'Biolinguistics': Some foundational problems

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The 'Biolinguistics' program seeks to establish specific neuroanatomical models corresponding to the representations and operations characterizing the species-specific language faculty in human beings. Yet after decades of research, no neural structures corresponding to specific linguistic structures, rules, constraints or principles have ever been identified. A key to biolinguistics' failure is, I suggest, its long-term adherence to two dubious assumptions: (i) a kind of literalism in envisaging the relationship between neural anatomy and linguistic representations, reflecting a seriously misconstrual of Marr's (1982) tripartite division of cognition, and (ii) a view of such representations as objects fundamentally different from other components of human cognitive capacity. (ii) rests on the premise that phrase markers are the optimal formal representation of natural language sentences, despite major empirical difficulties that syntactic accounts based hierarchical phrase structure face in handling a wide variety of grammatical patterns, including non-canonical coordinations and ellipsis constructions. In contrast, proof-theoretic approaches such as type-logical grammar do not face these difficulties, and their foundational assumptions link language to the higher-order cognitive functions supporting deductive reasoning. This conclusion offers a very promising alternative to the current, essentially result-free 'Biolinguistic' paradigm.

Anti-reconstruction Effects and Object Shift in Japanese
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Japanese has a group of expressions that typically take wide scope over negation. Among these are focus particles like *dake* (=only), *mo* (=also), *sae*(=even) and the disjunction *ka* (=or). Take a look at (1), where the particle *dake* (=only) attached to the object *ringo* (=apple) takes obligatory wide scope over negation.

(1) Masao-wa ringo-dake tabe-nakatta   (only > Neg, *Neg > only)
     Masao-Top apple-only eat-Neg.Past
     'lit. Masao didn't eat only apples.'

This obligatory wide scope phenomenon can be broken down into the following two questions. First, given that Japanese is a scope-rigid language, should (1) count as evidence for obligatory TP movement into TP domain as Shibata (2015) argues? Second, why is the narrow scope reading of *dake* (=only) unavailable in (1)? In other words, do we need some special mechanism to derive the anti-reconstruction effects observed in (1)?

In this talk, I argue that the answers to both questions are negative, by demonstrating that the particles in question are positive polarity items (PPIs) in that they exhibit rescuing effects in the sense of Szabolcsi (2004) and Yoshimoto (2014).

PPIs are, by definition, unable to take narrow scope with respect to clausemate negation as shown in (2).

(2) a. Masao didn't eat something   (*Neg > some)
     b. *Masao-wa   nanika   tabe-nakatta   (*Neg > some)
         Masao-Top something eat-Neg.Past
         'lit. Masao didn't eat something.'

However, Szabolcsi (2004) points out that PPIs taking scope below clausemate negation can be rescued as in (3) and proposes (4). Yoshimoto (2014) claims that the rescuing effects are also observed in Japanese.

(3) a. I don't think John didn't call someone   (✔Neg> Neg >some)
     b. If we don't call someone we are doomed.   (✔Neg > some)
(4) PPIs do not occur in the immediate scope of a clausemate anti-additive operator AA-Op, unless [AA-Op > PPI] itself is in an NPI licensing context.
(5) a. Masao-wa   nanika   tabe-zu-ni-wa irare nakatta.(✔Neg> Neg >some)
         Masao-Top something eat-Neg-Prt-Top can.be-Neg-Past
         'Masao could not help eating something'
     b. Naika tabe-nakere-ba, Masao-wa sinu   (✔Neg > some)

something eat-Neg-if Masao-Top die.Pres
'lit. Masao will die, if he doesn't eat something'

Now consider (6), where the narrow scope reading of *dake* (=only) is available.

(6)　a.　Masao-wa　ringo-dake　tabe-zu-ni-wa irare nakatta (✔Neg > Neg > only)
　　　　Masao-Top something　　eat-Neg-Prt-Top can.be-Neg-Past
　　　　'Masao could not help eating only apples'
　　b.　Niku-dake tabe-nakere-ba Masao-wa benpi-ni nara-nai　　(✔Neg > only)
　　　　meat-only eat-Neg-if Masao-Top, Masao constipation become-Neg
　　　　'lit. Masao will not be constipated, if he doesn't eat only meat'

The present claim is that the particle *dake* is a PPI.　The absence of the narrow scope reading of *dake* in (1) immediately follows from this claim, since PPIs cannot stay under the scope of their clausemate negation.　Another implication of the narrow scope reading of *dake* in (6) is that object shift across negation does not have to be obligatory in Japanese.　Thus, we do not need to introduce any extra mechanism to deal with (1), because scrambling suffices to derive the anti-reconstruction effects.

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Lexical Creativity: Contrastive Focus Reduplication and Constructional Reduplication

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In this talk, I would like to address the question of lexical creativity, i.e. how the coining of new words takes place in the lexicon and how existing words are manipulated into novel lexical combinations, through a discussion of a certain type of word formation in English and Japanese. The word formation process that I will focus on is the so-called *Contrastive Focus Reduplication* (CFR) in English (Ghomeshi et al. 2004) and *Constructional Reduplication* (CR) in Japanese (Ono 2015). As the names suggest, both of them are a type of reduplication, and thus they have some similar formal and semantic properties in common. But despite their apparent similarities, there are some fundamental differences between them. In this talk, I will show that they exhibit some parallelisms in form and meaning, but at the same time they differ crucially from each other. Finally, I will attempt to explicate the reason that superficially similar lexical processes differ from one language to another.

