

The Lexicalist Hypothesis: Both Wrong and Superfluous

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Abstract

The Lexicalist Hypothesis, which says that the component of grammar that produces words is distinct and strictly separate from the component that produces phrases, is both wrong and superfluous. It is wrong because (1) there are numerous instances where phrasal syntax feeds word formation; (2) there are numerous instances where phrasal syntax can access sub-word parts; and (3) word formation and phrasal syntax do not obey different principles, but behave identically. The Lexicalist Hypothesis is superfluous because where there are facts that are supposed to be accounted for by the Lexicalist Hypothesis, those facts have independent explanations. The model of grammar that we are led to is then the most parsimonious one: there is only one combinatorial component of grammar that builds both words and phrases.

1 Introduction

The Lexicalist Hypothesis, usually attributed to Chomsky 1970, is a foundational hypothesis in numerous current approaches to morphology and syntax, including Head-Driven Phrase Structure Grammar (HPSG), Lexical Functional Grammar (LFG), Simpler Syntax (Culicover and Jackendoff 2005), various versions of the Principles and Parameters and Minimalist models, and others.¹ The basic tenet of the Lexicalist Hypothesis is that the system of grammar that assembles words is separate from the system of grammar that assembles phrases out of words. The combinatorial system that produces words is supposed to use different principles from the system that produces phrases. Additionally, the word system is encapsulated from the phrasal system and interacts with it only in one direction, with the output of the word system providing the input to the phrasal system. This has the result that the phrasal system has no access to sub-word units, and in addition, the output of the phrasal system never forms the input to the word system.

An alternative view dispenses with the Lexicalist Hypothesis and argues that the phrasal and word formation systems are not distinct (Sadock 1980; Baker 1985; Sproat 1985; Lieber 1988, 1992; Hale and Keyser 1993; Halle and Marantz 1993; Marantz 1997; Borer 2005; Bruening 2014; among others). If this view is correct, a model of grammar does not need two separate generative components, but only one. This view has the virtue of simplicity: a model of grammar with only one component is simpler than one with two, and is therefore to be preferred, assuming that they are equivalent in their empirical coverage. In the face of this challenge, numerous recent publications have defended the lexicalist position, arguing that the empirical facts demand the strict separation of the word and phrasal systems (e.g., Williams 2007, Newmeyer 2009, Müller 2013, Müller and Wechsler 2014).

In this paper I make two points. First, the empirical facts indicate that the Lexicalist Hypothesis is fundamentally incorrect. There are numerous instances where the output of the phrasal system feeds word formation (section 2), and there are also numerous cases where the phrasal syntax must have access to sub-word units (section 3). Morphology and syntax also do not obey different principles, but instead behave alike (section 4). All of these facts

¹This hypothesis is usually referred to as the Lexicalist Hypothesis, after Chomsky (1970). It is occasionally also referred to as the Lexical Hypothesis (e.g., Williams 2007). The more common name seems to be the Lexicalist Hypothesis, so that is the name I will use. The literature on this hypothesis is too vast to cite fully here. Important references include Jackendoff (1972), Aronoff (1976), Lapointe (1980), Bresnan (1982), Kiparsky (1982b), Simpson (1983), Mohanan (1986), Di Sciullo and Williams (1987), and Bresnan and Mchombo (1995). Many other references can be found in the works cited throughout the text. It should also be noted that different approaches that assume the Lexicalist Hypothesis vary significantly in their implementation. Some of these differences are discussed at points in the text.

are incompatible with the model of grammar posited by the Lexicalist Hypothesis. Second, the Lexicalist Hypothesis is superfluous. Where there are facts that are supposed to be accounted for by the Lexicalist Hypothesis, those facts have independent explanations, even within theories that assume the Lexicalist Hypothesis. This is shown in section 5. Since the Lexicalist Hypothesis is both incorrect and does no work, it can and should be dispensed with. We only need a single syntactic module in the grammar, one that produces both words and phrases.

I begin in sections 2–4 by pointing out three ways in which the Lexicalist Hypothesis is mistaken in its view of grammar.

2 Error 1: Phrasal Syntax Can Feed Word Formation

According to the Lexicalist Hypothesis, interaction between the word and phrase systems is unidirectional: the output of the word formation system provides the input to the phrasal syntax, and not vice versa.² In this section I show that this is incorrect: there are numerous cases where the output of the phrasal syntax can feed word formation.

2.1 Compounding

The most well-known exception to this strict ordering involves compounding. Nominal compounds in numerous languages may include a phrase as the first member of the compound (Botha 1981; Kiparsky 1982a; Selkirk 1982; Fabb 1984; Sproat 1985; Lieber 1988, 1992; Spencer 1988, 1991, 413–417). Phrasal compounding has been documented in Afrikaans (Botha 1981), Dutch (Ackema and Neeleman 2004), German (Meibauer 2007), Mandarin Chinese (Wiese 1996), Japanese (Shibatani and Kageyama 1988), and English. I illustrate the phenomenon with English:

- (1) a. I gave her a don't-you-dare! look.
- b. She baked her fiance a sweet I-love-you cake.

In most theories, compounding must be a lexical process, since it creates elements that have the distribution (and inflectional morphology) of words. It can also feed further derivation, as in *snowboarder*, *pan-fryable*, *antibullfighting*, *Church Slavonicism*, *redownload*. The lexicalist literature uniformly treats compounding as a lexical process (e.g., Kiparsky 1982b, Bresnan and Mchombo 1995). Compounds should therefore not be able to include phrases that are put together by the phrasal syntax.

In fact, however, the phrases that constitute the first member of these compounds *must* be put together by the syntax, because they have the form that the syntax requires. They can be imperatives and have the form of an imperative, as in (1a), and they can have the form of a declarative, as in (1b). They can also be wh-questions and exclamatives, as in the examples in (2). In all cases, if the first member of the compound violates rules and constraints of the phrasal syntax, the result is ill-formed (3):

- (2) a. She had that Don't-you-dare! look.
- b. She had that I'm-so-proud-of-myself look.

²Chomsky (1970) presents this in derivational terms: rules of the “base” create lexical items, which are plugged into deep structures in the phrasal system; deep structures undergo transformations to surface structures, with no returning to the rules of the base. According to Wasow (1977, 330), this ordering follows from the architecture of the Extended Standard Theory, “which requires that lexical rules relate items in the lexicon, while transformations must operate on phrase markers into which lexical items have been inserted.” A similar feed-forward view is presented in Kiparsky (1982b) and Mohanan (1986). In constraint-based frameworks, there is no derivational directionality, but the interaction is still only one way. For Bresnan and Mchombo (1995, 192), the morphological component is “restricted to lexical and sublexical categories,” meaning that the output of the phrasal system, phrases, is not something that the lexical system can work with. A similar view, where the word and phrase systems are entirely distinct and operate on different units, is presented in Di Sciullo and Williams (1987, 48–49). In HPSG, it is not entirely clear what prevents phrases forming the input to lexical rules; most HPSG work just seems to assume the lexicalist position (see section 2.6). Briscoe and Copestake (1999) discuss the power of lexical rules in HPSG explicitly, and say (p521), “an interface between the lexical component and syntactic-semantic component of the grammar is required... such rules [syntactic-semantic] must necessarily apply after all genuinely lexical rules,” but they present no formalism for doing this. Sag (2007) stipulates that lexical rules/constraints involve the type *lexeme*; this stops them from including phrases. See more on HPSG in the conclusion.

- c. She had that What-the-hell-are-you-doing?! look.
 - d. She had that What-a-strange-person-you-are! look.
- (3)
- a. * She had that You-don't-dare! look. (obligatory inversion with negative imperative)
 - b. * She had that Myself-is-so-proud-of-me look. (reflexive bad as subject)
 - c. * She had that You're-doing-what-the-hell?! look. (obligatory fronting with wh-the-hell; Pesetsky 1987)
 - d. * She had that What-a-strange-person-are-you! look. (no inversion with exclamation marks)

If these phrases were not put together by the phrasal syntax but by some other mechanism, that mechanism would have to precisely duplicate the constraints of the phrasal syntax.

According to Bresnan and Mchombo (1995) and Williams (2007), the word formation system obeys different principles from the phrasal system, such that the word system is head-final while the phrasal system is head-initial, in English (there are numerous counterexamples; see section 4.3). If the phrasal part of a compound were built by the word system, it should then be head-final, but this is not true:

- (4)
- a. She baked her fiance a sweet I-love-you cake.
 - b. * She baked her fiance a sweet I-you-love cake.

The only conclusion can be that the phrases that appear in compounding are put together by the phrasal syntax. Yet they create units—nominal compounds—that otherwise act like words in the phrasal syntax that they are embedded within. For instance, in all of the examples above, they follow determiners and adjectives to form a noun phrase, just like any simple noun. They can also be conjoined with simple nouns, sharing a determiner and modifiers:

- (5) Those I-love-you cakes and pies that she brought look really good.

These compounds act like single words for most purposes, yet they include a phrase within them.

Bresnan and Mchombo (1995) argue that the phrases that appear in compounds are not counterexamples to the Lexicalist Hypothesis. According to them, phrases have to be “lexicalized” to be imported into compounds. The only way I can interpret this claim is that apparently a phrase is built by the phrasal syntax, but then becomes some kind of frozen unit in the lexicon, akin to a noun. It can then be used to form a compound.

There are two problems with this. First, allowing this possibility is equivalent to giving up the Lexicalist Hypothesis. If phrases can be “lexicalized” and then form an input unit to the word formation component, then there is no sense in which word formation strictly feeds phrasal syntax. The phrasal syntax *can* feed word formation, simply by building phrases that become lexical units. The Lexicalist Hypothesis has been circumvented and rendered vacuous.

Second, the empirical evidence that Bresnan and Mchombo (1995) give for their claim that compound phrases must be “lexicalized” is less than convincing. Using phrases in compounds is completely productive, as the examples above and attested usage show (see Ackema and Neeleman 2004, Lieber and Scalise 2007, Sato 2010, and especially Hohenhaus 1998). Here are a few attested examples, pulled from the web (with the punctuation used there):

- (6)
- a. What was your “I don’t get paid enough for this shit” moment?
(https://www.reddit.com/r/AskReddit/comments/3hiw5t/what_was_your_i_dont_get_paid_enough_for_this/)
 - b. How to end your “I don’t feel like it” syndrome
(<http://www.prolificliving.com/i-dont-feel-like-it-syndrome/>)
 - c. If there’s one thing I don’t need, it’s your “I don’t think that’s wise” attitude.
(<http://www.gotfuturama.com/Multimedia/EpisodeSounds/2ACV02/>)
 - d. Discovering the answer to your why can’t I sleep question is an important step to putting sleep troubles behind you.
(<http://www.holistic-mindbody-healing.com/facts-about-insomnia.html>)

- e. Your “Why can’t I bait newbies?” tears are glorious.
(<https://forums.eveonline.com/default.aspx?g=posts&m=5798278>)
- f. Overcoming the I can’t afford it sales objection.
(<http://www.servextra.com/overcoming-the-i-cant-afford-that-sales-objection/>)

Product ads also regularly use novel phrasal compounds; here are two noticed recently:

- (7) a. Lysol is “the prevent-mold-on-the-shower-curtain-for-up-to-seven-days spray”
- b. on Puffs box: “open for the I-feel-better-already tissue”

Bresnan and Mchombo (1995) note that non-English can be used in compounds, as in *a Heil Hitler skinhead* (Bresnan and Mchombo 1995, 194, (22)). This, they claim, shows that the compound is not put together by the phrasal syntax. However, non-English phrases can regularly be manipulated in the phrasal syntax. Postal (2004, chapter 6) discusses this phenomenon at length. One can say all of the following, in English:

- (8) a. He stepped out and yelled *Heil Hitler* at us.
- b. Is *Heil Hitler* German, or French?
- c. Which part of *Heil Hitler* do you not understand?

