MONITORING AND FEEDBACK IN THE PROCESS OF LANGUAGE ACQUISITION -ANALYSIS AND SIMULATION-

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ABSTRACT

Previously studies have shown that native Japanese and English speakers, constantly monitor their speech, provide feedback and then correct. Japanese and English have different word orders which make speakers of both languages monitor their own speech, give feedback and make corrections at different key surface points. However, structurally, speakers from both languages check their speech and make correction at the complementizers.[1] From there, they continue to produce sentences. As a result, we may say that in order to efficientlyproduce sentences (in time and energy),native Japanese and English speakerscheck their speech and correct it at the sentence level.

KEYWORDS

Monitor, Feedback, UniversalGrammar, Correcting Method, Maze, Flowchart, Algorithm, Matrix Search Counter

1.1INTRODUCTION

The purpose of this paper is to try and describe the procedure of producing the sentences which native Japanese and English speakers use. To describe the procedure, a maze, flowchart of algorithms and Excel VBA MACRO are used to show that the both speakers find the shortest way possible to produce sentences. In order to simulate consciousness using computer systems (Czora, 2001), human concepts cannot function like part of an ordinary computer program because they are not formed automatically. Instead, simulated concepts can be used by the system that simulates the volitional consciousness of a human being .In this paper, we claim that we can describe the procedure via a system that simulates the volitional consciousness of a human being.

1.2MAZE

Mazes are used for reinforcement learning. According to Hacibeyoglu, reinforcement learning is the problem faced by an agent that must learn behavior through trial and error interactions within

[1]Morimoto, *The Monitoring and Feedback of Natural Conversation Processing*

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a dynamic environment that lacks the educational examples.

1.3 ALGORITHMS

In this paper, a flowchart of algorithms is used to show the step-by-step procedure for calculation and data processing.

1.4 EXCELVBA MACRO

A spreadsheet process called a VBA macro written for Microsoft EXCEL is used to explain grammatical systems that make up human language. It simulates the specific grammatical systems that make up a major part of the language.

2.1 DATA

From our previous study regarding the monitoring and feedback of natural conversation processing, we noticed that native speaker of Japanese and of English always monitored their own speech and made corrections at the sentence levelswhile they were conversing with others. Here is a sentence in Japanese and English:

A sentence according to a native Japanese speaker:

(1) Watashi-ha asu hayaku haha-to Kyotoni ikimasu,ikitaidesu-ga otenki-ga shinpaidesu.(I will go to Kyoto with my mother first tomorrow, I want to go,but I wonder about tomorrow's weather.)

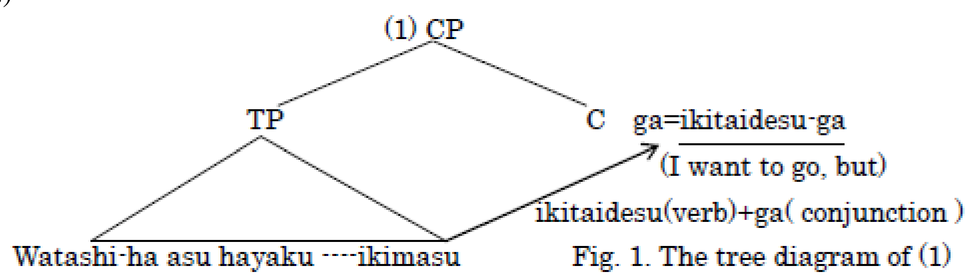


Fig. 1. The tree diagram of (1)

A sentence bya native English speaker:
(2) I take, (2)'I use the minimal framework to consider the structure.

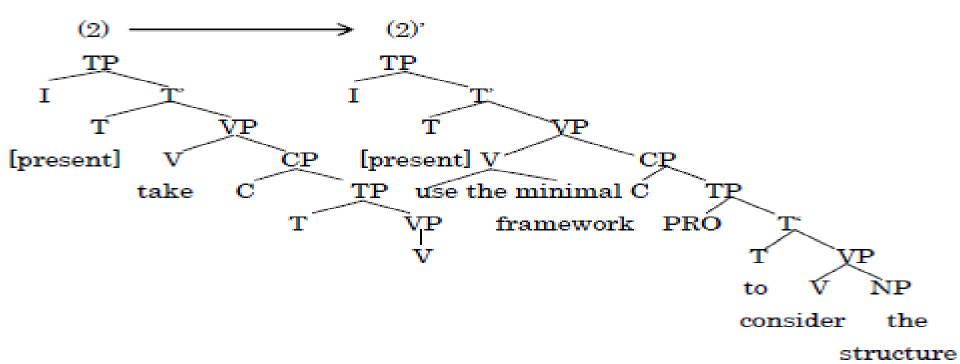


Fig.2. The tree diagrams of (2) and (2)'

According to Chomsky, when the speaker begins to speak, his sentence structure is already built in his mind/brain. We may argue that the sentence (2) has a structure which is illustrated above. An English Speaker:

