The "Habitat Segregation" of Expressions Denoting Futurity, and its Application to TESL

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Futurity can be expressed using *will*, *be going to* and *shall*, but even advanced English learners can hardly tell the difference among "*The ice will / *is going to melt if the sun comes out*." (Ando 2005: 104)

This presentation consists of three parts; first, we will try to explain the differences, i.e., "habitat segregation", of the two expressions denoting futurity, i.e., *will* and *be-to* infinitives; secondly, we will argue for a better explanation for *will* and *be-to*; and thirdly, we will apply our explanation to TESL and see if the students understand the subtle differences of the expressions denoting futurity better.

1. Introduction

One of the most difficult items for the English learners is the homonymy of the expressions denoting futurity. Futurity can be expressed using *will*, *be going to, be-to* infinitive and *shall*. However, even advanced learners can hardly tell the difference among "*The ice will / *is going to melt if the sun comes out*." (Ando 2005:104)

As for auxiliary verbs including *will*, it is common in the literature to argue that auxiliaries have root use and epistemic use and treat epistemic use as an extension of the root use. (cf. Sweetser (1990)) However, we have found that this idea has, at least, the following two shortcomings especially in TESL. First, it is difficult to make students fully understand auxiliaries using the idea of root and epistemic use.   For example, it is hard to explain that the *can* in *You can go* is an epistemic use of *can* because if teachers describe root use of *can* as ability and its epistemic use as possibility, the students might be

confused in deciding whether the *can* in *You can go* denotes the root usage ("ability of *yours*) or epistemic usage ("possibility" of you going). Secondly, as for *will*, many studies argue that its root use is strong will and ability, while its epistemic use is supposition. However, all the sentences with a first person subject should fall into root use (it is impossible to suppose something about myself), and most of the sentences with a third person subject should fall into epistemic use, for it is quite impossible to know the strong will of a third person, rather, we have to suppose.

Hence, in this paper, we will argue for a better explanation of the expressions denoting futurity based on their core meaning and the linguistic contextual cues that invite the interlocutors to interpret a sentence online in a certain way.

2. How the Future Expressions Are Taught in Japanese English Classrooms
2.1 *Will*

The English textbooks used in most junior high schools in Japan introduce *will* as an auxiliary verb which enables us to express what happens in the future. At the same time, almost all of those textbooks say that *be going to* is also an expression to denote futurity. With such an instruction, students can hardly tell the difference between *will* and *be going to*. The problems of *will* contain three aspects; (i) Students in junior high school assume that *will* and *be going to* have the same meaning; (ii) They learn the polysemous meanings of *will*, but they regard *will* as the expression to denote futurity   because they learn how to use *will* before they learn about *be going to*. And (iii) Because of the second problem, a lot of students make mistakes as in (1);

(1) a. *If the boat will sink, we will get drowned.   (Declerck 1984: 281)
     b. *When he will come, tell him to wait.   (Nakayama 1981: 2)

The curriculum guidelines issued by the Ministry of Education can be considered as one of the major causes for such misunderstanding. Current guidelines for foreign language (English) in junior high school (7th to 9th grade) state that teachers should teach *will, be going to,* and progressive form as future expressions. On the other hand, the guidelines for high school (10th to 12th grade) state that teachers should teach *will* not only as a future expression but also as an expression denoting anticipation but they are not advised to tell the difference between the two usages to high school students. Consequently, Japanese students learning English are generally poor at differentiating the *will* denoting futurity and the *will* denoting anticipation, and Japanese students often make such mistakes as in (1) because they are possessed with the idea that *will* is the

expression for future. Thus, the problem in English education in Japan can be summarized as follows.

(2) The problems of Japanese English education concerning *will*
   a. *Will* denoting futurity is taught first and anticipation *will* is taught later
   b. Students are never taught the relationship between the two usages of *will*, rather they are told to memorize the two usages.

