A canonical typology of flexible categories

Daniel W. Hieber

Abstract

This paper presents an approach to flexible categories in the framework of Canonical Typology, a methodology which first defines the canonical instance of a phenomenon, then reasons through the logically possible dimensions along which languages might deviate from the canonical type, before classifying languages along these dimensions. The result is a typology that, rather than providing a binary response to questions like, ‘does this language have flexible categories?’ or ‘does this language have a noun class?’, instead assesses the degree to which languages approach or diverge from the canonically flexible type along each dimension, thereby avoiding a polarization among discussants, and providing a more precise framework for the study of lexical flexibility and parts of speech generally. Specifically, this paper refines Hengeveld’s concept of flexible categories in a way that is consistent with the rigorous criteria set out by Croft (2001) and Evans and Osada (2005a) in order for a part of speech to be considered flexible. It then provides ten criteria by which a lexical category may be considered either more or less canonically flexible, and shows how the canonical approach is useful in resolving previous impasses in the literature on parts of speech.

Keywords: Canonical Typology, flexible categories, lexical flexibility, lexical categories, parts of speech, rigid categories, word classes, lexeme

# Introduction

Linguistic categorization is the oldest, thorniest issue in linguistics: What parts of speech are there? Do they exist for every language? Are parts of speech language-specific or language-universal? Can languages lack certain parts of speech?

The method of answering these questions in classical antiquity, adopted by Dionysius Thrax in his *Τέχνη Γραμματική / Tékhnē Grammatiké (‘The Art of Grammar’)*, was to borrow Aristotle’s concept of necessary and sufficient conditions to analyze parts of speech in Greek. In the resulting methodology, “sets of linguistic objects are neatly partitioned on the basis of similarities,” (Van der Auwera & Gast 2011: 170), yielding the eight traditional parts of speech still handed down today: Noun, Verb, Participle, Article, Pronoun, Preposition, Adverb, and Conjunction.[[1]](#footnote-1) These categories were applied indiscriminately to the world’s languages with little or no revision until the advent of anthropological linguistics in the United States in the early 20th Century, when Boas (1911, 1922, 1933) and Sapir (1921) demonstrated the great crosslinguistic diversity that exists for parts of speech.

This increased attention to categorical diversity did not, unfortunately, signal an end to the Aristotelian method of classification, but merely made the task more difficult. With such extensive crosslinguistic variety in parts of speech now apparent, it was impossible to pinpoint the necessary and sufficient properties of a category that accurately encompassed the range of its diversity, as Geeraerts explains:

[T]he flexibility that is inherent in the absence of clear boundaries prevents the formulation of an essence that is common to all the members of the category. Because peripheral members may not be identical with central cases but may only share some characteristics with them, it is difficult to define a set of attributes that is common to all members of a category and that is sufficient to distinguish that category from all others. (Geeraerts 2006 [1989]: 149)

In response to this problem, in the mid-1970s there arose alternative, gradient approaches to lexical categorization (Geeraerts 2006 [1989]; Hopper & Thompson 1984; Lakoff 1987; Rosch 1973a, 1973b, 1975a, 1975b, 1975c; Ross 1987). Eleanor Rosch in particular brought the influential prototype theory to prominence, on the idea that categories circumscribe particularly salient exemplars known as prototypes. Prototype theory replaces the “featural definitions” of the Aristotelian method (i.e. listing the attributes of a category) with the idea that “there need not be a single set of defining attributes that conform to the necessity-cum-sufficiency requirement.” (Geeraerts 2006 [1989]: 142). It provides a clear contrast to Aristotelian and even Boasian methods in that it took the gradience of the data seriously. Geeraerts (2006 [1989]: 144) calls this “perhaps the single most appealing characteristic of prototype theory: here at last is a descriptive approach to lexical meaning in which our pretheoretical intuitions about gradedness, fuzziness, flexibility, clustering of senses etc. receive due attention.”

Despite these advances, and despite the recent resurgence of prototype theory and multidimensional approaches to lexical categorization (Anward, Moravcsik, & Stassen 1997; Croft 1991, 2001, 2003, 2007; Croft & Cruse 2004; Francis & Matthews 2005; Spencer 2005), typologists still commonly seek to separate lexemes into neatly-bounded categories, debating *ad naseum* what the precise necessary and sufficient properties are for each category. One type of debate recurs with particular frequency:

The debate revolves around whether a given language exhibits a particular part of speech (typically adjectives), or distinguishes between two particular parts of speech (often nouns and verbs).[[2]](#footnote-2) These debates proceed as follows: one researcher notices strong similarities in a language between lexical categories which are typically distinct in classical parts-of-speech typology, and suggests that no such distinction is necessary for the language; another researcher subsequently uncovers subtle evidence in favor of making the distinction, and declares that the category must be distinguished, sometimes generalizing the claim to all languages (e.g., Dixon 2004, 2010a); discussants disagree as to whether these criteria are relevant or significant, take up opposing sides, and no further progress is made. Recent examples of such discussions include the debate regarding the Noun-Verb distinction in Mundari (Stassen 1997; Rijkhoff 2003; Evans & Osada 2005a, 2005b; Hengeveld & Rijkhoff 2005; Peterson 2005; Croft 2005; Dixon 2010b), or the existence of Adjectives in Quechua (Schachter & Shopen 2007; Hengeveld & Valstar 2010; Floyd 2011), or likewise Adjectives in Northern Iroquoian (Dixon 1977, 2010a; Chafe 2012).