(3) I use the minimal framework to (3)' to consider the structure

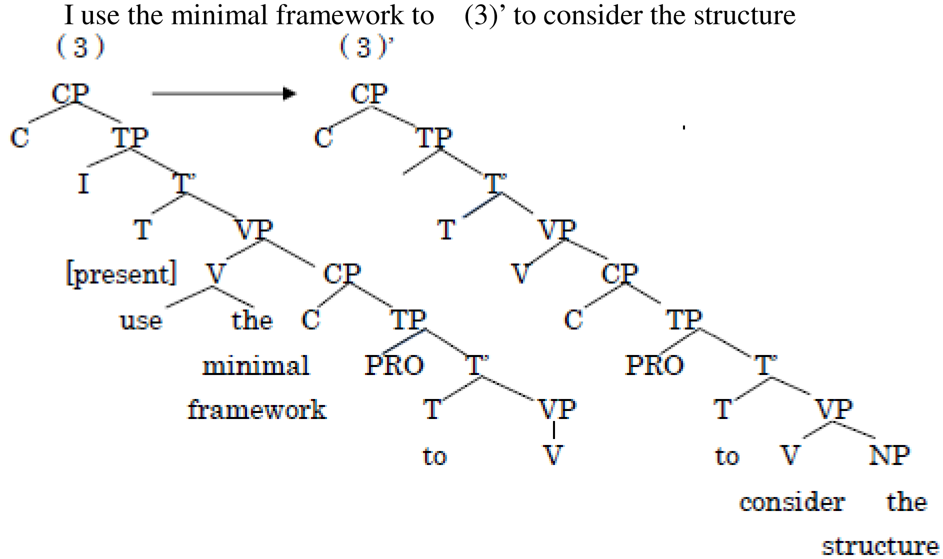


Fig.3. The tree diagrams of (3) and (3)'

2.2A PROBLEM

From the above examples from (1) to (3)'we can raise a question. Why do both native speakers change and create the sentence at the sentence level even though there are differences in English and Japanese?Are there any special reasonsto change and create sentences at the sentencelevel?

2.3 The MAZE APPLIED TO THE DATA

To consider the problem(2.2), we apply the Maze to the data and see the mechanism of the correcting method.The maze shows that both native speakers change and create sentences at the word and sentence level. Once they have learned, they only traverse X1to X2 to X3 to X4 to X5 to Y1 to Y2 to Y3to Y4 (Goal).The matrix search counter from Xa1.Ya2 to Xa4.Ya5 shows the linguistic learning mistakes and the process of linguistic learning.

Table 1. Maze for both Japanese and English and matrix search counter

Start :X1 → (Subjects)	X2 → (EV)[5]	X3 →	X4 →	X5 ↓
Xa1.Ya2	Xa2.Ya2	Xa3.Ya2	Xa4.Ya2	Y1 →
Xa1.Ya3	Xa2.Ya3	Xa3.Ya3	Xa4.Ya3	Y2 →
Xa1.Ya4	Xa2.Ya4	Xa3.Ya4	Xa4.Ya4	Y3 →
Xa1.Ya5	Xa2.Ya5 Z (a new word)	Xa3.Ya5 W (a new word)	Xa4.Ya5	Y4 Goal (JV)[6]

If a Japanese speaker says, "watashi-ha asu hayaku haha-to Kyoto-ni ikimasu, ikitaidesu-ga otennki-ga shinnpaidesu."(I will go to Kyoto with my mother early tomorrow, but I wonder about tomorrow's weather.) In Japanese, the verb is at the end of the sentence, so this speaker says ""watashi-wa----------ikimasu", and changes the verb to "ikitaidesu-ga".Again, this means that she has saved 8 words (watashi, ha, asu, hayaku, haha, to, Kyoto, ni) in her speech to convey sentence meaning. On the other hand, If an English speaker says"I take ", but monitors his speech and he changes it just after the verb("take"), he will say"I use the minimal framework to consider the structure." That means he monitors his speech and changes it just after the verb.He has saved the 7 words in this case. Also, he says"I use the minimal framework to," and he monitors his speech andpauses just after "to".Then he continueshis speech and says "to consider the syntax." In this sentence, he has saved 5 words (I, use, the, minimal, framework)insteadof repeating again from the beginning.

2.4 THE ALGORITHM FLOWCHART AND EXCEL VBA MACROAPPLIED TO THE DATA

2.4.1The following algorithm flowchart shows a sentence in Japanese and English.

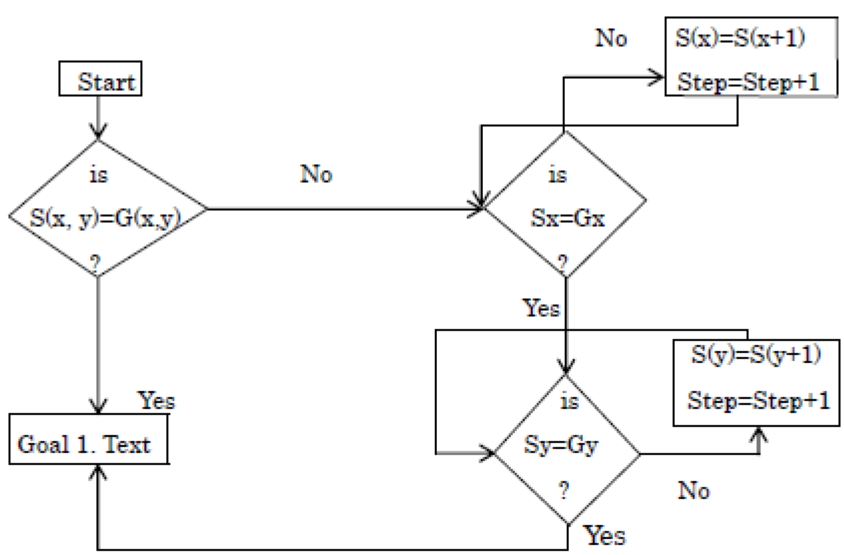


Fig.4. Algorithm flowchart for both Japanese and English

2.4.2 The following program is repeated from 1 to 5 in X and 1 to 4 in Y.

```
Sub MacroA( )                    'In the name of the macro
For x = 1 To 5                   'X is repeated from 1 to 5 in the For Next syntax.
Next                             ' For was carried back to a single x
Application.Run "MacroB"         ' X is repeated 5 times and run the macro B
ActiveSheet.PrintPreview         ' Y is repeated from 1 to 4 and print review
End Sub                          'Macro B has been runand close the macro


Sub MacroB()                     'Macro B
For Y = 1 To 4                   ' For Next syntax for Y
Next                             ' For was carried back to a single x
End Sub                          'Exit the macro B
```

