## NOTES ON VARIATIONS OF WH CONSTRUCTIONS IN THE MC FRAMEWORK AND THE PRINCIPLE T FEEDING RECONSTRUCTION\*

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### 1. Introduction

Chomsky (2024) proposes a new framework, which we call the Miracle Creed (MC) framework in this paper. As in other minimalist theories, the MC framework adopts the uniformity principle in Chomsky (2001: 2) and assumes that human languages share the uniform computational system. However, variations among languages have to be captured in some way. We focus on *wh* constructions in this paper and derive some variations in terms of the interactions between the computational system and the semantic/phonological interpretive systems. The organization of this paper is as follows: section 2 introduces the MC framework and how access by phase heads interprets a syntactic structure. Section 3 focuses on *wh* interrogatives. Section 3.1 introduces some variations of *wh* interrogatives, and section 3.2 is contributed to show how such variations are derived in terms of externalization, as assumed in the MC framework. However, it is unclear how syntactic variations are explained in the MC framework. To address this problem, we propose in section 3.3 a principle on reconstruction, which is governed by the principle T. In section 3.4, we discuss variations between Japanese and Chinese, which are assumed to be in-situ *wh* languages. Section 4 presents the concluding remarks.

#### 2. The MC Framework

The most radical change of the MC framework would be the elimination of successivecyclic movement. This property is closely related to the notion of cycle/cyclicity, one of the most central properties of syntactic derivation. Any framework proposed so far implements this property in the computational theory. One of the classic attempts can be found in the subjacency analysis of wh islands, where long-distance movement requires a wh operator to move cyclically to the spec of every intermediate CP. More recently, the phase theory captures this property by the phase impenetrability condition, by which the element has to be located at the spec of CP to move to the higher clause. Delimiting the computational domain by a phase is also compatible with the idea that the human brain only has a limited working memory (Chomsky 2020). In this way, restricting accessing to syntactic objects falls in the third-factor principle, and it is widely accepted especially in the minimalist theories.

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However, the MC framework discards the idea of successive-cyclic movement, assuming Merge as the operation related to the theta-structure. As is well-known, Merge is the most central operation in syntax, and it exhibits two types of applications: external Merge (EM) and internal Merge (IM). In the MC framework, each of them conforms to the principle T Chomsky (2024: 22) in (1), in that they explain the two basic aspects of human language: theta and discourse properties.<sup>1</sup>

(1) All relations and structure-building operations (SBO's) are thought-related, with semantic properties interpreted at CI.

The MC framework assumes that IM applies to a syntactic object in a theta-structure, which is created by EM. After IM, a syntactic object is relocated from a theta-structure to a discourse-structure, which is the intuition of the duality of semantics. If IM only applies to a syntactic object in a theta-structure, a syntactic object in a discourse-structure is no longer the candidate for further IM. Thus, this framework allows each syntactic object to move once, and the movement is only to the local phase edge (by PIC). After that, the item is "accessed" by a phase head in the later derivation to produce long-distance displacement effects. Let us see the following example (2a). (2b) shows its structure, W showing the inscriptions of *which pictures of each other*.

(2) a. Which pictures of each other did Mary think the men hope Bill likes?

(Chomsky 2024: 31)

b. [CP1 C1 INFL [Mary thought [CP2 C2 INFL [the men [ $\nu^*P1$   $\nu^*1$  hope Bill [ $\nu^*P2$  W1  $\nu^*2$  like W2]]]]]

In (2b),  $W_2$  is the theta-position, from where it moves to the phase edge, yielding  $W_1$ . This IM drives it out of the theta-structure, prohibiting further application of Merge. In (2), the interpretive system needs several types of information on *which pictures of each other* for the sufficient interpretation, which are listed in (3).

