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# Affixal rivalry and its purely semantic resolution among English derived adjectives<sup>1</sup>

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This paper aims to fill in a long missing piece in the paradigmatic word-formation research: a set of rival affixes whose members are differentiated in meaning. We argue that such a set can be found in English derivational adjectivalization, in the affixal rivalry between the adjectivalizing suffixes *-ed* and *-y*. Using the traditional method of doublet comparison (Aronoff 1976, 2020), we reveal that adjectives of the form *Xed* and those of the form *Xy* (*X* standing for the source word) differ in the scale type. *Xed* adjectives are closed-scale adjectives, but *Xy* adjectives are totally open-scale adjectives. The scale-type difference explains why *Xed* adjectives combine with certain degree modifiers, whereas *Xy* adjectives do not. Furthermore, we show that the rival affixes are doubly differentiated in the deverbal domain in terms of the said output scale type and the input base selection. In this domain, the major sources of the closed-scale *-ed* adjectives and the open-scale *-y* adjectives are result and manner verbs, respectively.

KEYWORDS: adjectivalization, competition, degree-based semantics, derivational morphology, lexical semantics, manner/result complementarity

## 1. INTRODUCTION

In many contemporary theories, derivational affixes tend to be studied vertically or semasiologically, picking up one specific affix and comparing its multiple usages.

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Abbreviations used in this paper are: *Xed/Xy* (morphological doublet based on *X* and suffixed with *-ed* or *-y*), *Ned/Ny* (denominal adjectives suffixed with *-ed* or *-y*), *Ved/Vy* (deverbal adjectives suffixed with *-ed* or *-y*), [ $\pm$ Div] (the presence or absence of the Division function), HdN (head noun), BseN (base noun). The examples are cited from the *Oxford English Dictionary (OED) Online* unless otherwise specified.

Studies of affixal rivalry, however, approach the matter horizontally and consider the way each affix is used in terms of its distributional relationships with its rival affixes. Ideally, the vertical and horizontal approaches should complement each other and deepen our understanding of morphology. Aronoff (1976) introduced the concept of rival affixes to address the paradigmatic relationship between *-ness* and *-ity* in abstract nominalization in English. Aronoff and his colleagues (Aronoff & Anshen 1981; Anshen & Aronoff 1988; Lindsay & Aronoff 2013) revealed that the two abstract nominalizers have different, if not complementary, base selectional properties, and morphological doublets such as *curiousness* and *curiosity* have different grammatical properties. It is easy to see how hard it would be to pin down the lexeme-formation rules of *-ness* and *-ity* if these suffixes were studied individually.

As a contribution to the paradigmatic word-formation research, the present paper addresses the domain of derivational morphology that so far has received much less scholarly attention than nominalization and verbalization: adjectivalization (see Trips 2003; Arndt-Lappe 2014; Lieber 2016; Santana-Lario & Valera 2017; Bonami & Thuilier 2019; Rainer et al. 2019; Renner 2020). Adjectival suffixes include many subtypes in terms of syntactic and semantic effects that they cause (Fradin 2007, 2017; Nagano 2013, 2016, 2018; Sleeman 2019), such as deverbal participial adjectives (e.g. *remaining issues*, *broken vase*), deverbal dispositional adjectives (e.g. *forgetful*, *forgettable*), denominal relational adjectives (e.g. *Chinese vase*), proprietive adjectives (e.g. *(well-)mannered*), privative adjectives (e.g. *cordless*), similitive adjectives (e.g. *apish*), and evaluative adjectives (e.g. *oldish*).

This paper also aims to fill in another missing piece in the paradigmatic word-formation research. In reviewing the history of pertinent studies, Aronoff & Lindsay (2014: 72) regretfully remark as follows:

- (1) In our own work on rival affixes in English over close to forty years, the only robust example of the members of a set of rival affixes becoming differentiated in meaning is the set *-dom*, *-hood*, and *-ship*. Aronoff & Cho (2001) argue that *-ship* has become specialized to distinguish between stage-level and individual-level attributes. But Lieber (2010) questions even this case. Based on corpus data she concludes that the three suffixes are frequently interchangeable. This leaves us with no real cases of semantic differentiation in English, the language where this theoretical possibility has been most sought after.

Adopting Gause's principle of mutual exclusion as a central principle, Aronoff's theory of morphological competition looks at affixal rivalry as the struggle for survival among affixes. Two stages should be distinguished: (i) the struggle for existence between competing species and (ii) the outcome of the struggle (Lindsay & Aronoff 2013; Aronoff 2019, 2021). The second stage is also called RESOLUTION of the competition if the competing species have successfully found their own ecological niches; in other cases, only one or a few species survive(s), and the others drop out of the race. In the case of language, the struggle between competing constructions can be resolved, in principle, phonetically, phonologically,

morphologically, syntactically, semantically, pragmatically, sociolinguistically, or orthographically (for the last case, see Nagano & Shimada 2014; Berg & Aronoff 2017). Lexeme-formation rules working at a particular historical point, if devised richly enough, are different outcomes of the struggle for survival between competing affixes. The research question raised by (1) is to find a pair or set of English affixes whose ecological niches are semantically motivated.

Aronoff (2020) claims that the PRIVATIVE adjectivalizers *-less* and *-free* in contemporary American English constitute such a pair. Importantly for the research question in (1), pairs such as the following suggest that the earlier rivalry between *-less* and *-free* was resolved semantico-pragmatically (examples taken from Dixon 2014: 258–259):

- (2) (a) **parent-less** child (an orphan, with no one to look after them)  
 (b) **parent-free** evening (when teenage children have the house all to themselves, for a party)
- (3) (a) She fell into a deep **dream-less** slumber.  
 (b) He has been suffering from nightmares a lot recently, but last night he experienced a **nightmare-free** repose.

Both *-less* and *-free* express the absence of the base referent (*X*). However, compared to *-less* adjectives in (2a) and (3a), *-free* adjectives in (2b) and (3b) carry the additional assertion that not having *X* is good. Aronoff maintains that the additional pragmatic implication acquired by *-free* successfully distinguishes it from its traditional rival *-less*, which remains neutral on the speaker's evaluation about the absence of *X*.

We agree with this argument, but the domain of resolution is limited to concrete noun bases, reflecting the once compound-second origin of *-free*.<sup>2</sup> This matters because if a pair or set of rival adjectivalizers are differentiated PURELY semantically, as is hoped in the passage in (1), the differentiation in question is expected to be observed both in denominal and deverbal adjectivalization. Indeed, we can find such a distribution if we turn our attention to the rivalry between *-ed* and *-y* among derived adjectives. We first look at their denominal adjectivalizing usage and then proceed to their deverbal adjectival usage.

First, *-ed* and *-y* both produce PROPRIETIVE adjectives from inanimate concrete nouns:

- (4) (a) well-branched  
 'having many branches; having a pleasant arrangement of branches'  
 (b) branchy  
 'full of, covered with, or consisting of branches'

[2] For example, *helpless* and *careless* do imply the speaker's negative attitude toward the absence of *X*. However, such instances are not counterexamples to Aronoff's analysis because the rival *Xfree* is limited to concrete noun bases in the first place. In fact, we need a competition-based analysis to account for the fact that when paired with *Xful* (*helpful*, *careful*) rather than *Xfree*, the form *Xless* (*helpless*, *careless*) acquires an additional negative connotation.

- (5) (a) well-legged  
       ‘having strong or shapely legs’  
 (b) leggy  
       ‘having long legs, (sometimes) excessively or disproportionately so’

As suggested in (4a) and (5a), the form *Xed* can be modified by *well* (Kennedy & McNally 2005; McNally & Kennedy 2013).<sup>3</sup> The combination with this adverbial item confirms that unmodified words of the form *Xed*, such as *branched*, are really adjectives. In many cases, adjectives of this form are used in the modified form *Mod-Xed*, where the *Mod* slot accommodates not only *well* but also other morphemes such as *ill-*, *half-*, *over-*, and *under-*:

- (6) (a) well-boned, ill-boned  
 (b) well-famed, ill-famed, over-famed  
 (c) well-headed, ill-headed, half-headed  
 (d) well-mannered, ill-mannered  
 (e) well-natured, ill-natured  
 (f) well-priced, overpriced, underpriced  
 (g) well-sized, oversized, undersized  
 (h) well-weaponed, over-weaponed  
 (i) well-witted, half-witted, over-witted, under-witted

In this paper, we largely focus on *well-Xed*, but similar observations can be made of *ill-Xed*, *half-Xed*, *over-Xed*, and *under-Xed*. We believe that these formations constitute a single abstract construction of the form *Mod-Xed*, and that each modifier (word-internally, see Note 3) functions as a DEGREE MORPHEME that ‘modulates the degree to which an adjective holds and, in English, generally occurs to its left’ (Morzycki 2016: 287). For example, in (4a), *well* assigns a ‘good’ value to the degree argument (*d*) of the unmodified adjective *branched*, which simply expresses ‘having a branch or branches’. From the interaction between the semantics of *well* and *branched* emerge the meanings of the modified construction cited in (4a). Different modifiers have different restrictions on the degree argument of the *Xed* adjective and yield a series of *Mod-Xed* constructions (see Figure 1 on the next page).

