Response to "Alternative theories of morphology in the Parallel Architecture:
A reply to Benavides 2022"

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I would like to thank Ray Jackendoff for submitting a reply to my article. I concur with him in hoping that this dialogue will enrich the broader conversation about the nature of morphology and its place in the language faculty.

In this reply I will address the points raised by Jackendoff (2022), in the order they were presented, starting with the abstract.

Before the discussion, it must be noted that, overall, while Jackendoff (2022) addresses several important aspects of my paper, many of the key arguments made in Benavides (2022) regarding RM are left unaddressed, including the confusing and excessive coindexation of schemas; the proliferation of schemas; the lack of a detailed explanation of how RM deals with changes in argument structure in word formation (e.g. inheritance and suppression of arguments); and the issue of unnecessarily

ascribing meaning to a morphological construction (making it parallel to syntactic constructions such as the resultative) when meaning is already accounted for by the components of the structure (base and affix), as represented in concatenative models. Using constructional schemas, as Jackendoff & Audring (2020) (J&A) do, may not be the best way to incorporate morphology into the PA or to account for morphological phenomena in general, and it is important to explore other options.

In what follows, I quote relevant parts from Jackendoff (2022) and provide a response for each.

Jackendoff's (2022) abstract begins with the following:

> "The Slot and Structure Model of morphology (SSM: Benavides 2022) presents itself as an extension of the Parallel Architecture (PA: Jackendoff 1997, 2002)."

The *and* in the name, *Slot and Structure Model*, is not accurate. It is the *Slot Structure Model* because it is a model based crucially on lexical items being organized in an entry formed by slots that contain information. As noted in Benavides (2022: 13), this arrangement of blocks of information located within their respective slots constitutes the *slot structure* of each lexical item. The slots are not something separate or additional to the structure; they are the structure, which, along with percolation, determines the configuration of complex words.

Jackendoff (2022) continues:

> "It is shown that (a) SSM does not segregate semantic structure from syntactic structure, violating the fundamental premise of the PA"

This non-segregation in SSM only occurs below the word level. RM seeks to have a uniform notation for both phrasal syntax and morphology below the word level, but Benavides (2022) has shown that what happens below the word level is different from what happens above the word level, the phrasal component. Constructions such as the resultative are justified in syntax, not in morphology, because building phrases is different from forming words, especially with respect to the semantics, and this requires a different treatment for phenomena below the word level, as shown in Benavides (2022), § 3, 4. Language below the word level is different and the PA should adapt to that. Preserving a single notation (i.e. schemas) throughout should be warranted only by the data, not out of a desire for symmetry or uniformity, or in order to extend to morphology a formalism, based on constructions, that is used (effectively) for syntax.

In addition, as noted in Benavides (2022: 65), what happens below the word level is supported by Jackendoff's (2013) own theory of processing (based on the PA). In syntax, treelets are simply clipped together, without the need for a full phrase/sentence to be formed before clipping on another treelet. But in morphological processing, according to Jackendoff (2013), lexical items have to be fully-formed before they participate in phrasal structure. This automatically makes morphology different from

the phrasal level, requiring, in my view, formations as in SSM.

The abstract continues:

> "(b) SSM is concerned primarily with deriving productive morphology, while the PA is stated in terms of declarative schemas that license nonproductive as well as productive morphology;"

However, unification, which accounts for a significant portion of morphological processes, is procedural, not declarative, in RM. In J&A: 29 it is stated that "this single procedural rule is unification." Thus, it is not accurate to say that declarative schemas in RM license productive morphology; they do so only in part. In J&A: 28-9 it is stated that the schema in its generative function "contributes the procedural character of the rule; it actively manipulates pieces of structure, turning a structure that satisfies the 'input template' into one that satisfies the 'output template.' " Thus, in RM it is schemas in their generative function that implement unification and also license and carry out productive morphology. There is instantiation of variables as part of unification, but there is much more, including manipulation of structure, as seen in the description above (see also J&A: 30, 53, 158, 265).

In addition, schemas in their generative role do have to account for the 92% of Spanish *-ble* derivatives, the 93% of German *-bar* derivatives that are regular, as well as for derivations with the many other regular affixes in Spanish and other languages. Even non-productive affixes have relatively high levels of compositionality that need to be accounted for by a regular process (unification). Through a corpus study that included both productive and non-productive affixes in Spanish, Benavides (2014) found that there is an 87% of compositionality for affixes in general, and prefixes have almost 100% compositionality. Even affixes with very low productivity (as measured based on hapax legomena) had a majority of regular derivatives, with some of them reaching a level of regularity of over 85%.