Typologists should not be satisfied with the inconclusiveness of these debates. In each case, there are two positions for a contributor to take: that the category under consideration can be distinguished as a separate lexical category, or that it cannot. This type of rigid approach to classification, that requires sorting lexemes into neat categories, fails to capture the gradient nature of the data, and forces researchers to adopt polarized positions, rather than to explore the theoretically interesting middle ground and ask why categories in some languages behave so remarkably alike while in others they share almost no commonalities. Gradient or multidimensional approaches to categorization have the potential to capture these important insights.

The Mundari debate is somewhat novel in that Hengeveld’s (1992) notion of flexible categories features prominently. A flexible category according to Hengeveld is one whose members can fill multiple syntactic slots (head of predicate phrase, head of referential phrase, modifier of head of referential phrase, and modifier of head of predicate phrase) indiscriminately, so that these syntactic functions form a single unified category within the language (Hengeveld 1992; Rijkhoff 2007, 2008; Rijkhoff & Van Lier). At particular issue in the debate are cases like *buru* and *jom* in the examples in (1).

1. Mundari (Munda, Austroasiatic: India)
   1. buru=ko bai‑ke‑d‑a.

mountain=3pl.sbj make‑compl‑tr‑ind

‘They made the mountain.’

* 1. saan=ko buru‑ke‑d‑a.

firewood=3pl.sbj “mountain”‑compl‑tr‑ind[[3]](#footnote-3)

‘They heaped up the firewood.’

* 1. maNDi=ko jom‑ke‑d‑a.

food=3pl.sbj eat-compl-tr‑ind

‘They ate the food.’

* 1. jom=ko nam‑ke‑d‑a.

“eat”=3pl.sbj get-compl‑tr‑ind

‘They got the food.’ (Evans & Osada 2005a: 354–355)

Under Hengeveld’s flexible category analysis, *buru* and *jom* are unspecified for part of speech. Both words are members of a single, flexible category (termed contentive by Hengeveld) that covers both the syntactic slot for referents (as in [a] and [c]) and predicates ([b] and [d]) without distinction. For Evans and Osada, the examples in (1) are a case of zero-conversion between two distinct categories, Noun and Verb. They base this distinction not on the data in (1), where no such distinction presents itself, but on evidence from elsewhere in the language. Hengeveld and Rijkhoff consider this other evidence too marginal to merit differentiating separate parts of speech, and the debate comes to an impasse.

Perhaps the reason that the notion of flexible categories has reignited these debates is because it is a first, particularly sophisticated formulation of the theoretical position of those who might be termed “categorical doubters” (those who, in such debates, argue for the non-existence/distinction of a certain category in a language) in positive rather than negative terms. That is, the concept flexible categories provides a robust schema for describing parts of speech in languages where certain lexical categories are denied to exist, transforming categorical doubter’s position from a negative theory into a fully-formed positive competing analysis. Thus the categorical doubter who denies the existence of Adjectives in Quechua can now posit the existence of a single, flexible Noun-Adjective category (what Hengeveld calls non-verbs) instead, ranging over the syntactic functions of head of referential phrase and modifier of head of referential phrase.

However, the notion of lexical flexibility as formulated by Hengeveld is not without its deficiencies. Hengeveld’s approach is unique in attempting to capture the gradient nature of the data while retaining the traditional featural approach to classification. That is, for Hengeveld a lexeme still falls neatly into one category or another according to its syntactic distribution; the novel contribution is that these categories may be either rigid or flexible. According to this schema, lexemes in Quechua must be members of either the Verb category or the Non-Verb category, with no intermediate possibility. This ironically rigid classification of lexemes into flexible categories therefore leaves Hengeveld’s approach open to the same criticisms that cognitive linguistics directs against Aristotelian methods. Indeed, Croft (2001) provides precisely this critique. These cracks in the definition of lexical flexibility are unfortunate because the idea, if formulated correctly, has the potential to capture our intuitions about what *does* unify the lexemes in a seemingly flexible category, if anything. If lexical flexibility is defined gradiently, however, so that particular lexemes or categories are seen as *more or less* flexible without running afoul of the critiques mentioned above, then this conception can break the “definitional logjams” (to borrow a favorite phrase from Corbett) that have riddled recent debates.

What, then, are the principles and criteria by which we could identify a flexible category in a given language in the first place? Evans and Osada (2005a: 352) attempt to answer this question by presenting “a typology of ways in which languages may blur the distinction between the major word classes of nouns and verbs,” and suggest four criteria which a category should have to meet if it is to be deemed lexically flexible. Unsurprisingly, given that they assume the answer to be binary, no language is found to have a flexible Noun-Verb class according to their criteria, since no language ever perfectly instantiates all four criteria. While their criteria are important and will be adopted here, a better model of lexical flexibility assesses categories by the *degree* to which they meet each criteria. In short, a gradient and multidimensional approach to lexical flexibility is needed.

