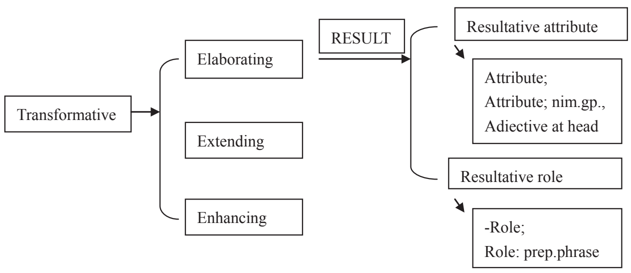

Figure 4
The Elaboration Processes and the Result Subnetwork

In Figure 4, by selecting features [transformative] and [elaborating], on the basis of the other choices made in the early part of the transitivity network, the following skeleton sentence will be generated (Figure 5).

The attribute will be generated by entering the Quality network. By selecting appropriate features, the word *clean* will be produced (Zhang, 2013). Thus, the full sentence *Mary wiped the table clean* will be obtained.

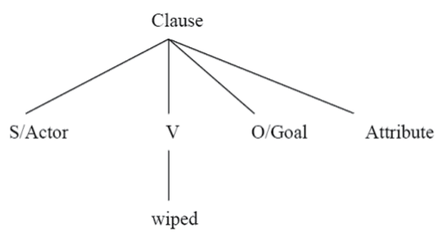

Figure 5
The Skeleton Sentence for *Mary Wiped the Table Clean*

If we put the generation process aside and only focus on the semantic and syntactic structures of the sentence, the following analysis will be obtained (Halliday & Matthiessen, 2004, p.177, p.180):

Table 2
The Semantic and Syntax Structures of *Mary Wiped the Table Clean*

Mary	Wiped	The table	Clean
Actor	Process	Goal	Attribute
Nominal group	Verb group	Nominal group	Quality group

In the above we presented the treatment of the Resultative construction in SFG. Let us now consider the Way construction. Take the sentence *Bob pushed his way to the stage* as an example. There is virtually no research on how such a sentence should be dealt with in SFG. Normally, the pushing process involves a pusher (Actor) and a pushed (Goal). But here, *his way* is not something *Bob* really pushed. Rather, the sentence means that Bob moved to the stage by pushing (other people aside). The Goal, if needed to be made clear, should be the unexpressed *other people*.

We will discuss the SFG treatments of the Resultative and the Way constructions further in Section 4.3 below.

3.2 The CG Approach to the Resultative and the Way Constructions

Let us look at how the Resultative construction is dealt with in CG first. Take *Mary wiped the table clean* as an example. According to Goldberg (1995, pp.189), the semantic and the syntactic structures of this sentence are shown below:

Semantics	MOVE	<agent	patient	Result-goal>
R:instance Means	PRED	<		>
Syntax	V	SUBJ	OBJ	$OBL_{AP/PP}$

Figure 6
CG Analysis of *Mary Wiped the Table Clean*

The above example can be interpreted as Mary caused the table to become clean by wiping, with *clean* indicating the result.

Take *She cried her eyes dry* as another example. The CG analysis of the sentence is the same as that is shown in Figure 6. The sentence is associated with its constructional semantics "X CAUSES Y TO BECOME Z" independently of the verb *cry* which instantiates it. When *cry* fuses with the Resultative construction, the construction can add both a Result-Goal and a Patient argument, which the intransitive verb *cry* alone does not have. In this way, the acceptability of other sentences, such as *Sue talked her face blue*, can also be explained.

Now, let us consider the analysis of the Way construction in CG. The Way construction can be represented as follows (Goldberg, 1995, p.199):

[SUBJi [V [POSSi way] OBL]]

Here V is a nonstative verb, and OBL codes a directional meaning. Example sentences of this construction include: *John pushed his way to the stage*, *He belched his way out of the restaurant*, and so on.

According to Goldberg (1995), the Way construction has two interpretations: the "means interpretation" and the "manner interpretation". The sentence *John pushed his way to the stage* has the means interpretation: John moved to the stage by means of pushing. The sentence *He belched his way out of the restaurant* has the manner interpretation: the man moved out of the restaurant belching. The two constructional meanings are shown in the following two figures:

Semantics	CREATE-MOVE	<creator-theme		Path>
	means PUSH	< pusher		>
Syntax	V	SUBJ	OBJway	OBL

Figure 7
Means Interpretation of the Way Construction

Semantics	MOVE	<theme		Path>
	manner PRED	<		>
Syntax	V	SUBJ	OBJway	OBL

Figure 8
Manner Interpretation of the Way Construction

When the speaker wants to express the meaning "create a way by means of doing something", or the meaning "going along a path in a certain manner", he can select the Way construction: [SUBJi [V [POSSi way] OBL]], and then fills the empty slots with appropriate words or phrases.