Non-English phrases can be used as objects of verbs and as subjects and even undergo subject-auxiliary inversion. They can also be part of a *wh*-phrase and undergo *wh*-movement. Since the phrasal syntax can manipulate non-English phrases, the fact that they can appear in compounds is not evidence that compounds are not using the phrasal syntax. They clearly are.

Wiese (1996) argues that phrasal compounds are not a problem for the Lexicalist Hypothesis because the phrase is a quotation. This view is supported by the fact that first and second person pronouns do not refer to the speaker and hearer in compounds like *an I-love-you cake*, just as they do not inside quotations (Bresnan and Mchombo 1995). However, it is not clear how viewing the phrase in a phrasal compound as a quotation helps to save the Lexicalist Hypothesis. Wiese (1996) does not deny that the quotation is put together by the phrasal syntax. In fact, he provides further evidence that it is (from prosody, e.g.). This means, even on the quotation view, that phrasal syntax can feed word formation, something that is supposed to be impossible under the Lexicalist Hypothesis. Identifying the phrase as a quotation does not change that fact.

Furthermore, we need to understand what a quotation is in order to fully evaluate how the quotation analysis might bear on the Lexicalist Hypothesis. Unfortunately, Wiese (1996) provides only the sketchiest analysis of what a quotation is. He says that a quotation is “a linguistic object. . . [which] can be regarded as being dominated by a highly underspecified linguistic category, which can be arbitrarily set to either a word (if a quotation occurs within a compound) or a maximal phrase” (page 188).³ Setting the dominating category to “word” seems to violate the Lexicalist Hypothesis: it takes the output of the phrasal system and turns it into a word.

Wiese (1996, 188) does claim that the inner structure of the phrase in a phrasal compound is “structurally invisible or encapsulated.” This seems to be the basis for his claim that compounds are not a problem for the Lexicalist Hypothesis. However, he just seems to be wrong about this. Elements within a phrasal compound are clearly visible for anaphora of various sorts, as the following examples illustrate (see Partee 1973 on this point with quotations in the phrasal system):

- (9) a. Charles-and-Di syndrome died when she did. (coreference)
- b. He baked me a sweet I-love-you cake, but I don’t think he really does. (VP ellipsis)
- c. The old the-dog-ate-my-homework excuse won’t work because I know you don’t have one! (*one* anaphora)
- d. You can’t use the termites-ate-the-walls excuse because the home inspection didn’t find any! (NP ellipsis)

³Quotations can be maximal phrases, because they can also appear in phrasal syntax with the distribution of phrases, for instance as complements to verbs of communication.

- e. Every customer who took from the take-a-penny-leave-a-penny tray on the counter dropped it on the floor. (e-type anaphora: *it* = the penny he/she took)

R-expressions inside phrasal compounds also give rise to Binding Principle C effects when they are coreferential with a commanding pronoun outside the phrasal compound:

- (10) a. He was put off by her I'm-holier-than-the-pope attitude. (he≠the pope)
- b. I told him to ignore her I'm-more-peaceful-than-Gandhi attitude. (him≠Gandhi)

Contrast this with a pronoun inside the compound, where coreference is possible:

- (11) a. He wasn't surprised by her I'm-better-than-him attitude. (he and him can be coreferential)
- b. I told Gandhi to ignore her I'm-more-peaceful-than-him attitude. (him can be Gandhi)

It therefore appears to be false that the material inside a phrase in a phrasal compound is “structurally invisible or encapsulated.” Even if it were, it would not change the fact that the phrase was put together by the phrasal syntax, and the output of that formed the input to word formation.

I conclude that it might be correct that phrases in phrasal compounds are quotations, but they are still phrases and they are still put together by the phrasal syntax. Their pieces are also visible to further phrasal syntax. Identifying phrases in phrasal compounds as quotations therefore does not help to save the Lexicalist Hypothesis in any way. Compounding is clearly an instance of the ordering that is not supposed to be allowed: phrasal syntax provides the input to word formation.

2.2 Words Zero-Derived from Phrases

We find the same putatively banned ordering in numerous words that are zero-derived from phrases. These can include a verb plus adverb, verb plus object and particle, verb plus preposition, modal verb plus main verb, or other elements, including functional ones that do not typically participate in word formation (*a how-to*). Most of the output forms are nouns, but at least two are adjectives (*see-through*, *lackluster*). The following are some examples that include at least three different words:

- (12) a. a ne'er-do-well
- b. a know-it-all
- c. a wannabe (want-to-be)
- d. a good-for-nothing
- e. a pick-me-up
- f. a hand-me-down
- g. a shoot-'em-up
- h. the pushmi-pullyu (push-me-pull-you)
- i. a free-for-all
- j. a two-by-four
- k. a mother-in-law, brother-in-law, etc.; the in-laws
- l. a (fine) how-do-you-do

There are also many examples with two different words:⁴

- (13) a. a has-been

⁴One might also want to include in this list such words as *pickpocket*, *cutthroat*, and *scofflaw*. However, these are missing elements that they would have to have as phrases (determiners or plural morphology, and a preposition in the case of *scofflaw*). In the list in the text I include only words that are well-formed phrases.

- b. an also-ran
- c. will-call (“the tickets are waiting at will-call”)
- d. the once-over
- e. a do-over
- f. X’s say so
- g. the long ago
- h. a gimme (give-me)
- i. a know-nothing
- j. a readme
- k. a how-to
- l. a walk-through, a run-through, a drive-through, follow-through
- m. see-through
- n. lackluster

A particularly large and productive class consists of verb-particle combinations:

- (14) a drive-by, a layabout, a runaway, a knock-off, a callback, a rub-down, a beat-down, a smack-down, a put-down, a pushover, a cast-off, a castaway, a breakup, the brush-off, a let-down, a walk-up, a walkabout, a throwback, leftovers, ...

These verb-particle combinations contrast with ones where the particle is initial, like *input*, *bystander*, *off-putting*. They therefore do not appear to have been formed by the process of compounding. Also fully productive but not shown here are adjectival passives consisting of verbs plus particles (*put upon*, *run down*, *crossed out*, etc.), as well as adjectival passives derived from verbs plus full prepositional phrases (*talked about*, *unasked for*, *unheard of*, etc.). These are shown in Bruening (2014) to be inconsistent with existing lexicalist treatments of them. There is also a productive process of forming nouns denoting food and beverage dishes and names of products and services from phrases, primarily conjunctions of noun phrases, as in *two gin and tonics*, *a Stoli and kiwi juice* (Wechsler 2008b), *a surf-n-turf*, *an East meets West*, *a bed-and-breakfast*, *the wash-n-fold*, *a slip-n-slide*, etc.

Verbs can also be created from phrases. Here are a few attested examples:

- (15) a. You just **Bonnie and Clyded** my starting middies! (*Archer* season 3, episode 3)
- b. The outside door opened and a knot of people, all taking down umbrellas and shaking out hats, came in, were **order-of-serviced** by Colin, and went into the nave. (they were handed a card listing the order of service; Connie Willis, *The Doomsday Book*)

See also Carnie (2000) on verbs zero-derived from phrases.

The simplest analysis of all these cases is that they are phrases, put together by the phrasal syntax, and then converted into nouns (or adjectives, in the case of *see-through* and adjectival passives; see Bruening 2014 for such an analysis).⁵ The ones that are nouns are clearly nouns, since they occur with articles and/or possessors and can take plural morphology (*a couple of wannabes*, *two has-beens*, *most how-tos*, *three brother-in-laws*). However, in every case the word has the form produced by the phrasal syntax, and not the form that ought to have been produced by, say, compounding (e.g., **it-all-know*, **so-say*). Many of them also include non-selected adverbs (*a*

⁵In a purely syntactic approach to word-formation, one possible analysis would be to posit a null nominal head that merges with the phrase and turns it into a noun. An anonymous reviewer says that the purely syntactic approach to morphology necessarily adopts this kind of *syntagmatic* approach to morphology and could not adopt a *paradigmatic* one. The reviewer seems to think that a syntagmatic approach is not viable, citing Becker (1993). However, Becker (1993) is simply a list of facts and unsupported opinions, with no arguments against syntagmatic approaches. I see no reason such an approach could not handle all of the facts listed in Becker (1993), or others. It is true, as the reviewer also notes, that a syntagmatic approach will need to admit empty heads/morphemes, as just suggested, but whether this is a drawback or not seems to be entirely a matter of opinion. It seems to me that empty elements are widespread in syntax and morphology and cannot be denied, so my own view is that empty elements in morphology are not a drawback at all. Of course, the question will always be what analysis achieves the best empirical coverage.

do-over, *an also-ran*), which are supposed to be inaccessible to the word formation system (see section 4.2). Some include functional elements that do not otherwise appear inside words (*a how-to*, *a wannabe*). The noun *how-to* even includes apparent wh-movement of a wh-adverb, as does *a fine how-do-you-do*, which also includes subject-auxiliary inversion. This type of zero derivation, then, like the case of phrasal compounding above, is an instance of phrasal syntax providing the input to word formation. Again, this ordering is not supposed to exist under the Lexicalist Hypothesis.

One could attempt to dismiss these forms as isolated exceptions. However, as can be seen from the list above, there is a large number of them, and at least two classes are completely productive (verb-particle combinations, and names for foods/beverages and products). Compare this with the noun-deriving affix *-age*, as in *blockage*, *breakage*, *cleavage*, *leakage*, *lineage*, *stoppage*, etc. This suffix occurs with what is probably a comparable number of words (I count 150 or so), but is far less productive (new forms are not created frequently). Yet no one views forms in *-age* as isolated; they are viewed as a pattern. Zero derivation of phrases is just as common, and new forms are created, probably more frequently (e.g., *a stop-and-chat*, on the TV show *Curb Your Enthusiasm*). Zero derivation from phrases therefore constitutes a pattern of word formation that requires an account. Moreover, if the Lexicalist Hypothesis were correct in its view of grammar, there should be no such isolated exceptions: the form of the grammar would simply preclude their ever being created.⁶

2.3 Adjectival Passives

Other examples of phrasal syntax feeding word formation are not hard to find. Bruening (2014) shows that adjectival passive formation can be fed by raising to object, a process that many theories regard as syntactic (but not all; see section 2.5). Adjectival passive formation then feeds further word formation, for instance un-prefixation, as in the following examples with raising to object verbs:

(16) (Bruening 2014, 372, (30))

- a. ... his mind is unsound because it starts from premises that are undemonstrated to be true and that he has no reason to accept as true.
- b. [That] remains unestablished to be of any significance at all.
- c. We are against fad diets and questionable supplements that are unproven to be either safe or effective.
- d. ... presence of silicon in bedding plant species previously unreported to be accumulators,...
- e. ... such studies are important as they may uncover genetic variants in genes previously unsuspected to be related to the phenotype under study...
- f. No character page should have art that is a) fanmade b) unverified to be that character or c)...

Again, this is a clear violation of the Lexicalist Hypothesis: a process of phrasal syntax feeds word formation. (See section 2.5 on viewing raising instead as a lexical process.)

As mentioned briefly in the preceding section, adjectival passives are also productively formed with verb-particle combinations and verb-PP combinations. These are also phrasal combinations, and are also therefore inconsistent with the Lexicalist Hypothesis.

2.4 Resultatives

As Müller (2006) shows, the same ordering occurs with resultatives and caused motion constructions. As is well known, objects can be added to verbs that do not select objects in certain constructions, for instance in resultatives:

- (17) a. They fished the pond empty.
 b. * They fished the pond.

⁶Besides words that are zero-derived from phrases, there are also a few cases of words derived from phrases with overt morphology. These include *do-it-yourselfer*, *stick-to-itiveness*, *unputdownable*. Some prefixes also seem to productively attach to phrases, in particular *pre-*, *post-*, and *ex-*: *it was pre-founding of Rome*, *post-digestive disorder complications* (Lieber and Scalise 2007, 11), *ex-Secretary of the Interior*. See Lieber and Scalise (2007, 11–12) for some discussion, and Spencer (2005, 83) on the suffix *-ish*.