The canonical approach to typology (Corbett 2004; Brown, Chumakina, & Corbett 2013) is ideally suited for providing this type of framework. Canonical Typology was developed by Greville G. Corbett as a method for doing typology that “allows the linguist to handle gradient phenomena in a principled way.” (Corbett 2007a: 9). It has since been utilized by a variety of researchers in analyzing gradient or epiphenomenal features (Baerman, Brown, & Corbett 2005; Comrie 2003; Evans 2003; Hyman 2009; Mithun 2000; Nikolaeva & Spencer, n.d.; Polinsky 2003; Spencer 2005; and the collection of papers in Brown, Chumakina, & Corbett 2013), as well as grammatical descriptions of particular languages (Paciaroni 2012; Palancar 2012).[[4]](#footnote-4) Though a full characterization of the method will be given in Section 2, the canonical approach can be described briefly as follows: The method first defines the canonical instance of a phenomenon, and then outlines the theoretically possible ways in which a language might stray from this definition along various dimensions. Only after establishing the theoretically possible ways a language might deviate from the canonical does one look at individual languages to see how this theoretical space is populated. For each instance of the phenomenon, one can then determine how far it is from the canonical point, in terms of the number and degree of the dimensions of divergence, and categorize its particular type of deviation.

This paper therefore seeks to refine the notion of lexical flexibility through the framework of Canonical Typology, and to apply this concept to the task of resolving the recent debates on categorization. In particular, the focus here is on flexible lexical categories, rather than functional ones. To preview the definition, a rigid lexical category may be defined as a class of lexemes in a particular language that map uniquely to one set of properties or functions, and whose properties do not overlap with that of any other lexeme classes. Put differently, the canonically rigid word class is one where, no matter which properties are used as the basis for categorization, the same lexemes are picked out. By contrast, when different schemas for partitioning the lexicon yield different results, a category exhibits lexical flexibility. A flexible lexical category, therefore, is one that has overlap of properties between categories. Members of a perfectly flexible word class may fulfill any of the functions of traditional word classes – noun, verb, adjective, adverb, etc. This definition captures the intuition behind Hengeveld’s notion of lexical flexibility, but is novel in that it does not depend on Aristotelian classification methods. A fuller and more precise treatment will be given in Section 3.4.

After revising Hengeveld’s notion of lexical flexibility, this paper then examines ten ways (criteria, dimensions) by which a lexical category might be considered either more or less flexible. Strongly rigid and strongly flexible examples are provided for each criterion. While these criteria tend to covary considerably, most are logically independent of one another. The resulting typology allows linguists to say that a given category is flexible according to one criterion, rigid according to another, but when taken in aggregate is more flexible rather than less (or vice versa). The practical effect of this position is to ease the tension between the categorical doubters and the Aristotelians and provide a fertile middle ground for empirical investigation. The broader theoretical implication is to suggest that parts of speech are better viewed as epiphenomenal, consisting of a variety of intersecting properties, rather than simply featural. Finally, this paper also serves as an introduction to the method of Canonical Typology, showcasing its potential utility for other kinds of typological investigation.

The paper is organized as follows: Section 2 outlines the canonical approach to typology, explaining its key concepts and clarifying the congruities and differences between it and prototype theory. Section 3 lays the theoretical framework necessary for a revised definition of lexical flexibility. Section 3.1 distinguishes between language-specific categories and crosslinguistic comparative concepts. Section 3.2 presents the definition of the lexeme adopted here, a crucial preliminary on which the entire idea of lexical flexibility hinges. Section 3.3 formalizes the nature of the classical categorization method, and summarizes Croft’s (2001) critique of this methodology, which the definition of lexical flexibility must be able to address if it is to be of any use. Section 3.4 sketches out Hengeveld’s parts-of-speech typology along with his definition of lexical flexibility, notes its shortcomings based on the critiques in Sections 3.1 and 3.3, and revises the concept accordingly. Having provided a more sound definition of lexical flexibility, Section 4 then examines the variety of ways flexibility is realized (or not realized) in the world’s languages. Ten criteria for assessing lexical flexibility are presented, each followed by examples from particular languages illustrating how particular categories in these languages fall on different points along the continuum from most flexible to most rigid. Section 5 concludes by applying these criteria to the debate over Mundari and assessing its lexical flexibility, thereby illustrating how the canonical approach to flexible categories breaks the gridlock in these debates, and sets the stage for a more nuanced analysis of the theoretically fascinating, fuzzy areas between categories.

# Canonical Typology

## Why Canonical Typology?

The canonical approach to typology has been developed extensively by Corbett (2003; 2004; 2006) to address a perceived gap in typological studies:

As one way forward I suggest a ‘canonical’ approach. This approach sidesteps two potential dangers in typology, namely ‘premature statistics’ and ‘not comparing like with like’. The first danger is that something which is frequently found may be treated as uninteresting, whereas there are linguistic phenomena which are common yet which, I believe, should surprise us. The second danger is that we fail to take sufficient care over our terminology and so do not see that phenomena labeled identically are in fact distinct (conversely we miss identities because of different traditions of labeling). (Corbett 2004: 25)

Corbett (2007a) shows how the canonical method addresses these problems. There, Corbett provides a typology of suppletion, which is often seen as a rather uninteresting and standard type of inflection – a quirk of diachrony. He demonstrates, however, that the range and complexity of the phenomenon is much greater than is typically assumed, by highlighting its fuzzy cases and interaction with other phenomenon. The result is a clear set of criteria for delineating suppletion from other morphological processes, and a survey of some remarkable ways suppletion interacts with these phenomena.