Turning to (4b) and (5b), it seems safe to say that derived adjectives of the form *Xy* do not occur with the items in Figure 1. As suggested in (7), *Xy* should be used in the unmodified form, and the contrast between the well-formedness of the form *well-Xed* and the non-occurrence of the form *\*well-Xy* is striking and demands an explanation:

[3] For example, Kennedy & McNally (2005) treat *well* in *a well-loaded truck* and *a well-known brand* as a degree morpheme that saturates the degree argument of the unmodified *-ed* adjective. While they regard it as a syntactic degree morpheme, it seems to us that we also need to posit *well* as a word-internal degree morpheme. Thus, *well(-)Ved* composites can be modified by *very*, a bona fide syntactic degree morpheme, as in *a very well-known brand* and *this brand is very well known* (see McNally & Kennedy 2013: 250). See Miller (2014: 69–70) for an analysis of *over-* and *under-* as word-internal degree morphemes.

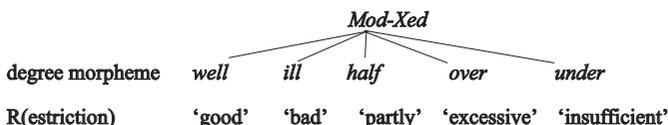


Figure 1  
*Mod-Xed* construction in English (R is stated very roughly).

- (7) (a) well-boned  
       bony  
 (b) well-branched (= (4a, b))  
       branchy  
 (c) well-curved  
       curvy  
 (d) well-headed  
       heady  
 (e) well-legged (= (5a, b))  
       leggy  
 (f) well-priced  
       pricey  
 (g) well-witted  
       witty

Another striking thing about (7) is that propriative adjectives of the form *Xy* have their degrees fixed without any overt degree morpheme such as *well*. This is most clearly illustrated by (7e–f). Why can *pricey* mean ‘expensive’ or ‘high-priced’ in an unmodified form, when *well-priced* ‘cheap’ depends on *well* in modulating the degree of *priced*? Also, why can *leggy* mean ‘long-legged’ without any overt degree morpheme? The simplest hypothesis is that *Xy* adjectives lexically contain a covert degree modifier. Anticipating the upcoming discussion, suppose that *Xy* covertly contains yet another degree modifier *much* ‘greater than (an average) by a large amount’ (Kennedy & McNally 2005: 372–375). In *much-deserved rest*, for example, *much* modulates the degree of *deserved* to be appropriately large. If *pricey* contains this modifier covertly (i.e. MUCH), then we can explain its ‘high-priced’ meaning as a result of the setting of the priced-ness degree as appropriately large. The dictionary meanings of *branchy* and *leggy* cited in (4b) and (5b) suggest the same. Thus, *branchy* ‘full of branches’ can be seen as a reading from ‘greatly exceeding an average on the scale associated with having a branch or branches’.

In deverbal adjectivalization also, adjectives of the form *Xed* occur with modifiers in Figure 1, as in (8a)–(10a), but the counterparts of the form *Xy* occur without such a modifier (8b)–(10b).

- (8) (a) well-cut, half-cut, overcut  
 (b) cutty ‘so abnormally short as to appear to have been cut’

- (9) (a) well-washed, half-washed, over-washed  
 (b) washy ‘too much diluted’
- (10) (a) overstretched; half-cracked (*Merriam-Webster’s Dictionary*)  
 (b) stretchy ‘elastic’; cracky ‘somewhat cracked in intellect’

Again, the formal contrast between (a) and (b) and the semantics of (b) suggest that the latter, unmodified *Xy* adjectives lexically contain a covert degree modifier.

In the following pairs, *Xed* is deverbal, while *Xy* is denominal, according to the etymology of the *OED Online*:

- (11) (a) well-curved  
 (b) curly ‘having a lot of curls’
- (12) (a) well-dressed, ill-dressed, overdressed, underdressed  
 (b) dressy (words) ‘excessively elaborate; ostentatious’
- (13) (a) well-stuffed, overstuffed, understuffed  
 (b) stuffy ‘ill-ventilated’
- (14) (a) well-tasted, ill-tasted  
 (b) tasty ‘pleasing to the taste; appetizing, savory’
- (15) (a) well-squared  
 (b) squary ‘squarish’

The existence of these categorially mixed pairs is understandable if the distribution between *-ed* and *-y* is purely semantic.

In the next section, we consider why *Xed* accepts *well* while *Xy* does not and show that the contrast comes from the scalarity difference between the two adjectivalizers: *-ed* derives closed-scale adjectives, while *-y* derives open-scale adjectives. This will be our fundamental answer to the research question raised by (1), but in Section 3, we further probe into the open-scaledness of adjectives of the form *Xy*. In Section 4, we observe that deverbal *Ved/Vy* doublets are not so common as denominal *Ned/Ny* doublets and argue that the fact is related to an independently motivated principle of verb semantics. Section 5 summarizes our findings and clarifies future tasks.

## 2. SCALE TYPES OF DERIVED ADJECTIVES

### 2.1 *Affixal rivalry between -y and -ed*

Bauer, Lieber & Plag’s (2013: 305) corpus-based study describes *-y* as among the most productive suffixes of contemporary English, but, thus far, no major theoretical analysis has been proposed in the literature about this suffix.<sup>4</sup> My observations to be presented greatly benefit from Fradin’s (2007, 2017) research on the French

[4] Beard (1995: 220–227), Hamawand (2007), Bauer et al. (2013: Chapter 14), and Sánchez Fajardo (2020) each contain semantic observations on *-y*, but none of them notes the morphological doublet formation.

Base	Constraint	Derived adjective + head noun relationship	Examples (taken from Fradin 2007)
Abstract Nouns	—	causal	<i>attente peureuse</i> 'fearful expectation' < <i>peur</i> 'fear'
Concrete Nouns	the Natural Origin constraint (*)	spatial	<i>ciel nuageux</i> 'cloudy sky' < <i>nuage</i> 'cloud'
		similarity	<i>champignon laiteux</i> 'milky mushroom' < <i>lait</i> 'milk'

Table 1

Classification of French *-eux* adjectives; (\*) To be introduced below and spelled out in (53).

adjectivalizer *-eux*. The English suffix *-y* exhibits a surprising similarity to *-eux* in the denominal usage. As summarized in Table 1, French denominal adjectives suffixed with *-eux* consist of two major groups in terms of base selection, one group derived from abstract nouns and the other group from concrete nouns; and the latter further divides into two types based on the semantic relationship between the derived adjective and the head noun. In addition to this classification, Fradin (2007, 2017) shows that the derivation from concrete nouns is subject to a semantic constraint, which we call the Natural Origin constraint and introduce later in this section.

In Table 1, the Concrete Noun Base region is important for us.<sup>5</sup> English *-y* adjectives are also rich in the types based on concrete nouns, expressing either of the two relationships with respect to the head noun. Proprietary *-y* adjectives (already introduced in Section 1) correspond to the *ciel nuageux* type in Table 1, whereas simulative *-y* adjectives (see Section 3.3) correspond to the *champignon laiteux* type. While *-eux* and *-y* clearly differ in the possibility of deverbal adjectivalization (see Section 5), it seems safe to say that they share certain fundamental characters.

If so, Fradin's (2007: 24n9) remark should also be relevant for *-y*:

A more thorough study of the suffixation by *-EUX* would require examining at least two other denominal suffixations, namely the one by *-É* (*étoilé* 'starred' < *étoile* 'star') and the one by *-U* (*joufflu* 'chubby-cheeked' < *joue* 'cheek').

We apply this paradigmatic perspective to English. Indeed, everyday body-part nouns in English produce doublets ending in *-y* and *-ed*, as in (16a). In addition, nouns denoting inanimate objects' parts (16b) and dimensions (16c) also generate such doublet adjectives.

[5] In Table 1, we simplified the adjectivalization from abstract nouns because it is not addressed in this paper. See Fradin (2007: 18–21) for French and Nagano (2021) for English. The latter study shows that *-y* is largely preempted by *-ful* in this region.