- (3) a. The theta-role assigned to the NP
  - b. The scope position of the *wh* operator
  - c. The spell-out position of the entire phrase
  - d. The position determining the anaphoric relation

 $W_2$  is responsible for (3a). However, (3b–d) cannot be ensured by  $W_1$  or  $W_2$ . To give appropriate interpretive instructions to the interpretive systems, the matrix  $C_1$  and the  $v^{*_1}$  access  $W_1$  for (3b, c) and (3d), respectively. Based on the instructions, the interpretive systems get the following information shown in (4).

<sup>&</sup>lt;sup>1</sup> This principle can be considered as a stronger version of the Full Interpretation principle (Chomsky (1995)).

- (4) a. The theta-role is assigned from *like*.
  - b. The *wh* operator takes its scope at the matrix clause.
  - c. The entire phrase is externalized at sentence-initial position.
  - d. The antecedent of the anaphor is *the men*, which locally c-commands v\*P1.

In this way, the MC framework sends the interpretive systems the relevant information based on access by phase heads and captures long-distance movement effect without actual movement. The next section considers variations of *wh* interrogatives.

## **3.** Variations in the MC Framework

### 3.1. Variations of Wh Interrogatives

Without successive cyclic movement, a question arises how variations of *wh* interrogatives are derived in the MC framework. We will see some types of variations of *wh* interrogatives here. In the first type, there is no *wh* movement (Chinese, Japanese).<sup>2</sup> A Japanese example is given in (5), and (6) exhibits a Chinese example.

(5) Ken-wa [Mary-ga nani-o kat-ta]-to kii-ta no? K.-TOP M.-NOM what-ACC buy-PST-C hear-PST Q

'What did Ken hear that Mary bought?

(6) Zhangsan xiangxin [shei mai-le shu]Z. believe who bought books

"Who does Zhangsan believe bought books?" (Chinese; Huang 1982: 371)

The *wh* operators in (5) and (6) stay in the embedded clauses but take the matrix positions. In this paper, we call *wh* operators which do not move to the scope positions like *nani* 'what' and *shei* 'who' in (5) and (6) in-situ *wh* operators. Also, we call languages licensing in-situ *wh* operators in-situ *wh* languages.

The second type moves all wh operators to the spell-out position (Bulgarian, Serbo-Croatian).<sup>3</sup> (7) is an example of the multiple wh construction, and all wh operators exit the embedded clause.

(7) Koj kâde misliš [če e otišâl ]]?Who where think-2s that has gone

'Who do you think (that) went where?' (Bulgarian; Rudin 1988: 450) If only the higher wh operator moves as in English, the sentence becomes ill-formed, as shown in (8).

 $<sup>^2</sup>$  It is a tentative classification. Detailed observations differentiate these two languages. See the discussion in section 3.4.

<sup>&</sup>lt;sup>3</sup> See Bošković (1998) for the variations within this type of languages.

(8) \*Koj misliš [če e otišâl\_kâde]]?Who think-2s that has gone where

'Who do you think (that) went where?'

(Bulgarian; Rudin 1988: 450)

The third type moves one *wh* operator (English).

(9) Who do you think Ken went where?

Some attempts are proposed to capture these variations in terms of parameters in the Minimalist Program.<sup>4</sup> However, the locus of parameters slightly changes in the minimalist theories. First, Chomsky (1995) deduces these variations in syntax. In this model, the covert component (LF) is assumed, and languages are assumed to be uniform only in the LF level. The apparent differences are due to the different timing of application of operations; if an operation is applied before Transfer, it yields overt effects; otherwise, the operation is covert. This model assumes that Japanese also moves *wh* operators like English but only at LF.

In contrast, recent minimalist theories assume that parameter differences lie in the lexicon and externalization, and syntax is the same in human languages. On this issue, Cheng (1997) observes the following generalization.

(10) In-situ languages have wh-particles. Languages with wh-particles are in-situ languages.

(Cheng 1997: 18)

Based on this generalization, Japanese allows in-situ wh operators because of its wh marker like *no* and ka.<sup>5</sup> English lacks the wh markers and the wh operators must move to the sentence-initial position.<sup>6</sup>

French shows an interesting behavior concerning this generalization. Cheng and Rooryck (2000) observe that it allows both the in-situ *wh* strategy and the movement strategy.