An additional merit of the Canonical method is that it allows one to conduct their typologies at a fine-grained level. For example, in Corbett’s (2006) monograph on agreement, rather than simply lumping various types of agreement into several large classes like subject agreement or noun-adjective agreement (‘concord’), he examines the various criteria which determine how agreement is realized across languages (their controllers, targets, domains, features, and conditions). This makes it possible to classify agreement systems according to each of these criteria independently, and therefore make more nuanced distinctions. It also allows for a more detailed focus on specific criteria in future research, without having to treat the entire system of agreement at once.

Similar benefits result from the present study. Rather than partitioning the lexicon into large parts-of-speech classes and glossing over the interesting boundary cases or categorical overlap, a canonical typology makes it possible to examine the variety of features which interact to produce these categories.

## Key concepts in Canonical Typology

The defining feature of the Canonical approach is the notion of canonicity: the canonical instance of a phenomenon is one which is easily recognizable and readily agreed-upon as being an instance of that phenomenon. As Corbett explains:

The canonical instances are simply those that match the canon: they are the best, the clearest, the indisputable ones. Given that they have to match up to a logically determined standard, they are unlikely to be frequent. They are likely to be rare, and may even be non-existent. This is not an issue. The convergence of criteria fixes a canonical point from which the phenomena actually found can be calibrated. We may then go on to an investigation of the distribution of canonical and less canonical phenomena in terms of their frequency. (Corbett 2013: 48)

The canonical type is a useful construct because its properties are easy to identify. For example, Nouns in English such as *cat* or *piano* tend to have plural forms (*cats*, *pianos*) and tend to resist use in predication (*\*He catted the carpet*; *\*I piano that song every Tuesday*). As we begin to relax one or more of these criteria, however, the judgement becomes less clear: is *running* in the sentence *I like running* a noun or something else? It fills a syntactic slot associated with canonical English Nouns, but does not have a plural form (*\*I like runnings*) and it can be used for predication (*I am running*). Plural marking and non-predicative use are thus two of the criteria that constitute a canonical English Noun. Rather than making endless attempts at classification and subclassification, and thus running aground of Croft’s (2001) critique of the distributional approach to lexical categories, the canonical approach merely notes that English Nouns which lack plural marking are less canonical than Nouns which do not.

This approach rescues the intuition that speakers have that ‘English Noun’ is a salient category, without making any claim as to its linguistic reality. Instead English Nouns should be seen as a purely epiphenomenal category, an abstraction away from various overlapping constructions. Croft, to a certain degree, anticipates this position himself:

“syntactic categories are derivative of – in fact epiphenomenal to – the representation of grammatical knowledge. […] Categories can also be defined cross-constructionally, as the class of fillers that has an identical distribution across the relevant roles for all constructions of the language, or at least some specified set of constructions in the language.” (Croft 2001: 46)

Canonical Typology can therefore be seen as a feature-clustering approach to typology, where the canonical instance of a phenomenon is perceived as canonical precisely because a variety of features converge on that point. The fewer of these properties a particular construction exhibits (or the less strongly it exhibits them), the less canonical an instance of the phenomenon it is. In Canonical Typology, these various dimensions along which canonical properties can vary are termed criteria.

Criteria usually range along a continuum, where canonical cases of the phenomenon under study lie on one end, and noncanonical instances on the other. Figure 1 utilizes a visual metaphor to illustrate this. In this figure, the canonical point is where all the criteria associated with a linguistic phenomenon “intersect”. The result of this approach is that canonical instances of a phenomenon are all canonical in the same way – they all share extremely similar features and function alike – but noncanonical instances of a phenomenon can be noncanonical in a variety of ways – they can deviate along any one of these “dimensions” or criteria.

Figure 1. *Conceptualizing the canonical point*

From an ontological perspective, the canonical point is somewhat of an arbitrary choice. Its important function is to provide a starting point for comparison and classification, or as one of the endpoints on a continuum. Canonical Typology does not make claims as to the ontological significance of the canonical point. That is, the canonical point is not necessarily something that has a real status in the grammar of the language or the minds of its speakers. This should hardly be surprising since the canonical point is epiphenomenal, emergent from a variety of converging properties. It is the criteria which compose the canonical point that have substance and status in the grammar of the language.

Another useful metaphor for understanding Canonical Typology is the idea of creating a framework or ‘grid’ on which to situate the variations on the phenomenon we are interested in. The problem is not too different from the attempt to establish universal reference points for mapping locations on the globe. There is nothing ontologically significant about most longitude lines on a map. They don’t correspond to any natural geographic features of the earth, and yet we all accept them as canonical and conventional reference points, and we can plot our relative distance from them. At the same time, latitude lines (as opposed to longitude) do have ontological significance in that they reference the poles and the equator. But even these points are not precise lines in the earth’s crust. They are much like canonical points: we all recognize canonical instances of equatorial and polar regions, but the boundaries are fuzzy. What this metaphor shows is that, while it is certainly useful and preferred to identify a canonical point which aligns with some ontologically significant aspect of a speaker’s competence, it is not necessary that this be the case for a canonical typology to be possible.

Another useful feature of the canonical approach to typology is that it often allows one to define not just one, but two opposing canonical points from which to measure. In the present case, the two opposing points are canonical rigid and flexible categories, respectively. These canonical points can be viewed as two endpoints on a continuum, but this view is overly simplistic, because phenomena in languages can deviate from the canonical point along a number of different dimensions, not just the single plane between canonical points A and B. Thus Figure 2 is a useful visual metaphor for conceptualizing the phenomenon under investigation here.