2.4.3 The following program will be repeated until the number 1-9 on the stage, A1, B2, C3 from the cell. The value of n is shown in the position Range(‟K1”).

```
Sub Input1To9 ()          ' Macro to enter on the stage anumber in the range of 1 to9
Dim i As Integer          ' Define i as an integer
For i=1 To 9              ' It is imperative to repeat 1 to9 until i
Cells(i,i)=i              ' Take the contents of what is contained in the space called
‟i”and stuff it into the space called ‟Cells(i,i)”
n=Cells(i,i).Value        'The assignment of  the cells (i,i) the value of the n
Range(‟K1”).Value=n       'To display the value of n in range(‟K1”).
Next i                    'Repeat the above program i until 9
End Sub                   ' Exit the macro
```

In this program, the value of ‟n” indicates how many words the speaker uses to make a sentence. We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 2. A spreadsheet process to imply a computational process

	A	B	C	D	E	F	G	H	I	J	K
1	1										9
2		2									
3			3								
4				4							
5					5						
6						6					
7							7				
8								8			
9									9		

2.4.4 The definition used for words used in algorithms.

1.Start → Japanese or English speaker changes his/her word or sentence
2.Step=Step+1 → Check text word
3.Counter → Automatically counts occurrences
4.Goal → Correct

2.4.5The following algorithm flowchart shows how a native Japanese speakers changes a word(Kyoto) to another word(Nara).

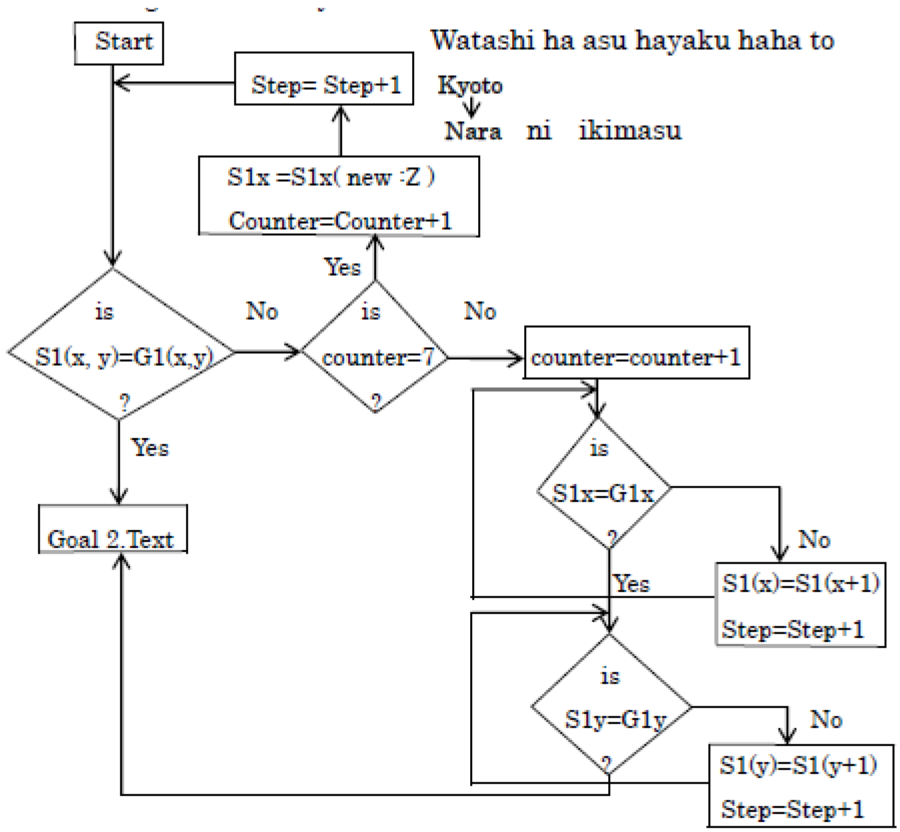


Fig.5. Algorithm flowchart for Japanese

Here, a native Japanese speaker monitors, provides feedback on his speech, picks up a correct word (a new word: Table 1, Z) and changes it from the previous word.

Watashi ha asu hayaku haha to Kyoto

(1) (2) (3) (4) (5) (6) (7)

↓

Nara ni Ikimau.

(7) (8) (9)

```
Sub Macro_de_hyouzi()

Cells(1, 1).Value = "①"                'Input Value "①" into Cells(1, 1)

Cells(1, 2).Value = "②"                'Input Value"②" into Cells(1, 2)
Cells(1, 3).Value = "③"                'Input Value"③" into Cells(1, 3)
Cells(1, 4).Value = "④"                'Input Value"④" into Cells(1, 4)
Cells(1, 5).Value = "⑤"                'Input Value"⑤" into Cells(1, 5)
```

```
Cells(1, 6).Value = "⑥"                  'Input Value"⑥" into Cells(1, 6)
Cells(1, 7).Value = "⑦"                  'Input Value"⑦" into Cells(1, 7)
Cells(1, 8).Value = "⑧"                  'Input Value"⑧" into Cells(1, 8)
Cells(1, 9).Value = "⑨"                  'Input Value"⑨" into Cells(1, 9)
Cells(2, 1).Value = "Watasi"             'Input Value" Watasi " into Cells(2, 1)
Cells(3, 2).Value = "ha"                 'Input Value" ha " into Cells(3, 2)
Cells(4, 3).Value = " asu "              'Input Value" asu " into Cells(4, 3)
Cells(5, 4).Value = "hayaku"             'Input Value" hayaku " into Cells(5, 4)
Cells(6, 5).Value = "haha"               'Input Value" haha " into Cells(6, 5)
Cells(7, 6).Value = "to"                 'Input Value" to " into Cells(7, 6)
Cells(8, 7).Value = "Kyoto"              'Input Value" Kyoto " into Cells(8, 7)
Cells(9, 7).Value = "↓"                  'Input Value"↓"into Cells(9, 7)
Cells(10, 7).Value = "Nara"              'Input Value" Nara " into Cells(10,7)
Cells(11, 8).Value = "ni"                'Input Value" ni " into Cells(11, 8)
Cells(12, 9).Value = "Ikimasu"           'Input Value" Ikimasu " into Cells(12, 9)
End Sub
```