- (16) (a) *From body-part nouns*
- |           |          |
|-----------|----------|
| boned     | bony     |
| brained   | brainy   |
| cheeked   | cheeky   |
| feathered | feathery |
| handed    | handy    |
| headed    | heady    |
| hipped    | hippy    |
| legged    | leggy    |
| mouthed   | mouthy   |
| nosed     | nosy     |
| skinned   | skinny   |
| thumbed   | thumby   |
| toothed   | toothy   |
| winged    | wingy    |
- (b) *From object-part nouns*
- |          |         |
|----------|---------|
| edged    | edgy    |
| lofted   | lofty   |
| roofed   | roofoy  |
| roomed   | roomy   |
| windowed | windowy |
- (c) *From dimension nouns*<sup>6</sup>
- |          |         |
|----------|---------|
| colored  | colory  |
| mooded   | moody   |
| priced   | pricey  |
| shaped   | shapely |
| tasted   | tasty   |
| tempered | tempery |
| witted   | witty   |

As we observed in Section 1, the *Ned* type in (16) usually accompanies a modifier. The modifier's variety indicates that *-ed* attaches to two different levels of nouns in Acquaviva's (2016) structural analysis: (i) Number Phrase (*many-legged, three-legged*) and (ii) Division Phrase (*well-legged, a left-handed batsman*). In (ii), the unmodified *Ned* carry a non-individuated sense of the noun, unlike the counterpart in (i). In our lexicalist approach, we assume that Acquaviva's Division-Phrase level correspond to noun lexeme. This is our target type, and '*Ned*' in this paper refers to it.

Proceeding, similar doublets are widely observable WHEN DERIVED ADJECTIVES OBSERVE THE NATURAL ORIGIN CONSTRAINT: 'the relationship between the HdN's (head noun) referent and the BseN's (base noun) referent must have a natural origin' (Fradin

[6] Two notes are in order on the listed items. First, all *-ed* adjectives have denominal uses according to the *OED Online*, although *colored* and *shaped* can also be deverbal. Second, *shapely* is exceptional in using the suffix *-ly* rather than *-y*.

2007: 22). Denominal adjectives from part and dimension nouns such as (16) clearly observe this constraint because the base nouns refer to an inherent part/dimension of the head noun referent. As a second instantiation, consider the following doublets:

- |      |     |                    |               |
|------|-----|--------------------|---------------|
| (17) | (a) | curved             | curvy         |
|      |     | fished (lake ...)  | fishy         |
|      |     | leaved             | leafy         |
|      |     | rocked             | rocky         |
|      |     | sanded (shore ...) | sandy         |
|      |     | stoned             | stony         |
|      |     | wooded             | woody, woodsy |
|      | (b) | aired              | airy          |
|      |     | clouded            | cloudy        |
|      |     | iced               | icy           |
|      |     | misted             | misty         |
|      |     | snowed             | snowy         |
|      |     | sunned             | sunny         |

These adjectives all express topographical or mereological existence of the base referent and thus describe naturally occurring phenomena. For example, in *clouded sky conditions*, the relationship between clouds and sky is a natural occurrence. Since weather verbs such as *to cloud* are non-agentive, the natural relation between the cloud and sky is easy to understand, but caution should be taken in that causative verbs can yield an *-ed* adjective whose semantic relationship to its head noun is internal in the sense of Fradin (2007: 12). Examples include:

- |      |     |         |        |
|------|-----|---------|--------|
| (18) | (a) | dressed | dressy |
|      | (b) | oiled   | oily   |
|      | (c) | spiced  | spicy  |
|      | (d) | sugared | sugary |

In (18), denominal verbs of the locatum- or goal-types (Clark & Clark 1979) give rise to resultant-state passive participial adjectives (Kratzer 2000) that are semantically devoid of causality and purely express possession. Such *-ed* adjectives often have a semantically closely related *-y* counterpart.

In brief, *Xed* and *Xy* adjectives are similar in observing the Natural Origin constraint. We return to it in Sections 3.3 and 4. Meanwhile, the morphological doublets exhibit systematic differences also. The most important difference is what we observed in Section 1. *Xed* adjectives are overtly degree-modified by *well* or other similar items in Figure 1, while *Xy* adjectives do not take them.

Second, *Xed* and *Xy* adjectives differ in the compatibility with *very*:

- |      |     |                      |             |
|------|-----|----------------------|-------------|
| (19) | (a) | ??very dressed       | very dressy |
|      | (b) | ??very fished (lake) | very fishy  |
|      | (c) | ??very (left-)handed | very handy  |

Fradin also observes that *-eux* adjectives accept *très* (Doetjes 2008: 134–138), as follows (Fradin 2007: 4):

- (20) *C'est un champignon très laiteux.*  
'It's a very milky mushroom.'

A third difference is the existence of a morphological antonym. *Xed* has an antonym sharing the same base and marked with *-less* or *un-*, as in *legged: legless* and *dressed: undressed*. However, it is hard to find such an antonym for the *Xy* type.

These differences can be explained if we assume that the affixal rivalry between *-ed* and *-y* is resolved along the output adjective's scale type. Below, we first show that *Xed* adjectives are closed-scale adjectives, while *Xy* adjectives are open-scale adjectives (Section 2.2). Then, we proceed to the overt and covert degree modification (Section 2.3).

## 2.2 Examining the scale type

Kennedy & McNally (2005) assert that gradable adjectives display a four-way typology of scale structure: (i) TOTALLY OPEN SCALES, (ii) LOWER CLOSED SCALES with minimum values, (iii) UPPER CLOSED SCALES with maximum values, and (iv) TOTALLY CLOSED SCALES with minimum and maximum values. Relative adjectives possessing (i) use a contextually determined relative standard to determine the semantic interpretation of their unmodified positive form, whereas absolute adjectives possessing one of (ii–iv) do not. When the latter take an unmodified form, their standard of comparison defaults to the minimum or maximum value specified on their scale. Since totally closed scales contain both minimum and maximum values, adjectives possessing this type of scale behave either as minimal standard or maximal standard adjectives.

Kennedy & McNally (2005) use several tests to prove the presence or absence of scalar endpoints. For example, maximality modifiers such as *completely* and *fully* are compatible with adjectives that have a scale with the upper endpoint (Kennedy & McNally 2005: 352–355). If both an adjective and its antonym shun this type of modification, as in (21a), they are associated with a totally open scale. If both accept it, as in (21b), they are associated with a totally closed scale (Doetjes 2008: 150).

- (21) (a) ??Her brother is completely tall/short.  
(b) The door is completely open/closed.

The scale is partially closed (ii or iii) if only one member of an antonymic pair accepts maximality modification. Expressions whose scale is closed only at the lower endpoint are incompatible with a maximality modifier themselves, but their antonyms should accept it. If so, the following data suggest that the antonymic pairs in (22a–b) and (22c–d) have lower closed scales, respectively (Kennedy & McNally 2005: 355; Doetjes 2008: 150):

- (22) (a) ??The pipe is fully bent/curved/crooked.  
 (b) The pipe is fully straight.  
 (c) ??That author is completely famous.  
 (d) That author is completely unknown.

In (22), the minimum values of the said scales are employed as the standard of comparison.

Turning to our data, whether denominal or deverbal, *-ed* adjectives have a lower closed scale.<sup>7-8</sup> First, consider the following deverbal examples (Kennedy & McNally 2005: 347):

- (23) (a) unacquainted, unprotected, undocumented, uneducated  
 (b) unneeded, uncriticized, unpraised, unappreciated

In (23), we see *un-* prefixation to the form *Ved*, an indication that the prefixless *Ved* is an adjective. As for the scalarity, Kennedy & McNally (2005: 365) observe that ‘all deverbal [-*ed*] adjectives prefixed with *un-*, which reverses the polarity of the adjectival scale, accept modification by endpoint-oriented modifiers such as *completely*’. Since *un-* reverses the polarity of the adjectival scale, this observation means that the prefixless *-ed* adjectives have a scale that is closed at least at the lower endpoint.

As noted in Section 2.1, proprietive *-ed* adjectives also have a morphological antonym derived by *-less* or *un-*, as in:

- (24) (a) clouded/cloudless/unclouded  
 (b) dressed/undressed  
 (c) legged/legless

Each negative antonym naturally accepts maximality modification, as in *completely cloudless*, *totally unclouded*, and *completely undressed*. Therefore, the scale structure of proprietive *-ed* adjectives is closed (at least) at the lower endpoint.

In contrast, *-y* adjectives have a totally open scale. First, *-y* adjectives do not accept maximality modifiers, as indicated by ??*completely dressy*, ??*completely cloudy*, ??*completely leggy*.<sup>9</sup> Since many do not have an antonym, the maximality test cannot be employed to check for the presence of an endpoint at the opposite end of the scale.<sup>10</sup> However, the entailment test (Kennedy & McNally

[7] Causative psychological predicates behave differently. Additionally, in this paper, we do not concern ourselves with the issue of whether *-ed* adjectives have an upper endpoint also.