(11) Jean a acheté quoi? J. has bought what

'What has Jean bought?'

(Cheng and Rooryck 2000: 3)

(11) does not involve a special wh particle. However, when a wh operator is externalized in an in-situ position like (11), they observe that the sentence must be pronounced with a special intonation. If we assume that C determines its intonation, French also involves a null wh particle in C, which licenses the in-situ wh operator.<sup>7</sup>

<sup>&</sup>lt;sup>4</sup> For example, see Pesetsky (2000).

<sup>&</sup>lt;sup>5</sup> Actually, *no* is a Fin head (Saito 2009), and the apparent license of the in-situ *wh* operators by *no* is caused by the null *wh* marker after *no*. For ease of discussion, we regard *no* as a *wh* particle in this paper.

<sup>&</sup>lt;sup>6</sup> Hayashi (2022) discusses this generalization in terms of labeling, whose assumptions are compatible here.

<sup>&</sup>lt;sup>7</sup> See also Hasegawa (2005) for the relevant discussion.

This section has observed some types of variations in wh interrogatives. In the next section, we will see how such variations are captured in the MC framework.

# **3.2.** How variations are derived in the MC Framework

As shown in section 2, the derivation in the MC framework is very simple with the following steps.  $^{8}$ 

- (12) a. EM forms a theta-structure (the  $v^*P$  phase).
  - b. IM moves syntactic objects to the edge of the  $v^*P$  phase.
  - c. The CP phase (and other higher structures, if any) is formed.
  - d. A phase head accesses the syntactic objects in the phase edge for the instructions at the interpretive systems.

We have also seen that wh operators need not move to the spell-out position in this framework. For example, the derivation of long-distance object wh movement takes the following schematic structure.

(13) [C<sub>int</sub> ... V [CP ... [v\*P wh [v\* ... wh...]]]]

In (13), the object *wh* operator moves from the base-position to the edge of the embedded  $v^*P$  phase. It does not move anymore in the later derivation, and the matrix phase head (interrogative C) accesses the *wh* operator at the phase edge to assign the matrix scope. Thus, with apparent differences, a Japanese *wh* interrogative example in (14) and an English one in (15) share structure (13).

(14) Ken-wa [Mary-ga nani-o kat-ta]-to kii-ta no? (=(5)) K.-TOP M.-NOM what-ACC buy-PST-C hear-PST Q

'What did Ken hear that Mary bought?

(15) What did Ken hear that Mary bought?

In both examples, the *wh* operators just move from the base-positions to the local phase edges, accessed by the matrix C to determine their scope. In English example (15), the *wh* operator is accessed by the matrix C also for the instruction of externalization, yielding the movement effect. <sup>9</sup> However, the matrix C does not access the Japanese *wh* operator in (14) for externalization. Rather, it is externalized in the in-situ position. In this way, the MC framework can capture the apparent difference between in-situ *wh* languages and *wh*-

<sup>&</sup>lt;sup>8</sup> The derivation omits the phase-internal movements for labeling (see Chomsky 2015), which are orthogonal to the current discussion.

<sup>&</sup>lt;sup>9</sup> We assume that the differences between Languages which moves all *wh* operators (Bulgarian and Serbo-Croatian) and English also depend on externalization rules, but we leave open the detailed analysis on this issue.

movement ones in terms of the instruction required at the SM system. Syntax is the same between the two languages with structure (13). Thus, contrary to the framework in Chomsky (1995), all languages are analyzed as Chinese-Japanese type in the sense that all wh operators need not move to the spell-out positions.

As Chomsky (2024: 33) notes, this analysis also accommodates German partial wh movement.