2.2 *Be-To* infinitive

The *be-to* combination has been known to express various meanings such as plan / prearrangement, destiny, and order. The main problem for English learners has two aspects; (i) English learners often find it difficult to distinguish various meanings of *be-to* infinitive, (ii) English teachers in Japan treat the combination of *be-to* infinitive as irreducible and omit detailed explanations. Thus, students have to remember the various meanings of *be-to* infinitive every time they encounter the phrases using *be-to* infinitive. The fact that *be-to* infinitive is rarely used in colloquial English also contributes to the difficulty of learning the meanings of it.

3. The Semantics of *Will*

This chapter examines the auxiliary verb *will*. In 3.1, we will review previous studies. 3.2 will show our own analysis.   Through 3.1 and 3.2, we claim that the meaning of *will* has one core meaning and the following two linguistic contextual cues motivate the interlocutors to interpret the sentence into various usages; (i) whether the verb used in the sentence is dynamic or static, and (ii) whether the subject of the sentence is the first, second, or third person.

3.1. The Previous Studies of *Will*

This section reviews the previous studies of *will*. There are many kinds of those studies, and they can be categorized into three lines just as many studies on a polysemous word; (i) to list the several meanings of *will*, which is reviewed in 3.1.1.; (ii) to classify the meanings into two categories (root use and epistemic use), which we will review in 3.1.2., and (iii) to claim that *will* has only one meaning, which we will review in 3.1.3.

3.1.1. Listing the Usages: *Will* in Dictionaries

This section reviews how dictionaries list the usages of *will*;

(3) Meanings of *will* Listed in *Cobuild*:

    1. You use *will* to indicate that you hope, think, or have evidence that something is going to happen or be the case in the future.

    2. You use *will* in order to make statements about official arrangements in the future.

    3. You use *will* in order to make promises and threats about what is going to happen or be the case in the future.

    4. You use *will* to indicate someone's intention to do something.

    5. You use *will* in questions in order to make polite invitation or offers.

    6. You use *will* in questions in order to ask or tell someone to do something.

    7. You can use *will* in statements to give an order to someone. [FORMAL]

    8. You use *will* to say that someone is willing to do something. You use *will not* or *won't* to indicate that someone refuses to do something.

    9. You use *will* to say that a person or thing is able to do something in the future.

    10. You use *will* to indicate that an action usually happens in the particular way mentioned.

    11. You use *will* in the main clause of some 'if' and 'unless' sentences to indicate something that you consider to be fairly likely to happen.

    12. You use *will* to say that someone insists on behaving or doing something in a particular way and you cannot change them. You emphasize *will* when you use it in this way.

    13. You use *will have* with a past participle when you are saying that you are fairly certain that something will be true by a particular time in the future.

    14. You use *will have* with a past participle to indicate that you are fairly sure that something is the case.

This type of previous studies only shows how it is used, and will not be of a help to the English learners. More detailed studies are needed in order to account for the polysemous nature of *will*.

3.1.2. Two Categories: Sweetser (1990)

The second line of research includes those that argue that all the modals have two usages: root use and epistemic use. Sweetser (1990), a representative of such studies, argues that epistemic use is an extension of the root meaning.

(4) the Modal Extension from Real-World to Internal-World (*must*):

  a. John *must* be home by ten; Mother won't let him stay out any later.
   (real-world: obligation)   (Sweetser 1990: 49)
  b. John *must* be home already; I see his coat.
   (internal-world: probability in reasoning) (ibid: 49)
 (5) the Modal Extension from Real-World to Internal-World (*will*):
  a. He *will* be home in three hours. (real-futurity) (ibid: 55)
  b. He *will* be home by now; I just saw the lights go on.
   (the epistemic futurity of knowledge)   (ibid: 55)

  Sweetser (1990) seems to be right in stating that both root and epistemic uses of modal auxiliary verbs are related by metaphor, and that epistemic use is the extension of root use. However, a problem with this idea is that she considers (5a) as the root use of *will*. The attempt failed because she does not deal with the sentences like (6), which are also classified as root use of *will*.