[8] Deverbal *-ed* and denominal *-ed* are etymologically related (Marchand 1969: 264), but their synchronic commonality has not been seriously investigated. Bauer & Huddleston (2002: 1709) observe that *Ned* and *Ved* exhibit the identical phonological alternation between /id/, /ʌ/, and /d/, although the /id/ variant ‘occurs exceptionally in a handful of lexicalized words (*crooked*, *dogged*, *ragged*, *wicked*, *wretched*) and in forms containing *legged* (e.g. *three-legged*, though /legd/ is an alternative pronunciation)’.

[9] The question marks for the maximality reading of *completely*, excluding its emphatic reading.

[10] When an *-y* adjective has a morphological antonym, our analysis predicts that both shun maximality modification. This seems to be correct with the pair *tasty/untasty*.

2005: 358–359) confirms that *-y* adjectives have a totally open scale. Adjectives with a totally open scale use a relative standard, so the truth conditions for *tall*, for example, entail only that the degree of height it attributes to its holder falls above a contextually determined standard of comparison. Hence, the denial *x is not tall* should not entail that *x* possesses no amount of height at all. At the same time, an assertion of *x is tall* should not entail that nothing can be taller than *x*. Hence, there are no contradictions in the following sentences (Kennedy & McNally 2005: 359):

- (25) (a) Sam is not tall, but his height is normal for his age.  
 (b) That film is interesting, but it could be more interesting.

When this test is applied, *-y* adjectives behave in the same way, as follows:

- (26) (a) The sky is not cloudy, but we see some clouds there.  
 (b) The sky is cloudy, but the weather report says that it will be cloudier in the afternoon.

Since *Xed* and *Xy* adjectives differ in the scale type, they differ in the compatibility with *very*, as observed in (19). As widely assumed in the literature (Doetjes 2008), the modification by *very* is a hallmark of totally open-scale adjectives. Compare (27) with (28) ((28a–b) from Kennedy & McNally (2005: 370); (28c–d) from (19)).

- (27) (a) Sam is very tall.  
 (b) That film is very interesting.  
 (c) That person is very handy.  
 (d) That person is very dressy.  
 (28) (a) ??I always leave the door to my office very open.  
 (b) ??That drug is currently very available.  
 (c) ??That person is very (left-)handed.  
 (d) ??That person is very dressed.

Based on the above data, we conclude that *Xed* and *Xy* adjectives have closed and totally open scales, respectively.

## 2.3 Degree modification

### 2.3.1 Overt degree modifiers

Moving on to the issue of degree modification, Kennedy & McNally (2005) argue that deverbal closed-scale *Ved* adjectives are degree-modified either by *well* or *much* (Kennedy & McNally 2005: 345):

- (29) (a) Martin Beck was (well) acquainted with the facts of the case.  
 (b) Their vacation was (much) needed.

According to their analysis, *well* is a degree morpheme that combines with a closed-scale gradable predicate. Based on the evaluative scale of goodness, *well-Xed* composite measures ‘the goodness of the event that is related to the degree to which the subject has the property named by the adjective’ (Kennedy & McNally 2005: 377). For example, in (29a), *well* positively evaluates the degree to which Martin becomes acquainted with the facts.

The closed scalarity of *Xed* is not the only restriction for *well* modification. Thus, *well* allows both a degree modifier reading and a manner adverb reading in (30a), but only a manner reading in examples like (30b) (McNally & Kennedy 2013: 247–248, hyphens added).

- (30) (a) a well-loaded packing box  
           a well-documented case  
       (b) well-loaded hay  
           a well-written paper

This suggests another restriction for the degree reading of *well*: it should occur with a minimal standard *-ed* adjective, i.e. *-ed* adjective whose standard is at the bottom of its scale (McNally & Kennedy 2013: 251). The *-ed* adjectives in (30b) employ maximal standards because they crucially involve incremental theme arguments.

Proceeding to (29b), *much* as a degree morpheme also combines with closed-scale minimal standard adjectives. In particular, the denotation of *much* in (31) contains the restriction  $d >!! \mathbf{min}(S_G)$ , which says that the degree of a gradable adjective  $G$  is greater by a large amount than the minimum value of its scale ( $\mathbf{min}(S_G)$ ) (Kennedy & McNally 2005: 373).

- (31)  $[[\text{much}]] = \lambda G \lambda x. \exists d [d >!! \mathbf{min}(S_G) \wedge G(d)(x)]$

For example, in (29b), the unmodified *needed* contains  $\mathbf{min}(S_{\text{needed}})$ , which is equal to the minimum portion of the relevant event that is large enough to support the statement  $x$  needs  $y$ . Hence, it can be an input to the modification by *much*.

Now, the selectional properties of *well* and *much* summarized above predict that denominal propriative *-ed* adjectives are also compatible with these degree modifiers because they have a lower closed scale (Section 2.1) and thus behave as minimal standard adjectives.

First, in Section 1, we saw that the said prediction is borne out with respect to *well*. See the data in (4)–(7). In some cases, the goodness of *Ned* adjectives implies a high degree of  $N$ 's quantity. Thus, a *well-brained vertebrate* refers to a vertebrate possessing intelligence to the amount that counts as good. In others, the goodness scale within *well* evaluates a non-quantitative dimension of  $N$ . Thus, *well-branched* in (32a) is concerned with  $N$ 's quantity, but (32b) employs a qualitative dimension of measurement.

- (32) (a) In the midst of the fruit trees, and towering high above them, was an oak, **well-branched** and leafy. (‘having many branches’)

- (b) When you're buying bare-root stock or balled-and-burlapped trees, be sure to select a **well-branched** specimen. ('having a pleasing arrangement of branches')

### 2.3.2 Covert degree modification

Proceeding to *much*, the predicted *much-Ned* construction, such as *much-branched* or *much-brained*, seems very marginal. However, this apparent problem disappears once we assume that the semantic function of *much* in (31) is cumulatively expressed by the suffix *-y*. A CUMULATIVE EXPRESSION (also called FUSION) is 'the expression of multiple morphological meanings simultaneously by a single un-analyzable element' (Haspelmath & Sims 2010: 324). That is, we do not have overtly modified adjectives such as *much-branched* or *much-brained* most probably because cumulative expressions such as *branchy* and *brainy* BLOCK (Aronoff 1976, 2021) them.

If *Xy* adjectives lexically contains the function of (31), their open-scaledness naturally follows. Here, it is important to notice that (actually-occurring) *much-Ved* composites exhibit totally open scales. Thus, while unmodified *Ved* adjectives are incompatible with *very*, as in (33a), *much*-modified counterparts accept it (33b).

- (33) (a) \*very needed (rain)  
(b) very much needed (rain)

This fact is explained as follows. Example (33a) is ungrammatical because *very* is sensitive to a relative standard (Section 2.2), which *-ed* adjectives do not have (except those derived from causative psychological predicates and lexicalized examples such as *dogged*). Example (33b) is grammatical due to the relative standard introduced by the function in (31), i.e. 'greater than by a large amount'. As a result of applying this function, *much-Ved* composites obtain a relative standard and become compatible with *very* (see also Kennedy & McNally 2005: 373n21). The totally open scalarity of *-y* adjectives can be explained following the same logic, if the suffix cumulatively expresses the function in (31).

## 2.4 Summary

This section introduced a new set of data into the study of affixal rivalry and showed that they can fill in the missing gap observed in (1). The rival adjectivalizers *-ed* and *-y* are differentiated purely semantically in terms of the scale type of the derived adjective. Whether deverbal or denominal, *Xed* adjectives are degree-modified by *well* because they are closed-scale adjectives. In contrast, *Xy* adjectives do not accept *well* because they are totally open-scale adjectives. We also argued that *Xy* contains a covert degree modifier and that it leads to the totally open-scale structure of this form and the marginality of *much-Ned* constructions.

## 3. DEGREE MEASUREMENT

3.1 *Observations*

Let us consider the issue of MEASUREMENT DIMENSION. For example, *long* can be used in two ways as a measure of temporal or linear extent. Similarly, in the *much-Ved* composite, the dimension is indeterminate. Consider the following examples (Kennedy & McNally 2005: 364, hyphens added):

- (34) (a) a much-admired statesman  
 (b) much-needed rain  
 (c) a much-regretted action  
 (d) a much-praised piece of work  
 (e) a much-looked-for treasure  
 (f) a much-talked-about program

Kennedy & McNally (2005: 364–365) observe that most of the *much-Ved* composites can be paraphrased as *Ved for a long time*, but the temporal duration is not the only way to gauge admiration, need, regret, etc. Thus, *much admired* (34a) is also paraphrasable as *admired by many people*, in which case each admiration could be short. Further, it can mean the intensity of one person's admiration toward the subject of the adjective. Therefore, we observe that in Japanese, *much* in (34) is translated by several lexical adverbs catering to different dimensions, such as *nagaku* 'long', *hiroku* 'widely', and *hukaku* 'deeply'.