(16) a. [Mit wem]<sub>*i*</sub> glaubst du [CP  $t_i$  dass Hans meint [CP  $t_i$  dass Jakob  $t_i$  gesprochen hat]]? with whom believe you that H. thinks that J. talked has

'With whom do you believe that Hans thinks that Jakob talked?'

b. Was<sub>i</sub> glaubst du [CP [mit wem]<sub>i</sub> Hans meint [CP *t<sub>i</sub>* dass Jakob *t<sub>i</sub>* gesprochen hat]]? what believe you with whom H. thinks that J. talked has

'With whom do you believe that Hans thinks that Jakob talked?'

c. Was<sub>*i*</sub> glaubst du [CP was<sub>*i*</sub> Hans meint [CP [mit wem]<sub>*i*</sub> Jakob  $t_i$  gesprochen hat]]? what believe you what H. thinks with whom J. talked has

'With whom do you believe that Hans thinks that Jakob talked?'

d. \*Was*i* glaubst du [CP dass Hans meint [CP [mit wem]*i* Jakob *t<sub>i</sub>* gesprochen hat]]? what believe you that H. thinks with whom J. talked has

'With whom do you believe that Hans thinks that Jakob talked?'

(All examples are from McDaniel 1989: 575–576)

(16a) shows an example where the wh operator moves to the scope position. In (16b), the scope position is indicated by the scope marker *was*, and the *wh* marker is externalized at the second highest spec of CP. In (16c), the two highest specs of CP are occupied by *was*, and the *wh* operator is externalized at the next highest spec of CP. However, as shown in (16d), all the specs of higher CP than the *wh* operator must be occupied by *was* when the *wh* operator does not move up to the scope position. This construction is also captured by an externalization parameter. The first difference between languages licensing the partial *wh* construction and ones without this construction is whether there is a mechanism that externalizes the scope marker in a language. This may be a lexical variation (whether the language has a scope marker as an independent item) or the difference of externalization rule; one speculation is that the scope marker is the reflection of the access to a *wh* operator. If *was* is externalized for any reason at the highest Spec of CP, the associated *wh* operator cannot be externalized there, and then, the next highest C also yields *was*, the next C accesses to the *wh* operator, producing (16c).

We can summarize the discussion so far as follows: different languages require different externalization rules, which are the source of the parameter. This line of the analysis of linguistic variation fits well to the minimalist framework in that we can keep the uniformity of syntax. However, not all differences can be deduced from externalization, and it is still unclear how such variations are accommodated in the theory, which will be discussed in the next section.

## **3.3. Syntactic variations**

First, let us see the following contrast.

- (17) \*What did Ken hear [the rumor that Mary bought]?
- (18) Ken-wa [Mary-ga nani-o kat-ta uwasa]-o kii-ta no? K.-TOP M.-NOM what-ACC buy-PST rumor-ACC hear-PST Q

'What did Ken hear [the rumor that Mary bought]?'

(17) is ill-formed due to the violation of the complex NP island. In contrast, Japanese in-situ wh operators can appear in the island, as shown in (18). Given that the two languages share the same syntactic structure, the contrast between (17) and (18) is puzzling. In syntax, both languages only move the wh operators to the spec of  $v^*P$ , and movement crossing the islands is not involved.

To discuss the contrast above, it is worth seeing the well-formed examples of English *wh* operators base-generated in islands. First, in-situ *wh* operators can be licensed inside islands.

| (19) a. Who is reading a book that criticizes who? | (Watanabe 2001: 207) |
|--|----------------------|
| b. Who remembers where we bought what?             | (ibid.)              |

Second, parasitic gaps apparently license movement of *wh* operators from islands.

(20) What did John file [without reading]?

The Japanese/English in-situ wh constructions and the parasitic gap construction suggest that access to the wh operator inside islands is not prohibited. Then, the question is why movement from inside islands is banned. We will propose the ill-formedness of (17) is not a copy relation crossing an island but the reconstruction across the island. To address this issue, let us focus on the principle T in (1), which we argue governs the availability of reconstruction. See the following contrast.