Most research on CFR in English has largely focused on its semantic properties (Horn 2006, Ghomeshi et al. 2004, Song and Lee 2014, among others). Researchers agree, more or less, that any particular CFR picks out a prototypical reading of the reduplicated word; for instance, the reduplicated expression *salad-salad* in "I'll make the tuna salad, and you make the SALAD-salad" (Ghomeshi et al. 2004: 308) is said to denote a prototypical instance of a category denoted by the base noun, i.e. something like "a green salad" in this case. Likewise, a CR in Japanese, such as *onnanoko-onnanoko sita* (girl-girl) in the following sentence "*onnanoko-onnanoko sita onna ga sukidesuka*" (lit. Do you like a girl-girl woman?) signals the most prototypical meaning of the reduplicated word *onnanoko* (girl). Thus, CFR and CR commonly serve to single out, as Horn (2006: 15) puts it, "an element or subset of extension of the noun corresponding to a true, real, default, or prototype category member".

What is more interesting about the semantics of CFR and CR is that the interpretation of a reduplicated expression is often heavily dependent on contextual factors. The meanings of CFR and CR vary depending on the context in which they occur. Researchers have pointed out that an instance of CFR, e.g. *coffee-coffee*, can signal a literal meaning, in contrast with its figurative meaning, with no reference to prototypicality (Ghomeshi et al. 2004: 315). Thus, a CFR merely picks out a contextually salient reading and the reference to prototype is one of the possible senses. Similarly, a CR may convey varying senses; e.g., in *yasai-yasai sita suupe* (lit. vegetable-vegetable soup), the CR usually picks out a sense of an ample amount of (or sometimes an excessive amount of) the entity expressed by the noun; thus, *yasai-yasai sita* (vegetable-vegetable) in this case does not mean a prototypical amount of vegetable.

The context-dependency of CFR and CR may follow from, or at least be closely related with the fact that CFR and CR are a phenomena of colloquial language. Widlitzki (2016) has pointed out

that, based on a corpus study she conducted, CFRs most frequently emerge in contexts where the intended meanings are clarified by the speaker and they tend to appear in blogs maintained by women and young speakers. Ono (2015) has revealed that CRs are completely different from conventional N-N or A-A reduplications in Japanese, such as *yama-yama* (mountain-mountain) or *hiro-biro* (wide-wide) in that the conventional reduplications express plurality of individual entities or intensifying meaning, independent of the context.

Some researchers have pointed out that a prototype analysis does not satisfactorily account for the semantics of CFR since prototypes of a category vary depending on the contexts and speaker's background knowledge. This fact leads Song and Lee (2011) to propose a "dynamic" prototype analysis where CFRs are only interpretable in relation with relevant alternative categories in the discourse. Ono (2015) has observed, in contrast, that CR in Japanese does not exhibit as much contextual variability as English CFR does. Instead, a CR is viewed as a degree modifier in which a denotation of the reduplicated noun is turned into a scalable object. Ono proposed a scale structure analysis of CR and claimed that the prototypicality of a category signaled by CR follows from a scalar interpretation of the object.

The question is why this is so. I would like to suggest that the difference is boiled down to the lexical resources that CFR and CR make use of when the coining of novel lexical expressions takes place. I would claim that the lexical resource that delivers CFRs to the English lexicon is compounding; whereas the lexical resource that creates CR in Japanese is reduplication of mimetic (or onomatopoeic) words, such as *sube-sube* (smooth). Compounding and mimetic reduplication are highly productive lexical processes in each language. Thus, the productivity of CFR and CR crucially hinges on the productivity of their lexical resources. CFR and CR are creative lexical formations at the level of colloquial speech. We are able to try to explain lexical creativity as a function of lexical resources from which the lexical processes originate and contextual factors in which the lexical processes are used.

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Theoretical Shortcomings:
Counterexamples to Word Stress Treatments in English

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In this talk, I will examine how certain types of exceptions are dealt with in major treatments of word stress in English. I will then suggest a new analysis of main stress assignment, as well as subsidiary stress assignment.

First to be mentioned here is *Sound Pattern of English* (Chomsky and Halle (1968)) (henceforth, *SPE*). In *SPE*, main and subsidiary stress assignment are comprehensively accounted for by the Main Stress Rule (MSR) and auxiliary rules with the help of cyclic application. For example, in the *còndênsátion* word type, whose internal structure is taken to be [[*condéns*]$_V$ *ation*]$_N$, the MSR and auxiliary rules provide the stress pattern *còndênsátion* with primary stress on the penultimate vowel *sá*, *tertiary* stress on the second syllable *dên*, and secondary stress on the first syllable *còn* ((´) = main stress, (`) = secondary stress, (ˆ) = tertiary stress or full vowel without stress reduction to schwa). Note that in this case the position of primary stress in the verb is inherited by the noun as tertiary stress (stress "inheritance" with so-called "transparency") by the cyclic application of MSR from the innermost constituent, the verb, to the next higher level of the word structure, the noun (also termed "cyclicity"). This contrasts with the *còmpensátion* word type *without* tertiary stress on the *second* syllable *pen*, since its base verb does not have primary stress on that position, i.e. [*cómpensàt*]$_V$ *ion*]$_N$.