We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 3. A spreadsheet process to imply a computational process on the process

	1	2	3	4	5	6	7	8	9
1	□	②	③	④	⑤	⑥	⑦	⑧	⑨
2 Subject	watashi								
3 particle		ha							
4 adverb			asu						
5 adverb				hayaku					
6 noun					haha				
7 postposition						to			
8 noun							Kyoto		
9							↓		
10 noun							Nara		
11 postposition								ni	
12 verb									ikimasu

2.4.6The following algorithm flowchart shows how a native English speaker changes a word (syntax) to another word(framework).

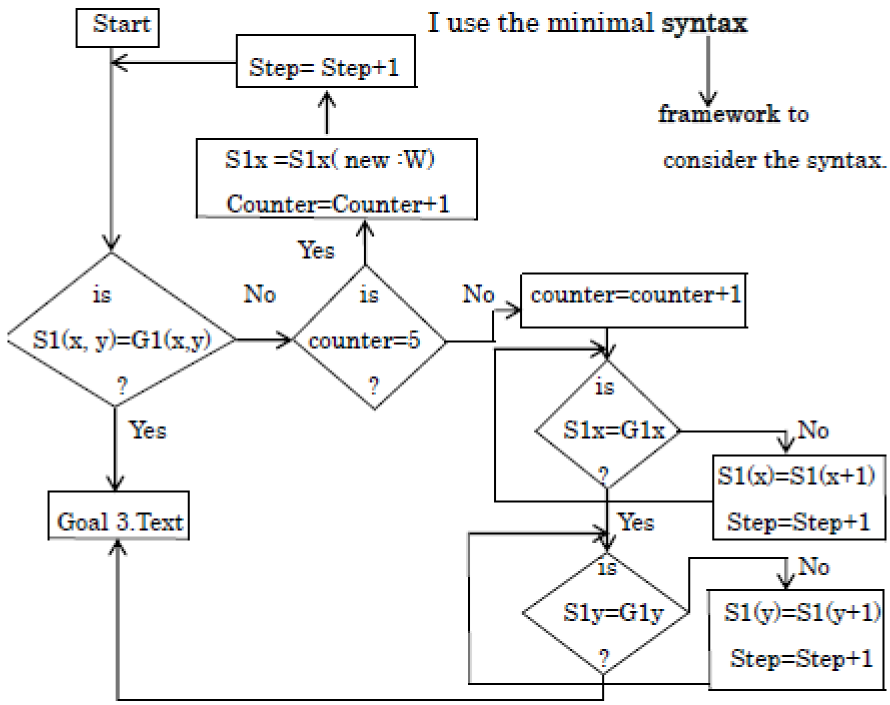
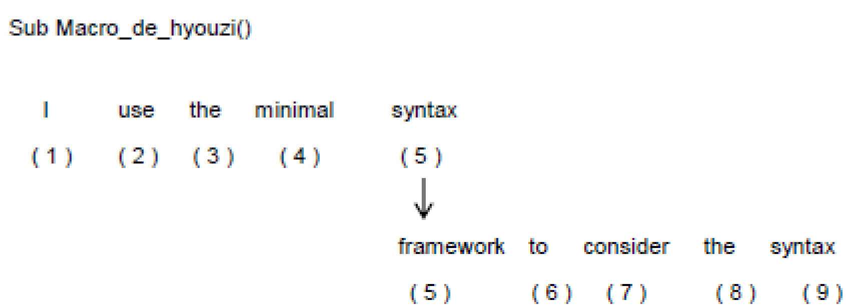


Fig.6. Algorithm flowchart for English

Here, a native English speaker monitors and feeds back his speech, then picks up a correct word (a new word : Table 1, W) and changes it from the previous word. The results show that both native speakers try to change words when they monitor them and make corrections. According to the relationship between the critical period hypothesis and monitor and feedback capability, this is true not only for the native speakers of English and Japanese, but also the non-native speakers of Japanese and English. They all try to change words when they monitor them and make corrections.




```
Cells(1, 1).Value = "①"                    'Input Value"①" into Cells(1, 1)

Cells(1, 2).Value = "②"                    'Input Value"②" into Cells(1, 2)
Cells(1, 3).Value = "③"                    'Input Value"③" into Cells(1, 3)
Cells(1, 4).Value = "④"                    'Input Value"④" into Cells(1, 4)
```

```
Cells(1, 5).Value = "⑤"              'Input Value"⑤" into Cells(1, 5)
Cells(1, 6).Value = "⑥"              'Input Value"⑥" into Cells(1, 6)
Cells(1, 7).Value = "⑦"              'Input Value"⑦" into Cells(1, 7)
Cells(1, 8).Value = "⑧"              'Input Value"⑧" into Cells(1, 8)
Cells(1, 9).Value = "⑨"              'Input Value"⑨" into Cells(1, 9)
 Cells(2, 1).Value = " I "           'Input Value" I " into Cells(2, 1)
Cells(3, 2).Value = " use "          'Input Value" use " into Cells(3, 2)
 Cells(4, 3).Value = " the "         'Input Value" the " into Cells(4, 3)
 Cells(5, 4).Value = " minimal "     'Input Value" minimal " into Cells(5, 4)
 Cells(6, 5).Value = " syntax "      'Input Value" syntax " into Cells(6, 5)
Cells(7, 6).Value = "↓"              'Input Value"↓" into Cells(7, 5)
Cells(8, 7).Value = " framework "    'Input Value" framework" into Cells(8, 5)
 Cells(9, 7).Value = " to "          'Input Value" to "into Cells(9, 6)
 Cells(10, 7).Value = " consider "   'Input Value" consider " into Cells(10, 7)
Cells(11, 8).Value = " the "         'Input Value" the " into Cells(11, 8)
Cells(12, 9).Value = " syntax "      'Input Value" syntax " into Cells(12, 9)

End Sub
```