As predicted from our analysis, dimensional indeterminacy also holds for -y adjectives. First, let us consider the measurement dimension with *windowy* in (16b). Witness the following example:

- (35) She paints in a huge, sunny, **windowy** room.

In (35), the proprietive reading of the derived adjective is based on a number-based scale, expressing 'having more windows than the standard degree'.

However, unlike the number of windows of a room, the number of body parts does not vary. For example, the number of legs of a human body is universally the same: two. In such a case, number-based measurement is not meaningful. As predicted, when *leggy* is used to describe a person or a plant, it is usually interpreted in the sense of *long-legged*:

- (36) (a) a **leggy** Qazaq youth riding one wild-eyed pony and leading another  
 (b) Pansies became **leggy** and were attacked by slugs.

Like *window*, *leg* is a count noun, which explains why it yields an -ed adjective that is modifiable by a quantifier, as in *three-legged* and *many-legged*. However, *leggy* does not exhibit a number-based scale because 'having more legs than the standard degree' is virtually impossible due to our world knowledge about human bodies and

pansies. Instead, *leggy* employs an amount-based scale, and its ‘long-legged’ sense comes from ‘having a larger amount of leg than the standard’.

This analysis applies not only to *leggy* but also to other -y adjectives in (16a). Consider why *brainy* ‘clever, intelligent’, *handy* ‘dexterous’, and *nosy* ‘inquisitive, prying’ express such senses, as illustrated below.

- (37) (a) So I invited all of the **brainy** gentlemen I could think up.  
 (b) He’s very **handy** – he is a bit of an electrician and plumber, and also knows his way around auto engines.  
 (c) I’m **nosy** and I like to see what people have been up to.

Significantly, in (37a), *brainy* is based on mass plural *brains* ‘one’s intellectual capacity’. The degree of ‘having brains’ in this sense can be meaningfully specified as ‘greater than the standard by a large amount’ by (31), unlike the universally same degree of ‘having a brain’. The same applies to (37b, c) because the bases of *handy* and *nosy* do not refer to physical, atomic body parts either.

Next, consider an example from (16c):

- (38) Meat has become a very **pricey** business for most households.

Again, a number-based interpretation is very difficult because each selling article is attached with only one price. Rather, what can be meaningfully degree-specified by the function in (31) is a degree on the amount dimension inherent in *price*. In lexical semantics, *price* is defined as ‘the amount of money expected, required, or given in payment for something’. If the adjective in (38) uses this base lexical information for degree measurement, together with (31), its ‘high-priced’ reading ensues.

Ambiguity can be explained in a similar way. *Toothy* differs slightly from the items discussed above in that the standard number of human or animal teeth is not so obvious. Biologically speaking, there should be a standard number for each species, but such knowledge is not as common or obvious as knowledge about the number of human eyes or legs. Moreover, animal species may be compared to human beings in the number of teeth, while such a comparison would be unrealistic concerning the number of eyes, a head, or a brain. As a result, *toothy* is ambiguous between amount-based and number-based proprietives. Being predicated of an animal or a person, it expresses ‘having NUMEROUS, LARGE OR PROMINENT teeth’:

- (39) **toothy** wolves in lambswool                      amount- or number-based

In fact, *leggy* is also ambiguous. When it is predicated of an animal whose leg count is unidentified, it may employ a number-based scale:

- (40) Wild scorpions are the most **leggy**, hairy, fangy, scabbly creatures you could ever hope not to find in your desert tent.

3.2 MUCH *in the lexicon*

How can we explain the observations in the previous section?

In Section 2.3, we introduced MUCH (Wellwood 2019) in the lexicon.<sup>11</sup> This analysis faces a challenge about MUCH's argument selection. A predicate is measurable if its domain has a non-trivial structure and is non-measurable otherwise (Wellwood 2019: 6). Thus, in syntax, mass NPs and plural count NPs can be measured by MUCH (41a, b), but singular count NPs cannot (41c) (Wellwood 2019: 99–100).

- (41) (a) Al drank {**more/as much**} coffee.  
 (b) Al had {**more/as many**} ideas.  
 (c) \*Sue has **more idea** than Al does.

Wellwood, Hacquard & Pancheva (2012) observe a similar contrast between atelic and progressive/imperfective/habitual predicates (which are measurable) and perfective telic predicates (which are non-measurable).

What does this mean for the degree measurement in the lexicon? Lexical derivation and compounding do not involve grammatical plural or aspectual morphology. As pointed out by Borer (2005: 133), the first item of the compound *flea-infested* cannot take the plural form (*\*fleas-infested*) but receives a generic plural interpretation. A single flea does not represent an infestation. Lexemes underlying -y adjectives can also be interpreted as semantically plural even though they are not morphologically plural-marked. To examine this issue, we look at Wellwood et al. (2012) and Acquaviva (2016) in this order.

Discussing nominal and verbal comparatives, Wellwood et al. (2012) argue that the presence or absence of number or aspectual morphology correlates with the variability of the measurement dimension. As first observed by Bale & Barner (2009), in nominal comparatives, when MUCH takes a plural-marked NP as its argument, the measurement dimension is in terms of cardinality only. (This generalization excludes lexical plurals; see below.) Thus, (42) is compared in terms of the number of servings or kinds or of some other individuated quantity (Wellwood et al. 2012: 212).

- (42) Mary brought **more** waters than coffees.

In contrast, when MUCH takes non-plural-marked NPs, the measurement dimension is variable, and it is determined by the properties of the nominal predicate. Usually, such comparatives are evaluated in terms of portions of matter measured by volume or weight, as in (43) (Wellwood et al. 2012: 212).

- (43) **More** beer than wine was drunk.

[11] Strictly speaking, Wellwood's (2019) MUCH is a general-purpose measure function, so we need to assume that the suffix -y introduces MUCH plus the degree modifier function in (31).

However, when comparatives are based on *luggage* and *furniture*, as below, what is compared is typically the number of individuals satisfying each NP's description (Wellwood et al. 2012: 212).

(44) Mary has **more** luggage than furniture.

Examples (42–44) suggest that ‘the absence of plural morphology underdetermines the scale, so that it is idiosyncratic to the NP’s “lexical” properties’ (Wellwood et al. 2012: 212). What needs to be clarified here are the contents of the NP’s ‘lexical properties’ that are supposed to distinguish (43) from (44). Following Borer’s (2005) non-lexicalist exoskeletal approach, Acquaviva (2016) examines *furniture* and other fake mass nouns and proposes a derivation involving functional head Div(ision). Div divides the set of sums denoted by a mass predicate into a set of mutually disjointed elements. Acquaviva (2016: 223) states:

the elements of Div are individuals in the sense that they are cut up in a determined way ... but not in the sense that they are atoms in any sense. The elements of a partition are not necessarily similar to each other in size, or based on a uniform criterion.

Thus, *furniture* differs from *beer/wine* in the positive function of Div in their underlying structures; the former, but not the latter, refers to an aggregate of non-uniform individuals (chairs, desks, tables, etc.), which results from Div’s partitioning function. However, ‘[t]he partition introduced by Div is a necessary but not sufficient condition for countability’ (Acquaviva 2016: 223). Hence, *furniture* is uncountable and rejects *-s*. Nouns such as *table* are countable because their semantics are not only partitioned into individuals but also contain a specific criterion for atomicity: ‘the domain of its denotation is partitioned into stable atoms, each of which is named as a table-entity’ (Acquaviva 2016: 223). Although Acquaviva (2016) does not discuss the contrast between (42) and (43), we assume the following line of thought: Beverage nouns are ambiguous between atomic and non-atomic readings, with the atomic nouns corresponding to the reading containing a piece of world knowledge about how the beverage is served.

Adopting the above analysis of *furniture*, we assume that MUCH is sensitive to the lexical semantic property [ $\pm$ Div] of its argument when it is not plural marked. We also assume the significance of the property [ $\pm$ animate] based on the work of Corbett (2000). Then, as predicted from the lack of grammatical plural morphology, *-y* adjectives are under the influence of these lexical properties. Concretely, such adjectives exhibit amount-based or number-based scales, depending on the base noun’s [Div] and [animate] properties. First, let us consider the case when the base noun is [-animate, -Div], as in the following:

- (45) base noun [-animate, -Div]  
 (a) rusty, sandy, watery  
 (b) greedy, guilty, healthy, hungry

The proprietive reading ‘having more {rust .../greed ...} than the standard degree’ is based on the amount scale, just as we saw for the measurement in (43). The examples we saw in (36)–(38) belong to this type.