3.3 SFG and CG Compared: The Treatment of Complex Constructions

Complex constructions are many in a language. Much of the CG literature is on complex constructions (e.g. Kay & Fillmore, 1999; Goldberg, 1995; Goldberg & Jackendoff, 2004; Boas, 2003). By contrast, there has been little research in SFG on complex constructions. Halliday and Matthiessen (2004) provide an account of the Resultative construction, but analyses of other complex constructions, e.g. the way construction, are hard to find in the SFG literature.

In terms of the amount of research outcome on complex constructions, CG is surely better than the SFG. But what about the treatment of complex constructions in SFG? Is it better or worse than that in CG? Let us consider this important question now.

In CG, constructions are taken as basic units of language. In order to produce a sentence, a relevant construction is first determined. It is assumed that a speaker of a language knows a large number of sentence constructions, simple or complex. In generating a sentence which is an instance of a complex construction, CG first produces the complex construction, presumably from the speaker's knowledge base of constructions. It then fills the relevant slots with more concrete words or phrases.

In SFG, at least in the work by Halliday and Matthiessen (2004), the Resultative construction is produced by traversing the Transitivity network. In order to generate the result part, e.g. the *clean* part in *Mary wiped the table clean*, a Result subnetwork is added to the Transitivity network (Figure 4). This treatment is able to generate the sentence *Mary wiped the table clean*, but is the treatment good enough? And is it applicable to other complex constructions?

Halliday and Matthiessen's (2004) treatment of the Resultative construction works fine for sentences like *Mary wiped the table clean*, and *Pat chopped the carrot into pieces*. But it seems to have difficulties in dealing with other, marked, resultative sentences, such as *She cried her eyes dry*, and *Sue talked her face blue*. Within the SFG framework, *cry* or *talk* indicates a behavioral process, which typically involves a Behaver and a Process only, such as *He grumbled, She smiled*, and so on (Halliday & Matthiessen, 2004, p.251). But such verbs can enter the Resultative construction. In order for such verbs to appear in the Resultative construction, the feature [behavioral] must also be linked to the Result subnetwork, in the same way as the feature [elaborating] is linked to it (Figure 4).

But potentially any verb is able to appear in the Resultative construction (by given a suitable context); resultative sentences containing some verbs (e.g. *Mary wiped the table clean*) may be more semantically acceptable than those containing other verbs (e.g. *Mary laughed the table clean*). But even *Mary laughed the table clean* may make perfect sense in a fiction. Thus, a better way of treating the resultative construction might be to link the Result subnetwork to the feature [transitivity], which appears at the beginning of the Transitivity network (Feng, 2012).

Similarly, many verbs can enter the Way construction. At the moment, SFG has not dealt with the Way construction. Maybe, there should be a kind of Way subnetwork, and the feature [transitivity] should be directly linked to it; the idea would be that after traversing the Way subnetwork, a Way Construction will be generated, and then the relevant slots will be filled later on.

Such thoughts lead to a solution to the treatment of complex constructions in SFG, which we will discuss in the next Section.

4. INCORPORATING THE IDEA OF CONSTRUCTIONS INTO SFG

Let us now recall how constructions are dealt with in CG. In CG, it is assumed that the speaker knows a large number of sentence constructions, simple or complex, and that he selects one construction when wanting to produce a sentence. A construction is a sort of skeleton sentence, an incomplete sentence with some empty slots, which are filled later on with concrete words or expressions (Deng & Shi, 2007; Zhang, 2007). A difference between a simple construction and a complex construction is that in the former the verb is fixed, but in the latter the verb slot is still blank, needing to be filled later by a concrete word. For example, in the Way Construction:

[SUBJi [V [POSSi way] OBL]]

the verb V can be filled by *push, elbow, whistle, belch*, etc..

In SFG, a simple construction is also directly linked to a concrete verb. The skeleton sentence generated at the end of traversing the transitivity network contains a simple construction with a concrete verb in it (Figure 1).

