The Logical Form in the Second Language

An Investigation into Quantification in the Japanese-English interlanguage

Introduction: In coping with variability in morphological production in L2 acquisition, which represents a challenge for the parameter (re-)setting theories, Lardiere (2008) proposed the *feature re-assembly hypothesis* in which sequential difficulty in L2 acquisition of morpho-syntactic features is captured by the processes of (re-)assembly and mapping of features onto their morphological realizations. Slabakova (2009, 2013) incorporated Lardiere's proposal in establishing a scale of difficulty in learning semantic properties (e.g. definiteness) which is based on whether reassembly is needed and whether the universal meaning is obtained by overt morphology or context (See also Ramchand & Svenonius, 2008). In considering the truth-conditional aspect of meaning, the feature-based framework is not powerful enough to account for the variability of interpretations that L2 learners come to learn. Take as an example the acquisition of English comparatives by Japanese L2 learners. While the English comparative is a quantified syncategorematic[1] structure that incorporates the invariant logical meaning of the quantifier ⟦ -er ⟧, of type <dt,dt, t> as represented in (1.a), Japanese has a context-dependent categorematic comparative structure that denotes the predicate of individuals of type <et> which is inherently comparative with a contextually-determined standard (Beck, et al, 2004, 2009) derived as (1.b) (See footnote 1). A mismatch of this sort in which the universal meaning of comparative meaning is expressed by two logical forms (i.e., two truth conditional structures) in the two languages requires Japanese L2 to learn the quantificational expression of comparatives in English by showing a cluster of subtle interpretations that are unavailable in Japanese such as sub-comparatives in (2.a) and ambiguous comparatives which are derived by scope interaction between the quantifier –er and modal expressions such as "required" in (2.b) as well as showing sensitivity to the negative island constraint (to be discussed). It is far from clear how Slabakova's framework can account for variability of this sort, given that neither overt morphology nor context is responsible for expressing the universal meaning in the two languages[2].

Hypothesis: The purpose of this paper is to present the *complex semantics hypothesis* that has the following rationale: (a) acquiring the truth conditional meaning hinges on successful form-meaning connection (VanPatten, 2004) between the syntactic categorial structure and its type-based structure. (b) Semantic variation lies in the way the language in question chooses the typed logical form structure for expressing the universal meaning. As we saw in (1), Japanese and English have superficially similar comparative structures, but they are different in the truth-conditional structure they use in expression the comparative meaning: higher order quantificational expression in English vs. low-typed predicate-structure in Japanese. (c) Categorematic structures (e.g. lower-typed logical forms) are the most prototypical and the easiest to acquire, given their one-to-one correspondence between its semantic items which get

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[1] Logical terms such as quantifiers have direct implication for the truth-definition of language. They bear fixed invariant meanings which stem from the application of the semantic rules. In this sense, quantified expressions are syncategorematic as containing items with invariant logical meaning that do not follow from the direct mapping of the categorial syntactic structure and its type based logical form (See Heim & Kratzer, 1998). Other non-logical terms, such as predicates, pronouns and individuals, contribute indirectly to the truth-specification of language through the grammatical constraints that equate them to the categorical composition of syntactic structures. Such items get their meaning by reference and they do not impose any requirement on the truth in deriving the overall meaning (See May, 1991). (= I will explain further this difference and the mismatch it creates once my paper is given opportunity of acceptance).

[2] Please note that context in Japanese comparatives assign value for the standard of comparison only. It does not assign the comparative meaning per se. The role of context is just making the standard available for comparison. Comparative meaning is inherently specified by the adjective which is of type <et>.

their meaning by reference and the syntactic categorial composition. Categorematic structures are mapped at the interfaces using the interface processes (Jackendoff,2002) which follow straightforwardly without further processing and accommodation (to be discussed).(d) Syncategorematic structures are harder to learn since there is no direct mapping between the syntactic structure and the typed structure. They contain logical forms with invariant meaning that impose further requirement on truth, which calls for further processing by the integrative processes of the semantics (see Jackendoff, 2002) through retrieving the logical invariant meaning of the quantifier from the long term memory into the working memory.

The Study: I will investigate the semantic mismatch as explained in paragraph 2 in the domain of past tense which is quantificational in Japanese and pronominal in English. I will also discuss another experiment testing comparatives which are quantificational in English and predicate-like in Japanese. All data, methodological issues and predications will be presented and discussed.

(1) a. Bill bought cars more than Jim did **(English)**

i. $[\![\text{-er}_{\textbf{clausal}}]\!] = \lambda Q_{<d,t>}, \lambda P_{<d,t>}.. \max(P) > \max(Q)$

ii. Bill bought [$_{AP}$ [$_{DegP}$ -er than Jim did ~~buy t1 many cars~~] many cars

iii. $[\![\text{-er}]\!] = \lambda Q \lambda P [\max(P) > \max(Q)]$ (λd. Jim bought *d*-many cars)

iv. $[\![\text{DegP}]\!] = \lambda P [\max(P) > \max(\lambda d.$ Jim bought d-many cars)]

v. [[$_{IP}$ [$_{DegP}$ -er than Jim did ~~buy t1 many cars~~][1 [Bill bought [d- many cars]]].

vi. $[\![\text{DegP}]\!] = \lambda Q [\max(Q) > \max(\lambda d.$ Jim bought d-many cars)] (λd. Jim bought *d*-many cars)

vii. $[\![\text{IP}]\!] = 1$iff max (λd. Jim bought d-many cars) > max (λd. Jim bought d-many cars)[3]

b. Sally wa Joe yori kasikoi. **(Japanese)**
Sally Top Joe YORI smart
Sally is smarter than Joe.

i. $[[\text{kasikoi c}]]^g = \lambda x.\max(\lambda d.$ x is d-smart) > g(c)

ii. $[[\text{Sally wa kasikoi}]]^g = 1$ iff max(λd. S is d-smart) > g(c)

iii. c := the standard of intelligence made salient by comparison to Joe
: = Joe's degree of intelligence

(2) a. * Kono tana-wa [ano doa-ga hiroi yori (mo)] (motto) takai **(Japanese)**
This shelf-Top [that door-Nom wide YORI (mo)] (more) tall

b. This shelf is taller than that door is wide. **(English)**

(3) a. Sono ronbun wa sore yori (mo) tyoodo 5 peeji nagaku nakerebanaranai
That paper Top that YORI (MO) exactly 5 page long-be require
"The paper is required to be exactly 5 pages longer than that"

i. required > -er: required [[exactly 5 pages -er than that]1 [the paper be t_1-long]]
$\forall w \in$ Acc: max {d: $\text{long}_w(p,d)$} = 5 pages (Where Acc = the set of accessible worlds)

ii. # -er > required: #[exactly 5 pages -er than that]1 [required [the paper be t1-long]]
max {d: $\forall w \in$Acc: $\text{long}_w(p,d)$} = 15 page **(unavailable reading in Japanese)**

iii. .er > required: [exactly 5 pages -er than that]1 [required [the paper be t1-long]]
max {d: $\forall w \in$Acc: $\text{long}_w(p,d)$} = 15 pages **(available reading in English)**

[3] (= where Max (P)= ιd: P(d)=1 & ∀'d [P('d) =1 → d'≤ d])

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