*Canonical flexible categories*

*Canonical rigid categories*

Figure 2. *The continuum of flexibility*

Incidentally, Velupillai adopts the same approach in her discussion of ‘category overlap’ in Nuuchahnulth and Mwotlap, utilizing a visual metaphor remarkably similar to that in Figure 2 (hers is shown in Figure 3). Her analysis is implicitly canonical: “One might think of it as a continuum on a scale between the two ends in [Figure 3], where on the one end of the scale there is very little overlap between the characteristics of nouns and verbs, such as in English, and on the other end there is a lot of – but not complete – overlap between the characteristics of nouns and verbs, such as in Nuuchahnulth or Mwotlap.” (Velupillai 2012: 125–126).

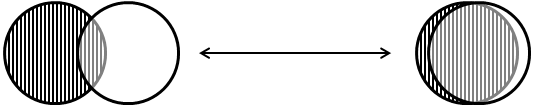
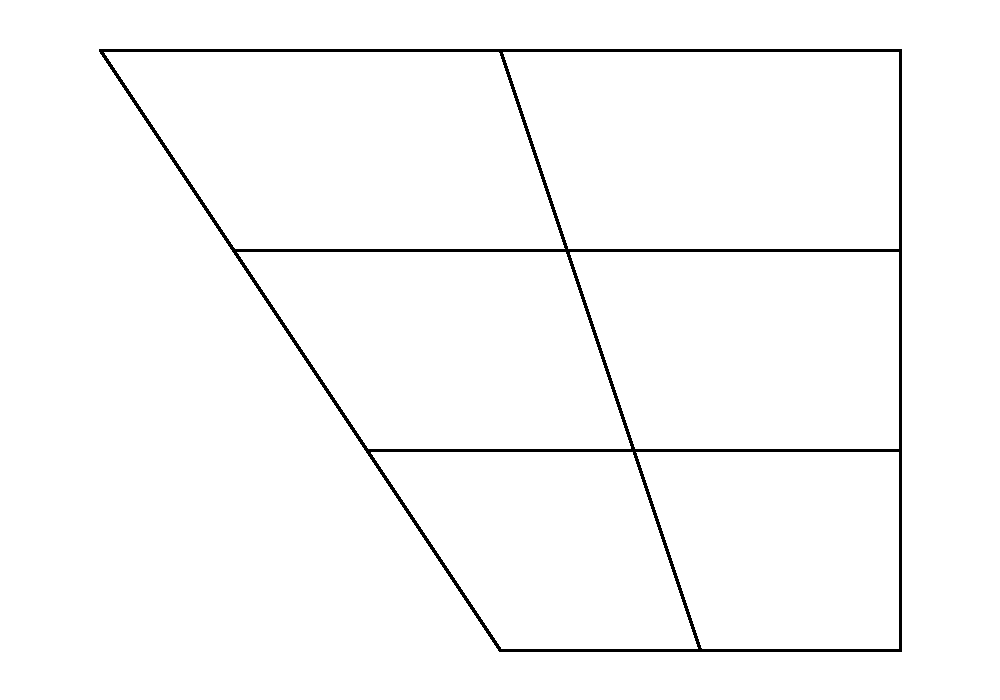


Figure 3. *Velupillai’s visualization of categorical overlap*

This is the method which will be followed in this paper, beginning first with the identification of the two opposing extremes of canonicity – the canonically rigid and canonically flexible categories (Section 3.4) – and then examining all the ways a language can be noncanonical according to the associated criteria (Section 4), falling on a continuum between the two poles.

At this point it would be helpful to see a few examples of Canonical Typology in action. One application of the canonical method is is actually quite ubiquitous – the International Phonetic Alphabet. Each symbol on the vowel chart represents a canonical point – a canonical [ɛ], a canonical [ɯ], a canonical [ɪ], etc. The criteria which interact to produce these canonical points are height, frontness, and tenseness. There is general agreement on what a canonical [i] sounds like, and it is readily identifiable, but it is extremely rare that one finds an [i] which is completely high and completely front. Most instances of [i] in real speech are somewhat noncanonical in that they only approximate or approach this canonically-defined point. These noncanonical instances might deviate in terms of their height or tenseness. The grid metaphor is especially apt here, since one can still chart – even quantifiably – the position of specific instances of [i] in relation to the canonical point.

Note that, even though the vowel space in the mouth is a smooth continuum, and there are no a priori reasons to divide up the vowel space the way we do, we can still define the conceptual space with a variety of theoretically useful constructs. We define the endpoints of the continuum as well as the general midpoints, and these then serve as anchors by which to locate other instances. In theory, linguists could define their vocalic reference points anywhere on the continuum, perhaps midway between their current locations. This would look something like Figure 4. One could certainly do their transcription in such a framework, and describe what we now think of as [ɪ] as a slightly fronted [α], or [ɛ] as a high and fronted [ɣ], but this would be a cumbersome description, and we share a sense that the current IPA chart actually correlates to salient epiphenomenal representations of the world’s vowel sounds.



α

β

ɣ

δ

ε

ζ

Figure 4. *A poorly-chosen canonical schema for the IPA vowel chart*

In sum, the IPA first defines the theoretical space of possibilities, charting out all logically possible ways in which a sound might vary, and this then enables linguists to go out into the field and see how this theoretical space is actually populated (in this particular case, by examining the sounds of the world’s languages and placing them somewhere on this chart). This is precisely the method of canonical typology.