  (6) I *will* solve this problem.   (Huddleston and Pullum 2002: 193)

 As seen, the approach of Sweetser (1990) falls short in that it is impossible to deal with (6): we cannot say that (5b) has extended from (6).

3.1.3. Monosemous Approach: Ueno (1991)
  Ueno (1991) attempts to explain cognitive-linguistically why *will* has various uses by arguing for a core meaning of the word. She claims that the core meaning of *will* is "non-factuality", i.e., the event which the sentence refers to does not occur as a fact. She also claims that the speakers use *will* rather than *may* or *might* when he /she thinks that the event is likely to happen. She also continues to argue that sentences with *will* have the following five peculiarities;

  (7) Five peculiarities of sentences with will according to Ueno (1991)
   a. Almost all the subjects in root use is +Animate
   b. The event in root usage is controllable by the subject.
   c. The event is caused by the volition of the subject in root use.
   d. Almost all the events in epistemic use is uncontrollable by the subject
   e. The events in epistemic use happen without the volition of the subject

  (8) Strong Points(SP) and the Problems(P) in Ueno (1991)

SP1. explanation using a core meaning

SP2. trying to identify the contextual cues that invite the interpretation of the usages

Pr1. does not refer to why modal auxiliary verbs express "non-factuality."

Pr2. cannot explain why the sentences using *will* has various meanings as shown in 3.1.1.

3.1.4. Summary of the Reviews of Previous Studies

3.1 has reviewed how *will* is treated in dictionaries and previous studies. We claim that not only listing the meanings but also suggesting a core meaning is needed to deal with a polysemous word *will.* We also claim that only suggesting a core meaning of a polysemous word cannot account for the reason why the word has various meanings.

3.2. Our Analysis on *Will*

In this section we will propose our own analysis on *will*. As will be discussed below, the word *will* just expresses that the proposition is assumed only in speaker's mind. The 'meanings', i.e., usages of *will* (shown in 3.1.1, for example) are derived from the online interpretation by the interlocutors combining the core meaning of the word and the linguistic contextual information, i.e., the fowling two; (1) whether the subject is first, second, or third person, and (2)whether the verb is dynamic or static.

3.2.1. The Core Meaning of *Will*

First, using Langacker (1987)'s bottom-to-top method, we have examined all the sentences with *will* in COCA, and with this analysis, we will argue that the core meaning of *will* is that it expresses "irrealis" mood, i.e., *will* expresses that the speaker considers the proposition is not real. As English is not well equipped with some mechanism to express irrealis mood, modals are a good candidate to express the irrealis mood easily without using some ostentatious constructions, for modals are, by definition, mechanism to express the speakers' mood.

The next step is to see which linguistic contextual cues motivate the interlocutors to interpret a sentence in a certain way.

3.2.2. Various Meanings of *Will*

Having examined all the collected data sentences, we have found that the following two linguistic contextual cues invite the interlocutors to interpret the sentences in a certain way. i.e., (1) whether the Subject of the sentence is the first, second, or third

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person, and (2) whether the verb is dynamic or static.

In concrete terms, it will be as (9);

(9) Linguistic Contextual Cues that Motivate the Various Usages of *Will*:
   a. Three types of Subjects:, 1st person, 2nd person and 3rd person
   b. Two groups of verbs: Dynamic and Static.
   c. The core "irrealis" + 1st person + Dynamic verb
       = recognized as the <INTENTION> of the subject (=speaker).
   d. The core "irrealis" + 1st person + Static action or situation
       = recognized as the <INFERENCE> of the speaker
   e. The core "irrealis" + 2nd / 3ed person + either Dynamic or Static action
       = recognized as the <INFERENCE> of the speaker

As for (9e), when the speaker is talking about 2nd and 3rd person, it is impossible for the speaker to know what the 2nd or 3rd person intends, rather, all he/she could do is to infer the intention.