- (18) a. She danced her shoes bloody.
 b. * She danced her shoes.

In most lexicalist theories, word formation processes can only act on semantic arguments of a morpheme. So, if a word formation process were to apply to *fish* or *dance*, it would be unable to include an object that is licensed only by the resultative. As Müller (2006) shows, however, these resultatives quite regularly participate in adjectival passive formation and nominalization in German. Corresponding to *fish the pond empty* is the nominalization *Leerfischung*, ‘empty fishing’ (Müller 2006, 868). Corresponding to *dance her shoes bloody* is the adjective in (19b):

- (19) (Müller and Wechsler 2014, 32, (33))
 a. Er tanzt die Schuhe blutig / in Stücke.
 he dances the shoes bloody / into pieces
 b. die in Stücke / blutig getanzten Schuhe
 the into pieces / bloody danced shoes
 c. * die getanzten Schuhe
 the danced shoes

As (19c) shows, the resultative is crucial to forming the adjectival passive, since *Schuhe* is not an argument of the verb without it. In most theories, however, resultatives must be part of the phrasal component, since they manipulate units larger than words. (Müller’s own approach is to assign resultatives to the lexical component; see section 2.6 below.)

2.5 Raising in Nominalizations

Further examples include many that have been cited as ungrammatical in the literature, but are actually well attested. For instance, according to Chomsky (1970), nominalizations may not include raising to subject or raising to object. These examples are cited again by Newmeyer (2009) as crucial evidence for the Lexicalist Hypothesis.

- (20) a. John was certain/likely to win the prize.
 b. * John’s certainty/likelihood to win the prize (Chomsky 1970, 189, (8b))
 (21) a. We believe God to be omnipotent.
 b. * our belief of/in God to be omnipotent (Chomsky 1970, 201, (32b))

According to Chomsky and Newmeyer, the Lexicalist Hypothesis rules out raising to subject and raising to object in the input to nominalization, because they are rules of the phrasal syntax.

However, raising to subject and raising to object do take place in nominalizations. I for one have always found (20b) reasonably acceptable. Numerous examples can be found on the internet, including ones where the genitive is inanimate, ruling out the genitive being the holder of the psychological state of certainty in the case of *certainty*:

- (22) a. If that is an accepted premise, the same concept should apply to the net neutrality debate and **its certainty to increase consumer bills**.
 (<http://www.foxnews.com/politics/2014/11/17/fcc-official-warns-obama-backed-net-neutrality-plan-will-bring-backdoor-tax-on/>)
 b. ... that the Black Panthers were eager to start a civil war despite **its certainty to cause a bloodbath**.
 (blackpanthercivilrights.blogspot.com/)
 c. ... refused to consider the underlying patent litigation, and **its certainty to be a bitter and prolonged process**.
 (https://www.wsgr.com/WSGR/Display.aspx?SectionName=publications/PDFSearch/AntitrustWire_0405.htm)

Raising to subject inside a nominalization is even more widespread with *likelihood*:

- (23) a. Sadly a species' name affects **its likelihood to survive**.
(<https://twitter.com/meeurotaru/status/552744000651001856>)
- b. But in this case whether or not a man was in a committed relationship had no influence on **his likelihood to sexually harass**.
(<https://books.google.com/books?isbn=1555536387>)
- c. However, if a peer tells the student his joke is “silly” or “stupid” he will be punished by telling the joke and **his likelihood to tell another joke** is greatly decreased.
(en.wikipedia.org/wiki/Self-control)

All of the native speakers I have presented the above examples to have accepted at least a subset of them as well-formed.

Raising to object also seems to be well-attested inside of nominalizations, contrary to all of the literature (although not with *belief*):

- (24) a. do not trust this person or company unless you get **proof of them to be different**.
(<http://www.thumbtack.com/wa/bellevue/movers/moving-services>)
- b. If anyone got **proof of them to be involved in the attack** they should take them into the court.
(<https://www.facebook.com/NationalMartyrs>)
- c. . . . again what you are telling us is **no proof of them to be hackers**.
(<http://www.kongregate.com/forums/291-yu-gi-oh-bam/topics/379107-new-hack>)
- d. The same kind of features she shared with Shakiya were **the only proof of them to be a mother and daughter**, . . .
(<https://www.fanfiction.net/s/10668250/4/Athelern-Ithilrim>)
- (25) a. This indicates **his acceptance of them to be ministers in his church**, at all levels.
(<https://books.google.com/books?isbn=1602666024>)
- b. . . . for true confession consisteth in the general, in a man's taking to himself his transgressions, with **the acknowledgment of them to be his**, . . .
(The Pharisee and the Publican By John Bunyan)
- c. . . . and how I may be erroneous in **my demonstration of them to be consistent with my argument**.
(<http://orthodoxbridge.com/is-the-protestant-church-fragmented-a-response-to-pastor-doug-wilson-1-of-2/>)
- d. . . . those acts that would be wrong must be wrong by virtue of some means other than **God's declaration of them to be wrong**.
(<https://quizlet.com/94797180/attacking-faulty-reasoning-ch-256-quiz-flash-cards/>)

I find the examples of raising to object with *proof* in (24) unacceptable, like Chomsky and Newmeyer. On the other hand, examples with *acceptance*, *acknowledgment*, *demonstration*, and *declaration* in (25) seem reasonably acceptable. I have also presented these examples to a handful of native speakers of English, all of whom agree with my judgment that *proof* does not seem acceptable, but at least some of the other examples do. This means that raising to object is allowed inside nominalizations in principle, even if many speakers do not allow it specifically with *proof* or with certain other nominals. Moreover, there are so many attested examples of raising to object with *proof*, apparently produced on purpose by native speakers of English, that the only conclusion can be that there are significant numbers of English speakers who do accept such examples.

The conclusion is that the word-formation process of nominalization can take a phrasal structure as input, one that includes at least a verb and its propositional complement, out of which raising can occur. See more on nominalization in section 5.4.

2.6 Analyzing Raising, Resultatives, Passives as Lexical Rules

The lexicalist literature is inconsistent on whether syntactic processes like raising to subject and object ought to be able to feed word-formation processes like nominalization. Chomsky (1970), Wasow (1977), and Newmeyer

(2009) considered the apparent lack of raising to subject and object inside nominalizations and adjectival passives to be crucial evidence for the Lexicalist Hypothesis. However, Bresnan (1982) and more recently Müller (2006) and Müller and Wechsler (2014) analyze raising to object, raising to subject, resultative formation, and passive formation (both verbal and adjectival) as lexical rules or constraints. As such, they can feed other lexical processes and form new words. On this view, nominalizations are fully expected to be fed by raising to subject and raising to object. It would be odd on this view if they could not be.

Notice that the criterion for deciding whether a rule is lexical or syntactic in this approach is not whether it manipulates units larger than words, but whether it can feed morphological word formation or not. Müller and Wechsler (2014, 32) explicitly state that this is the deciding criterion, following Dowty (1978, 412) and Bresnan (1982, 21). This has the result that multi-word phrases can be derived by lexical rules in addition to being derived by the phrasal syntax component (e.g., resultatives). It is not at all clear why the morphological criterion is the primary one for this approach; one could just as well decide that any process that combines more than one word must be part of the phrasal syntax. The result of going this way instead would be that some morphological processes must be part of the phrasal syntax (as in Chomsky 1970, Wasow 1977). The choice of criterion here is entirely arbitrary. No matter which one we choose, we end up with a mismatch on the other side: either some multi-word phrasal processes are done by lexical rules and not phrasal syntax, or some morphological processes are accomplished by the phrasal syntax and not by lexical rules. What these mismatches indicate is that there really is no principled distinction between word formation processes and phrasal processes. If there really were such a principled distinction, morphological word-formation processes should never create multi-word phrases, and the phrasal syntax should never create morphological words. The expectations of the Lexicalist Hypothesis—the strict separation of the word and phrasal components—do not match the actual state of affairs.

Furthermore, if one pushes the logic of the criterion of morphological word formation, all of phrasal syntax must be reassigned to the lexical rule component, because of compounding. We saw in section 2.1 that compounds can include subordinate clauses, wh-movement, subject auxiliary inversion, and various other phrasal phenomena. All of these would have to be lexical rules, according to the logic in Müller (2006) and Müller and Wechsler (2014), since they can feed morphological word formation. In other words, following their logic we again end up with a single generative component of grammar, not two that are strictly separated. (In fact, HPSG has moved in this direction to a large extent: Kim and Sag (2002) introduce sentential negation and many adverbs lexically; Pollard and Sag (1994) analyze long-distance extraction like tough-movement lexically. We might as well go all the way and acknowledge that there is just one combinatorial component.)

Finally, there is an empirical problem with treating raising, resultative formation, and so on as lexical rules, as pointed out by Williams (2011). The point can best be made by going back to the example of nominalization of a resultative in German:

(26) die Leerfischung der Nordsee ‘the empty-fishing of the North Sea’ (Müller 2006, 868)

The way the lexical analysis works in Müller (2006) is that a lexical rule applies to the stem *fisch-* (which appears in the verb *fischen*, ‘to fish’). This lexical rule creates a new stem *fisch₂-* which obligatorily takes an NP and an AP argument. Semantically, the NP is not the logical object of the stem, but is instead interpreted as the subject of the AP. This permits the stem *fisch₂-* to appear in a verbal frame like [*die Nordsee leer fischen*], ‘the North.Sea empty to.fish’.

Next, a nominalization rule may apply, creating *Fischung* from *fisch₂-*. *Fischung* inherits the arguments of the stem, so it can now appear with the adjective *leer* ‘empty’ and the NP ‘the North Sea’ in (26). The problem is that arguments of nominalizations are never obligatory. This means that *Fischung* by itself ought to be able to mean ‘fish such that X enters state Y’. However, according to Müller (2006), in fact *Fischung* can only refer to a plank on a boat. Müller concludes from this fact that *Leerfischung* must be a nominalization of *leer fisch-* (p. 869). His analysis does not actually capture this, however, because it applies the rule only to the stem *fisch₂-* and not to the phrase *leer fisch-*.

This empirical problem with the lexical rule approach shows that it is necessary for word formation processes to take phrases as inputs. Otherwise, we get incorrect results.

2.7 Summary

This section has illustrated several cases of phrasal syntax feeding word formation, in clear violation of the Lexicalist Hypothesis. Other examples have also been presented in the literature. For instance, Pulleyblank and Akinlabi (1988) illustrate a case of phrasal syntax feeding word formation in Yoruba; Goddard (1988) argues for the necessity of phrasal syntax preceding morphology in the Algonquian language Fox; Rainer and Varela (1992) list cases of prefixes attaching to phrases in Spanish; Subramanian (1988) describes phrasal syntax feeding derivation in Tamil; Lefebvre and Muysken (1988) present such a case in Quechua; Lieber and Scalise (2007, 6–8) discuss another in Italian.⁷

Part of the original motivation for the Lexicalist Hypothesis was the apparent lack of phrasal processes feeding word formation. Since it was proposed, however, more and more instances of phrasal processes feeding word formation have come to light. The response has often been to reassign those phrasal processes to the word formation component. What this history shows, however, is that the original motivation was incorrect. Phrasal processes can and frequently do feed word formation. If all phrasal processes that can feed word formation are reassigned to the word formation component (as lexical rules or constraints), then the phrasal component disappears altogether. Alternatively, word formation processes should be reassigned to the phrasal component. Either way, the strict separation between a word formation component and a phrasal syntax component that is envisioned by the Lexicalist Hypothesis is incorrect.

3 Error 2: Phrasal Syntax Has Access to Sub-Word Units

The Lexicalist Hypothesis is also incorrect in its assertion that the phrasal syntax has no access to sub-word units.⁸ In fact, numerous processes can target both phrases and sub-word units.