Hopper and Thompson (1980: 253) is another well-known study offering an account of transitivity that is clearly canonical in its approach: “Transitivity […] can be broken down into its component parts, each focusing on a different facet […] Taken together, they allow clauses to be characterized as more or less transitive.” They also note that these facets tend to covary extensively. The same will be shown to be true for our canonical typology of flexible categories.

As a final example, consider systems of possessive marking crosslinguistically.[[5]](#footnote-5) There are three different categories that are often the locus of possessive marking: objects, kin terms, and body parts. What are the logically possible ways a language might mark possession for these three categories? One is that all three categories use the same method for marking possession. English is one such example:

1. English possessive marking
   1. my book (object)
   2. my mother (kin term)
   3. my nose (body part)

Another possibility is that a language might use two separate devices for marking possession. There are three ways a language might realize this possibility. In the first, illustrated by Maricopa in (3), kin terms and body parts are marked one way (a possessive prefix on the noun), while most other objects are marked in another (an analytic possessive). The second method is to mark body parts in one fashion and kin terms and objects in another. This is illustrated for Tuscarora in example (4), where *ak‑* is used for objects and kin terms, and *k‑* is used for body parts. This third possibility, where body part possession takes unique coding, is shown with Konkow in (5). Here, possessed kin terms are marked with pronominal prefixes on the noun, while other noun types take an analytic possessive consisting of the pronoun and the suffix *‑k̓i*.

1. Maricopa (Yuman, Yuman: United States)
   1. kwar’o m‑nywish

knife 2sg‑poss

‘your knife’ (object) (Gordon 1986: 33)

* 1. m‑shchaa

2sg‑younger.brother

‘your younger brother’ (kin term) (Gordon 1986: 30)

* 1. m‑iishaaly

2sg‑hand

‘your hand’ (body part) (Gordon 1986: 30)

1. Tuscarora (Northern Iroquoian: United States)
   1. ak‑hə̨́ːweh

1sg.poss‑boat

‘my boat’ (object) (Mithun 1999: 253)

* 1. ak‑hríˀə̨h

1sg.poss‑father

‘my father’ (kin term) (Mithun 1999: 254)

* 1. k‑táˀreh

1sg.poss‑head

‘my head’ (body part) (Mithun 1999: 253)

1. Konkow (Northwestern Maidu, Maiduan [Pujunan]: United States)
   1. mý‑k̓i sỳ·

3sg‑poss dog

‘his dog’ (object)

* 1. mý‑k̓ùli

3sg‑father

‘his father’ (kin term)

* 1. mý‑k̓i té·‑k̓i c̓íbi·

3sg‑poss cub‑poss claw

‘her cub’s claws’ (body part) (Mithun 1999: 253)

The final possible system of possessive marking is where each type of noun codes possession differently. Such is the case for Gaahmg, shown in example (6). Note that the difference between body part possession and kin possession is tonal.

1. Gaahmg (Eastern Sudanic, Nilo-Saharan: Sudan)
   1. máà ə́ə̀n

house 1sg.poss

‘my house’ (object) (Stirtz 2011: 79)

* 1. ā fānd̪

1sg.poss cheek

‘my cheek’ (body part) (Stirtz 2011: 80)

* 1. á t̪ááðà

1sg.poss grandmother

‘my grandmother’ (kin term) (Stirtz 2011: 81)

What we have just done is conducted a canonical typology of possession. We began by describing the logically possible ways possessive marking might be realized along two dimensions – the number of ways possession can be marked, and the semantic category of the possessed noun. We then found examples from languages in the world that matched each of the possible permutations of these criteria. The possible permutations are given in Table 1, where x, y, and z each represent a different method of coding possession. Note that we did not *predict* that these cases existed. Instead, our canonical typology provided us a framework for directing our investigations and classifying the data we find.

Table 1. *Possible systems of possessive marking*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | I | II | III | IV | V |
| Objects | x | x | x | x | x |
| Kin | x | y | x | y | y |
| Body Parts | x | y | y | x | z |

This section has explained the important concepts in Canonical Typology, namely the canonical type and criteria, and shown how this methodology works in practice. I now turn to some final clarifications.

## Prototypes versus canonical points, and some clarifications

Canonical Typology is subject to a few common misconceptions, so it is worth clarifying them here. One anonymous reviewer asks, for example, where the ‘predictions’ of Canonical Typology come from. Canonical Typology, however, is not in the business of prediction. It is true that Canonical Typology establishes a framework for interpreting and classifying data before even looking at it, but this is not prediction. A canonical typology may note the *logical possibility* that a language might realize a phenomenon in a certain way, but it is quite possible that no language actually exhibits this mode of realization, and Canonical Typology makes no claims as to whether languages will. A canonical typology is merely a way of deciding in advance how the phenomena under consideration will be classified and assessed. This pre-categorization of the logically possible realizations of a phenomenon is a potential advantage for Canonical Typology over other data-first approaches to typology, which refrain from any attempt at classification until the data is in hand. But it must be stressed that the Canonical approach to typology is no more predictive than others.

