

Chomsky's derivation-by-phase theory as applied to judgments of the grammaticality of Japanese double accusative sentences

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Abstract

Four experiments explored the psychological reality of Chomsky's derivation-by-phase theory. Speakers of Japanese judged the grammaticality of Japanese simple sentences involving two accusative arguments, each related with a single verb. In Experiment 1 one argument (a part-argument) constituted a part of the other argument (a whole-argument) and a part-argument either preceded or followed a whole-argument. Either the two arguments were concatenated or one argument was scrambled up to the sentence initial position. Judged grammaticality of the two types of sentences, concatenated and scrambled, was found comparably low, with no difference between them. Experiment 2 compared the two types of sentences with sentences including an adverbial phrase between the two arguments. The latter sentences were judged higher than the former for both the concatenated and the scrambled sentences. In Experiments 3 and 4, judged grammaticality increased as the distance between the two arguments was increased. Each of these findings could not be predicted by the derivation-by-phase theory. Implications of the findings for Chomsky's mentalist position on speakers' knowledge of language were discussed.

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1. Introduction

Chomsky's (1995, 2000, 2001, 2004) Minimalist Program aims to formally specify the human faculty of language as "an optimal solution to minimal design specifications" (Chomsky, 2001, p. 1). For language to be usable, these specifications, he argues, must be determined in respect of two systems that interface with the language system, i.e., the conceptual-intentional (C-I) system for thought and the sensorimotor (SM) system for action. Specifically, in order for the specifications to be fulfilled the information involved in the syntactic

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structures generated by the computational component must be converted, on the one hand, into the semantic representation that is perfectly legible, i.e., accessible, to the C–I system and, on the other, into the phonetic form representation that is perfectly legible to the SM system.

One of the recent theoretical developments seeking to embed the language system into a human cognitive system concerns the manner in which the syntactic structures constructed in the computational component are spelled out, i.e., transferred, to the semantic component and the PF (Phonetic Form) component. In the preceding model (Chomsky, 1995) the information involved in the syntactic structure is spelled out only once when the structure has been built up completely, while in the recent model (Chomsky, 2001) it may be spelled out by phase on the way of derivation. Specifically, Spell-Out of syntactic structure is made by phase once a specific phase has been reached. Part of the syntactic structure constructed until then – the complement of the head of the phase – is spelled out to the two components and thereby becomes impenetrable to further syntactic operations in the computational component. The phases include a complementiser phrase (CP) and a light verb phrase (*vP*) involving a causative sense. The derivation-by-phase theory assumes an important role in reducing the “computational burden” (Chomsky, 2001, p. 11), thus firmly embedding the language system well into the human cognitive system and making the former maximally usable by the latter.

This study addresses the psychological reality of the syntactic constraint implied by the derivation-by-phase theory. The psychological reality of the derivation of syntactic structure has recently been suggested, although not so explicitly, by, for example, Thornton (1995), Crain and Thornton (1998, pp. 37–40), Radford (2004, pp. 156–157, pp. 195–196, pp. 394–401), and Franck et al. (2006). These researchers, analyzing, for instance, syntactic errors observed in speech production, equate the formal syntactic process involved in sentence derivation with the actual process involved in speakers’ sentence production. In this study, we explore the psychological reality of this theory as applied to judgments of the grammaticality¹ of Japanese sentences. The sentences to be judged include two arguments with the same accusative case marker *o* (hereafter called Double-*o* sentences) as shown in (1) below (the sentences drawn from Mihara and Hiraiwa, 2006, p. 292):

(1) Taro-wa Hanako-o atama-o tatai-ta.

Taro-Topic Hanako-Accusative head-Accusative hit-Past
(Taro hit Hanako the head.)²

It is to be noted that in this sentence the two arguments are each associated with a single verb, *tataita* (hit), and they both play a thematic role of Theme with respect to the verb, which, however, accepts only one Theme argument. Hence, the sentence violates the θ -criterion which specifies that “each θ -role associated with a given predicate should be assigned to one and only one argument” (Radford, 2004, p. 480).³ In a more recent terminology, it violates the legibility condition in that it includes a superfluous argument that is not legible to the C–I system. Thus Mihara and Hiraiwa (2006, p. 292) and Hiraiwa (2002, p. 143) actually judge sentence (1) to be ungrammatical, though mildly so, when contrasting it to sentence (2) below:

¹ Despite Newmeyer’s (1983) argument that “there is no such thing as a *native speaker’s* intuition about grammaticality” (p. 51, italics is Newmeyer’s), we have adopted *grammaticality* instead of *acceptability* judgments for the same reason as mentioned previously (Nagata, 1988, 2001, 2004, 2005a). However, we use the two terms differently when necessary. In our view, there is no difference in kind in the long run between grammaticality and acceptability because both are the product of performance regardless of whether the performance is done by linguists or ordinary speakers. See Bever (1970), Mathews (1979), Osgood (1980), Wasow and Arnold (2005) for similar views. Remember that Chomsky (1957, p. 13), though long ago, equated “grammatical” with “acceptable to a native speaker”.

² Only very loose translations are given, because the Japanese sentences are not put into English so satisfactorily that their syntactic structures are preserved in English.

³ In this study, we used double accusative sentences that violate the θ -criterion, and excluded double accusative sentences that do not violate it and therefore are not ungrammatical. The latter sentences include, for example, *Yoru no koosokudooro o, Yoohei wa moosupiido de kuruma o hashiraseteita* (Yohei drove the car along the night freeway at breakneck speed. The example is a one offered by a reviewer.) This sentence contains two arguments, *koosokudooro* (freeway) and *kuruma* (car), that are given an accusative case marker and that are each associated with a verb, *hashiraseteita* (drove). However, the two arguments assume a different thematic role with respect to the verb: the former argument assumes a Locative role, while the latter assumes a Theme role.

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