There are, in fact, some sentences with 2nd or 3rd person, expressing their intention such as (10);

(10) 2nd or 3rd person Subject Sentences Expressing the Intention:
   a. Parents often threaten their children by saying that they*'ll* stop their pocket
       money.   (Leech 1987: 87)
   b. He *will* go swimming in dangerous waters.   (ibid. : 86)

In (10a), *will* is used in an indirect discourse. That means that the original speech for the part "they*'ll* stop their pocket money" is "we*'ll* stop our pocket money." As you can see, the original subject for the sentence is 1st person.

The reason why (10b) expresses the intention can be explained by the argument of Huddleston and Pullum (2002). Huddleston and Pullum (2002) says that intentional component is heightened in an example like (11); (11) is "uttered in a context where she has already expressed her intentions";

(11) I've told her how urgent it is but she won't sign the form.

(Huddleston and Pullum 2002: 193)

Using the above explanation by Huddleston and Pullum (2002), we can say that

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(10b) is regarded as the intention of *him* (= the subject) only under the circumstances where *he* has expressed his intention.   In situations other than that, (10b) expresses only the <INFERENCE> of the speaker that *he* will go swimming.

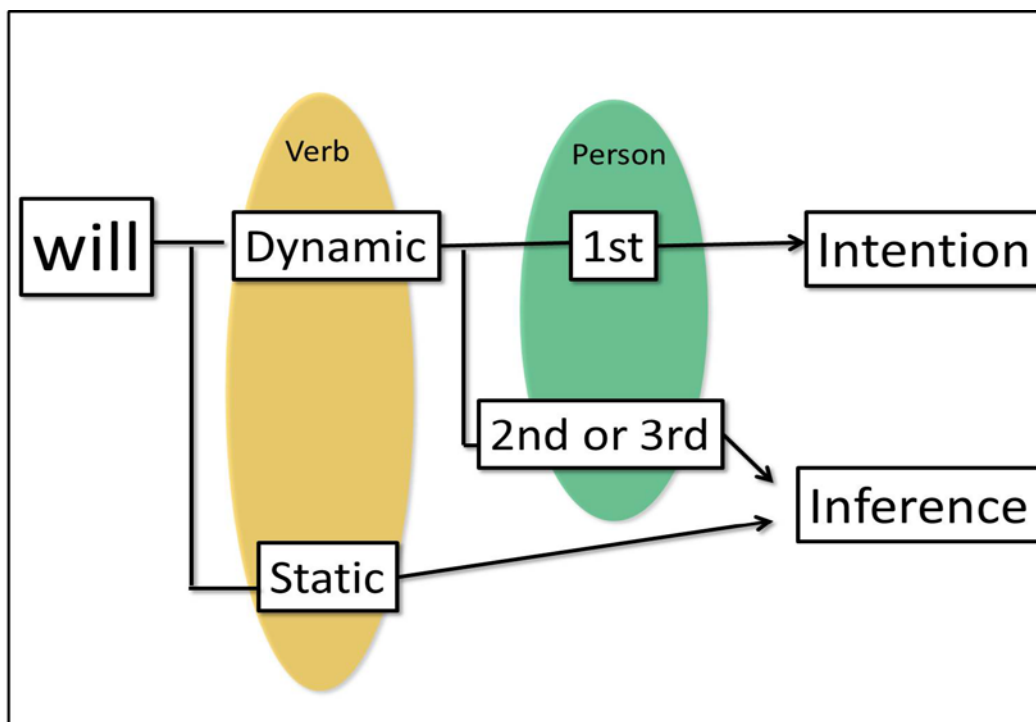 Summarizing, we can depict our result for *will* as Figure 1;

Figure 1: Derivation of Meanings of the Sentence Using *Will*

4. The Semantics of *Be-To* infinitive

 There should be no disagreement on the point that *be-to* construction has many usages, though we tend to define the various usages in different ways. The list of the usages usually includes plan/arrangement, destiny/fate, order/command, and the like. The following is the list of the usages that Japanese pedagogical textbooks of English include;