(21) a. One interpreter each seemed *t* to be assigned to the diplomats (Chomsky 2024: 27)b. \*One interpreter each tried PRO to be assigned to the diplomats (*ibid.*)

To interpret *each* properly associated with the plural nominal *diplomats*, (1) requires *each* to be reconstructed into the positions of t/PRO, respectively. However, the example with PRO fails reconstruction. Chomsky (2024: 27–28) notes the reason as follows:

(22) The antecedent of t (the matrix subject) lacks a theta role so interpretation must be at the trace position: reconstruction. Not so for PRO, whose antecedent has a theta role as E[xternal]A[rgument] of *try* (before raising to SPEC-INFL) so there is no reconstruction.

(22) explains the well-formedness of the PG example (20). Sentence-initial *what* in (20) needs reconstruction with the lack of the theta-interpretation. However, it does not mean that (20) involves reconstruction crossing the island; rather, reconstruction into the complement of *file* suffices to satisfy (1) and (22). Thus, since there is no reconstruction crossing an island, (20) is well-formed with the apparent movement across the island.<sup>10</sup>

The contrast between (17) and (18) remains. To derive the difference, we suggest the following principle.

(23) Externalized syntactic objects must be associated with the position satisfying the principle T.

(23) requires externalized syntactic objects to respect the principle T. A theta-position is the representative position satisfying the principle T in that it constructs one of the most basic structures in language: theta-structure. In contrast, case positions are insufficient for the principle T, assuming that cases do not feed the CI interpretation. Operator positions also need reconstruction because the position can receive the CI interpretation only with the variable position.<sup>11</sup>

Another example of the position satisfying the principle T is the topic position. (24) and (25) are the examples which do not need reconstruction.

(24) Sakana-wa tai-ga umai. fish-TOP red.snapper-NOM delicious

'As for fish, red snapper is delicious.'

(25) Defoe, even I could have scored that goal. (Radford 2018: 42)

Both examples involve a gapless topic, and the sentence-initial topics do not have the position for reconstruction. Since topics can yield a discourse effect, we assume that the interpretive contribution of topics can satisfy the principle T, and they can merge externally without theta-positions.<sup>12</sup> Note that Japanese allows topicalization crossing islands like (26).

(26) Sono hon-wa Ken-ga [Mary-ga *pro* kat-ta uwasa]-o kii-ta. that book-TOP K.-NOM M.-NOM buy-PST rumor-ACC hear-PST

<sup>&</sup>lt;sup>10</sup> See Hayashi (2024) for the analysis of the parasitic gap construction with Form Copy (Chomsky 2021).

<sup>&</sup>lt;sup>11</sup> Note that if this line of argument is on the right track, the traditional theta criterion is deduced from the principle T.

<sup>&</sup>lt;sup>12</sup> The situation is different in foci, which require operator-movement structures.

'As for that book, Ken heard the rumor that Mary bought (it).'

As shown in (26), Japanese has *pro* in its lexicon. The sentence-initial topic respects (23), and the predicate can complete its theta-structure by *pro*. In contrast, English does not allow this type of topicalization.

(27) \*That book, Ken heard [the rumor that Mary bought].

As discussed above, sentence-initial topic satisfies (23). However, since English does not have *pro* in its lexicon, there is no item in the complement position of *bought*, and it fails to complete its argument structure, which makes (27) bad. Since the sentence-initial topic does not induce a problem, completing the argument structure with a resumptive pronoun will ameliorate the ill-formedness.<sup>13</sup>

This section focuses on syntactic variations and proposes that the principle on reconstruction causes the variations. To satisfy the principle T, reconstruction is necessary for some examples, and if the reconstruction crosses an island, the sentence becomes ill-formed. Therefore, also in English, in-situ wh operators and wh operators which have other gaps are licensed with islands. Finally, the following section touches on further differences in in-situ wh languages.