The SSM can be seen as a refinement of the dual route model, and as such, SSM does account for irregular morphology in addition to regular word formation (via lexical redundancy rules). And while the dual route model has focused on morphology, its principles apply to the other components of the grammar as well (see Pinker 2006). For example, in syntax, any structure that does not follow regular syntactic rules, such as idioms or syntactic nuts, is stored in the associative network and undergoes lexical redundancy rules.

> (c) SSM enforces a strict division between morphology and syntax, while the PA allows a degree of interpenetration.

In SSM morphology does interact with syntax, via the lexicon. As noted in Benavides (2022: 58), when needed in a sentence, fully-formed complex words separate into their respective components to participate at the interfaces, and instantiate into variables when necessary. More importantly, PA also separates morphology from phrasal syntax, as seen in the discussion below (p. 8). As also noted in Benavides (2022: 60), it is advantageous to represent morphology as operating below the word level as its

own subcomponent, as this clearly marks the distinction between the phrasal and the word-based components of the lexicon/grammar.

With this overall characterization in mind, ldet us compare SSM's formalization with that of RM and CxM. First consider the representation of the word *driver* and the *-er* affix in the RM formalism. (p. 2)

(1)
a. RM representation of *driver* (cf. Jackendoff and Audring 2020, 89)
Semantics: [PERSON$^\alpha$; [DRIVE (Agent: α, Patient: INDEF)]$_1$]$_2$
Morphosyntax: [$_N$ V$_1$ aff$_3$]$_2$
Phonology: /drajv$_1$ ər$_3$ /$_2$

b. [$_N$ V-*er*] affix
Semantics: [PERSON$^\alpha$; [F (Agent: α, …)]$_z$]$_w$
Morphosyntax: [$_N$ V$_z$ aff$_3$]$_w$
Phonology: /…$_z$ ər$_3$ /$_w$

The formalism in (1) explicitly segregates semantic, syntactic, and phonological structures. The links between levels of representation are encoded by subscripting: subscript 1 connects the levels of the base *drive*, subscript 2 connects the levels of the entire word, and subscript 3 connects the levels of the affix (this last an issue to which we will return). Thus it directly embodies the basic principle of the Parallel Architecture.

These RM schemas segregate semantic, syntactic and phonological information, but they do not show the changes in argument structure (Benavides 2022, p. 64). It has not been shown in RM what exactly are the effects on argument structure in word formation, that is, what arguments are inherited, added or lost. In RM representations (in 1 above and in J&A) it is not shown that the Agent is no longer a part of the entry, and that *driver* can only take an object argument. The Agent is no longer a part of the derivative, but this is not reflected in the RM entry. It is also important to keep in mind that the derivation for *driver* is a relatively simple one when compared to the derivations with causative suffixes in Chichewa, Madurese, Malayalam, Chimwi:ni, and Choctaw, all analyzed in Benavides (2022: 31 ff.). Can RM, as currently formulated, account for the changes in argument structure in that type of complex derivations, in a principled and consistent way? That may be, in the future, but that is not shown in J&A.

However, this violates the basic premise of the Parallel Architecture, namely that phonological, syntactic, and semantic levels of representation are independent and internally unified. In RM and CxM, the close link between basic semantic categories and syntactic parts of speech is captured not by putting them in a box together, but rather by specifying the interface between the two levels. Similarly, the SSM slot labeled SUBCAT/SELECT encodes the affix's constraints on its base. It too mixes semantic and syntactic information. Moreover, it makes no connection with the syntax and semantics of the CATEGORIAL slot. The remaining slots deal with aspects of semantics:

> "core" lexical semantics and argument structure. So semantics is scattered throughout the slots. (p. 4)

Lexical entries in SSM are represented that way for convenience and ease of interpretation. The syntactic and ontological features of the Categorial slot can be given a slot each, with the ontological category represented within a slot that is part of semantics The same goes for subcat/select features. Semantic information is not just scattered randomly in a lexical entry in SSM. Recall that there is a horizontal way of representing the LCS of a word, without "boxes" (Benavides 2022: 21). Just as syntactic structures are not necessarily represented in the mind as trees, lexical entries in SSM do not have to be represented with "boxes"; entries can be represented in different ways. However, whether represented vertically, horizontally, as circles within circles, or in other ways, lexical entries in SSM are still triplets of semantic, syntactic and phonological information.

> And on the other hand phonology has no slot at all, just an informal listing at the top of the table. In short, on this reading, SSM, unlike RM and CxM, cannot be considered an instantiation of the Parallel Architecture. (p. 4)

There are no slots for phonology in SSM representations, but slots could well be added. Their inclusion, however, would neither add nor detract from the way SSM accounts for the formation of complex words. In addition, the role of phonology is addressed (briefly) in Benavides (2022 p. 58-9).