Next, the base noun is of type [-animate, +Div] below.

- (46) base noun: [-animate, +Div]  
 (a) gemmy ‘abounding in gems’  
     jointy ‘having numerous joints’  
 (b) moony ‘moon-shaped, stupidly dreaming’  
     churchy ‘exceedingly pious’

In (46a), MUCH inside the -y adjectives use the same type of scale as employed for (44). As a result, they express a proprietive reading that involves an aggregate of small objects. The number-based readings we observed in (35) and (39)–(40) belong to this case.

The items in (46b) seem limited to SIMILATIVE readings because the base denotes something unique (*moon*) or very large (*church*). The proprietive/similative polysemy is discussed in the next section.

Base nouns of type [+animate, +Div] are interesting in that animals are quantity-measured in the semantics of the -y adjective. Therefore, as in (47a), animal-based adjectives allow a proprietive reading.

- (47) base noun: [+animate, +Div]  
 (a) mousy ‘infected with mice’  
     horsy ‘addicted to horses’  
 (b) matey ‘sociable’  
     actressy

We assume that the sense ‘infected with mice’ of *mousy* is a variant of ‘having more mice than the standard degree’, and the sense ‘addicted to horses’ of *horsy* is a variant of ‘having more horses than the standard degree’. Human-based adjectives, however, are usually limited to similative readings. The items in (47b) do not have a proprietive reading comparable to those found in (47a).

Before closing this section, let us consider the following colloquial examples where -y attaches to -s marked nouns:

- (48) (a) sudsy ‘full of soap-suds’  
 (b) gutsy ‘possessing or requiring guts’  
     cf. gutty  
 (c) nutsy ‘mad, crazy’  
     cf. nutty  
 (d) rootsy ‘of music, characteristic of folk or blues traditions’  
     cf. rooty ‘full of roots’

- (e) woody ‘characteristic of the woods’  
cf. woody
- (f) tricky ‘full of tricks; playful’  
cf. tricky
- (g) outdoorsy ‘fond of an outdoor life’
- (h) antsy ‘agitated, restless’
- (i) booksy ‘characterized by an interest in books or literature’  
cf. booky

Those cited as ‘cf.’ do not contain *-s* and may or may not be a near-synonym to the one containing *-s*.<sup>12</sup>

Despite the appearance, (48) does not involve the Number-Phrase level because except for (48h–i), all the underlying *-s* forms are lexical plurals (Acquaviva 2008; Gardelle 2019). In fact, the bases in (48a–g), *suds*, *guts*, *nuts*, *roots*, *woods*, *tricks*, and *(the) outdoors* are all used as independent lexemes (rather than word-forms) with their own semantics and grammar. Lexeme-creating *-s* is not a marker of atomicity-based plurality (‘many a one’), but can be seen as a marker of property partitioning. That is, the *-s* marked bases in (48) are morphologically complex [+Div] lexemes.

For (48h), *ants* does not seem to have lexical plural use, but significantly, *antsy* is based on the following IDIOM involving a plural-marked form:

- (49) have ants in one’s pants ‘be restless’

Being a possessive construction, this idiom makes perfect sense as a base of a proprietive adjective.

In brief, proprietive adjectives use amount- or number-based scales depending on the lexical semantics of the base noun. Crucially, this observation is consistent with what has been noted with nominal comparatives based on non-plural-marked NPs.

### 3.3 Proprietary/simulative polysemy

As discussed by Beard (1995: 219–227), proprietive adjectives, whose base noun is the possessee with respect to the head noun, and simulative adjectives, which express ‘similar to the base noun’, are cross-linguistically the most productive and widely distributed semantic types of denominal gradable adjectives. In Section 2.1, we observed this point among French *-eux* adjectives based on concrete nouns, which consist of the *ciel nuageux* type (proprietary) and the *champignon laiteux* type (simulative) (see Table 1).

[12] The *OED* cites *teethy* ‘touchy, peevish’, where the suffix is attached to an irregular plural. In the standard language, *toothy* is common.

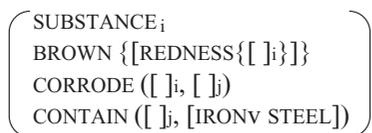
Often, a particular adjective is polysemous with the two readings; thus, *rusty* can be proprietive (50a) or similitive (50b).<sup>13,14</sup>

- (50) (a) **rusty** knife            Proprietive
- (b) **rusty** hair             Similitive

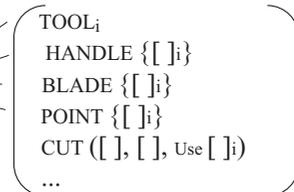
Using a lexical semantic decomposition that is reminiscent of today’s more familiar qualia structure (Pustejovsky 1995), Beard analyzes the polysemy as follows (Beard 1995: 224–225):

(51) rusty knife

(a) rust

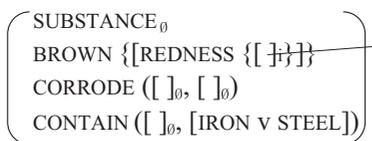


(b) knife

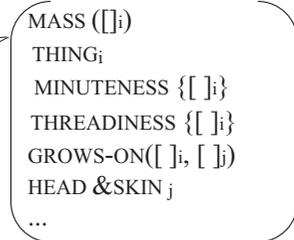


(52) rusty hair

(a) rust



(b) hair



First, (51a) and (52a) represent the extensive and intensive readings of *rust*, respectively. As indicated in (51b) and (52b), the derived adjective’s prenominal modification is done differently based on the compatibility of the semantics of *rust* and the head noun. Details aside, the proprietive reading in (50a) arises when the R-representation of *rust* as a whole combines with any of the semantic features of

[13] The usage in (i) is basically proprietive but very close to the other use.

(i) My tennis is very rusty these days

[14] In English, *-rich* and *-like* do not show this common polysemy, with the former being uniquely proprietive (e.g. *oil-rich*) and the latter being uniquely similitive (e.g. *cat-like*). This is related to the fact that *-rich* and *-like* each originate from a lexical adjective denoting the sense in question.

the head noun, as indicated by the connecting lines in (51). However, the similitive reading in (50b) is explained as a case in which *rust*'s semantic feature BROWN combines with the R-representation of the head noun, as depicted in (52).

In our view, this line of analysis leaves the role of the adjectivalizing suffix totally unclear and does not explain what makes the two ways of composition possible. Instead, suppose that our analysis of *-y* is correct. Then, given the context sensitivity of MUCH, the derivative is polysemous because MUCH picks a suitable dimension of measurement so that the following semantic constraint introduced in Section 2.1 (Fradin 2007: 22) is satisfied:

- (53) The relationship between the HdN [head noun]'s referent and the BseN [base noun]'s referent must have a natural origin: it must not result from a human intervention.

Fradin (2007) proposes this constraint for French *-eux* adjectives produced from concrete nouns. Significantly, all English denominal adjectives examined thus far also follow this constraint, whether the suffix is *-ed* or *-y*. A proprietive reading of *N<sub>y</sub>* results when MUCH picks a quantitative dimension (such as volume, weight, number, etc.). In contrast, a similitive reading of *N<sub>y</sub>* is obtained when MUCH picks a qualitative dimension (such as color, taste, texture, form, manner, etc.) to maintain the natural PART-WHOLE relationship between the base and the head.

Specifically, in (50a), the base noun *rust* (*w*) is a natural occurrence in the head noun *knife* (*z*), and its volume is measured by MUCH. After the degree argument of MUCH ( $w = d$ ) is supplied by (31), the value is ascribed to *z* because *w* is part of *z*. As a result, the denominal adjective denotes that the head noun has the base noun as an inherent part, and its volume exceeds the standard volume. Next, similitive readings may arise from the same process. In (50b), the measure function gauges the state of the color BROWN and returns a degree argument. Such a qualitative scale is employed so that the intrinsic relationship between the base and head nouns suggested in (53) is maintained. The rest is the same as what we said above about (50a).

#### 4. DOUBLE-LAYERED SEMANTIC DIFFERENTIATION

*X<sub>y</sub>* adjectives we discussed so far are denominal ones. In this section, we address deverbal data.