# 3.4. Variations in in-situ *wh* languages

As noted, both Japanese and Chinese allow in-situ wh operators.<sup>14</sup> However, some differences are observed in these two languages. Consider (28) and (29).

| (28) Ken-wa [dare-ga nani-o kat-ta-ka] tazune-ta-no?   | (Japanese)               |
|--|--------------------------|
| <b>K.</b> -TOP who-NOM what-ACC buy-PST-Q ask-PST-Q  |                          |
| 'Who is the person x such that Ken asked what x bought?'   |                          |
| "What is the thing x such that Ken asked who bought x?"  |                          |
| 'Did Ken ask who bought what?'   |                          |
| (29) ni xiang-zhidao [shei mai-le shenme] (ne/ma)?<br>you want-know who buy-PRF what Qwh/Qyes/no |                          |
| 'Who is the person x such that you wonder what x bought?'  |                          |
| 'What is the thing x such that you wonder who bought x?'   |                          |
| 'Do you wonder who bought what?'   | (Chinese; Tsai 1999: 60) |
|  |                          |

In (28), the subject *wh* operator can take the matrix scope, yielding the matrix interrogative sentence. Otherwise, it takes the embedded scope, and the entire sentence becomes a *yes-no* 

<sup>&</sup>lt;sup>13</sup> See Aoun, Choueiri, and Hornstein (2001) for the types of resumptive pronouns.

<sup>&</sup>lt;sup>14</sup> The discussion in this section basically follows Saito's (2017) insights.

interrogative. These two readings are disambiguated by intonation (Ishihara 2002, 2003 and Kitagawa 2005). However, an unavailable interpretation is that the object *wh* operator takes the matrix scope, leaving the subject *wh* operator in the embedded scope. In contrast, Chinese allows either of the two embedded *wh* operators to take the matrix scope with the question particle for *wh* interrogatives. As discussed, in-situ *wh* operators in Japanese move to the spec of v\*P phase to be accessed by a phase head. For a subject *wh* operator, we follow Chomsky (2024) and assume that the in-situ inscription is the candidate for access. Based on these assumptions, the schematic structure of (28) is as follows.<sup>15</sup>



Chomsky (2024) assumes that a subject is introduced outside the  $v^*P$  phase, and therefore, external Merge of the subject follows the movement of the object to the  $v^*P$  edge. We here suggest that access by a phase head is subject to the minimality condition; the highest available item is accessed by a phase head.<sup>16</sup> Thus, when a phase head searches for a *wh* operator, *who* in the in-situ position is accessed, blocking the access to *what*. In contrast, Chinese does not involve movement of an in-situ *wh* operator; it is licensed by unselective binding (Saito 2017). To put it technically, Chinese does not rely on the (syntactic) search operation to determine the scope of a *wh* operator, and therefore, it is free from the minimality condition, which governs the search algorithm.

### 4. Concluding Remarks

We summarize the locus of variations discussed in this paper as follows.

(31) Lexical variations

Only certain languages involve lexical items like *pro*, scope markers like *was* in German, and question particles in the lexicon.<sup>17</sup>

<sup>&</sup>lt;sup>15</sup> We omit subject and object raising for ease of discussion. The discussion remains intact with these two types of raising.

<sup>&</sup>lt;sup>16</sup> We leave open how Bulgarian-type languages are analyzed with this assumption.

<sup>&</sup>lt;sup>17</sup> As discussed, German *was* may be the reflection of access, in the case of which this is a kind of variations on externalization.

(32) Variations in externalization

It varies among languages how many *wh* operators are required to be externalized at sentence-initial position. This variation partly depends on morphological/lexical variations (Cheng's generalization).

(33) Apparent syntactic variations

Syntactic variations observed in this paper can be deduced from the interaction of the principle (23) and lexical variations.

In Chomsky's (2024) framework, syntax is universally the same and syntactic differences are not expected. We derive syntactic differences are caused by the principle (23), which conform to the principle T. (23) requires externalized syntactic objects to show their relevancies with the positions satisfying the principle T. Thus, we do not consider (23) as the principle serving in the computational procedure. Rather, it is a kind of conditions working at the interpretive systems (traditional interface conditions). Relegating the apparent syntactic variations to interpretive ones, the proposed framework is also compatible with the uniformity principle.

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