> RM and CxM also endorse a dual-route theory of processing, in which compositional derivations are in competition with stored complex items (Jackendoff and Audring 2020, chapter 7; Huettig, Audring, and Jackendoff 2022; Booij 2010, 251-253), and RM develops an extensive account of the network of stored forms. In fact, given the sheer volume of "irregular, semiproductive, or unpredictable forms" that "have to be memorized," RM might well be thought of as primarily a theory of the "relational network that is part of the lexicon." Such a theory should say that on one hand, *driver* is related to *drive* through its base, but on the other hand it is related to *baker*, *singer*, and *winner* through its affix. Moreover, it should be related to *butcher* and *carpenter* through its affix, even though the base of these words is a "bound root" rather than an independent word on its own. RM encodes these relations in affix. (p. 4)

As noted above, there is also a sheer volume of regular forms to be accounted for. Regular forms are not always the most frequent, as we know from the German plural, where the default *-s* is in the minority when compared to irregular forms. However, there are still massive amounts of regular complex words in a language, and they need to be accounted for. SSM accounts for them in a simple and clear way, but the (generative) schemas of RM have characteristics that make them confusing, as seen in Benavides (2022: § 4). This is particular to RM, because in the PA no emphasis is given to regular or irregular forms. Regarding relating words ending in *-er*, this can be done with lexical redundancy rules as well. J&A: 82 present a diagram similar to the one in (2), which shows some of the possible relational links between the suffixes in

derivatives ending in *-er*. While J&A do not explicitly label these as lexical redundancy rules, the diagram does illustrate what these rules can do; it is another way to visualize them.

(2)

driv er .... butch er

play er ....   sing er

bak er .... carpent er
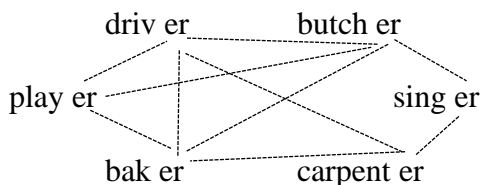
[adapted from J&A]

SSM does recognize the creative power of analogy, as implemented with lexical redundancy rules, as noted in Benavides (2022: p. 54): "In fact, some of these words may have acquired their additional meanings due to the operation of lexical redundancy rules, by analogy. For example, the regular *apreciable* may have acquired its meaning of "worthy or deserving of being appreciated" by analogy to the already stored patrimonials *punible* and *condenable*, which have this meaning of "deserving of." Likewise, English *translatable*, which has the regular meaning of "capable of being translated," could have acquired its additional meaning of "easy to translate" by analogy to *readable*." " The key, however, is that, by definition, analogy is based on similarity, and when there is no similarity between two or more items, analogy has difficulty producing an appropriate form (Pinker 1999). Here is where the regular, default rule or structure comes in. So, analogy, or relational structures, or lexical redundancy rules do have an important role, but that role is limited, because they are all based on similarity. The regular process, unification, has an extremely important role as well, because the massive amounts of regular forms also have to be accounted for.

> These roles, internal to the lexical network, constitute what RM calls the **relational** function of schemas. Benavides (p. 69) is correct in surmising "that, in essence, relational schemas are a modification and formalization of lexical redundancy rules." However they are not identical, and in particular are no longer represented in the format of Jackendoff 1975, which Benavides appears to adopt (p. 68). (p. 5)

While relational schemas are not identical to lexical redundancy rules, they perform the same functions as lexical redundancy rules, which are not simply loose associations, as Jackendoff (2022: 5) says, but rather express a formal relation, as the rule shown in Benavides (2022: p. 68) illustrates.

> There is a further consequence. Consider the English regular plural: it clearly can be used generatively to produce novel forms. However, it also appears inside of forms that have to be memorized, for instance *clothes*, *woods*, *dregs*,

smarts, *best regards*, *raining cats and dogs*. In these cases, the plural schema is being used relationally, capturing the similarity between these forms and regular forms, rather than generating these forms online. This is not an isolated case: it turns out that any productive pattern can also be used relationally. (p. 5)

Lexical redundancy rules can be used for exactly the same purposes as those noted above involving words such as *clothes*, *woods*, *dregs* and others. A network similar to the one in (2) above can be created for words ending in -*s*, using lexical redundancy rules.

This conclusion undermines any attempt such as SSM to treat productive patterns in isolation, and to set aside nonproductive patterns as a matter for some sort of loose association – or as a matter for lexical redundancy rules. At the same time, RM upholds the distinction between computation and storage in processing by appeal to the difference between generative and relational functions of schemas. (p. 5)

Lexical redundancy rules are not simply loose associations, as noted above.