(12) a.. plan, order / command, possibility / fate   (Ishiguro 2007: 177)
  <plan> The next meeting *is to* take place in Hong Kong.
  <order / command> You *are to* show your student card at the entrance.
  <possibility / fate> Not a sound *was to* be heard.
 b. plan / destiny, order / command, possibility   (Sugiyama 2011: 379)
  <plan / destiny> I *am to* leave next week.
  <order / command> You *are to* avoid the trouble.
  <possibility> Not a cloud *was to* be seen.

c. plan, order / necessity, destiny, possibility, intention   (Hagino 2004: 183)

      <plan> They *are to* be married in June.

      <order / necessity> Nobody *is to* leave this room until 10:30.

      <destiny> He *was* never *to* see his mother again.

      <possibility> The bag *was* nowhere *to* be found.

      <intention> If you *are to* succeed in anything, you must make a good start.

d. arrangement, one-sided arrangement (order, command), providence, impossibility, intention   (Ando 2005: 107,108)

      <arrangement> We*'re to* be married in June.

      <order > You *are to* do your homework before you watch TV.

      <command> The gate *is* not *to* be opened today.

      <providence> He *was* never *to* see his wife again.

      <impossibility> The man *was* nowhere *to* be seen.

      <intention> If we *are to* be friends you must call me Leslie.

In the literature, although there has been a growing interest in cognitive approaches to language, much of the discussion has dealt only with very limited usages of *be-to* infinitive.

This chapter reviews some previous studies on *be-to* infinitive and argues for its core meaning and the linguistic contextual cues that invite the interlocutors to understand the construction in a certain way based on a research using Langacker's usage-based model (Langacker 1987). Explaining a linguistic construction with its core meaning and the linguistic contextual cues that motivate the interpretation would be much more effective than enumerating various meanings in TESL, which will be discussed in section 5.

4.1 Previous Studies

Previous Studies on *be-to* infinitive can be divided into three categories; (i) historical approaches, (ii) word combinational approaches, and (iii) modal unit (constructional) approaches. We will review representative studies of each type and argues that none of them are sufficient in explaining the construction as a whole.

4.1.1. Historical Approaches to *Be-To*

(13) studies included in this type: Visser (1963-73), Yanagi (2004)

(14) Original meaning of *be-to* according to Visser (1963-73) is <predestination>. According to Yanagi (2004), *be-to* denotes both futurity and obligation

(15) Shortcomings of Historical Approaches

The relation between each usage, i.e., the motivation for the various meanings, remains an unsettled question.

4.1.2. Generative, Compositional, Approaches to *Be-to*

(16) studies included in this type; Sugayama (2005), Declerck (2010)

(17) The meaning of *be-to* According to Sugayama (2005) is deontic necessity. Accroding to Declerck (2010) is copula + *to* inf.

(18) Shortcomings of Generative, Compositional, Approaches

To realize the meanings of *be-to* infinitive, we need both *be* part and infinitival *to*. Moreover, Sugayama (2005) and Declerck (2010) posit more than seven meanings of the combination; arrangement, obligation, predestined future, future in the past, possibility, purpose and hypothetical condition. However, the motivation for the various meanings remains an unsettled question.

4.1.3. Constructional Approaches to *Be-to*, i.e., Treating it as a Modal Unit,

(19) studies included in this type; Goldberg and Auwera (2012), Chang (2012)

(20) The meaning of be+to According to Goldberg and Auwera (2012)

Syntax: [be tense [VP to]]VP

Semantics: "subject raising" PrIPS

Pragmatics: Formal register; I-S >:--I

*PrIPS contains four basic meanings; prearrangement, indirect command, predetermination, and suitability.