3.1 Coordination/Ellipsis of Word Parts

It has long been noted that coordination of word parts is widespread (Nespor 1985, Booij 1985):

- (27) a. *infra e ultrasuoni* (Italian, ‘infra- and ultra-sounds’; Nespor 1985, 201)
- b. *Freund- oder Feindschaft* (German, ‘friendship or hostility’; Booij 1985, 152)
- c. Pre- and post-revolutionary France were very different from each other. (Chaves 2008, 264, (10))

Chaves (2008) argues strongly that this phenomenon is actually not coordination of sub-word parts, but coordination of phrases accompanied by word-part ellipsis. Among the arguments is the fact that plural agreement is possible in (27c), as is antecedence of the reciprocal *each other*. The subject in (27c) must actually be *Pre-revolutionary France and post-revolutionary France*, with deletion of repeated material in the first conjunct.

Regardless, ellipsis is generally regarded as a phrasal process. Bresnan and Mchombo (1995) include it in their list of processes that cannot target sub-word units (see section 5.2). Obviously, it can. One response is to view this type of ellipsis as different from phrasal syntax ellipsis; for instance, Chaves (2014) treats it as a process that targets linearized strings, not syntactic phrases. Note, however, that this ellipsis process cannot break up morphemes that are not easily segmentable, even when the same phonological string can be stranded in a different morphological context:

- (28) a. *pro-choice and -gun control* (Chaves 2008, 263, (6e))
- b. * (both) *pro-gressive and -fessional*

⁷Sato (2010) also cites Schachter and Otnes (1972) for a case of phrasal syntax feeding word formation in Tagalog, but I have been unable to find an example of this in Schachter and Otnes (1972).

⁸In most lexicalist approaches, this follows because the atoms of the phrasal syntax are words. See the works cited above, especially Di Sciullo and Williams (1987). In other formulations, Lapointe (1980, 8) has a principle stating that “no syntactic rule can refer to elements of morphological structure”; Selkirk (1982, 70) has a Word Structure Autonomy Condition that bans syntactic operations from involving categories of both word and sentence structure.

- c. * Because he is pro-fessional and -management, he is a valuable member of our team.
- (29) a. You can pre- or re-mix it.
- b. * They produce cranber- and dai-ry products.
- (30) a. Bing and Sydney Crosby (are not related).
- b. * The room was full of bing- and bon-go players.
- (31) a. red- and black-banded moths
- b. * red- and ind-olent
- (32) a. bi- and a-sexual
- b. * the Bi- and A-cre Lane Campaigns (the Biker Lane Campaign and the Acre Lane Campaign)
- (33) a. bi- and a-sexual
- b. birth- and adopted sons
- c. * bi- and ma-son paraphernalia (bison paraphernalia and mason paraphernalia)

In (33), for instance, we see that the strings *bi-* and *a-* can stand alone, as can the string *son*. But (33c) does not work, because in these particular words *bi-*, *ma-* (similar in sound to *a-*), and *son* are not distinct morphemes. This means that this process of ellipsis is not simply operating on phonological or prosodic strings, it must have access to morphological structure. It does seem to be true that this type of ellipsis is sensitive to prosody (Booij 1985), but it is also true that the constraints holding of it cannot be stated solely in terms of prosody, as just demonstrated (see also Chaves 2008, 2014). Rather, this process of ellipsis makes crucial reference to morphology. This means that it has access to sub-word parts.

Chaves (2008, 2014) also argues that the ellipsis process at work here is the same one that we see operating on phrasal units in right node raising and coordinate ellipsis. Corresponding to deletion of the left member of the second coordinate in word-part ellipsis is what is sometimes regarded as non-constituent coordination:

- (34) a. [half-brothers] and [~~half~~-sisters]
- b. Mary [caught a fish on Monday with a fly rod] and [~~caught a fish~~ on Tuesday with a spear]. (Dowty 1988, (62)).

And corresponding to deletion of the right member of the first conjunct is right node raising:

- (35) a. [over-~~application~~] and [under-application]
- b. The break-in on Monday was a [rare ~~breach of royal security~~] but [not unheard-of breach of royal security]. (Chaves 2014, 839, (11e))

As these examples show, these two ellipsis processes can target units larger than words, namely, phrases. At the same time, however, this process must also have access to sub-word morphemes. That is, it can see both units larger than words and units smaller than words. This is a clear violation of the Lexicalist Hypothesis: the word formation system is supposed to be encapsulated from everything that deals in units larger than the word. There should be no process that can target both phrases and morphemes. Yet this type of ellipsis does exactly that.

Another example of this situation can be found in Japanese. In Japanese, it is possible for a causative morpheme to embed a disjunction of verb phrases, as Kuroda (2003) shows. Either this is true disjunction embedded beneath a bound morpheme and is an example of phrasal syntax feeding word formation, or it is also ellipsis and is another example of a process that can target both phrases and sub-word units.

3.2 Wh-Questions

Another example of phrasal syntax targeting word-parts, not previously recognized to my knowledge, has a wh-word questioning a sub-word morpheme. The following are attested examples pulled from the internet.⁹

⁹A wh-phrase can also replace a word-part in an echo question (Artstein 2004):

- (36) a. How “pre” is prehypertension? (<http://www.ncbi.nlm.nih.gov/pubmed/17519120>)
 b. How ‘post’ does ‘postcolonial’ have to be before it ceases to be a—or the—primary determinant in the way Irish writing is read, and reads itself? (*Irish Poetry Since 1950: From Stillness Into History* by John Goodby, p319)
 c. Just How Sub Is Subprime? (<http://online.barrons.com/articles/SB117409608947340293?tesla=y>)

However these types of examples are analyzed, the fact is that the wh-phrase is semantically picking out a single morpheme in a multimorphemic word. This is again a violation of the Lexicalist Hypothesis.

A case of this that is less peripheral in the language occurs in the Algonquian language Maliseet-Passamaquoddy, as described by LeSourd (2001), Bruening (2001, 2004, 2006a, 2008). In this language, a non-specified wh-word *tan* quantifies over a bound morpheme on the verb to produce various types of adjunct questions:¹⁰

- (37) (Bruening 2008, 83–84, (34))
- a. **Tan** ’-kisi-**qoni**-tuwiya-n cihpolakon ’kekiw?
 TAN 3-able-X.length-fly-Sub eagle day
 ‘How far can an eagle fly in a day?’
- b. **Tan** op ’-kisi-**li**-tuwiya-n cihpolakon?
 TAN would 3-able-X.manner-fly-Sub eagle
 ‘How would the eagle fly?’
- c. **Tan** k-**tut**-alokiqa-n?
 TAN 2-X.extent-eye.have-Sub
 ‘How big are your eyes?’

The boldfaced bound morpheme (what is known in the Algonquian literature as a *relative root*; Bloomfield 1946) is necessary for such questions, both grammatically and semantically. Notice that in these three examples, the questions range over different things: length, manner, and size. The wh-word *tan* does not encode these things, nor does the verb root; only the bound morpheme on the verb does. At the same time, the bound morpheme on the verb is not a question by itself, it can only be questioned with the freestanding morpheme *tan* that always occurs at the left edge of the clause, often separated from the verb by other elements, as in (37b).

This is a particularly clear case of a phrasal syntactic operation—wh-questioning—targeting a sub-part of a word. This is not permitted by the Lexicalist Hypothesis. Bruening (2006a) proposes an analysis of these questions, an analysis which captures their behavior in long-distance and scope-marking questions. This analysis crucially does not adopt the Lexicalist Hypothesis: the verbal word is put together by the phrasal syntax. No such analysis is possible in a framework that adopts the Lexicalist Hypothesis.¹¹

3.3 Focus

It is also well-known that focus can target sub-word units (Selkirk 1984, 271, Wennerstrom 1993, Artstein 2004):

- (38) a. That poet is from the POST-colonial era, not the PRE-colonial one.
 b. That type of action indicates an A-moral viewpoint, not an IM-moral one.

(i) This is a stalag-what? (A: stalagMITE; Artstein 2004, 7, (13a))

However, this type of questioning is insensitive to morpheme boundaries, and can replace any string (or prosodic unit), as in *He’s a presti-what?* (*prestidigitator*) or *It’s a capy-what?* (*capybara*). This phenomenon is probably just asking to repeat some phonological string, and so is not relevant to the Lexicalist Hypothesis.

¹⁰“Sub” = subordinative inflection that appears in these types of questions and certain other environments. “X.length/manner/extent” = the morpheme adds a variable length, manner, or extent, where that variable is bound by some other element (the wh-phrase here).

¹¹A lexical rule analysis where the bound morpheme adds an argument to the stem that can be filled by a wh-phrase would not be adequate, because of the semantically contentless morphemes that appear on higher verbs in long-distance questions. See Bruening 2001, 2004, 2006a.

- c. That individual is TRANS-sexual, not BI-sexual.
- d. Sex-IST, not sex-Y!

Since focus can also target phrases, this is again an example of a process that makes no distinction between phrasal and sub-word units (Artstein 2004).

3.4 Summary

This section has shown that there is no strict separation of the word and phrasal systems as envisaged by the Lexicalist Hypothesis. There are numerous processes that can target both phrasal and sub-word units.

4 Error 3: Morphology and Syntax Obey the Same Principles

According to the Lexicalist Hypothesis, the word-formation system and the phrasal system, as distinct components of grammar, obey different principles. In this section I examine several differences that have been claimed to distinguish word formation from phrasal syntax. I show here that none of these differences are real, and in fact morphology and syntax obey the same principles, as expected if there is only one component of grammar rather than two.

4.1 Strict Locality of Affixes Versus Phrases

Williams (2007) points to a putative difference between affixal *self-* and phrasal *self* as a motivation for the Lexicalist Hypothesis. Phrasal *self* according to Williams may take a long-distance antecedent, so that in the following example *himself* does not need to relate the internal argument of *destruction* to the external argument of *destruction*; instead the destroyer can be unspecified:

(39) John told stories about the destruction of himself. (Williams 2007, 354, (2))

In contrast, *self-destruction* strictly requires coreference between the destroyed and the destroyer. An example like (40a) cannot instead relate the destroyed with the teller of stories. This means that, in contrast with (39), (40a) is unambiguous, and must mean (40b), not (40c):

- (40) (Williams 2007, 354, (3))
- a. John told self-destruction stories. (unambiguous)
 - b. John told stories about one's destruction of oneself.
 - c. John told stories about the destruction of himself.

According to Williams, such facts show that “the lexical system has no delayed resolution, but the phrasal system does” (Williams 2007, 355).

Williams is incorrect about both morphology and syntax here. In (39), *of himself* combines strictly with *destruction* to fill the internal argument role of *destruction*. The NP *himself* needs an antecedent, but, as is well-known, inside NPs reflexives are free to find an antecedent based on perspective or other principles (Pollard and Sag 1992, Reinhart and Reuland 1993). If *himself* were to occur as the object of the verb *destroy*, it would strictly require covaluation between it and another argument of the verb. That is, phrasal *himself*, like affixal *self-*, generally does not allow delayed resolution. It is only in contexts like within certain kinds of NPs that phrasal *himself* can take a long-distance or even discourse antecedent.