4. The relation between morphology and syntax

A third difference between SSM and RM concerns the relationship between morphology and syntax. RM proposes an architecture along the lines of (4), in which the upper three components are concerned with the grammar of phrases and the lower three with the grammar of words. The double-headed arrows represent interface correspondences. (Thus Benavides is mistaken in claiming (p. 60) that "[i]n this model, morphology is not seen as being located below the word level.") From the perspective of PA and RM, a theory of morphology has to be concerned not just with morphosyntax but also with its interfaces with phrasal syntax, word phonology, and lexical semantics. (p. 5)
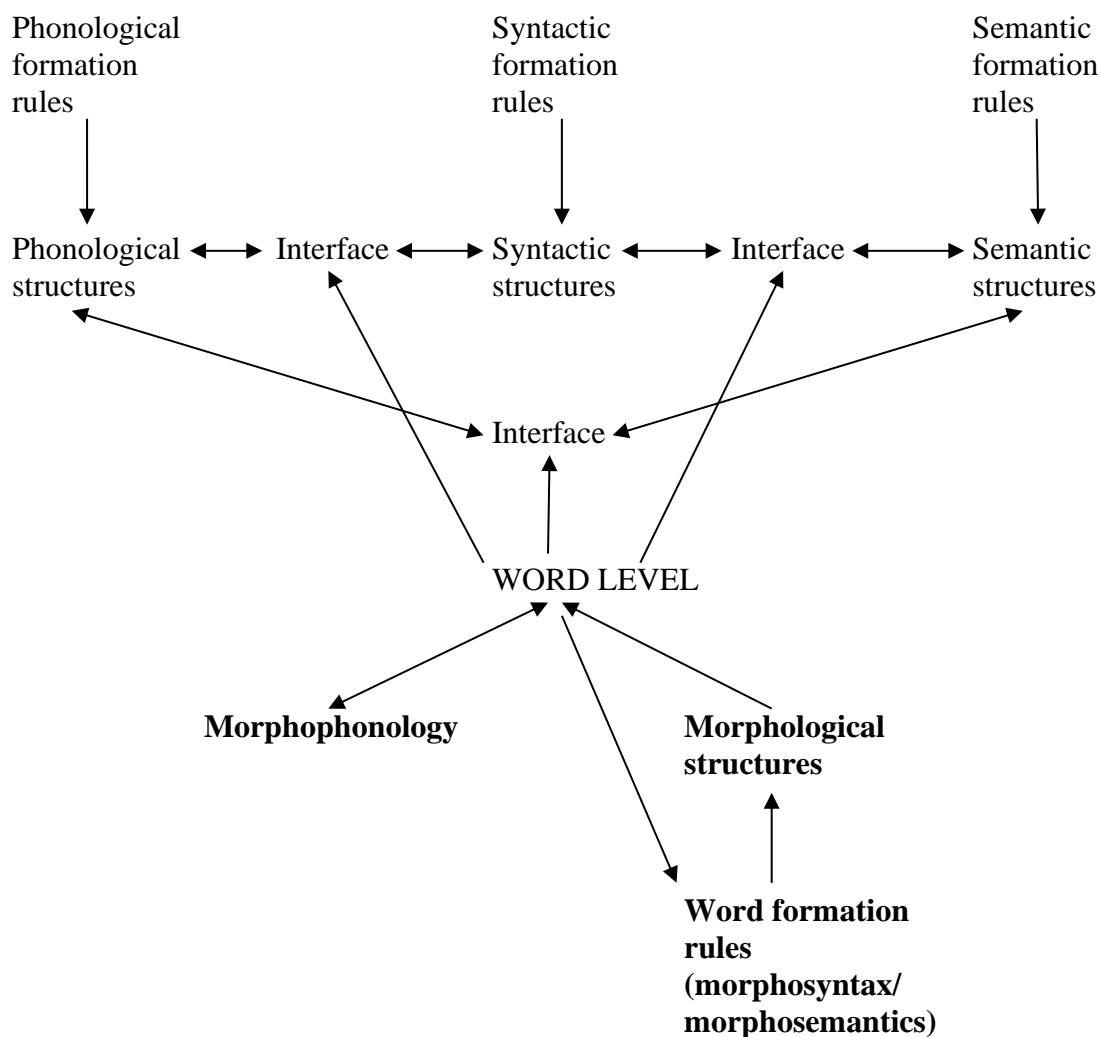
SSM does show how morphology interacts with other components. For example, in Benavides (2022: p. 58) it is noted that "fully-formed structures created by WFRs (e.g. *caza+dor* 'hunter') in turn become a part of the lexicon. When needed in a sentence, they separate into their respective components to participate at the interfaces, and instantiate into variables when necessary,"

This diagram does not have a separate component called "lexicon," because RM and CxM, along with Construction Grammar, argue that the entire grammar can be said to be "in the lexicon." (p. 6)

The use of the word "lexicon" in the diagram is just a matter of terminology, to which Jackendoff (2022) gives undue importance, given that it was explained in Benavides (2022: 4) (and other parts) that it means "below the word level." In the diagram in (1) in Benavides (2022: 4), the label "Word Level" is shown in parentheses below the word "Lexicon," with an explanation in the text that it refers to the lexicon below the word level. The definition of "lexicon" is even given as the subtitle for the paper: "The Centrality of *the Lexicon Below the Word Level*." Saying that there is a lexicon below

the word level automatically implies that there is another part of the lexicon that is above the word level (the phrasal component). However, in order to avoid the use of the word "Lexicon" in such diagrams, the diagram can be represented as in (3) below, a variation of the diagram presented in Jackendoff (2022: 6), taken from Benavides (2022: 58). All the components of the diagram are a part of the lexicon, as per PA principles, with morphology operating below the word level.