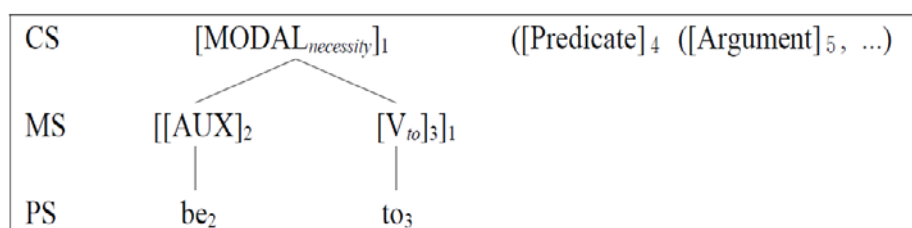(21) The meaning of *be-to* According to Chang (2012) based on the LCS theory.

Figure 2: Model of B*e-to* Infinitive According to Chang (2012: 14)

(22) Shortcomings of Constructional Approaches

   a. PrIPS is a mere subset of contextual meanings rather than the basic meaning underlying them.

   b. They provide no detailed explanation for the derivation of various meanings of *be-to* infinitive

4.2 The Suggested Core Meaning of *Be-To* Infinitive and Its Linguistic Contextual Cues

We have to identify the linguistic contextual cues that motivate the interlocutors to interpret the sentence in a certain way for making a better teaching method for English learners. All attested examples come from COCA and BNC.

(23) Form of *be-to* infinitive indicates futurity without time adverbs
 a. He *is going to* leave.
 b. He *is to* leave.

The reason why (25) can express futurity without a time adverb is that both expressions have two aspects of referential points; *be* and *to* infinitive.

(24) Two points of event time denoted by *be-to*
 a. current state expressed by *be*-verb
 b. event in the future denoted by *to* infinitive
(25) If *be*-part and the event occur simultaneously, the construction is realized as present progressive.
 a. He *is leaving* tomorrow.
 b. He *is leaving*.
(26) The agent and the speaker cannot interfere or negotiate the affair which is denoted by *to* infinitive
 a. We *are to be married* in June.
 b. We *are destined to* (*predetermined to* / *prearranged to*) *be married* in June.
 c. *We *are* probably *to* be married in June.
(27) *be-to* infinitive has tendency to be used in expressing an official event.
 a. The prime minister *is to visit* Japan next month.
 b. The Idaho Supreme Court *is to decide* early next year whether to grant that trial.
 c. #The prime minister *will visit* Japan next month.
(28) The *be-to* combination seems somewhat biased for deontic modality.
 Huddleston & Pullum (2002: 206) remarks that the combination is 'commonly used for deontic necessity.'

Sugayama (2005: 102) also explicitly denotes the basic meaning of the combination as obligation:

(29) The agent has been set or scheduled to do something by some external (outside) forces, and is thus obliged. However, the agent's commitment to the obligation is left open.

(30) The core meaning of *be-to* infinitive is 'fixed state'
All the usages of *be-to* infinitive can be paraphrased as (20b) using this core meaning.

(31) a. Bob is to attend the meeting.
b. It is the fixed state for Bob to attend the meeting.

Next, we will identify the linguistic contextual cues that motivate the interlocutors to interpret the sentence in a certain way.

Although we define the core meaning of *be-to* infinitive as 'fixed state,' *be-to* infinitive can be interpreted as having various meanings, i.e., usages. We must recognize the linguistic contextual cues to distinguish the meanings in order to design a better teaching method for English learners. From the bottom-to-top method, we get the followings.

Meanings	Linguistic Contextual Cue
Plan 108 examples	**Tense:** present **Agent:** I, we Ex. I *am to meet* at three on Wednesday.
Order 162 examples	**Tense:** present **Agent:** you Ex. You *are to do* your homework before you watch TV. Ex. This medicine is to be taken before going to bed.
arrangement 99 examples	**Tense:** present **Agent:** third person or inanimate object Ex. The next meeting *is to take place* in Hong Kong.
Destiny 168 examples	**Tense:** past **Agent:** human **+ negation (including an adverbial clause with 'but' or 'however')** Ex. He *was never to see* his wife again.
impossible 70 examples	**Tense:** past **Subject:** inanimate object **Agent:** you **+ negation (including an adverbial clause with 'but' or 'however')** Ex. Not a cloud was to be seen.