A common question revolves around the nature of the criteria, namely how they are established. This was discussed briefly at the beginning of Section 2.2. Criteria are established by testing our intuitions regarding what features, when weakened, give us less (or more) clear instances of the phenomenon in question. For example, if enough of the cells in an inflectional paradigm are identical (syncretic), it is less certain whether should call this an inflectional paradigm at all. Such is the case with the third person singular form of English verbs, which are sometimes placed in a six-cell inflectional paradigm, five of which are syncretic, but at other times simply treat the third singular as a standalone ‘s-form’ with idiosyncratic uses. The fact that a lack of distinct forms for each cell in an inflectional paradigm yields variable judgements suggests that distinctiveness between inflectional forms is a key criterion for canonical inflectional paradigms (Corbett 2007b, 2009).

Next, are the criteria meant to be language-specific, universal or something else? This depends on what one is doing a typology of. If one were attempting a canonical typology of subjects crosslinguistically, then obviously the criteria for subjecthood would need to be comparative concepts in the sense of Haspelmath (2010), i.e., formulated in language-general terms so as not to commit the error of imposing categories from one language onto another. But one could just as well conduct a canonical typology of subjects *in* a particular language, in which case the criteria will likely be particular to that language. The present study utilizes only language-general comparative concepts for its criteria.

Another clarification is that criteria may be either formal or functional in nature. While, as one reviewer notes, comparative concepts are usually thought of as being functional in nature, Haspelmath (2010: 663) is quite explicit that they can consist of general formal concepts as well: “Comparative concepts have to be universally applicable, so they can only be based on other universally applicable concepts: conceptual-semantic concepts, general formal concepts, and other comparative concepts. Comparative concepts are not always purely semantically based concepts, but outside of phonology they usually contain a semantic component.” If the notion of comparative concepts is meant to encompass whatever concepts we use for crosslinguistic typology, this only makes sense. The key point is not that semasiological approaches are the only valid way to do typology, but rather that the comparative concepts for typology must be language-general rather than language-specific. Whether they are formal or functional is of little relevance. The fact that the criteria of Canonical Typology can be either formal or functional is therefore consistent with their status as comparative concepts, since comparative concepts themselves are either formal or functional as well.

The single most frequent question asked of Canonical Typology is how the canonical point differs from a prototype, and what Canonical Typology has to offer that prototype theory and other gradient approaches do not. The most salient difference between the two is that the canonical type is not necessarily frequent or even prototypical. In fact, the canonical type is more likely *not* to be frequent, and perhaps may not exist in actual languages at all. Its primary function is as an agreed-upon point of calibration. Recall the example of the IPA vowel chart: very few languages have phonemes which match the canonical [i] precisely. In order for an aspect of language to match the canonical type, it must strongly or perfectly exhibit each of the criteria that constitute it. Very few features of language are like this. If you consider the idealized way in which we conceptualize various linguistic phenomena (e.g. inflectional templates, agreement, subjects), and then consider how messy the data actually is by comparison – riddled with exceptions, variations, and strange in-between cases – it is easy to understand why the canonical point is not always frequent. Languages are prototypically messy, so to speak. A prototype, by contrast, is prototypical precisely because it *is* an extant exemplar drawn from experience.

The following quotes from the literature on Canonical Typology serve to make this point more explicit:

It is worth distinguishing clearly between canonical and prototypical, though rereading a few pages of Rosch should be sufficient to convince the reader of the differences. A prototype, at least in the term’s prototypical use, has an exemplar, is in speakers’ heads (it is claimed to be psychologically real), and can vary across cultures. Canonical instances need have no exemplar, they are not claimed to be part of speakers’ competence (they are theoretical constructs of linguists), and they are ideally invariant. (Corbett 2010: 142)

One difference between a canonical property and a prototype is that a prototype has to exist. For instance, if we wish to claim that humans categorize the animal kingdom by appeal to notions such as ‘prototypical bird’ then some bird species (robin? sparrow? eagle?) has to be the prototype from which all other species deviate. Canonical objects, on the other hand, are not necessarily frequent and in fact there is no guarantee that anything like such a category does exist. It seems to us that talking of canonical properties is more appropriate for lexical classes because we do not want to commit ourselves to the existence of, say, some prototypical adjective in a language. Another difference is that prototypes may be ‘linguist-specific’, while canons are, at least in principle, indisputable and therefore easily compatible with various theoretical frameworks. (Nikolaeva & Spencer, n.d.)

Though Canonical Typology and prototype theory are distinct, they are not mutually exclusive approaches to typology, and are in fact quite compatible. Van der Auwera & Gast’s description of Ross’s (1972) study on “category squish”, for example, clearly illustrates its canonical nature:

[…] word classes as well as word class systems can be represented as ‘quasi-continua’ or ‘squishes’, whose endpoints are constituted by specific prototypes, for example, verbs and nouns for the lexicon as a whole, or specific types of nominal expressions for the class of ‘nouns’. Other, non-prototypical categories occupy intermediate positions in such systems. (Van der Auwera & Gast 2011: 177–178)

They demonstrate the concept with an example from Mirrinh-Patha (Sasse 2001: 498) with the data in Table 2, showing how a variety of properties intersect to create a cline between Nouns and Verbs. Each one of the column headings in this example can be appropriately viewed as one of the relevant criteria that converge to form canonical Nouns and Verbs.[[6]](#footnote-6)