(3) Morphology within the Parallel Architecture

Phonological formation rules	Syntactic formation rules	Semantic formation rules

Phonological structures ⟷ Interface ⟷ Syntactic structures ⟷ Interface ⟷ Semantic structures

Interface

WORD LEVEL

Morphophonology   **Morphological structures**

Word formation rules (morphosyntax/ morphosemantics)

[modification of Jackendoff 2007, Culicover & Jackendoff 2005]

Note as well that ten Hacken (2019: 65, 66, 81) holds that word formation is unique in that it is the only component of the grammar for naming new concepts, which for him is reason enough to modify PA so as to have a separate word formation component. While the conceptual component of the grammar generates semantic structures (that interface with syntactic structures), word formation is the only component where new concepts are named. Interestingly, ten Hacken's (2019: 95) representation of the

"Lexicon" in PA is strikingly similar to that in my representation of PA in (3) above, linking to the phonology, syntax and conceptual structure, and with word formation (morphology) feeding fully formed words to the lexicon (below the word level). As ten Hacken (2019: 95) notes, in his diagram "the lexicon has been added as a box, but it is not a component of the same type as phonological, syntactic and conceptual structures." While ten Hacken (2019) favors a realizational view of word formation, his proposal of a word formation component separate from the phrasal components is fully compatible with my view of morphology within PA.

> But words are not the only linguistic entities stored in this fashion: there are also phrasal idioms, collocations, clichés – and schemas. (p. 6)

This is in fact mentioned in Benavides (2022: 76) and in several parts of §2. The lexicon below the word level and above the word level are both a part of the lexicon, and this does not imply any contradictions with SSM.

> Benavides says (p. 64): "Another important contrast between the SSM (as incorporated into the PA) and RM is that,…. in the former, morphology does not interface directly with phrasal syntax or semantics. It does so via the lexicon." Benavides approvingly cites Bresnan and Mchombo's (1995) Lexical Integrity Principle, which insulates internal word structure from phrasal effects. In short, SSM apparently considers it a virtue to isolate morphology from phrasal grammar. But RM considers it a vice. (p. 7)

In SSM, morphology does interact with syntax, via the lexicon, as noted above; it is not isolated from phrasal syntax. Importantly, however, the PA does separate morphology from phrasal syntax, as noted in many places in J&A, including pp. 5, 16, 17, 20, 21, 134, 136, 139, and 273, where it is stated that morphology is its own subcomponent and that there are boundaries between morphology and syntax. For example, on p. 20, J&A note that "while phrasal syntax deals with how words are combined to form phrases, morphosyntax deals with the structure *inside* words." (Emphasis in the original.) This supports the idea that what happens below the word level (that is, inside words) is different from what happens at the phrasal level. On p. 273, J&A note that "morphosyntax is its *own component* of grammar, governing the *internal structure* of words." (Emphasis mine.) Again, the "internal structure of words" is the lexicon below the word level. And on p. 5 of J&A we see that "the boundary between morphology and syntax is maintained." When there are (at least) nine locations in a book (J&A) that either indicate or suggest that there is a boundary between morphology and syntax, it is a clear indication that there is a separation between morphology and phrasal syntax in PA/RM; that in a sense, morphology is isolated from phrasal grammar. As in SSM, however, the fact that there is a boundary between them does not mean that these two components do not interact. They do interact, not only in PA/RM but also in SSM.

> Here are four representative phenomena that bear on the relation of word grammar to phrasal grammar.
> First, consider inflectional morphology. An inflected form answers to two masters. On one hand, its abstract features such as, say, second person singular

dative, have to be licensed by its syntactic position and the features of other items that it must agree with. (p. 7)

This is explained in Benavides (2022: 42), as part of the discussion on inherent and contextual features, and in the subsequent pages it is shown how inflectional features participate in morphological trees. Once an inflected word is fully formed, it separates into its components and participates at the interfaces in the phrasal grammar. This is the way there is an interaction between morphology and syntax in SSM.