##### 4.1 Observations

Since MUCH is cross-categorially available (Doetjes 2008; Wellwood et al. 2012; Wellwood 2019), our analysis correctly predicts that *-y* produces not only denominal but also deverbal open-scale adjectives. However, a closer observation reveals that *N<sub>y</sub>* and *V<sub>y</sub>* adjectives are not completely parallel in their BASE SELECTION. As we observed in Sections 1 and 2, there are many *Ned/N<sub>y</sub>* doublets, that is, the suffixes may attach to identical base nouns. However, *Ved/V<sub>y</sub>* doublets, such as (8)–(10), are

very limited in number. In fact, more productive types of *V<sub>y</sub>* adjectives are based on the verb types which are complementary to the verb types selected by *-ed*.

To be specific, it is widely agreed that productive *-ed* adjectives are based on verbs whose lexical semantics contain a result component (Gehrke 2012); see *-ed* adjectives based on change of state verbs and incremental theme verbs in (29)–(30). Incremental theme verbs such as *to load* and *to write* do not possess a result component themselves, but their internal argument introduces it, so strictly speaking, we should say that *-ed* adjectives are based on result verbs or result verb phrases. Such RESULT VERBS (Rappaport Hovav & Levin 2010) are not productive inputs to *-y*, so we do not find *V<sub>y</sub>* adjectives such as *\*acquainty*. Rather, the majority of *V<sub>y</sub>* come from non-result verbs. Particularly profitable for *-y* are VERBS OF BODY-INTERNAL MOTION and VERBS OF EMISSION. The first class includes verbs describing movements of particular body parts (Levin & Rappaport Hovav 1995: 226):

- (54) *Verbs of body-internal motion*  
 fidget, flap, flutter, gyrate, jiggle, pivot, rock, squirm, stir, sway, totter,  
 twitch, wave, wiggle, wobble, wriggle, etc.

The second class consists of verbs that describe ‘non-voluntary emission of stimuli that impinges on the senses’ (Perlmutter 1978: 163) and take the stimulus emitter as the subject (Levin & Rappaport Hovav 1995: 91):

- (55) *Emission verbs*  
 (a) *Sound*  
 bubble, buzz, clang, crackle, hoot, hum, jingle, moan, ring, roar, whir,  
 whistle, etc.  
 (b) *Light*  
 flash, flicker, gleam, glitter, shimmer, shine, sparkle, twinkle, etc.  
 (c) *Smell*  
 reek, smell, stink  
 (d) *Substance*  
 bubble, gush, ooze, puff, spew, spout, squirt, etc.

Neither (54) nor (55) are result verbs. Levin & Rappaport Hovav (1995) observe certain syntactic behaviors shared by these verb classes, such as generally unergative properties and participation in locative inversion. However, they miss the morphological fact that both are highly prolific of *-y* adjectives. As shown in (56) and (57) in bold, almost all verbs in (54)–(55) have the adjectivalized form in the *OED Online*.

- (56) *Body-internal motion*  
**fidgety, flappy, fluttery, jiggly, rocky, squirmy, tottery, twitchy, wavy,**  
**wiggly, wobbly, wriggly;** gyrate,<sup>15</sup> pivot, stir, sway

[15] Lacking the derived adjective most likely because *gyrate* itself has an adjectival usage.

- (57) (a) *Sound*  
**bubbly, buzzy, crackly, jingly, moany, ringy, roary, whirry, whistly**; clang, hoot, hum
- (b) *Light*  
**flashy, flickery, gleamy, glittery, shimmery, shiny, sparkly, twinkly**
- (c) *Smell*  
**reeky, smelly, stinky**
- (d) *Substance*  
**bubbly, gushy, oozy, puffy, spewy, spouty, squirty**<sup>16</sup>

In addition to the lack of a result component, the verb classes in (54)–(55) share the lack of a volitional agent. Thematically, the subject of verbs of body-internal motion is the Experiencer, and the emitter subject of emission verbs is the Causer (see Potashnik 2012 for details). In our view, this is one reason for their productivity with *-y*: non-agentive verbs can easily satisfy the constraint in (53), read with ‘BseV’ instead of ‘BseN’, when they adjectivalize. Verbs of sound and light emission may occur with an agentive subject, as in *The postman buzzed the doorbell/We shone the flashlight* (Levin & Rappaport Hovav 1995: 115), but more fundamental is the usage taking a stimulus-emitter subject, as in *The doorbell buzzed/The flashlight shone* (see Potashnik 2012; Rappaport Hovav & Levin 2012: 170–172; Isono 2013: chs 5, 6).

As evidence for the totally open-scale structure, deverbal *-y* adjectives can be naturally modified by *very*:

- (58) (a) Their marriage was **very rocky** from the start.  
 (b) A **very buzzy** bar in Kyoto

To summarize the observed tendency, *-ed* produces closed-scale adjectives from result verbs, whereas *-y* produces totally open-scale adjectives from non-agentive non-result verbs. In principle, the semantic resolution of affixal rivalry can take place at the base and/or derivative level(s). Thus, according to Aronoff & Cho (2001), *-ship* is semantically differentiated from *-dom* and *-hood* in its base selection, as suggested in (1). However, the rivalry between *-less* and *-free* (Aronoff 2020) are resolved in the semantico-pragmatics of their derived adjectives (see Section 1). What we saw above is the third case because *-ed* and *-y* attaching to verbs are doubly differentiated, both at the base and derivative levels. This is why *Ved/Vy* doublets are limited in number. A question is, why the rival affixes are distributed this way when deverbal?

#### 4.2 *Verbs specifying scalar and non-scalar changes*

The above observations suggest that the rival suffixes are sensitive to the MANNER/RESULT COMPLEMENTARITY, according to which ‘[m]anner and result meaning

[16] Cited from *Merriam-Webster's Dictionary*

components are in complementary distribution: a verb lexicalizes only one' (Levin & Rappaport Hovav 2013: 50). According to Rappaport Hovav & Levin (2010: 28), 'all result roots specify scalar changes, while all manner roots specify non-scalar changes'. If so, it is expected that result verbs, but not manner verbs, produce gradable adjectives using their inherent scalarity. Below, we discuss this possibility based on Kennedy (2012).

A representative type of result verb is change of state verbs such as *to widen*, *to warm* and *to heat*. First, let us observe that such verbs produce *-ed* adjectives, as in *well-warmed soup* and *well-heated room*. Kennedy (2012: 107) demonstrates that this type of verb specifies a scalar change using various data, including:

- (59) (a) The canyon widened for/??in one million years.  
 (b) The canyon widened 30 kilometers in/??for one million years.

In (59), *widen* is morphologically derived from totally open-scale adjective *wide*, and *30 kilometers* is a measure phrase. Example (59a) is atelic because the verb possesses a scale directly mapped from the totally open scale associated with the base adjective (Kennedy 2012: 109); in contrast, (59b) is telic because the measure phrase adds a bound to the verb's scale. Concerning the scale-to-scale mapping in deadjectival verbalization, Kennedy develops a hypothesis that the base adjective's measure function is converted into a MEASURE OF CHANGE function. While a regular measure function measures a degree in the absolute term, a measure of change function provides differential measure. Thus, the measure phrase in (59b) does not indicate that the canyon became 30 km wide; rather it indicates that the difference between the degree to which the canyon manifests width at the beginning and end of the event is 30 km.

The analysis above crucially depends on the morphological relationship between *wide* and *widen* (A > V derivation). Then, if the 'conversion' between measure function and measure of change function is not limited to this case, as argued by Kennedy, it is natural to assume that the morphological relationship between result verbs (or result verb phrases) and *-ed* adjectives involve the same functional conversion working in the opposite direction: measure of change function (associated with *to warm*, *to heat*, and *to load hay*) converted into measure function (associated with *(well-)warmed*, *(well-)heated*, *(well-)loaded*). This line of thought brings us to a deeper question about the source of the measure function of derived gradable adjectives in general. A default position would be to assume that the adjectivalizing suffix introduces a general purpose or parameterized measure function of the sort discussed by Wellwood (2019). In Section 3, we tacitly employed this assumption, using her concept of MUCH (see Note 11). Maintaining this position, we further posit that the parameterized measure function introduced by *-ed* should be substantiated in such a way to align itself with the measure of change function found in the host result verb (or verb phrase). In contrast, *-y* is exempt from this constraint. This idea, while awaiting further articulation, can explain the observations in Section 4.1. That is, in the deverbal domain, the rival suffixes are distributed in the way they are

because *-ed*, but not *-y*, is subject to a constraint that refers to the scalarity inherent in the host verb.

#### 4.3 Deriving *-y* adjectives from non-result verbs

In this section, we clarify how deverbal *-y* adjectives are derived from verbs expressing non-scalar changes.