We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 4. A spreadsheet process to imply a computational process

	1	2	3	4	5	6	7	8	9
1	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2 subject	I								
3 verb		use							
4 article			the						
5 object				minimal					
6 object					syntax				
7					↓				
8 object					framework				
9 to						to			
10 to-infinitive							consider		
11 article								the	
12 object									syntax

2.4.7The following algorithm flowchart shows that how to make and continue two Japanese sentences by a native Japanese speaker. This is shown in data (1).

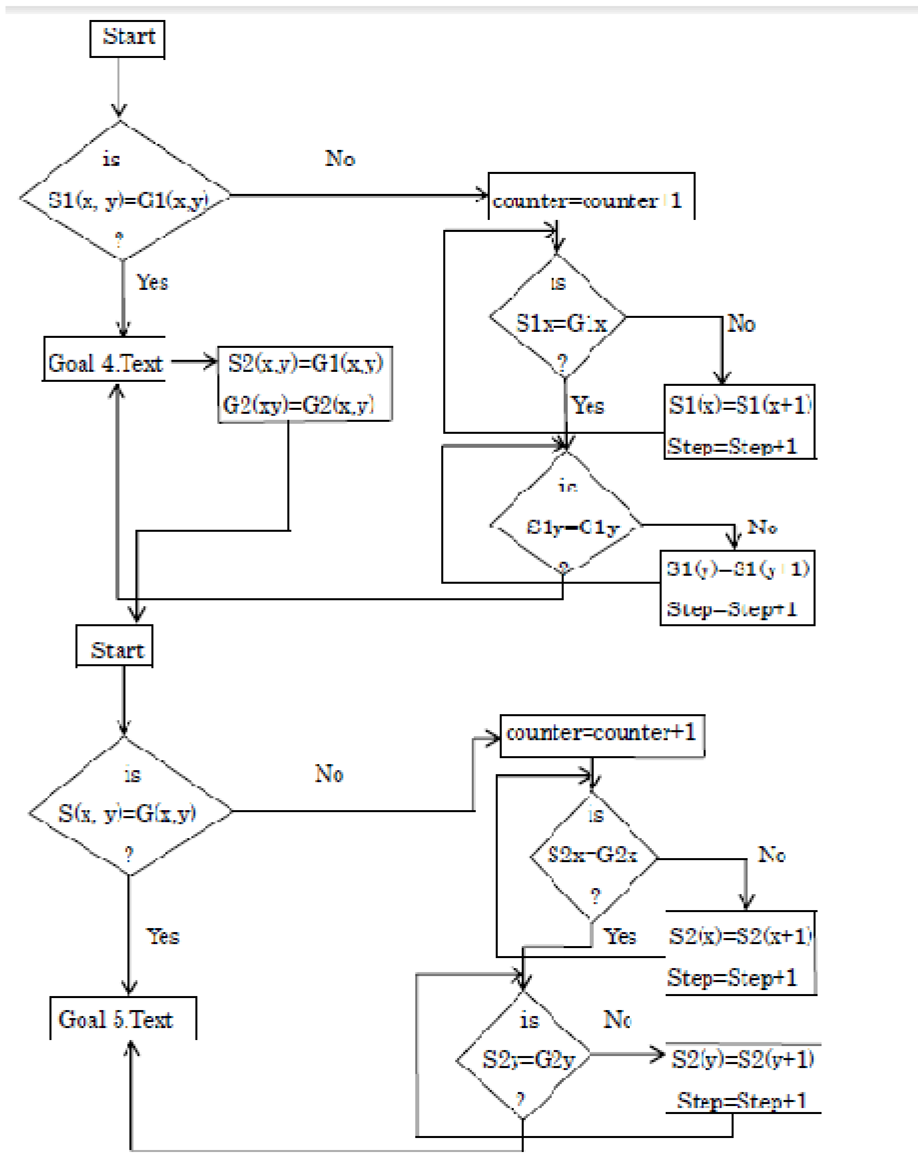


Fig.7. Algorithm flowchart for Japanese

Here, native Japanese speakerscan change the verb to a verb plus a conjunction when they try to make another sentence.

```
Watashi  ha   asu   hayaku   haha   to   Kyoto   ni   Ikimasu.

 (1)     (2)  (3)    (4)      (5)   (6)   (7)   (8)    (9)
                                                        ↓
                                                   Ikitaidesu  ga

                                                       (9)    (10)

otenki   ga   shinnpaidesu

(11)    (12)     (13)
```

```
Sub Macro_de_hyouzi()

                              Cells(1, 1).Value = "①"      'Input Value"①" into
Cells(1, 1)

Cells(1, 2).Value = "②"                 'Input Value"①" into Cells(1, 1)
Cells(1, 3).Value = "③"                 'Input Value"③" into Cells(1, 3)
Cells(1, 4).Value = "④"                 'Input Value"④" into Cells(1, 4)
Cells(1, 5).Value = "⑤"                 'Input Value"⑤" into Cells(1, 5)
Cells(1, 6).Value = "⑥"                 'Input Value"⑥" into Cells(1, 6)
Cells(1, 7).Value = "⑦"                 'Input Value"⑦" into Cells(1, 7)
Cells(1, 8).Value = "⑧"                 'Input Value"⑧" into Cells(1, 8)
Cells(1, 9).Value = "⑨"                 'Input Value"⑨" into Cells(1, 9)
Cells(1, 10).Value = "⑩"                'Input Value"⑩" into Cells(1, 10)
Cells(1, 11).Value = "⑪"                'Input Value"⑪" into Cells(1, 11)
 Cells(1, 12).Value = "⑫"               'Input Value"⑫" into Cells(1, 12)
Cells(1, 13).Value = "⑬"                'Input Value"⑬" into Cells(1, 13)