> Second, Booij 2010 points out that the grammar of numerals intercalates what look like compounds (e.g. *seventy-six*) with phrasal combinations (*two and two thirds*). Similarly, the grammar of English place names alternates between compounding (*Crater Lake*, *Roosevelt Boulevard*) and phrasal combination (*The Gulf of Aqaba*, *The Bay of Biscay*) (Jackendoff and Audring 2020, 41). (p. 7)

Places names such as *The Bay of Biscay* seem to be fully phrasal but they are fixed (as proper names), in a way that is similar to compounds, idioms, and prepositional link compounds (Lang 2013) (e.g. Sp. *casa de campo* [house + of + countryside] 'country house'), in that no intervening material is allowed. For example, we can say *the port of beautiful Aqaba*, but not **The Gulf of beautiful Aqaba*, because the former is fully phrasal but the latter is not. The same is the case for expressions such as *two and two thirds*; they are fixed as numbers, in a similar way to place names, and do not allow intercalated material (cf. **two and almost two thirds*, which is no longer strictly a number, but rather a phrase that includes numbers).

The fact that compounds are inflected (cf. the left-headed Sp. *hombres rana* 'frog men'), but do not allow intervening material (**hombres hábiles rana* 'skillful frogmen') (see Benavides 2022: 76), actually reinforces the idea that morphology has to happen first, and only when items are fully-formed can they participate in syntax. Compounding and phrasal syntax each have their own, separate combinatorial principles.

> Third, there exist paradigmatic relations between stored phrasal combinations and morphological combinations. For instance, alternating with phrasal *knock NP out*, there is the word *knockout*; likewise for *send NP off* and *sendoff*, and many others. More intricate examples appear in Booij 2012 (chapter 12), Booij 2019, and Jackendoff and Audring 2020 (section 1.6). (p. 7)

This can also be explained through the use of lexical redundancy rules. Analogy exists not only between words, but among any type of item that is stored. Words such as *sendoff* were created by analogy with the phrases, which are also stored. However, this process may not be that productive, cf. *turn NP in* and **a turnin* and *beat NP up* and **a beatup*, which shows that these relations are not fully paradigmatic, or may have a significant number of accidental gaps.

> Fourth, phrasal combinations can sometimes serve as bases for derivational affixation. The wealth of examples from COCA listed in Bauer, Lieber, and

Plag 2013 (513-514) include such examples as *do-it-yourself-er*, *dark-reddish*, *can-doism*, *down-to-earthness*, and *ex-man-of-steel*. (p. 7)

Examples such as these are accounted for in Benavides (2022: 64), as part of the discussion on lexicalism. The phrases (*can do, down-to-earth*) are represented in the mind as stretches of sound pressed into service as a word (Pinker 1999), regardless of what their function was before they were inflected. They are now units similar to words, not phrasal structures any more, that can undergo affixation.

Such phenomena must be accounted for. In CxM and RM, which countenance interactions between phrasal and morphological structure, they are to be expected. In contrast, a theory that demands a strict distinction between syntax and morphology, such as SSM, cannot cope with them. Perhaps we are owed an explanation of why such phenomena (other than inflection) are relatively rare, but it cannot deny their existence or otherwise sweep them under the rug. (p. 7)

As noted above and as seen in Benavides (2022), the SSM not only copes with all these issues but also accounts for them in a principled way, far from sweeping them under the rug.

5. A mistaken interpretation of the RM formalism
To conclude, we must correct a mistaken interpretation of the RM notation. Here again is the RM analysis of *driver* and the [N V-*er*] affix.

(1)
a. RM representation of *driver* (cf. Jackendoff and Audring 2020, 89)
Semantics: [PERSON$^{\alpha}$; [DRIVE (Agent: α, Patient: INDEF)]$_1$]$_2$
Morphosyntax: [$_N$ V$_1$ aff$_3$]$_2$
Phonology: /drajv$_1$ ər$_3$ /$_2$

b. [$_N$ V-*er*] affix
Semantics: [PERSON$^{\alpha}$; [F (Agent: α, …)]$_z$]$_w$
Morphosyntax: [$_N$ V$_z$ aff$_3$]$_w$
Phonology: /…$_z$ ər$_3$ /$_w$

In these examples, coindex 3 connects only morphosyntax and phonology; one might expect it to connect to something in semantics as well. Likewise, one might expect a coindex 1 on the semantics DRIVE in (1a), connecting it to a verb in morphosyntax and the phonology /drajv/. And in (1b), one might expect a coindex *z* on the variable function F, connecting it to the verb in syntax and the variable in phonology.
Benavides evidently has these **expectations**, as he says (p. 62) (p. 8)

These are not my expectations alone. J&A: 129 explicitly say that "Intuitively, on grounds of uniformity, one might expect this link to extend to semantics as well." This means that the expectation is objective and justified, based on the purpose of being consistent. In Benavides (2022: 62) I add that, to solve this problem, J&A discuss

several notational variants for coindexed schemas, noting that the issue boils down to the fact that the semantic structure associated with the affix is not always a coindexable constituent. J&A conclude that, given the difficulties associated with the alternatives, the notation adopted throughout their book appears to be a reasonably optimal combination of rigor and practicality. Thus, this problem of non-uniformity in RM is not resolved.