##### 4.3.1 Manner verbs

Manner verbs are adjectivalized by *-y* rather than *-ed*, as evidenced by (54) > (56). Verbs of bodily movement are characterized by a semantic component that ascribes a particular manner to the core motion event. Concretely, in the framework taken by Rappaport Hovav & Levin (2010) and Levin & Rappaport Hovav (2013), the lexical conceptual structure (LCS) of manner verbs integrates the manner as a MODIFIER of a core predicate (Rappaport Hovav & Levin 2010: 25); thus, the verbs in (54) share the following LCS (and differ from one another in the manner contents):

(60) [x MOVE<sub><manner></sub>]

Based on this LCS, the derivation from *rock* to *rocky* (58a) proceeds as follows:

(61) (a) Base            *rock*: [x MOVE<sub><rocking manner></sub>]  
           ↓  
       (b) Adjective      *rocky*: [y BE<sub><rocking manner></sub>]

Example (61) depicts a derivational process in which transposition (Beard 1995) changes MOVE to BE, while MUCH selects the shaded manner component as the measurand. The resulting adjective *rocky* and similar formations in (56) express the conspicuous manifestation of the manner in question by the subject or head noun referent.

In English, there are many ambiguous manners of motion verbs that exhibit usages with or without a volitional agent (Levin & Rappaport Hovav 1995), such as:

- (62) bounce, creep, float, jump, run, shake, swim, swing, twist, etc.
- (a) *Agentive*  
 She **jumped** into the water to save them.  
 Can you **run** as fast as Mike?
- (b) *Nonagentive*  
 Her heart **jumped** when she heard the news.  
 Water was **running** all over the bathroom floor.

These verbs are useful to test our analysis. As predicted from what we said so far, they undergo *-y* adjectivalization:

(63) bouncy, creepy, floaty, jumpy, runny, shaky, swimmy, swingy, twisty, etc.

Furthermore, they do so with non-agentive usage – let us recall (53). Compare:

- (64) (a) The (**\*very**) **jumping boy** is my cousin.  
 (b) The (**very**) **jumpy boy** is my cousin.

The participial prenominal modifier in (64a) is agentive and does not accept the modification by *very* (Meltzer-Asscher 2010: 2216, 2233). In contrast, (64b) accepts *very* and is totally independent of the notion of agency; the -y adjective merely expresses the conspicuous manifestation of the manner lexicalized in the base verb. This is further confirmed by the way *runny* and *swimmy* are used:

- (65) (a) A '**runny**' jelly is very difficult to manipulate.  
 (b) Karajan 1972 was altogether more passionate ... but the recording was **swimmy**.

In both sentences, the -y adjectives are linked with a non-agentive entity and ascribe to it only the manner component within the base verb.

#### 4.3.2 Emission verbs

Parallel to the proprietive/simulative polysemy of denominal adjectivalization, (56) and (57) differ from each other in the dimension of measurement tracked by MUCH. Providing in-depth analyses of emission verbs, Isono (2013) and Fleischhauer & Neisani (2020) suggest that the emitted substance is integrated as a constant argument within the verb semantics. Thus, in the following decomposition of German *bluten* 'bleed' (Fleischhauer & Neisani 2020: 72), the emittee argument (y) is existentially bound and is specified as being blood:

- (66) [[bluten]]  
 =  $\lambda x \lambda e \exists y$  (emit (e)  $\wedge$  EMITTER (e) = x  $\wedge$  EMITTEE (e) = y  $\wedge$  blood (y))

We propose that emission verbs produce -y adjectives such as (57) via the same operation that Fradin (2007: 17–18) proposes for denominal proprietive -*eux* adjectives such as:

- (67) *ciel nuageux* 'cloudy sky' = 'clouds (Figure) [are] in [the] sky (Ground)'

In (67), the spatial coexistence between the base (*nuage*) and the head noun (*ciel*) is an instance of a naturally occurring linkage required by (53). Formally, it is captured by the rule in (68a) involving spatial localization. Example (68b) illustrates how it works for (67) (Fradin 2007: 18; a slight adjustment in (68b)).

- (68) (a) loc (y, **P**(x)) loc = localization, **P** = spatial prep.  
 (b) loc (y, **in**(x))  $\wedge$  **cloud** (y) 'cloud is localized in x'

Turning to our case, *-y* adjectives from emission verbs are also linked to an NP that is thematically the Ground and express that it is filled with the emitted stimulus. For example, consider *buzzy* derived from *to buzz*:

- (69) (a) New York was **buzzy** with parties.  
 (b) a very **buzzy** bar (= (58b))

We propose that the operation in (68a) is applied to a base semantic representation equivalent to (66) and binds the emittee constant within, such as *buzz*, as the Figure argument (*y* in (68a)). Then, the localization function links it to the adjective's subject or head noun which acts as the Ground (*x* in (68a)). Crucially, in this process, *MUCH* selects the same emittee constant as its measurand and gives rise to the 'filled with buzz' sense. Since the measurement dimension is the amount of buzz, this type is parallel to denominal propriative *-y* adjectives.

#### 4.4 Summary

For our major concerns in (1), it seems safe to conclude that in the deverbal usage, *-ed* and *-y* are doubly differentiated. That is, semantically, these rival affixes differ not only in the output scale type, but also in the input base selection. Primarily, *-ed* base-selects result verbs, and *-y* non-agentive manner and emission verbs. This is why doublets in the forms *Ved/Vy* are much less frequent than doublets in the forms *Ned/Ny*. Also, the base-level differentiation is far from random; rather, it is done aligned with the independently motivated lexical semantic principle of the manner/result complementarity.

### 5. CONCLUSION

To summarize this paper, we set (1) as our research question within the research paradigm of affixal rivalry and closely examined the competition between *-ed* and *-y*. Compared with the privative pair *-less* and *-free* studied by Aronoff (2020), the propriative pair has the advantage of enabling us to examine semantic differentiation cross-categorially. Indeed, we found that whether denominal or deverbal, *-ed* and *-y* are purely semantically differentiated in terms of the scale type of the derived adjective. Also, we found that the rival affixes base-select semantically complementary types of verbs.

The findings of this paper provide fruitful inputs to more formal semantic analyses. In particular, scale structures of derived adjectives are worthy of in-depth research. Syntactically inclined researchers would be interested in how high in a multi-layered structure of the base item each affix can be attached to. In a non-lexicalist view, *legged* in *well-legged* would be produced at the Division-Phrase level while *legged* in *many-legged* at the Number-Phrase level. Such analyses are in fact popular when dealing with multi-faceted deverbal participial adjectives.

Constraint	Base category	Derivative type	-eux	-y
the Natural Origin constraint	Concrete N	proprietary simulative	✓ ✓	✓ ✓
	V	see §4.3	rare	✓

Table 2

Summary of the French–English comparison in this paper.

In our own research paradigm, the findings can be tested using various data and methods suggested by Aronoff (2020) for the *-less/-free* pair. Also, considering the breadth of Lieber's (2016) study of English nominalization and how intricately a multitude of nominalizing suffixes are interrelated with one another and live side by side in their ecological niches, we can proceed to the ecology of various adjectivalizing suffixes in the future study.

We believe that this paper successfully broadened the research perspective by examining the target affix cross-linguistically (Renner & Nagano 2019). While awaiting an in-depth cross-linguistic comparison, it seems safe to say that the English *Ny* and French *Neux* adjectives are basically similar. In Section 2.1 (see Table 1), we observed their similarity in the base/derivative types and, in Section 3.3, we further saw that they obey the same semantic constraint shown in (53). The summary of comparison is shown in Table 2.

However, *-eux* also raises a serious challenge for our analysis. Although it predicts the existence of *Veux* as the counterpart of *Vy*, this prediction is not empirically borne out. According to Fradin (2007: 3–4), *-eux* does not attach to any eventive verb.<sup>17</sup> Why is *-eux* limited to denominal adjectivalization? We leave this question for future research.<sup>18</sup>

[17] There are a few examples from psychological verbs:

- (i) *fâcheux* < *fâcher*
- (ii) *ennuyeux* < *ennuyer*
- (iii) *oublieux* < *oublier*

However, even in this base domain, deverbal *-eux* adjectivalization is rare (Kentarō Koga, pers. comm.).

[18] One possibility in Aronoff's (2019, 2021) theory is that morphological competition is a local phenomenon; as such, different scenarios among different languages should be expected. In particular, the way a competition is resolved deeply depends on the resources available to do so, among other things. In the history of English, *Vy* developed later than *Ny* (Marchand 1969). The encroachment of *-y* into eventive verbal domains was possible because English, being a satellite-framed language (Talmy 1985, 2000), possesses a wealth of manner verbs. It is also very rich in emission verbs. Crucially, French is a verb-framed language in this typology.

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