Such a discourse antecedent is also available for some instances of affixal *self-*, contra Williams:

- (41)
- a. Her behavior is self-serving. (the behavior does not serve itself, it serves her)
 - b. Most mission statements are self-aggrandizing. (the statements do not aggrandize themselves, they aggrandize the stater)

- c. Some of the funniest remarks are self-deprecating. (the remarks do not deprecate themselves, they deprecate the remarker)

In these examples, if *self-serving* (for example) were to be analyzed as x serves x , then it is not clear how *self-serving* could be predicated of *her behavior*. All of its arguments have already been saturated, and there is no role for *her behavior* to fill. In other examples, the NP that is the subject of a predicate adjective with *-ing* must be the external argument of the related verb:

- (42) a. Her robots are self-replicating. (only: the robots replicate themselves, they cannot replicate her)
 b. Those stories are self-destroying. (only: the stories destroy themselves, they cannot destroy the storyteller)
 c. These rumors are self-sustaining. (only: the rumors sustains themselves, they cannot sustain the rumor)
 d. These tales are self-educating. (only: the tales educate themselves, they cannot educate the teller)

In (41a), then, the analysis must be that *her behavior* is the external argument (*her behavior serves x*), and we have delayed resolution, since *self-* does not relate two arguments of the stem it attaches to, instead it relates the internal argument to a non-argument. The examples in (41) are exactly analogous to Williams’s example (39) in the phrasal system. As can be seen, morphology and syntax behave exactly the same: in general there is no delayed resolution (42), but in some circumstances we see delayed resolution in both morphology and syntax.

Examples of delayed resolution can also be found in other word-formation processes. One example occurs in the “symmetric” Bantu languages discussed by Bresnan and Moshi (1990). Bantu languages are famous for their valence-changing morphology. An applicative affix (“Appl”) can add an argument, for instance a benefactive. A reciprocal affix (“Recip”) can reduce valence by unifying two arguments into one, interpreted as acting in a reciprocal manner. When these two combine in the order verb-Appl-Recip in the “asymmetric” languages like Chichewa, the Recip can only combine the external argument (or agent) and the argument added by the applicative affix.¹²

- (43) Chichewa (Baker 1988)

Ana a-na-meny-**er-an**-a zigawenga.
 children SM-Pres-hit-**Appl-Recip**-Asp ruffians
 ‘The children₁ are beating the ruffians for each other₁.’
 *‘The children₁ are beating each other₁ for the ruffians.’

This fits Williams’s characterization of “no delayed resolution”: the reciprocal morpheme can only combine the most local arguments, it cannot look past the applicative affix and act on an argument of the verb stem that is not local to it.

However, in the “symmetric” languages like Kichaga this is exactly what happens:

- (44) Kichaga (Bresnan and Moshi 1990)

Wà-chàkà wá-í-w’ágh-ì-à**n**-à màngì.
 2-Chaga 2SM-Pres-kill-**Appl-Recip**-FV 1.chief
 ‘The Chagas₁ are killing each other₁ for the chief.’

In (44), the theme of the verb stem ‘kill’ and the agent added by the reciprocal morpheme are interpreted as reciprocal, skipping the benefactive argument added by the applicative morpheme in between. This is delayed resolution: the argument of the verb stem is not saturated immediately, but is only combined with the agent by the reciprocal morpheme after another morpheme has been added in between. (For an analysis, see Bruening 2006b.)

It is true that in most cases, affixes are strictly local in their effects. However, this is true of most cases of the phrasal syntax, too. It is not true that morphology and syntax are radically different in this respect. In fact, they seem to behave exactly the same, as a theory with only one generative component would predict.

¹²Bantu Abbreviations: Asp = Aspect; FV = Final Vowel; Pres = Present tense; SM = Subject Marker; numeral = noun class.

4.2 Differences in How Adjuncts are Treated

Williams (2007) also points to a difference between affixal *re-* and phrasal *again* to illustrate what he considers a fundamental difference between word formation and phrasal syntax. Phrasal *again* may include adjuncts in its scope, but *re-* may not:

- (45) (Williams 2007, 355, (4))
- a. John re-washed the dishes on Tuesday. (not ambiguous)
 - b. John again washed the dishes on Tuesday. (ambiguous as to whether it includes *on Tuesday* in its scope)

According to Williams, a prefix “can have scope only over the arguments of the item it adjoins to in the word system” and not the adjuncts “because the arguments of a lexical item are represented on the item itself in some way, but adjuncts are not” (Williams 2007, 355). In contrast, an item of the phrasal syntax like *again* attaches to an entire phrase, which can include adjuncts.

Williams’s claim about affixes is not correct, as has already been shown. Nominalizing morphemes in German can include non-arguments, as we saw in section 2.4. Nominalizing and adjective-forming affixes can include a raised NP that is not an argument of the stem the affix attaches to (sections 2.3 and 2.5). The derivational suffix *-sugiro* takes scope over an entire VP, including adverbs, in Japanese (Sadock 1991, 125). Prefixes can attach to phrases that include adjuncts in Spanish (Rainer and Varela 1992). In numerous languages, a causative morpheme can take scope over an adjunct that is interpreted as modifying the caused event. I illustrate with Venda:

- (46) Muuhambadzi o-reng-is-a Katonga modoro nga dzangalelo.
salesman 3Sg.Past-buy-Caus-FV Katonga car with enthusiasm
‘The salesman, eagerly, made Katonga buy the car.’ *or*
‘The salesman made Katonga [buy the car eagerly].’ (Pylkkänen 2008, 83, (8))

Other languages that permit this with morphological causatives include at least Japanese (Shibatani 1990, 313–315; Harley 2008 and references there), Bemba (Givón 1976), Luganda (Pylkkänen 2008, 119), and Finnish (Pylkkänen 2008, 116).

Another counterexample from English involves affixal *self-*, discussed in the previous subsection. The most general use of this morpheme relates a logical external argument and a logical internal argument, as follows:

- (47) a. self-activated = x activates x
b. self-supporting = x supports x
c. self-educated = x educates x

However, as noted by Bruening (2014, 418, note 32), affixal *self-* can also relate an external argument and an oblique:

- (48) a. self-absorbed = x is absorbed in x
b. self-centered = x is centered on x
c. self-involved = x is involved in x
d. self-concerned = x is concerned with x
e. self-reliant = x relies on x
- (49) a. a self-addressed envelope = x addresses an envelope to x
b. a self-assigned task = x assigns a task to x
c. “Mediocrity is self-inflicted, but genius is self-bestowed.” = x inflicts mediocrity upon x, x bestows genius upon x

Most of the above examples could be considered selected oblique arguments of the base verb, but the following examples are not amenable to such an analysis:

- (50) a. self-acquired property = x acquires property for x
 b. a self-arranged tour = x arranges a tour for x
 c. the restaurant's self-ordering kiosk = x orders for x
 d. self-pay patients = x pays for x
 e. self-prepared tax returns = x prepares tax returns for x
 f. a self-reported history of drug abuse = x reports a history of drug abuse about/on/concerning x

A *for* phrase can be added to any verb and is a canonical adjunct, while obliques of the type in (50f) can be added to any verb of communication. These examples look like *self-* relating an argument to an adjunct.

There are also cases where affixal *self-* seems to correspond to an emphatic reflexive (note that many of the previous examples could also be understood in this way):

- (51) a. self-evident = x is evident by x's self/on x's own
 b. the self-directed study of a language = x directs the study of a language by x's self/on x's own
 c. self-study = x studies x **or** x studies something by x's self/on x's own
 d. self-originating motion/impulses = x originates by x's self/on x's own
 e. self-arising wisdom = x arises by x's self/on x's own
 f. self-rising flour = x rises by x's self/on x's own

Arise and *rise* are unaccusative verbs and only have one argument; *self-* must necessarily involve an adjunct with such verbs. Emphatic reflexives are certainly adjuncts: no verb selects one as an argument. In all of these examples, then, affixal *self-* is able to operate on an adjunct. See also Bruening (2014, 417–418), analyzing other cases of affixal *self-* as operating on a raising-to-object like structure where the NP involved is not a selected argument of the verb that *self-* attaches to.

Williams (2007) therefore seems to have arrived at an erroneous conclusion by looking at the wrong affix. The prefix that he looks at, *re-*, is in fact more constrained than Williams characterizes it. Unlike *self-*, it cannot even include selected arguments of the stem it attaches to if they have the form of an oblique rather than a direct object (Carlson and Roeper 1980, Horn 1980, Wechsler 1990):

- (52) a. * John reup the book on the shelf. (Wechsler 1990, 9, (18b))
 b. John restocked the shelf.
 (53) (Wechsler 1990, 12, (30))
 a. * John reclimbed over the fence.
 b. John reclimbed the fence.
 (54) a. * Jimmy rereplied on James.
 b. * Tammy is reconcerned with her son.

This constraint does not follow from Williams's general view of word-formation processes; it seems to be idiosyncratic to *re-*. This particular prefix therefore cannot be used as evidence for a weaker constraint.

At the same time, the prefix *re-* can include a particle in its scope (Farrell 2005, Larsen 2014, 375–376):

- (55) (Farrell 2005, 102, (14))
 a. The plumber will be out on Monday to **re-hook up** the washer and dryer.
 b. Have to go **re-tuck in** my kids.
 c. And three days later, he was **re-sworn in** as governor.

While it is not entirely clear what the relation between a verb and a particle is, the particle is definitely not the direct object of the verb. Note that *self-* does not appear to be compatible with particles at all (**self-hooking-up washers*, **a self-sworn-in governor*), meaning that in this respect *re-* is less constrained than *self-*.

What this comparison between *re-* and *self-* indicates is that individual affixes must be analyzed in detail, just like individual items in the phrasal syntax. There is no general principle like the one posited by Williams; instead different affixes exhibit different behavior. Some affixes can include non-arguments, while others may not and may even be more constrained. Any analysis will have to explain the behavior of individual affixes. Analyses of many types of affixes have been proposed within purely syntactic approaches: on different causative morphemes, see Pykkänen 2008; on a syntactic treatment of *re-*, see Marantz 2009; Bruening (2014, 418) suggests an outline of an analysis of *self-*, at least as it combines with adjectival passives. Simply assigning affixation to a lexical component does not help us to understand the different properties of different affixes.

4.3 Headedness

Williams (2007) lists two other differences that he claims hold between the word system and the phrasal system. The most important one, the claim that the word system provides input objects to the phrasal system and not vice versa, has already been shown to be false (section 2). The other is the claim that the word system and the phrasal system obey different principles, so that, for instance, the word system is head-final in English, but the phrasal system is head-initial. In fact, the driving intuition behind the syntactic approach to word formation is that this is false: principles of word formation are ones familiar from phrasal syntax (Baker 1985, Hale and Keyser 1993, among numerous others). As for head directionality, it is rather superficial, and there are numerous counterexamples in both directions in English: words can be head-initial, like verbs formed with *en-* (e.g., *enrage*, *enfeeble*; Lieber 1988, 214), and compounds can have equal weight for their two parts (e.g., *bittersweet*, *deaf-mute*; Lieber 1988, 218). In the other direction, phrases can be head-final, like *counterexamples notwithstanding* and *two years ago*. This difference, such as it is, is simply not significant.

What is significant is that we do in fact see the same principles operating. Some instances of this were shown in the previous two subsections. The recognition that the principles are the same is also implicit in the trend mentioned above to reassign all syntactic processes to the lexical component. For Bresnan (1982), verbal passives must be lexical, just like adjectival passives were earlier argued to be (Wasow 1977); for Müller (2006), raising and resultatives must be lexical. In fact, in HPSG, many processes that are considered phrasal in other approaches have been analyzed as lexical. For instance, Kim and Sag (2002) introduce sentential negation and many adverbs lexically; Pollard and Sag (1994) analyze long-distance extraction like tough-movement lexically. If we are reassigning all processes to the same component, those processes must all obey the same principles. (See also the discussion of HPSG in the conclusion.)

4.4 Idiosyncrasy

One of Chomsky's (1970) original arguments for a lexical treatment of nominalizations, repeated in Newmeyer (2009), is that they are not completely productive or semantically regular. That is, they show a great deal of idiosyncrasy. The following list of sample semantic irregularities among derived forms (not just nominalizations) is from Newmeyer:

- (56) (Newmeyer 2009, 94, (7))
- a. profess ('declare openly')—professor ('university teacher')—profession ('career')
 - b. ignore ('pay no attention to')—ignorance ('lack of knowledge')—ignoramus ('very stupid person')
 - c. person ('human individual')—personal ('private')—personable ('friendly')—personality ('character')—personalize ('tailor to the individual')—impersonate ('pass oneself off as')
 - d. social ('pertaining to society'; 'interactive with others')—socialist ('follower of a particular political doctrine')—socialite ('member of high society')

There are also nominalizations that have no corresponding verb that they could be derived from, for instance *motion* (**mote*), *tuition* (**tuit*). The same is true of other derived forms (*social*, **soci*).