> Similarly, "the affix does not contribute to the semantics" (p. 60); "affixes are found in morphosyntax and word phonology but their content or contribution is not found in word semantics (or in any of the phrasal components) (p. 60); "in RM …, the derivational suffix does not contribute any meaning" (p. 62); and "in *devour* (39), only part of the semantics, the Patient, is linked to phonology and syntax. The core meaning, DEVOUR, is left unlinked" (p. 66).
>
> However, if one looks a little more closely at (1), these issues are resolved. First consider the absence of a coindex 3 in the semantics. The idea behind this notation is that the phonology /ər/ is an overt marker of the entire complex in (1b). The semantics of the complex is linked not to this marker, but rather to the morphosyntax and the phonology of the complex *as a whole*. (p. 8)

Right, the semantics is linked to the complex as a whole, that is, the schema is what carries the meaning, not the affix proper. As Masini & Audring (2019: 369) note, "the semantic contribution of affixes is 'only accessible through the meaning of the morphological construction of which they form a part' (Booij 2010a: 15). Thus, affixes are not stored on their own and do not have an independent meaning outside the structure they occur in. This is part of CxM being a word-based theory." This confirms that the affix itself does not carry any meaning in schemas. Thus, in schemas, while the syntax and phonology of affixes are linked, they are delinked from semantics.

Other examples also show that the linking issue is not fully resolved in RM. The entry in (4) below shows the entry for *devour* exactly as presented in J&A: 11. Notice that, unlike the V in (1a) for *driver* (repeated below *devour*), the V in *devour* is not linked to the semantics; it is only linked to the phonology. Even if we wanted to link the V in *devour* to the semantics, as in (1a), there would be circularity, because the verb would redundantly encompass the NP that is already linked with the semantics (subscript *y*); the V would be linked to its own NP in syntax. Again, there is confusion, and the linking issue is still not resolved. The same comparison goes for other examples in J&A, including *baker* (p. 71), which has the same coindexation as *driver* in (1a). There is no mistaken interpretation of the RM formalism in Benavides (2022); rather, linking and coindexation in the RM notation are confusing and inconsistent, as these examples show and as noted with further examples in Benavides (2022).

(4) Lexical entry for *devour*
Semantics: $[\text{DEVOUR (Agent: X, Patient: Y}_y)]_5$
Syntax: $[_{VP} V_4 NP_y]_5$
Phonology: $/\text{dəvawr}_4....y_5/$
                            [J&A]

(1)
a. RM representation of *driver* (cf. Jackendoff and Audring 2020, 89)
Semantics: [PERSON$^{\alpha}$; [DRIVE (Agent: α, Patient: INDEF)]$_1$]$_2$
Morphosyntax: [$_N$ V$_1$ aff$_3$]$_2$
Phonology: /drajv$_1$ ər$_3$ /$_2$

[Jackendoff 2022]

In addition, the Agent is still showing in the entry for *driver*, even though it is no longer a participant. As noted in Benavides (2022: 56), in this type of derivation, based on coindexation, it is not shown that the first argument of the base disappears after affix attachment and is no longer an argument of the derivative (cf. **Peter driver of the truck*; **driver of the truck by Peter*); the argument still appears as a part of the RM representation. Furthermore, in *driver*, only the semantics of the base should be reflected; the syntactic category of the base, V, is no longer a part of the output, yet it appears in the representation of *driver* in Jackendoff's (2022) example (1a). That representation, as well as others in RM, show the history of the derivation, but they do not show the final product accurately, as does SSM, as in (5).

(5) SSM lexical entry for *driver* (Benavides 2022: 59)

CATEGORIAL
[THING]
[+N, -V]
CORE
DRIVE-PERSON
ARGUMENT II
VEHICLE
Theme

As noted above and in Benavides (2022: 64), it is also unclear in RM how changes in argument structure (e.g. loss or addition of arguments) occur in word formation. According to J&A and Jackendoff & Audring (2019), the morphosyntax-semantics interface is responsible for the effects of morphological combination on argument structure. For example, event or process nominals such as *abandonment* preserve the argument structure of the corresponding verb *abandon*, while agentive nominals like *baker* and result nominals like *inscription* denote one of the semantic arguments of the corresponding verb. However, Jackendoff & Audring (2019) do not show what exactly are the effects on argument structure (e.g. what arguments are inherited and which are lost). In contrast, this is accounted for in a fine-grained way in the SSM. As for J&A, while they discuss some examples, there are inconsistencies related to those that arise with respect to coindexation.

