A Recursive Phonology Interface for WH-F Alternative Semantics

We assume an encoding in pure alternative semantics of the system of Beck (2006). A phrase such as $[_{\text{VP}}$dare-o aisiteiru] (Japanese 'love who') has an undefined ordinary semantic value and the Hamblin alternative set as the focus semantic value (1a). A phrase with a free ordinary focus has a standard ordinary semantic value, and an alternative set varying in the F positon as the focus semantic value (1b).

(1) a. $[_{\text{VP}}$dare-o aisiteiru] ordinary undefined

    focus $\{\lambda x.\mathbf{love}(x,y)|\mathbf{person}(y)\}$

b. $[_{\text{VP}}$Mary-o$_{\text{F}}$ aisiteiru] ordinary $\lambda x.\mathbf{love}(x,\mathbf{m})$

    focus $\{\lambda x.\mathbf{love}(x,y)|y\epsilon D\}$

The semantics-phonology interface for alternative semantics should capture two levels of semantics-phonology isomorphy for focus. First, the semantic scope of an F or WH-F matches the phonological domain of prominence, as argued for F using 'farmer sentences' by Truckenbrodt (1995). In Japanese WH-F, the phonological domain of post-focus prosodic compression reaches to the question particle, agreeing with semantic scope (Maekawa 1991, Deguchi and Kitagawa 2002, Ishihara 2003). Second, in configurations with multiple F, there is evidence that the wider-scope F is phonologically more prominent than the narrower-scope one; thus in (2), "much" is more prominent than "I". In Japanese, a wider-scope WH-F surpresses the realization of a subsequent WH-F in its scope, a configuration that is isomorphic to SOF (Ishihara 2005).

(2) You used to earn a little bit more than I did.

    NOW$_{\text{F}}$ you earn MUCH$_{\text{F}}$ more than $\underbrace{\text{I}_{\text{SOF}}\ \ \text{do.}}_{\phi}$

    $\underbrace{\phantom{\text{NOW}_{\text{F}}\text{ you earn MUCH}_{\text{F}}\text{ more than I}_{\text{SOF}}\text{ do.}}}_{\psi}$

phonology	[ay] "I" has highest prominence in phonological interval ϕ.
semantics	'hearer earns d much' and 'spkr earns d much' are substitution alternatives, with substitution in the y position of 'y earns d much'.

phonology	NOW and MUCH have more prominence than anything else in phonological interval ψ.
semantics	'then hearer earned a little bit more than spkr earned' and 'now heared earns much more than spkr earns' are substitution alternatives, with substitution in the t and x positions of 'at t hearer earns x much more than spkr earns'.

Following Wagner (2006) and Rooth (2010), the semantics-phonology interface for focus takes the form of local operators whose phonological interpretation is relative prominence, and that also have a semantic interpretation. The interpretation proposed here relates to the recursive construction of alternative semantic values. In Hamblin (1973) and Rooth (1985), alternative semantic values project "automatically" using an image construction, $[\![\text{dare-o aisiteiru}]\!]^{\text{f}} = \{b(a)|a\epsilon[\![\text{dare-o}]\!]^{\text{f}} \wedge b\epsilon[\![\text{aisiteiru}]\!]^{\text{f}}\} = \{\mathbf{love}(y)|\mathbf{person}(y)\}$. Suppose instead, alternatives project only in the presence of the right local operator:

(3) $[\![[_{10}\alpha\beta]]\!]^{\text{f}} = \{h(a,[\![\beta]\!]^{\text{o}})|a\epsilon[\![\alpha]\!]^{\text{f}}\}$

$[\![[_{01}\alpha\beta]]\!]^{\text{f}} = \{h([\![\alpha]\!]^{\text{o}},b)|b\epsilon[\![\beta]\!]^{\text{f}}\}$

$[\![[_{11}\alpha\beta]]\!]^{\text{f}} = \{h(a,b)|a\epsilon[\![\alpha]\!]^{\text{f}} \wedge b\epsilon[\![\beta]\!]^{\text{f}}\}$

$[\![[_{00}\alpha\beta]]\!]^{\text{f}} = \{h([\![\alpha]\!]^{\text{o}},[\![\beta]\!]^{\text{o}})\}$

The operator 10 projects alternatives from the left child and not from the right child, and phonologically, constrains the maximal prominence in the phonologal interval corresponding to the left child to be greater the the maximal prominence in the interval corresponding to the right child. 01 is symmetric, while 11 and 00 project from both children or neither child respectively. These are a local version of the "Stress F" constraint of Truckenbrodt (1995).

The local statement of the semantics-phonology interface is shown to account for semantics-phonology isomorphy. The representation (4) projects the scope of the F on "more" to the top, projects the scope of the focus on "I" one step, contrains the prominence on "I" to exceed the prominence on "did", and constrains the prominence on the "more" to exceed the prominence on "I".

(4) $[_{10} \; [_{10}\text{much}_F \; \text{more} \;] \; [_{00} \; \text{than} \; [_{10} \; I_F \; \text{did} \;]\;]\;]$

The analysis is completed by treating the licensing of non-trivial alternatives at their maximal projected scopes. WH-F is licensed by a question scope marker, which eliminates the undefined ordinary semantic value and introduces an ordinary semantic value and a trivial unit-set alternative set. F is licensed contextually at the top of its scope by a constraint among the ordinary semantic value, focus semantic value, and ordinary semantic value of an antecedent, essentially as in Schwarzschild (1999). In (4) the final 0 is annotated with the index of the antecedent for focus interpretation, which is the main clause of the comparative.

While related in certain ways to Williams (1997), Wagner (2006), and Rooth (2010), the system improves on all three by treating WH-F in addition to ordinary focus/givenness. It differs from Williams and Wagner in employing recursively generated alternatives, rather than a purely local givenness operator; it is doubtful that the latter could cover WH-F. It improves on Rooth in constructing alternatives recursively, rather than with ad-hoc structured meanings. It shares with Wagner's local operators whatever advantages accrue to interface constraints that are stated locally in terms of semantic and phonological properties of a pair of sister constituents, rather than more globally like Stress F. In its account of "why" WH is focused in Japanese, it takes advantage of the semantic commonality between F and WH offered by the WH-F system of alternative semantics, rather than stipulating that WH subclassifies F in UG feature geometry. Together with allowing F to take scope at any level, this is an advantage over syntactic accounts employing multiple spellout (Ishihara 2003).

Some problems are left open. Like other alternative semantics systems, a first-operator effect is predicted, with a focus or WH being bound the first operator it meets; such effects are probably not absolute either for focus or WH-F, and similarly for intervention effects among WH and F (Tomioka 2007). The system is designed to deal with Japanese-type WH-F, and it is not clear what it should say about typologically different WH systems.

<div align="center">**References** (some titles shortened)</div>

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