An often repeated view is that lexical processes and processes of the phrasal syntax differ in productivity, and this is the basis for Chomsky's argument. The claim is that operations of the phrasal syntax are completely

productive and semantically transparent, while lexical processes are not regular, often not productive, and are frequently idiosyncratic.¹³

Since Chomsky (1970), however, this putative difference has been shown over and over to be false. Processes of word formation can be productive and semantically transparent (e.g., Di Sciullo and Williams 1987). On the other side, irregularity is not the exclusive province of the word formation system, it is pervasive in the combinatorial system generally. There are phrasal idioms, like *kick the bucket* and *the shit hit the fan*; there are particle-verb combinations that are interpreted idiosyncratically and are not completely productive (*throw up*, *chew out*, *put up with*; see Jackendoff 2002); there are numerous fixed phrases (*all of a sudden*, *never mind*) and phrasal collocations (*concerted effort*); there are obscure limitations on different types of A-bar movement (Sag 2010). Here again there is no difference between the word system and the phrase system, and no reason to treat them differently. In fact, if we want a uniform account of idiosyncrasy, then we have to treat them the same, otherwise we will have to have two different ways of deriving idiosyncrasy, one for the word system and the other for the phrasal system.

Moreover, simply equating idiosyncrasy with listedness does not help to understand linguistic phenomena. As an example, Reinhart and Siloni (2005) discuss derived reflexive verbs in various languages, and propose that in some languages, reflexive verbs are derived in the lexicon, while in others, they are derived in the syntax. In the syntax languages, reflexive verbs are completely productive, while in the lexicon languages, reflexive verbs are limited to a small, apparently listed, set, typically verbs of grooming (*dress*, *shave*, *wash*, etc.). However, simply saying that these are listed in the lexicon does not explain why they are limited and in what way. Anything at all can be listed, and a listed set can be of arbitrarily large size. Why are reflexive verbs limited to a small set of particular verbs? Why *dress* and *shave* and not *tie up* and *choke*? Why not list every single verb in the lexicon, giving the appearance of complete productivity? In other words, appealing to listedness explains nothing by itself.¹⁴

Newmeyer (2009, 105) does ask a pertinent question: In purely syntactic theories of word formation, where is it recorded which affixes particular roots can combine with? That is, where is it stated that the root *destroy* (or *destruct* or whatever its base form is) combines with *-ion*, while *grow* combines with *-th* and *criticize* forms *criticism* and not **criticization*?

This is an important question, but it is a question to be answered, not an argument. Any theory has to answer this question, whether it assumes the Lexicalist Hypothesis or not. The Lexicalist Hypothesis does not make giving an answer any easier, since in a lexicalist theory, root and affix combinations are also done via rule, just as in a purely syntactic theory. The rules just have a different name. Particular roots still have to be specified as undergoing some rules and not others. The same has to be done in a syntactic theory. The two types of approaches are in the same boat; the question for all of them is what lexical entries look like, and what information is stored where.

If we give up lexical rules and only have a single syntactic rule component, as I am arguing for here, then all word formation has to be done by the same syntax that builds phrases. We need a way to capture idiosyncrasies and lack of full productivity. There are two obvious ways:

1. All specifications are stored in the lexical entries of roots. Suppose we have a root SOCI. In the entry for this root, it can be recorded that SOCI + *-al* = ‘pertaining to society’, while SOC + *-al* + *-ist* = ‘follower of the doctrine of socialism’, and so on. (Cf. Marantz 1997.)
2. Lexical entries include syntactic structure. There is a lexical entry for *socialist* that includes its structure and its meaning. There is another lexical entry for *social* that includes its structure and meaning (and its structure is probably a subset of the structure of *socialist*). (Cf. Hale and Keyser 1993.)

On both views, combinations are memorized as they are encountered. At the same time, language users will generalize to some extent and extract commonalities (different individuals may do this to different extents). This

¹³Personally, I suspect that the amount of idiosyncrasy in word formation has been vastly overstated. Cases like *profess*—*professor* are few and far between, and most English speakers probably consider the two words to be unrelated. The word *profession* can also be used to mean ‘the act of professing’, as in *professions of faith*, which is completely regular. To my knowledge, no one has actually done a systematic analysis to back up the claim of massive idiosyncrasy.

¹⁴Reinhart and Siloni (2005) also claim that it is no accident that the lexicon languages do not permit reflexivization of raising to object verbs; in their system, this follows from the operation applying in the lexicon, where only selected arguments of a verb stem can be affected. However, it also follows from these languages limiting reflexivization to a small, listed set of verbs; no raising to object verb is on that list.

is not really different from most lexicalist views; all that is different is the claim that the system that puts words together is the same as the system that puts phrases together.

There are also other possibilities besides the two listed, and I will not commit to any one here. It is an empirical question what the best account is. It seems to me, however, that a uniform account of idiosyncrasy at the word level and at the phrasal level would be desirable, and this is more likely to be successful in a theory that does not distinguish the two. (See Bruening 2010 on an approach to phrasal idioms where *selection* is crucial; selection operates uniformly throughout the system. See also Sag 2007.)

4.5 Summary of Sections 2–4

In sections 2–4 we have seen that the view of grammar proposed by the Lexicalist Hypothesis is incompatible with the facts of numerous languages. There is no strict separation of the component of grammar that produces words and the component that produces phrases. Phrasal syntax can feed word formation processes, and there are numerous processes that can target both phrasal units and sub-word units. Word formation and phrasal syntax also do not obey different principles, but instead behave alike.

One response to some of these facts has been to reassign processes from the phrasal component to the lexical component. However, *every* phrasal process seems to be able to feed compounding (and possibly zero derivation); this strategy then necessitates reassigning everything from the phrasal component to the lexical one, resulting in only one component of grammar again. The conclusion is clear: the grammar is not strictly separated into word and phrase components, there is only a single component that puts together both words and phrases.

5 The Lexicalist Hypothesis is Superfluous

I now show that we do not need the Lexicalist Hypothesis to account for the facts that it is meant to account for. We saw in the last section that the Lexicalist Hypothesis is wrong in numerous ways, but there are other cases where it does seem to capture something. That is, there are cases where phrasal elements cannot target sub-word units, and there are cases where sub-word units seem to behave differently from their phrasal correspondents. I show here that these facts have independent explanations, with no need to invoke the Lexicalist Hypothesis or the Principle of Lexical Integrity (Bresnan and Mchombo 1995). This means that the Lexicalist Hypothesis does no work, and is entirely superfluous. This is true even within theories that assume the Lexicalist Hypothesis.

I begin in the first three subsections with the arguments that Bresnan and Mchombo (1995) give for their Principle of Lexical Integrity. This principle says that word parts are inaccessible to the syntax, as would follow from the Lexicalist Hypothesis. We saw in section 3 that this is incorrect in many instances, but in others it does seem to be true.

5.1 “Lexical Integrity”: Extraction

The first argument involves extraction. According to Bresnan and Mchombo (1995), word parts are inaccessible to extraction. I illustrate here with parts of compounds:

- (57) * It’s American history that they’ve been [— teachers] for years. (modified from Bresnan and Mchombo 1995, 187, (3b))

Presumably, if there were no Principle of Lexical Integrity, we would expect word parts to be accessible to extraction.

The obvious question to ask here is whether the phrasal syntax independently rules out such attempts at extraction. It does, in fact. Extraction, and A-bar extraction in particular, may only target phrases, and not heads:

- (58) a. It’s [a dedicated teacher] that she’s been — for years.
b. * It’s teacher that she’s been [a dedicated —] for years.
- (59) a. As [incredibly terrified of crocodiles] as you’ve been — over the years, . . .

- b. * As terrified as you've been [incredibly — of crocodiles] over the years, . . .

Neither of these illicit instances of extraction is ruled out by the Principle of Lexical Integrity. Independently, then, we need a constraint to the effect that A-bar extraction only targets phrases, and may not target heads. Once we have this constraint, however, the inability of A-bar extraction to target sub-word units follows: they are not phrases.¹⁵ There is no need to have a Principle of Lexical Integrity in addition. It is entirely superfluous.

The same constraint operates on A-extraction, too. Raising to subject and passivization may not target a head, even in a case like the pseudopassive where a subpart of the argument of the verb—the complement of the P complement of the V—can be extracted:

- (60) a. The wealthiest candidate is likely — to win.
b. * Candidate is likely [the wealthiest —] to win.
- (61) a. Only the softest bed will be slept [in —].
b. * Bed will be slept [in [only the softest —]].

Both A- and A-bar extraction are constrained to operate on phrases, not heads; and it therefore follows that they cannot target sub-parts of words, because those are not phrases.

Some lexicalist theories treat raising and passive lexically (e.g., Bresnan 1982, Müller 2006). As such, they should in principle be able to target sub-parts of words, yet they cannot:

- (62) a. * American history is likely [a(n) — teacher] to win Teacher of the Year.
b. * American history was hired [a(n) — teacher].

Some other principle must block this. Typically, this is done simply by the way the rule is stated: it targets an argument. A sub-part of an argument cannot be targeted. But this by itself rules out targeting a sub-part of a word, since a sub-part of a word is not an argument. The Principle of Lexical Integrity is thereby rendered superfluous even within a lexicalist theory. It does no work whatsoever regarding extraction, even in a theory that assumes its correctness.

Extraction, then, does not require the Lexicalist Hypothesis or the Principle of Lexical Integrity. The fact that extraction cannot target sub-parts of words follows from independent principles.

5.2 “Lexical Integrity”: Conjunction and Ellipsis

According to Bresnan and Mchombo (1995), conjunction and ellipsis are phrasal processes and so cannot target parts of words. We saw in section 3.1 that this is false. Word parts can be conjoined and elided. Above we saw that all instances of conjunction of word parts might actually be ellipsis, however, so it may well be that conjunction cannot target word parts. If this is correct, do we need a Principle of Lexical Integrity to explain it?

The answer is no. Again, all we need is the recognition that some syntactic processes may only target phrases and not heads. Conjunction may be such a process. Of course, conjunction does seem to be able to operate on heads, as in the following examples:

- (63) a. You can bring this or that water bottle.
b. They can and will arrest you.
c. They shot and killed the suspect.

¹⁵We saw in section 2.1 that the first member of a compound *can* be a syntactic phrase. Such phrases still cannot be extracted by A-bar movement processes, however. This is because, as also shown above, these phrases when combined with the second member of the compound form a noun as far as the phrasal syntax they are embedded within is concerned. Extraction processes operating on larger phrases will treat the entire compound as a single noun, that is, as a head. For an analysis of phrasal compounds that attempts to derive their inaccessibility to extraction, see Sato (2010).

There are some indications that coordination of heads is illusory, however, and is probably always phrasal coordination (as proposed by Kayne 1994 and Beavers and Sag 2004). For instance, coordination of demonstratives and modals can include phrasal elements like adverbs and negation, and in coordination of verbs, *and* can always be replaced by *but did not*:

- (64) a. You can bring this but probably not that water bottle.
- b. They can and probably will arrest you.
- c. They shot but did not kill the suspect.

That is, any apparent instance of head coordination can include more than one word in one of the conjuncts, making it phrasal.

Similarly, coordination of verbal heads (here nominalized) acts like coordination of word parts in permitting plural agreement and antecedence of reciprocals (see above and Chaves 2008):

- (65) a. Their shooting and killing (of) the suspect were unrelated to each other. (the suspect was wounded by the shooting last year, and then they killed him with a knife this year)
- b. Her offering and making me an espresso usually take place on different days.