Cells(2, 1).Value = "Watasi"            'Input Value" Watasi " into Cells(2, 1)
Cells(3, 2).Value = "ha"                'Input Value" ha " into Cells(3, 2)
Cells(4, 3).Value = "asu"               'Input Value" asu " into Cells(4, 3)
Cells(5, 4).Value = "hayaku"            'Input Value" hayaku " into Cells(5, 4)
Cells(6, 5).Value = "haha"              'Input Value" haha " into Cells(6, 5)
Cells(7, 6).Value = "to"                'Input Value" to " into Cells(7, 6)
Cells(8, 7).Value = "Kyoto"             'Input Value" Kyoto " into Cells(8, 7)
Cells(9, 8).Value = "ni"                'Input Value "ni" into Cells(9, 8)
Cells(10, 9).Value = "ikimasu"          'Input Value" ikimasu " into Cells(10,9)
Cells(11, 9).Value = "↓"                'Input Value"↓" into Cells(11,9)
Cells(12, 9).Value = "Ikitaidesu"       'Input Value "Ikitaidesu" into Cells (12,9)
Cells(13, 10).Value = "ga"              'Input Value "ga" into Cells (13,10)
Cells(14, 11).Value = "otenki"          'Input Value "otenki" into Cells(14,11)
Cells(15, 12).Value = "ga"              'Input Value "ga" into Cells(15,12)
Cells(16, 13).Value = "schinpaidesu"    'Input Value "schinpaidesu" into Cells(16,13)
End Sub
```

We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 5. A spreadsheet process to imply a computational process

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	□	②	□	□	□	□	□	⑧	⑨	⑩	⑪	⑫	⑬
2 subject	wa-ta-shi												
3 particle		ha											
4 adverb			asu										
5 adverb				ha-ya-ku									
6 noun					ha-ha								
7postposition						to							
8 noun							Kyo-to						
9 p.p[2]								ni					
10 verb									iki-masu				
11									↓				
12 verb									iki-tai-des				
13 conjunction										ga			
14 noun											oten-ki		
15 p.p												ga	
16 verb													shin-pai-desu

2.4.8The following algorithm flowchart shows 1 to 2 in X, 1 to 5 in X and is repeated from 1 to 4 in Y.This is shown in data (2) and (2)'.

[2] Abbrevation p.p : postposition

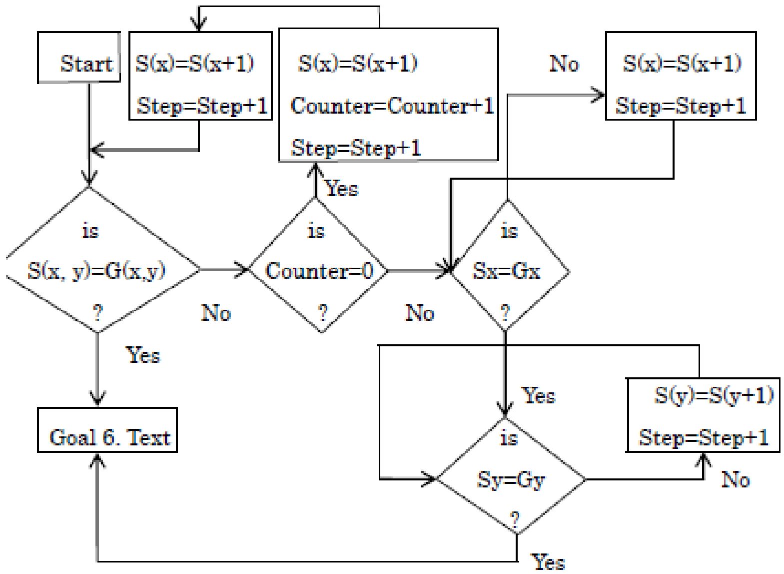


Fig.8.Algorithm flowchart for Japanese

Here, when a native English speaker tries to make a new sentence, he only changes the verb and then continues to make a new sentence.

