Review of the chapter on *Processing*

Jean-Pierre Koenig

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This is an excellent chapter and there is not much to change (I had read portions of it under the different guises Tom mentions). Some periods at the end of sentences are missing before footnotes (fn.1) or at the end of the footnotes (fn.4 and 5) and 'about' is repeated on p.1. This is the extent of what's missing! The following remarks are mostly my suggestions and take on some of the issues Tom raises that Tom is free to ignore any or all of them.

I should say that I have never been clear in my mind about the "right" relationship between syntactic and grammatical theories/frameworks and psycholinguistics and the remarks I make reflect this uncertainty. One of the reasons I chose to work in HPSG (and being a graduate of UC Berkeley, it was a choice on my part, not simply the happenstance of where I was "raised" as a graduate student) is because its architectural choices match what I believe of how language is processed. Tom does a great job articulating how these architectural choices match what is known about processing. On the other hand, I worry that (1) we, as linguists, are naive about cognitive processes (I know I am, working for many years with a psychologist) and assume representations may be more important/easier to establish than is probably the case (I am always amazed at the degree to which psychologists are more interested in processes than representations), (2) we suffer from confirmation bias, i.e. tend to only care about experiments that support our views and pick and choose (I am not accusing Tom's chapter of doing so; it is what I worry us linguists do), and (3) our linguistics cannot depend too much on the most recent results from psycholinguistics which are messy, of course, so we want a few degrees of separation between our linguistic theory and state of the art research on processing. This very long-winded paragraph is meant to be a preamble as to the underlying perspective of some of the comments I am making.

Overall, though, Tom's proposed level of association between HPSG as a linguistic framework and psycholinguistics he is exactly at the right level

(Section 4 might be a little speculative for my taste, but that's just me). Two points that may warrant a little more emphasis (they are there, but maybe a little more emphasis is warranted):

- The fact that in HPSG there is a local association between levels of representation (syntax, semantics, pragmatics, ...) is a big thing, I think and it is a little different from just non-modularity which Tom properly discusses. This is where, I think, HPSG is different from LFG where the σ mappings are more global (at least they seem to be, but maybe it is more a matter of presentation than substance). Stressing the relation between local associations and incrementality might be where to make this point.

- When talking about island constraints, I wonder whether stressing more that the issue of what is a matter of grammar and what is not has been debated in HPSG, particularly of late, might not be nice (although some of this goes back to P&S 1994 and their discussion of binding constraints). Because of the tight interaction between grammar and processing in HPSG that Tom stresses, there is always an issue in HPSG as to whether something is or is not a matter of grammar. Bringing in the work on reflexive (particularly picture reflexives) Runner and colleagues have been involved in might tie nicely with the work on island constraints in this respect. I think the distinction Ivan, Tom, and Emily in their book make between grammaticality and acceptability might also be brought in to explain where HPSG is coming from.

p. 1 Lexical access has often been said to differ across comprehension and production. This is not really critical to Tom's point, but I thought I would mention one area where comprehension and production may differ. See Gollan et al. (2012) 'Frequency Drives Lexical Access in Reading but not in Speaking: The Frequency-Lag Hypothesis' which touches on this issue (among others cited in this work)

p.2 Reference to Francis is missing in references

p.3 Third paragraph. I wonder whether "frameworks" would not be a better term that "theories," adopting Zwicky's terminology, to describe what HPSG is

p.3 "a theory of grammar that fits comfortably into a model of language use". I wonder if a paragraph early on in the paper (in the introduction) about what this means in practice would not be welcome. After

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all, I can imagine people like Colin Phillips arguing that Minimalism fits that bill. What are the criteria for deciding that theory of grammar A fits but theory of grammar B does not? Note that I agree with Tom, I am just wondering how to argue for it.

p.3, ex. 2: Is prosody always disambiguating in (2)? I know it can, but does it all the time, as the text is suggesting? Clearly as a non-native speaker, I don't have an opinion, but it reminds me of the inconclusive evidence (as far as I recall) regarding prosody and PP attachment in the production/comprehension literature.

p.4, below 5, mentioning Ford, Bresnan, and Kaplan (1982) might be a good idea here. I think it's the first paper to discuss preferences (which, ultimately, are a question of frequency).

p.4, Section 2.4. I wonder whether mentioning the event-knowledge crowd would not be a good idea, as event knowledge is one kind of context we use when processing sentences (and these researchers also typically manipulate sentential context in the experimental material to evoke distinct event knowledge). One possible reference among many that might be worth citing is Matsuki et al. (2011) 'Event-Based Plausibility Immediately Influences On-Line Language Comprehension'

p.5, Branigan and Pickering (2017). I am of course very sympathetic to the perspective Branigan and Pickering are taking, but not all agree, right? Mentioning maybe one dissenting view (I seem to remember there are some in the BBS target article responses) might be a good idea.

p.7, para.2: The term "lexical boost" is implied to be a Branigan and Pickering (2017) coinage. As Tom knows, this of course goes back quite a few years. I couldn't find the original paper where it was coined; apologies. The notion goes back to Pickering and Branigan (1998), I think, but the term itself does not seem to appear there (I checked).

p7, just above Section 4. "easy to incorporate": the direct object is missing.

p.8: Maybe citing work that did not find a processing cost for object vs. subject relatives once the difference in discourse function of ORs and SRs are controlled for might be a good idea (e.g., Roland et al. 2012). There is still a memory component to SR vs. OR processing, but mentioning these complicating factors might be good.

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p.8, fn. 8: I have always been a little puzzled about how one goes from comprehension to production here, namely how the fact that a structure is difficult in comprehension lead speakers to avoid it in production. The same issue arises, I think, w.r.t. Hawkins' work on phrase structure. The linking assumption is not totally clear to me.

p.9: What Tom is suggesting re. a parallel between Ivan's treatment of subject and non-subject RCs and the experimental evidence is very suggestive. But I always wonder whether us linguists would be willing to die by the sword (pardon the expression). If psycholinguistic evidence were to suggest that SR and OR ought to be treated the same, would we change our analysis of relative clauses and ditch Ivan's (1997) analysis of subject relatives? I have the nagging suspicion that there is some confirmation bias here and that we, as linguists, (I say *we* to avoid excluding myself) are only looking for evidence that supports our framework/theory.