This account meets a serious problem in the *ìnformátion* word type. It seems natural to consider the noun *ìnformátion* to be derived from the base verb *infórm* as in [[*infórm*]$_V$ *ation*]$_N$. As the rule stands now, however, it incorrectly predicts the stress pattern **ìnfôrmátion* with *tertiary* stress on the *second* syllable; in fact, *ìnformátion* does not have tertiary stress in that position. Words of this class are counterexamples to cyclicity and transparency. Thus, in *SPE* words of this type are postulated to have a "flat" structure as [*information*]$_N$ without an internal base verb (*SPE*: 112, 161) in the underlying phonological representation. However, this kind of treatment of counterexamples creates both a "cyclicity" and an "opacity" problem in the theory.

In subsequent studies, however, the problem of the "exceptional" treatment of this class of words does not seem to be completely solved in Liberman and Prince (1977), Hayes (1980), Halle and Vergnaud (1987: 251), or others. In other words, the counterexamples remain in their theories.

Optimality Theory (Prince and Smolensky (1993), and others; hereafter, OT) has inverted this approach. Rules and their cyclic application are abolished in favor of violable constraints. In effect, the *ìnformátion* word type becomes the norm, while the *còndênsátion* word type is made the exception. Since there are no derivations in (classic) OT, the *ìnformátion* word type seems to fit best for their purposes, as the word does not show any stress inheritance effect on the second syllable. On the other hand, the *còndênsátion* word type with a stress inheritance effect on the second syllable poses a difficulty in their account. We can say that this constitutes one of the counterexamples to OT.

For this class of counterexamples, Pater (2000) for example suggests that the words should be placed in a specially marked set in the lexicon as S_1 (a set-1); only one type of highest-ranked, specially assumed constraint will then be activated on this set, giving the desired output. This, too, constitutes an ad hoc "exceptional" treatment of counterexamples. (Later in OT, the theory was modified to accept the "derivational" aspect in the stress assignment of words; however, this causes another problem, which will not be discussed here.)

In the face of these issues, a new treatment was put forward for the stress assignment of words in English in Yamada (2010) (henceforth, PFT). In PFT, sixteen universal Positional Functions (PFs) are postulated for American English, by which subsidiary stresses are computed by the combination of PFs triggered on the specific syllables by each condition. Thus, in PFT the *ìnformátion* word type and *còndênsàtion* word type can both be equally accounted for within the same system, without recourse to ad hoc, "exceptional" treatment.

The next task for us is to account for the primary stress assignment of words. This has been preliminarily achieved in Yamada (2013) but is insufficient, since it leaves words such as *désignàte* (1a) and *confíscatòry* (1b) unexplained, where main stress is assigned to the left of the subsidiary stress (examples cited from Halle and Vergnaud (1987: 234-255)):

(1) a. <u>*désignàte*</u> *exácerbàte cávalcàde ásymptòte récognìze acétylène fôrmáldeh`yde*
    b. *álkalòid d´ynamìte inhíbitòry ântícipatòry* <u>*confíscatòry*</u> *defámatòry agglútinàtive*

Thus, in this talk we will explore how these types of words are accounted for. The newly developed account will show that we need five Positional Functions for primary stress assignment: Heaviness, Bounded Binarity, Rhythmic Adjustment, Trace, and Monosyllable. The gist of our account is that we postulate these five PFs with the help of Extrametricality, following Hayes (1980).

As for the *désignàte* word type (1a), we assume that after (i) primary stress assignment, followed by (ii) subsidiary stress assignment, main stress is transferred to the next strong position by (iii) lexical Coordinate Axis Transformation as (i)→ *designá<te># →*(ii)→ *dèsignáte* →(iii)→ *désignàte*. (< > = extrametricality, # = word boundary, bold type = coordinate axis).

For a word such as *confíscatòry* (1b), we postulate that certain suffixes are lexically treated as (iv) "suffixes that are stress domain" (i.e., they are treated as independent words in stress assignment), following Halle and Vergnaud's (1987) account, with (v) lexical Stress Retraction as follows: (iv)-(i) → #(*confís<c>)#(atór<y>)# → (confísc)(atóry)# →(v)→ (confísc)(atòry)# (each stress domain is enclosed by ( )).

We have shown that we can account for the main and subsidiary stress assignment of words in English with the use of PFs. Further, by adopting the idea of "stress domain," we can deal with many "exceptions" in a principled way under PFT.

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Note: All data in this talk are based on the American pronunciation in Wells (2008).