The following program is shown in data (2) and (2)'

```
Sub MacroA( )                     ' In the name of macro
Dim A as Variant                    'Define A as a string, number and object type
For x = 1 To 2                      ' X is repeated from 1 to 2 in the For Next Syntax
Next                                ' For is carried back to a single x
Application.Run "MacroB"            ' X is repeated 2 times and run the macro B
End Sub                             'The B has been run and close the macro

Sub MacroB()                        'The macro B
For Y = 1 To 2                      'For Next Syntax for Y
Next                                  ' For is carried back to a single x
Application. Run "MacroC"           ' Y is repeated from 1 to 2and run the macro C
End Sub                             ' Macro c has been run and close the macro
Sub MacroC( )                         'In the name of macro
For x = 1 To 9                        'X is repeated from 1 to 9 in the For Next syntax
Next                                    ' For is carried back to a single x
Application.Run "MacroD"                ' xis repeated 9 times and run the macro D
End Sub                                 'Macro D has been run and close the macro

Sub MacroD()                            ' Macro D
For Y = 1 To 9                          ' For Next Syntax for Y
Next                                    ' Y is carried back to single x
ActiveSheet.PrintPreview               'Y is repeated from 1 to9 and print review
End Sub                                 'Exit the macro D

Macro_de_hyouzi()
Cells(1, 1).Value = "①"                 'Input Value"①" into Cells(1, 1)
Cells(1, 2).Value = "②"                 'Input Value"②" into Cells(1, 2)
```

```
Cells(1, 3).Value = "③"                  'Input Value"③" into Cells(1, 3)
Cells(1, 4).Value = "④"                  'Input Value"④" into Cells(1, 4)
Cells(1, 5).Value = "⑤"                  'Input Value"⑤" into Cells(1, 5)
Cells(1, 6).Value = "⑥"                  'Input Value"⑥" into Cells(1, 6)
Cells(1, 7).Value = "⑦"                  'Input Value"⑦" into Cells(1, 7)
Cells(1, 8).Value = "⑧"                  'Input Value"⑧" into Cells(1, 8)
Cells(1, 9).Value = "⑨"                  'Input Value"⑨" into Cells(1, 9)
Cells(2, 1).Value = " I "                'Input Value" I " into Cells(2, 1)
Cells(3, 2).Value = " take"              'Input Value" take " into Cells(3, 2)
Cells(4, 1).Value = " I "                'Input Value" I " into Cells(4, 1)
Cells(5, 2).Value = " use "              'Input Value" use" into Cells(5, 2)
Cells(6, 3).Value = " the"               'Input Value" the" into Cells(6, 3)
Cells(7, 4).Value = "minimal"            'Input Value" minimal" into Cells(7, 4)
Cells(8, 5).Value = "framework"          'Input Value"framework" into Cells(8, 5)
Cells(9, 6).Value = "to"                 'Input Value" to "into Cells(9, 6)
Cells(10, 7).Value = "   consider "      'Input Value" consider " into Cells(10, 7)
Cells(11, 8).Value = " the "             'Input Value" the " into Cells(11, 8)
Cells(12, 9).Value = " syntax "          'Input Value" syntax " into Cells(12, 9)
End Sub
```

We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 6. A spreadsheet process to imply a computational process

	1	2	3	4	5	6	7	8	9
1	▯	▯	▯	④	⑤	⑥	▯	▯	▯
2 subject	I								
3 verb		use							
4 subject	I								
5 verb		take							
6 article			the						
7 object				minimal					
8 object					framework				
9 infinitive marker						to			
10 - infinitive verb							consider		
11 article								the	
12 object									syntax

2.4.9The following algorithm flowchart shows how to make and continue an infinitive sentence by native English speaker. This is shown in data (3) and (3)'.

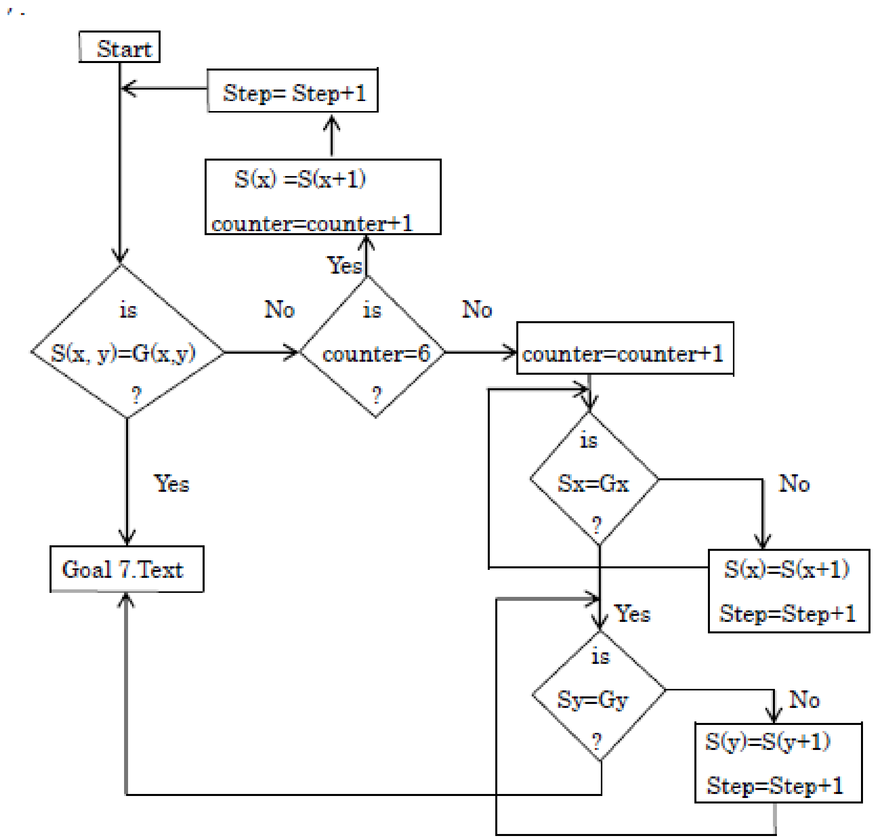


Fig.9. Algorithm flowchart for English

In this speech, a native English speaker has a PRO as a subject of an infinitiveclause, so he could continue and repeat from the infinitive clause to complete the sentence and convey its meaning.