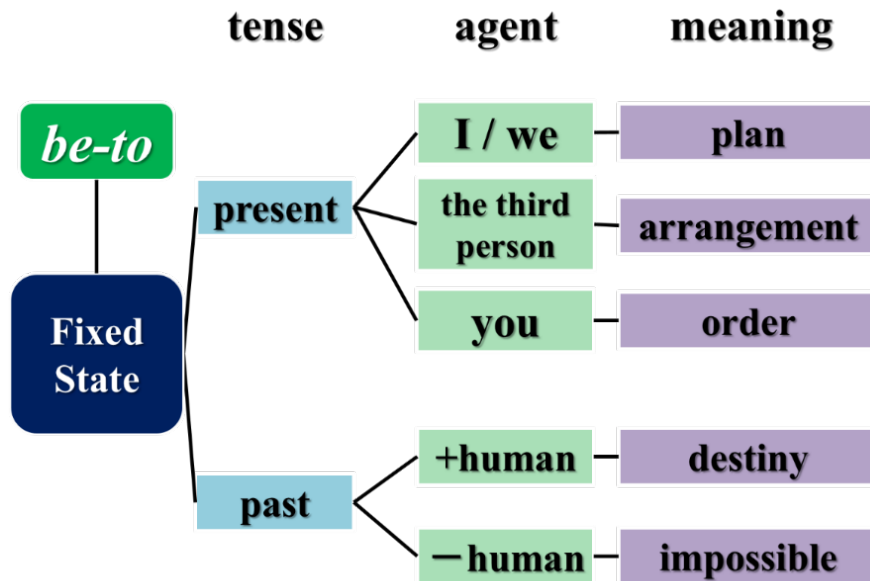**Table 1: The Linguistic Contextual Cue of *Be-to***

Figure 3: Derivation of Meanings of *Be-to*

4.3 Support

To verify the validity of our argument, let us do the following test of adding the relevant linguistic contextual cues to one sentence and check if the derived sentences can be interpreted in that way (Figure 4).
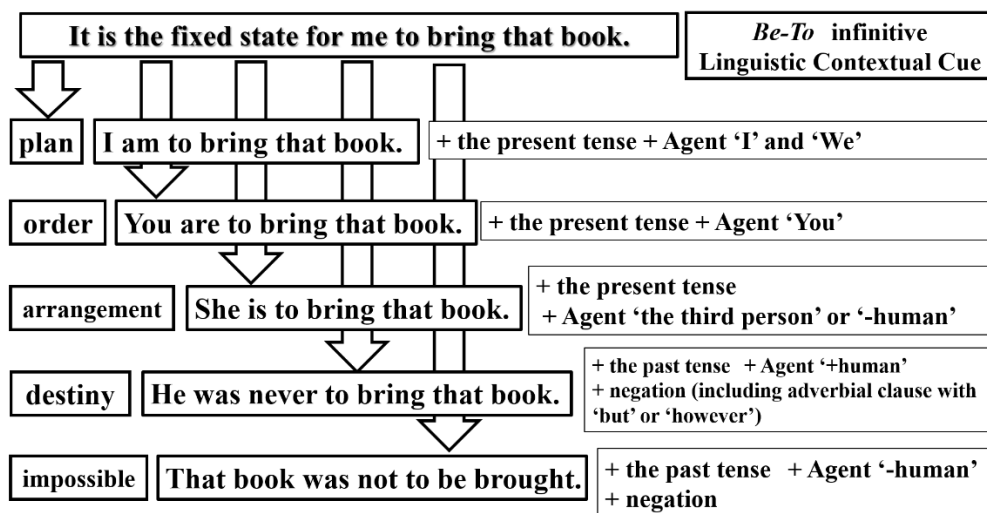

Figure 4: Adding Linguistic Contextual Cues

5. Applications to TESL

This chapter applies our findings to TESL and check the validity of our result.