It is plausible, then, that all instances of apparent head coordination are actually phrasal coordination with ellipsis, or are instances of right node raising (as Chaves 2014 seems to analyze them).

Borsley (2005) and Abeillé (2006) argue against this view, arguing that there must be true coordination of heads. However, their arguments do not go through. In every case where they contend that some phenomenon distinguishes head coordination from phrasal coordination (primarily right node raising), the same fact holds with what must be phrasal coordination (*but did not*). As an example, Abeillé (2006) claims that head coordination and right node raising differ in available interpretations. According to her, head coordination in (66a) and right node raising in (66b) differ in that in (66a), there are necessarily only two books, whereas in (66b) there could be either two or four books:

- (66) a. Paul read and annotated two linguistics books.
- b. Paul read, and Mary annotated, two linguistics books.

This is true, but a variation on (66a) that is clearly phrasal (67) also obligatorily involves only two books:

- (67) Paul read but did not annotate two linguistics books.

Example (67) simply cannot be analyzed as head coordination, since the second coordinate involves three different words. The forced “single object” interpretation could therefore not be explained by the coordination being head coordination.

The same is true of all of the differences Borsley (2005) and Abeillé (2006) point to between right node raising and apparent head coordination: all the respective facts still hold when *and* is replaced with *but did not*. For instance, weak pronouns are still allowed in (68b), just as they are in (68a), although they are not very good in canonical right node raising (68c):

- (68) a. They shot and killed him.
- b. They shot but did not kill him.
- c. ?? The police shot, and the gang members finally killed, him. (odd without heavy stress on the pronoun)

For further discussion of prosody in right node raising, see Chaves (2014). Prosody does not argue for the existence of head coordination, because the same prosody of (68a) holds in examples like (68b), which is clearly phrasal.

Additionally, in all the cases from other languages cited by Abeillé (2006), the phenomena claimed to be limited to heads also always admit “light” modification of the putative head, making it necessarily phrasal. Abeillé’s own analysis appeals to phonological weight, and it is likely that that is the factor involved in her data, not the head-phrase distinction.

I conclude that the arguments for the existence of head coordination do not go through, and there are good reasons to think that, in fact, apparent coordination of heads is always coordination of phrases. If this is true, then coordination is just one of many processes (like extraction above) that only targets phrases, and not heads. This is a restriction in the phrasal syntax, but it has the result that the coordination of word parts is banned, with no reference to the Lexicalist Hypothesis or the Principle of Lexical Integrity. Once again, all the work of the Lexicalist Hypothesis is already done by the phrasal syntax.

5.3 “Lexical Integrity”: Inbound Anaphoric Islands

Bresnan and Mchombo (1995) also cite “inbound anaphoric islands” as evidence for their Principle of Lexical Integrity. Following Postal (1969, 213-214), they note that words may be formed from referential nouns, but not from pronouns:¹⁶

(69) McCarthyite, *himite

Other types of pro-forms also cannot appear inside words:

- (70) a. * People who *smoke* like other *do-so*-ers. (Postal 1969, 217, (69a))
 b. * We need a *truck* but not a *one*-driver. (cf. We need a truck but not a driver of one.)

It is not exactly clear how this would follow from the Principle of Lexical Integrity. According to Simpson (1983), coreference is part of the sentence grammar (the phrasal system), so a pronoun could not receive its reference within a word, since the sentence grammar has no access to sub-words parts. As Ward, Sproat, and McKoon (1991) note, this would then have nothing to say about cross-sentential anaphora, which is also ruled out. Bresnan and Mchombo (1995) themselves explain the facts in a way that makes no reference to Lexical Integrity: “indexical pronouns, though they do have intrinsic lexical content and can appear word-internally, lack the appropriate lexical content to serve as morphological bases for semantic derivatives” (p192). In other words, pronouns have very little semantic content, and that is what stops them from forming words like **himite* and **do-so-er*. In attested words with pronouns like *he-man* and *she-male*, the pronouns are used just for their gender features, which is the only real semantic content that they do have. If this is correct, then inbound anaphoric islands have nothing to do with the Principle of Lexical Integrity and everything to do with the paucity of content in pro-forms.

A different explanation is offered by Sproat (1988). According to Sproat, pro-forms are always maximal projections. Pronouns are actually NPs, *do so* is a full VP, and so on. Word formation processes, according to Sproat, never operate on maximal projections. For instance, it is possible that suffixes like *-ite* and agentive *-er* strictly select heads, and may not combine with phrases (see more on this below). This rules out formations like **himite* and **do-so-er*.

Note that either of these potential explanations would permit pro-forms in compounds. In Sproat’s theory, pro-forms should be allowed if a phrase can form the input to a word, and we know this is possible in a compound. In Bresnan and Mchombo’s analysis, if a pro-form can be contentful, it should be allowed, and pro-forms can get content in phrases like those that form the input to compounding. It is correct that phrasal compounds can include pro-forms, including fully referential ones:

- (71) a. The dog gave me an accusing you-like-**her**-better-than-me look.
 b. She gave the flowers a resigned why-do-they-always-buy-me-ugly-**ones** look.
 c. When he said, “go ahead and dance,” she gave him a scornful I-won’t-**do-so**-alone look and he dutifully stood and accompanied her to the dance floor.

Recall that Bresnan and Mchombo (1995) claim that phrases in compounds are “lexicalized” (see above). If they are lexicalized then they would be expected to behave like words, and be inbound anaphoric islands. Instead they behave like phrases, and permit pro-forms.

¹⁶Postal (1969) also discusses “outbound anaphoric islands,” but these are not considered by Bresnan and Mchombo (1995) to be evidence for Lexical Integrity, since they were shown by Ward, Sproat, and McKoon (1991) to be regulated by pragmatics.

Additionally, Bresnan and Mchombo (1995) themselves cite numerous counterexamples to the inbound anaphoric island constraint, where in some languages a derived word form can include pronominal agreement affixes. Harris (2006) similarly shows that Georgian word-formation processes can include fully referential pronouns. This means that inbound anaphoric islands are not observed in some languages (or in compounds in English), a state of affairs that should be impossible if they really follow from the putatively universal Principle of Lexical Integrity.

Inbound anaphoric islands, then, follow the pattern we have seen throughout this paper: there are numerous counterexamples to what the Lexicalist Hypothesis requires, and where there are restrictions, they follow from other considerations.

I turn now from the Principle of Lexical Integrity to other claims that have been made in the literature.

5.4 Chomsky's "Internal Structure" Argument

One of Chomsky's (1970) original arguments for a split between a word system and a phrase system was the claim that derived words have the phrasal structure of their derived category, and do not have the phrasal structure of the category they are derived from. For instance, a deverbal nominalization has the same phrasal syntax as an underived noun, and does not have the phrasal structure of a verb or a sentence. Newmeyer (2009) illustrates this with the following examples:

- (72) (Newmeyer 2009, 95, (9))
- a. the stupid refusal of the offer
 - b. * the refusal stupidly of the offer
 - c. * the not refusal of the offer
 - d. * the have refusal of the offer
- (73)
- a. * She stupid refused the offer.
 - b. She refused the offer stupidly.
 - c. She did not refuse the offer.
 - d. She has refused the offer.

A derived N takes adjectives, not adverbs, and may not have sentential negation or auxiliary verbs that are possible with the verb it is derived from. According to Chomsky and Newmeyer, these facts only follow if derived Ns enter the syntax as unanalyzable Ns.

Chomsky (1970) originally contrasted nominalizations with gerunds, which have the external distribution of nouns but the internal structure of VPs or even clauses:

- (74)
- a. * her stupid refusing the offer
 - b. her stupidly refusing the offer
 - c. her not refusing the offer
 - d. her having refused the offer

According to Chomsky (1970), gerunds *are* derived transformationally; if nominalizations are not, we explain the differences between them.

However, later work in lexical frameworks like LFG and HPSG has lost the ability to make such a distinction. As described in section 2.6, in these approaches, any process of word formation has to be a lexical process. Since gerunds are morphologically derived forms, they must be lexical, too. An HPSG analysis of gerunds is proposed in Malouf (2000); an LFG analysis is proposed in Bresnan and Mugane (2006). Their properties are captured with lexical rules and constraints in these analyses.

This means that the Lexicalist Hypothesis again does no work in explaining linguistic facts: all the work is done by the actual analysis. Nominalizations are analyzed one way, gerunds another; their differences are captured by analyzing them differently. The Lexicalist Hypothesis plays no role whatsoever.

Moreover, the claim that Ns derived from Vs do not have phrasal properties of Vs has been argued to be false. For instance, Fu, Roeper, and Borer (2001) argue that Ns derived from Vs may have adverbs following them, while underived ones may not:

- (75) (Fu, Roeper, and Borer 2001, 549, (2))
- a. The occurrence of the accident suddenly disqualified her.
 - b. * Kim's accident suddenly on the track disqualified her.

This has been contested by Newmeyer (2009), but all of his examples of putatively underived nouns (p.109, examples 47a–c) are either zero-related to verbs (*use*, *release*) or can plausibly be analyzed as derived from a verbal source that is not actually used (*recourse*, which is used in the “light verb” construction *take recourse*). The following contrast between a derived N and an underived one appears to me to support Fu, Roeper, and Borer's view over that of Newmeyer:

- (76) a. The sudden growth of the tomatoes really shocked me.
b. The growth of the tomatoes so suddenly really shocked me.
- (77) a. the overwhelming smell of rotten fish
b. * the smell of rotten fish so overwhelmingly
c. * the smell so overwhelmingly of rotten fish

However, I acknowledge that the matter requires more research to be settled. (Newmeyer's skepticism of the *do so* data also offered by Fu, Roeper, and Borer 2001 does appear to be warranted.)

Other facts have been suggested to distinguish derived from underived Ns. For example, Bruening (2013) argues that certain PP adjuncts require verbal structure, and so they are only permitted with Ns that include verbal structure. Instrumentals are one such. They are allowed with VPs and with derived nouns, but not with (at least some) underived nouns (Bruening 2013, 12, (48–52)):

- (78) a. The inspector saw the blood with a microscope.
b. The sample was smelled with an electronic nose.
c. The danger was sensed by Peter with his spider-sense.
- (79) a. the perception of light with a photosensor
b. the detection of the sound with an amplifier
c. the discernment of God's will with various omens
- (80) a. * the sight of the blood with a microscope
b. * the smell of the sample with an electronic nose
c. * Peter's sense of danger with his spider-sense

We also saw in section 2.5 that nominalizations can include raising to subject and raising to object. In German, they can include resultatives (section 2.4). If these processes require VP (or predicative XP) structure, then nominalizations must be nominalization of a phrasal category.

At the same time, it is true that nominalizations differ from gerunds in having largely nominal syntax. Any theory will have to account for this difference, whether it assumes the Lexicalist Hypothesis or not. As described above, lexicalist theories do this by analyzing gerunds and nominalizations as both lexical, but treat them differently. A purely syntactic theory would derive them both syntactically, but again would have to treat them differently. Perhaps the simplest analysis would treat them differently only in *size*: nominalizations nominalize a fairly small structure, say VoiceP as in Bruening 2013, 31–34, while gerunds nominalize a larger phrase, perhaps a full IP as in Abney 1987. Producing an analysis is not important here; the important point is that lexicalist and syntactic theories are entirely equivalent on this point. All the work is done by the actual analysis; no work is done by the Lexicalist Hypothesis. Again, the Lexicalist Hypothesis is superfluous.¹⁷

¹⁷One argument presented against syntactic accounts of nominalizations is that they can be coordinated with underived nouns and share

5.5 Phrasal Elements That Cannot Target Sub-Word Units

According to Williams (2007), we need the Lexicalist Hypothesis in order to account for the inability of wh-questioning to target part of a word, as in the following:

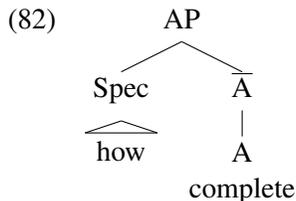
- (81) (Williams 2007, 354, (1))
- a. How complete are your results?
 - b. *How completeness do you admire? (*intended*: [how complete]-ness do you admire)
 - c. What degree of completeness do you admire?
 - d. How complete a record do you admire?