I use the minimal framework to

(1) (2) (3) (4) (5) (6)

↓

to consider the syntax

(6) (7) (8) (9)

```
Sub Macro_de_hyouzi()

Cells(1, 1).Value = "①"        'Input Value"①" into Cells(1, 1)
Cells(1, 2).Value = "②"        'Input Value"②" into Cells(1, 2)
Cells(1, 3).Value = "③"        'Input Value"③" into Cells(1, 3)
Cells(1, 4).Value = "④"        'Input Value"④" into Cells(1, 4)
Cells(1, 5).Value = "⑤"        'Input Value"⑤" into Cells(1, 5)
Cells(1, 6).Value = "⑥"        'Input Value"⑥" into Cells(1, 6)
```

```
Cells(1, 7).Value = "⑦"                 'Input Value"⑦" into Cells(1, 7)
Cells(1, 8).Value = "⑧"                 'Input Value"⑧" into Cells(1, 8)
Cells(1, 9).Value = "⑨"                 'Input Value"⑨" into Cells(1, 9)
Cells(2, 1).Value = " I "               'Input Value" I " into Cells(2, 1)
Cells(3, 2).Value = " use "             'Input Value" use " into Cells(3, 2)
Cells(4, 3).Value = " the  "            'Input Value" the " into Cells(4, 3)
Cells(5, 4).Value = " minimal "         'Input Value" minimal " into Cells(5, 4)
Cells(6, 5).Value = " framework  "      'Input Value" framework " into Cells(6, 5)
Cells(7, 6).Value = "to"                'Input Value" to " into Cells(7, 6)
Cells(8, 7).Value = "↓"                 'Input Value"↓ " into Cells(8, 7)
Cells(9, 7).Value = "to"                'Input Value" to "into Cells(9, 7)
Cells(10, 7).Value = "   consider "     'Input Value" consider " into Cells(10, 7)
Cells(11, 8).Value = " the "            'Input Value" the " into Cells(11, 8)
Cells(12, 9).Value = " syntax "         'Input Value" syntax " into Cells(12, 9)
End Sub
```

This can be expressed briefly in the following mathematical equation

$$f(x)=\begin{cases} new\_word & \text{if } target\_word=current\ word \\ current\_word+1 & \text{otherwise} \end{cases}$$

We also have developed a spreadsheet process to imply a computational process on the process of language acquisition as follows:

Table 7. A spreadsheet process to imply a computational process

	1	2	3	4	5	6	7	8	9
1	□	□	□	④	⑤	⑥	⑦	⑧	⑨
2 Subject	I								
3 verb		use							
4 article			the						
5 object				minimal					
6 object					framework				
7 infinitive marker						to			
8						↓			
9 infinitive marker						to			
10 Infinitive verb							consider		
11 article								the	
12 object									syntax

3.1 RESULTS

Based on our simulation of our data, we can summarize the results as follows.

1. In Japanese, the verb is at the end of the sentence, so the speaker just changes the verb in order to continue making another statement.
2. In English, the verb is in the second position of the sentence and if the speaker wants to change his statement, he does so just after the verb and then again from the subject of the new sentence.
3. In English, when the speaker uses“infinitive” in his statement, he stops his statements just after “to”, and continues his speech from there.

In results 1 to 3, both speakers efficientlysave the words to make and continue statements.
We also may illustrate these results as the speaker’s estimation of cost as follows:

The estimation of a Japanese speaker:

The speaker can not estimate how much it will cost at this point ①.In other word, when he starts to speak, he can not estimate how much it will cost.

1) Watashi-ha asu hayaku haha-to Kyoto-ni **Ikimasu**

↑ ① ↓②

1)’ ← **Ikitaidesui-ga** otenki-ga shinpaidesu.

COST

In this utterance, cost refers to the omitted utterance: “watashi-ha asu haha to Kyoto ni ikimasu” in 1). The speaker needs time and energy to speak these 8 words. The speaker can estimate how much it will cost to utter them at this point ② and may omit them to minimize the cost. As a result, the speaker can start making another sentence from the point of of the verb ② changing it from “a verb” to “ a verb+conjunction”.

The estimation of an English speaker:
The speaker cannot estimate how much it will cost at this point③. In other words, when he starts to speak, he cannot estimate how much it will cost.

2) I take →

COST

③ ↑

The speaker can estimate how much will it cost at this point④and may stop speaking to minimize the cost.

2)’I take →

↑ COST

4

In this utterance, cost refers to the omitted utterance:” the minimal framework consider to the syntax” in 2). The speaker needs time and energy to speak these 7 words. As a result, the speaker can start to speak from the point of the subject of the new sentence as follows:

2)’I use the minimal framework to consider the syntax.

The estimation of an English speaker.
This speaker can not estimate how much it will cost at this point □.That is:
3) I use the minimal framework to

5 ⑥COST

The speaker can estimate how much it will cost at this point ⑥and may stop speaking to minimize the cost.

The estimation of an English speaker:
3) to consider the syntax.

COST ⑦

In this utterance, cost refers to omitted utterance: "I use the minimal framework to" in 3). The speaker needs time and energy to speak these 6 words. As a result, the speaker can start to speak from the "to infinitive"⑦ to continue to complete his statement.

3.2CONCLUSION

From this result, we may say that when we start to acquire language, our monitoring and feedback system is activated to correct and create our speech. In other words,we may infer that "economy" is one of reasons (a mechanism in the Universal Grammar) that native speakers use this correcting method (monitoring and feedback)at the word and sentence level.

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