5.1 The Overview of the Experiment We Conducted

We conducted an experiment on 28th November 2013. The targets of the experiment were two Shinshu University freshman classes, whose English level are about the same. We can say that they are close in their English level because they both are English "Beginners" class, same level classes divided by the University's placement test.

Both classes took, at first, the Pre-test, and after the Pre-test, in one class, say A class, students were asked to have a short lecture that is similar to the explanation normally given at Japanese high schools, which is based on the Curriculum Guidelines issued by the Japanese Ministry of Education. In the other class B, students were asked to have the lecture, or an explanation, according to our model. After each lecture, the students of both classes took the Post-test. Both explanations lasted for fifteen minutes, and they were same in their length.

We calculated the average scores of all the four tests, and we also timed the average time that was needed for the students to answer all the questions.

For the ethical reason, we gave the short lectures based on our model to class A after taking the Post-test.

5.2 The Results of the Pre-test and Post-test

Each test had 9 questions, 3 asking if they understood *will* correctly, 3 asking if they understood *be-to* infinitive correctly, and 3 questions asked English skills other than *will* and *be-to* infinitives to ensure that the students have a similar English level.

Table 2 shows the result of the four tests.

	Class A Class that had the lecture based on the Curriculum Guidelines	Class B Class that had the lectures based on our new model
Pre-test Average Score	6.32	6.32
Post-test Average Score	5.82	7.67
Differences	- 0.5 ↓	+ 1.35 ↑

Table 2: The Result Scores of the Pre- and Post-Test

The fact that the average scores of the Pre-test were the same ensures that the classes

are of the same English level. And as Table 2 shows, the scores of Class B overwhelmingly increased, which clearly shows the effectiveness of our model. There was even one student who had increased his score from 3 to 9. This result surely lends support to the soundness of our model.

Not only in the scores, but comparing the time that was needed also supports the validity of our model. The needed time for finishing the test dramatically shortened in Class B as can be seen in Table 3;

	Class A Class that had the lecture based on the Curriculum Guidelines	Class B Class that had the lectures based on our new model
Average Time needed for Pre-Test	1'40	1'40
Average Time needed for Post-Test	1'46	1'33
Differences	+ 0'6. ↓	- 0'7. ↑

Table 3: The Time Needed for Completing the Tests

Table 3 shows that students in Class B were confident in choosing the right answer, which also supports the usefulness of our teaching method teaching the habitat segregation of the two linguistic elements based on their core meanings and the linguistic contextual cues that differentiate the usages of each element.

6. Conclusion

This paper has examined the "habitat segregation" of modal auxiliary *will* and *be-to* infinitives. Drawing on standard and novel evidence, it is argued that a variety of usages come from the online interpretation of combining the core meaning with Linguistic Contextual Cue.

We have argued that *will* has the core meaning of expressing "irrealis" and all the usages derive from the online interpretation of combining this core meaning with two linguistic contextual cues of (i) whether the subject is first, second, or third person, and (ii) whether the verb used is dynamic or static.

We have also closely investigated the semantics of *be-to* infinitive and found out that its core meaning expresses the fixed state, and this, too, the interlocutors infer its meaning by combining the core meaning with its contextual cues of (i) the tense of the event, and (ii) the grammatical number of the subject.

We also have applied our theory to TESL and confirmed its validity by showing that teaching based on our model enables the students to understand *will* and *be-to* infinitives better.

There being similarities in the linguistic contextual cues that are concerned with the expressions, the results in this paper may suggest a much broader consequence of some "habitual ways of thinking" (Whorf 1939) that are essential to the"construal" of the outer world that the speakers of English conduct.   Also, we did no deal with the "habitat segregation" between the two linguistic elements that we have dealt with here with other constructions that denote futurity such as progressives, *be going to*, and present tense. Much is left for future studies and for food for thought.

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