As for complex constructions, by their nature, each complex construction allows a variety of verb to appear in it, e.g. *He belched / elbowed / joked / punched / pushed / shoved / whistled / his way out of the restaurant*. So, in SFG there should be a network, at a higher level than the Transitivity network; and a traversal in this higher level network should produce a complex construction, in which the verb and other parts are left blank. The verb can be filled by traversing the Transitivity network, and other parts can be produced by entering other relevant networks such as the Thing network, and the Quality network.

However, there are a number of problems needing to be discussed. Firstly, how this higher level network should be integrated into the existing system network. Here is a suggestion. Suppose that the entry condition of the huge system network (which includes the Transitivity network, the Mode network, the Tenor network, etc.) is [situation]. Now, we can have the following system:

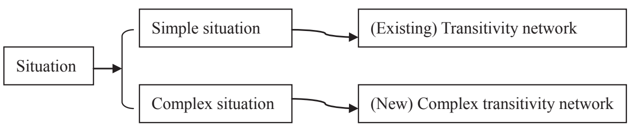

Figure 9
The Situation System

If the speaker is to describe a simple situation, he can generate a simple construction first, by traversing the existing Transitivity network, and then fill in the slots by entering other, appropriate networks (as discussed in great detail in the SFG literature). If the speaker is to describe a complex situation, he can enter the Complex_transitivity network—the higher-level network mentioned above—to generate a complex construction; he then needs to traverse the Transitivity network and other networks to produce the required verb and other parts of the sentence.

Secondly, there is a problem of how the Complex_transitivity network is to be related to the existing Transitivity network. Note that a traversal in the Complex_transitivity network should produce a complex construction, in which the verb is still empty. The verb is to be filled by traversing the Transitivity network. But once a complex construction is produced, it sets certain constraints on the choice of the verb. For example, once the Way Construction is chosen, different verbs have different probabilities to appear in the construction; for example, contact verbs such as *push* will have a strong probability, whereas verbs such as *be* and *seem*, will have a very low probability (or even zero probability). We suggest that this can be done by Probability Resetting rules (Fawcett, Tucker, & Lin, 1993).

Thirdly, there is the problem of how to construct the Complex_transitivity network. One solution is to put all the complex constructions in one big system, e.g.:

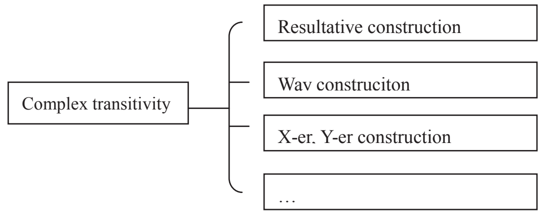

Figure 10
A Huge System of Complex Constructions

This solution is very much the same as that in CG, which assumes that the speaker has a large list of sentence constructions and that he selects one of them when wanting to utter a sentence. But it is not in the spirit of SFG, which emphasizes on the systemic aspect of language. A better way would be to organize all the complex constructions in a systemic way, put them into related groups, and form a network very much like the existing Transitivity network.

CONCLUSION

In this paper we compared the treatment of simple and complex constructions in SFG with that in CG. The comparison showed that SFG and CG are very similar in dealing with simple constructions (Section 3). But it revealed that there has been little research on complex constructions, and that the existing treatment, e.g. by Halliday and Matthiessen (2004), is very impoverished (Section 4). We suggested a way of dealing with complex constructions in SFG, discussed some problems and offered our suggestions.

Constructions are facts of language. In order to achieve greater descriptive adequacy, SFG has to deal with complex constructions in a satisfying way. Our solution to the problem of handling complex constructions incorporates some important ideas from CG. We hope that this paper will generate strong interests in SFG, and will lead to extensive research on complex constructions in SFG.

Ideas from SFG are useful for CG too. CG concentrates on the ideational meaning, especially the experiential meaning, of language. But it neglects the interpersonal and textual meanings of language (Zhao & Wang, 2008). For example, it does not explain why a speaker chooses to use one construction, rather than another construction, if both express the same basic meaning. In order to make CG a better theory of language, it should widen its functional perspective.

Constructions are language-specific; they also reflect certain differences in culture, style, social status, etc.. So, SFG and CG can both contribute a great deal to the understanding of different contexts and descriptions of different languages. It is therefore important to combine the strengths of SFG and CG, to achieve better theories of language. The present paper is a result of such an attempt.

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