In (81b), *how* cannot modify just the *complete* part of the noun *completeness*. The examples in (81c–d) are meant to show that there is nothing semantically ill-formed about this question.

I will address this issue in two parts. First, we need to know why *how* cannot target just a sub-part of a word. That is the topic of this subsection. Then, we need to rule out the bracketing in (81b), where the suffix *-ness* attaches to a phrase. That is the topic of the next subsection.

We saw in section 3.2 that it actually is possible to question a sub-part of a word in some cases, but apparently it is not in this type of example. The question is whether we need the Lexicalist Hypothesis to explain why not.

The answer is no. Since at least Bresnan (1973) and Jackendoff (1977), degree elements like *how* and *quite* have been treated as specifiers in X-bar theory (for a recent HPSG treatment of *how* as a specifier, see Ginzburg and Sag 2000, 187–188). This by itself rules out having them modify a sub-word unit: the only thing they can modify is the constituent X-bar:



How cannot be the specifier of an NP (**how man*, **how liberty*), so it simply cannot modify the N *completeness*. As a specifier, it also cannot attach directly to an A head, which might then permit further suffixation. We need some such constraint independently, to rule out cases like the following:

- (83) a. How insufferably stupid is he being today?
 b. *Insufferably how stupid is he being today? (*[_{AP} insufferably [_A how [_A stupid]])
- (84) a. How justifiably angry is he?
 b. *Justifiably how angry is he? (*[_{AP} justifiably [_A how [_A angry]])

As can be seen, *how* only combines with a full phrase, including any adverbs, and may not combine just with a head. The analysis of *how* as a specifier captures this (assuming adverbs can only attach below the specifier). But this analysis again rules out *how* combining with a sub-part of a word, with no need for the Lexicalist Hypothesis.

arguments (Wechsler 2008a, Müller and Wechsler 2014). In section 5.2 I suggest that all apparent coordination of heads is actually coordination of phrases. If this is correct, the possibility of coordination of derived and underived nouns is not problematic for any theory. Additionally, the argument relies on the assumption that only heads with the same number and type of arguments can be coordinated, but this is false:

- (i) a. She described and (then) made me a wonderful espresso.
 b. *She described me a wonderful espresso.
- (ii) a. She recommended and (then) brought me a slice of key lime pie.
 b. *She recommended me a slice of key lime pie.

This is possible even with weak pronouns (*she described and then brought me it*), which is supposed to rule out a right node raising analysis (see more on this in section 5.2). The fact that derived words can be coordinated with underived words shows nothing.

5.6 The “No Phrase Constraint”

The question now is what rules out the bracketing in (81b), repeated below, where *how* combines with an \bar{A} before the suffix *-ness* turns it into a noun.

(85) * [N [AP how complete] -ness]

Similarly, Bresnan and Mchombo (1995) say that the Lexicalist Hypothesis and their Principle of Lexical Integrity are needed to account for the inability of adverbs and other phrases to modify sub-word parts:

(86) (Bresnan and Mchombo 1995, 192, (17))

- a. [A happy]-ness
- b. * [AP quite happy]-ness
- c. * [AP more happy [than sad]]-ness

All of these are supposed to be ruled out by something like the No Phrase Constraint (Botha 1981) in the Lexicalist Hypothesis: phrases may not form the input to word-formation. (In most versions this just follows from the hypothesized architecture of the grammar and need not be stated as a separate constraint; see note 2.)

Now, we saw in section 2 that there is no No Phrase Constraint, and phrases can in fact form the input to word formation. Many affixes can combine with phrases; we saw numerous examples in section 2. So, what rules it out in this particular case?

One type of analysis that has been proposed within a purely syntactic approach to word formation is to hypothesize that morphemes select different categories to combine with. For instance, Pykkänen (2008) proposes that causative morphemes in the world’s languages divide into three types. One selects a full phase (in the phase theory of Chomsky 2000), one selects a verb phrase, and one selects a bare root. The first two combine with phrases and may include things like adverbs. The root-selecting causative morpheme combines only with a bare root, and not a phrase.

Stating this slightly differently, one could propose that some morphemes select only heads, and may not combine with phrases. (Heads, unlike roots, can be complex.) The morpheme *-ness* would be one such morpheme. (The analysis of *-ness* in Embick and Marantz 2008 seems to have this character.) In support of this sort of analysis, complements of adjectives are generally not preserved from the adjective to the noun in *-ness*:

- (87) a. We are mindful of each other.
b. * our mindfulness of each other
- (88) a. We are worthy of each other.
b. * our worthiness of each other
- (89) a. We are crazy about each other.
b. * our craziness about each other
- (90) a. We are fond of each other.
b. * our fondness of each other

A complement can be preserved just if it is incorporated, forming a complex head:

(91) credit-worthiness, (certificate of) road worthiness, boy-craziness, . . .

Note that the morphemes shown in section 2 to attach to phrases, for instance the adjectival passive and nominalization suffixes, do often preserve complements:

(92) *Adjectival Passives*

- a. We stuffed the pillow with feathers, The pillow remained stuffed with feathers. (based on Levin and Rappaport 1986, 634)

- b. She convinced me of her trustworthiness, I remain unconvinced of her trustworthiness.
- c. They based the character on George W. Bush, The character appears based on George W. Bush.

(93) *Nominalizations*

- a. destroy NP, destruction of NP (fully general)
- b. depend on, dependence on; rely on, reliance on
- c. apply for, application for; prepare for, preparation for
- d. believe in, belief in; specialize in, specialization in; succeed in, success in
- e. commit to, commitment to; refer to, reference to; respond to, response to
- f. approve of, approval of; acquit of, acquittal of
- g. agree with, agreement with; collide with, collision with

In fact, Bruening (2014) showed that some instances of “dative shift” occur inside adjectival passives, contra Wasow (1977) and much other work. This means that the double object complement of a verb may be retained in an adjectival passive:

(94) (Bruening 2014, 401, (102a), (103a))

- a. The Victoria was unspared the horrors of World War II. . .
- b. . . he struggled with his identity, cast as a sex symbol for 1950s America but unafforded a private life outside the limelight.

The adjectival-passive-forming morpheme, then, attaches to full-fledged phrases. These phrases include various different types of complements. The suffix *-ness* differs in a way that indicates that it does not attach to phrases.

If this is true, then there is an independent explanation for the inability of *-ness* to attach to APs with *wh*-phrases and adverbs, or phrasal comparatives. We do not need the Lexicalist Hypothesis, and in any event, that hypothesis is incompatible with the facts of numerous affixes which do combine with whole phrases.

A more general point to be made here is the same one that was made earlier regarding *self-* versus *re-* (section 4.2): It is necessary to analyze individual affixes or word-formation processes in detail. They differ significantly from each other, in such a way that blanket statements like “affixes cannot attach to phrases” and “affixes may not take scope over adverbs” are simply false: some can, and those that cannot are often even more constrained, in peculiar ways. We do not want a model of grammar whose architecture rules out affixes combining with phrases and affixes taking scope over adverbs, because many of them do. If some of them do not, then that is something that is going to have to be captured in the analysis of those particular affixes, since it will not follow from general principles. I have given one suggestion for an analysis here, but it may well be that a better analysis is available. One can only decide this based on extensive research into the properties of the individual affixes involved.

Along these same lines, Bruening (2014) shows that adjectival passives are only allowed with certain non-alternating double object verbs like *spare* and *afford*, as in (94). They are not allowed with alternating verbs like *give* and *send*. Bruening (2014) explains this difference in terms of phrasal syntax, and suggests that the phrasal syntax is the right place to look for constraints on what may appear in phrases headed by derived words (pp411–412). Similarly, raising to object can be found in both adjectival passives and nominalizations, but double-object verbs of the *spare* and *afford* class only form adjectival passives and do not form nominalizations (Bruening 2014, 412). Again, different word-formation processes obey different restrictions, none of which match those imposed by various versions of the Lexicalist Hypothesis.

5.7 Summary

This section has gone through several cases from the literature where some phenomenon has been claimed to require the Lexicalist Hypothesis and/or the Principle of Lexical Integrity. In every case, the Lexicalist Hypothesis is superfluous: all of the data are already accounted for by independently needed principles, even within theories that assume the Lexicalist Hypothesis. The only principle that did any work was the No Phrase Constraint, but it is wrong in general, as section 2 showed. Instead, we need detailed analyses of particular morphemes, since they

can be both more and less constrained than what the principles of the Lexicalist Hypothesis require. The Lexicalist Hypothesis has no explanatory value in understanding any of the phenomena discussed.

6 Conclusion

The Lexicalist Hypothesis was a reasonable hypothesis about the organization of the human language faculty. It could have been correct that the human grammar has distinct word formation and phrasal syntax components. However, all of the evidence reviewed here indicates that it does not. The first part of this paper showed that there are numerous phenomena where phrasal syntax provides the input to word formation, and numerous phenomena where phrasal operations have access to sub-word units. Processes of word formation and processes of phrasal syntax were also shown to obey the same principles. The second part of the paper showed that where there are facts to be explained, they follow from independent principles, without the need to refer to the Lexicalist Hypothesis. The Lexicalist Hypothesis is entirely redundant and superfluous. More generally, all we need is a single combinatorial component for both words and phrases.

If some hypothesis is both incorrect and does no work, the obvious action to take is to discard it. In this case, doing so leads to the kind of theory that considerations of parsimony would also prefer: a theory where there is only one combinatorial system putting together both words and phrases, not two distinct systems. As noted in the introduction, a theory with only one component is simpler than and therefore preferable to a theory with two components, all other things being equal. This paper has shown that all other things *are* equal: the Lexicalist Hypothesis does no work, and so has no empirical advantage to outweigh the parsimony consideration. In fact, it seems to be at a disadvantage, since it gets numerous empirical facts wrong.

I conclude that the kind of theory we need is one with only a single combinatorial system for both words and phrases. Theories that assume two different combinatorial systems will need to be modified, and it is not clear how easy this will be to do. At one extreme we have the example of HPSG, which is always touted as a strongly lexicalist theory (e.g., Müller 2013). In actual practice, lexical rules and syntactic rules in HPSG use the same general mechanisms and the same formal tools (see, e.g., Briscoe and Copestake 1999). HPSG appears to be only nominally lexicalist, and rejecting the Lexicalist Hypothesis would probably affect it very little. I take this to further support the point that the Lexicalist Hypothesis is entirely superfluous: it does no work even in theories that pay lip service to it. As for other approaches like LFG, it is less clear how easily they could abandon the Lexicalist Hypothesis without becoming a very different theory.

One last point that should be made concerns the numerous criticisms that have been offered of particular analyses within the general syntactic approach to word formation. For example, Williams (2007), Wechsler (2008a, 2008b), Newmeyer (2009), Müller (2013), and Müller and Wechsler (2014) heavily criticize the syntactic accounts of nominalizations in Marantz (1997), Alexiadou (2001), Borer (2003), Roeper (2005), and others. Many of these criticisms are quite valid. However, none of them invalidate the syntactic approach in general. Showing that a specific analysis encounters problems does not invalidate the general approach that that specific analysis is couched within. None of these criticisms have shown that a syntactic approach is incapable in principle of adequately accounting for nominalizations.

In contrast, that is exactly the kind of point I have tried to make here regarding lexicalist approaches. I have not tried to show that specific lexicalist analyses are inadequate; rather, I have shown that the entire lexicalist enterprise is on the wrong track because its conceptual underpinnings are incorrect. I suggest that researchers now concentrate their efforts on developing better analyses within the most parsimonious class of theories, namely, the ones that assume only a single combinatorial system for both words and phrases.

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