> understanding, the meaning of the affix can be roughly 'person who F's.' Hence the conclusion that RM words and affixes are **semantics-free** is unfounded. (p. 9)

Affixes are indeed semantics-free in RM and CxM, as noted above and in Masini & Audring (2019: 369): **affixes "do not have an independent meaning** outside the structure they occur in." It is the schema (construction or structure) they occur in that contributes the meaning, as noted by Masini & Audring (2019) in the previous quote above. Regarding words as represented in RM, nowhere in Benavides (2022) is it stated or implied that words are semantics-free; only that the link between the form and semantics in words is not clear and is thus an inconsistency.

> Benavides's misapprehension has a further consequence. Consider again "there is no direct mapping between form and meaning, as there should be in a construction." Similarly,
> in schemas and derived forms, while the link between phonology and morphosyntax is retained, the link to semantics is lost. Since the semantics is delinked, this is no longer a triplet of linked structures, as per the definition of a lexical entry in the PA. (p. 62)

> The implication is that an item that lacks one of the three levels of representation is not a lexical entry. However, unlike Construction Grammar, PA/RM countenances lexical items that do not involve all three levels (Jackendoff and Audring 2020, 11-12). Fortunately Benavides corrects this error on p. 72, listing some oft-cited examples such as *yes* (which lacks syntax), the *do* of *do*-support (which lacks semantics), and the *-duce* of *reduce* (also lacking semantics). (p. 9)

Having a missing part of the triplet is fine for defective items; that is why they are given that name. But it is not fine for prototypical items such as the word *devour* or the suffix *-er*. It is a part of the definition of (typical or standard) lexical items that they consist of a triplet of semantic, syntactic and phonological structures. Prototypical words and affixes, not being defective items, should satisfy the triplet criterion.

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2. Closing remarks

Retaking what was mentioned at the outset, several of the key arguments made in Benavides (2022) regarding RM, that are left unaddressed in Jackendoff (2022), are accompanied in J&A by phrases such as "the clumsiness of this solution" (p. 165), for the proliferation of schemas; a "reasonably optimal" solution (p. 131), for the lack of a link between the form and the semantics in the schemas for words and affixes; "not always perspicuous…rather messy" (p. 127) and "impossible to use" (p. 129) for the coindexation used in RM schemas (which raises the issue of lack of plausibility in terms of processing); and others, including with respect to the lack of a detailed explanation of how RM deals with changes in argument structure in word formation (p. 19); and the issue of unnecessarily ascribing meaning to a morphological construction (making it parallel to syntactic constructions such as the resultative) when meaning is already accounted for by the components of the structure (the base and affix).

Clarity and consistency are both crucial traits in a morphological theory. Yet, due to

the problematic issues discussed above, it is not clear that RM, as currently formulated, clearly satisfies these traits. Whether or not SSM is a perfect fit for the PA, it still seems to account for word formation in a more consistent way than RM.

References

Benavides, Carlos. 2014. Lexicalization and Spanish Derivational Morphology. *Research in Corpus Linguistics* (*RiCL*) 2: 1-14.

Benavides, Carlos. 2022. Morphology Within the Parallel Architecture Framework: The Centrality of the Lexicon Below the Word Level. *Isogloss. Open Journal of Romance Linguistics* 8(1)/7, 1–87. https://doi.org/10.5565/rev/isogloss.200.

Booij, Geert. 2010. *Construction Morphology*. Oxford: Oxford University Press.

Jackendoff, Ray. 2013. A Parallel Architecture model of language processing. In Kevin N. Ochsner & Stephen Kosslyn (eds.), *The Oxford handbook of cognitive neuroscience*, *Volume 1: Core topics*, 1-22. Oxford: Oxford University Press.

Jackendoff, Ray. 2022. Alternative theories of morphology in the Parallel Architecture: A reply to Benavides 2022. *Isogloss. Open Journal of Romance Linguistics* 8(1)/12, 1-10. DOI: https://doi.org/10.5565/rev/isogloss.250

Jackendoff, Ray S. & Jenny Audring. 2020. *The Texture of the Lexicon*. Oxford: Oxford University Press.

Lang, M.F. 2013. *Spanish word formation*. London: Taylor and Francis.

Pinker, Steven. 1999. *Words and rules*. New York: Basic Books.

Pinker, Steven. 2006. Whatever happened to the past tense debate? In Eric Bakovic, Junko Ito, & John J. McCarthy (eds.), *Wondering at the natural fecundity of things: Essays in Honor of Alan Prince*, 221-38. UC Santa Cruz: Festschrifts.

Ten Hacken, Pius. 2019. *Word formation in Parallel Architecture: The case for a separate component*. Switzerland: Springer.