Table 2. *Category squish in Mirrinh-Patha*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) |
| Noun | + | + | + | ± | ± | ± | − | − | − | − | − |
| Adj | + | + | + | + | + | + | − | − | − | − | − |
| Nerb | ± | + | + | + | + | + | + | − | − | − | − |
| Voun | − | − | − | + | + | + | + | + | + | +¹ | − |
| Verb | − | − | − | + | + | + | + | + | + | + | + |
| ¹3rd singular subject only | | | | | | | | | | | |

Even Rosch’s famous example of bird prototypes may be appropriately viewed from a canonical perspective. Figure 5 (Geeraerts 2006 [1989]: 152) shows how the seven criteria listed below converge on the canonical type (a robin). In this case, the canonical point is an actually-existing exemplar, illustrating an instance where the canonical and prototypical idealizations are one and the same. In fact, each of the lines of demarcation below are canonical criteria, and one can even overlay our visual metaphor of the radiating star on this representation. But the crucial conceptual difference is that the prototype is calibrated to a specific, often culturally-specific exemplar that actually exists, while the canonical point is calibrated to the intersection of the key criteria, whether or not there exist robins to exemplify the canonical.

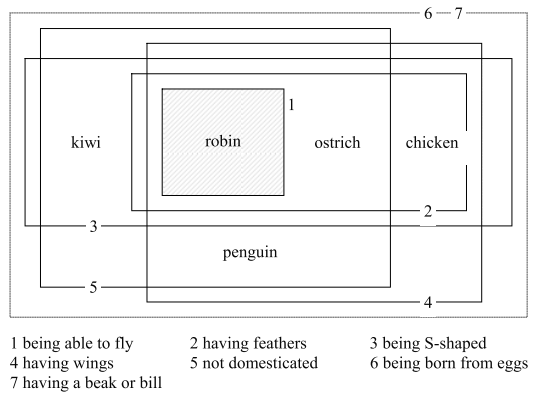


Figure 5. *The compatibility of prototypes and canonical types*

To sum up, the canonical approach to typology is certainly compatible with prototype theories, but the two are not coterminous. Their projects are notably different. While prototype theory is concerned with representations in the minds of speakers and the effect of culture and experience on those representations, Canonical Typology is a method for classification and comparison, and makes no claim as to the ontological or epistemological status of the phenomena it describes. Simply put, prototype theory is a theory of language and the mind, while Canonical Typology is a methodology for conducting typology that is capable of handling the gradient representations which prototype theory provides.

# Categories and the lexeme

## Crosslinguistic and language-specific categories

The purpose of the present study is to provide a means of assessing the lexical flexibility of categories in particular languages, and therefore an objective method of comparing flexibility between languages. It makes no claims as to what parts of speech exist in a particular language. In fact, given that Croft’s (2001) treatment of categorization casts serious doubt on the existence of large, language-specific word classes like Noun and Verb, a canonical typology of lexical flexibility should not attempt to take parts of speech as the point of comparison at all.[[7]](#footnote-7) To the extent that large parts of speech like Noun and Verb even exist in a speaker’s grammar, they are most likely epiphenomenal abstractions. Instead, a typology of lexical flexibility should focus on the flexibility of specific lexemes. For example, it may be that half the lexemes of a given language are extremely flexible, and can fulfill any syntactic function, whereas the other half are extremely rigid, and may only serve as referential heads. In this case, we would say that the language has one flexible and one rigid class of lexemes, which we may then compare to the lexeme classes of other languages. This method of classifying lexemes by their flexibility may or may not line up with the traditional parts of speech for that language.

Alternatively, one could say, ‘Here are all the lexemes which we say belong to the category Noun in this language. How flexible are the lexemes in this category?’ The resulting assessment would then claim that Nouns in this language are either flexible or rigid, under the assumption that Noun is a salient category for that language. All this does, however, is select a subset of lexemes to assess for their flexibility. In either case, the object of interest is the flexibility of individual lexemes, not of language-particular parts of speech per se.

It is important to recognize Croft’s crucial caveat when it comes to describing the flexibility of these language-specific categories:

It is *absolutely essential* to recognize that the commonalities across the subcategories found in various constructions must themselves be justified linguistically. For example, the justification for a category subsuming Intransitive Verb and Transitive Verb comes in from the occurrence of the Morphological Verb category in another construction, namely the morphological construction of Tense-Agreement (TA) inflection. This is why I have labeled the category Morphological Verb—in order to make clear that I am not positing a global category Verb for English (or any other language). There is no global category Verb; just overlapping XVerb categories defined by various constructions. (Croft 2001: 55)

Therefore, for the remainder of this article, any references to a certain part of speech in a given language should be taken to refer to a category grounded in a specific linguistic construction for that language. This is for practical convenience more than anything else, and is what allows me to make concise statements like ‘Nouns in Quechua are largely flexible between referential and modification functions’, for example, without making any ontological commitment regarding the status of the Noun category in Quechua.

All this is very much in line with Haspelmath’s take on how comparative concepts ought to function in typology. In Haspelmath (2010: 670), for example, he suggests a comparative definition of adjective: “An adjective is a lexeme that denotes a descriptive property and that can be used to narrow the reference of a noun.” He then goes on to clarify that “it is irrelevant for this definition whether a language has a separate word class that would be called ‘Adjective’ (i.e., a descriptive category), or whether it uses its ‘Noun’ or ‘Verb’ categories to attribute properties to nominal referents.” Haspelmath is here making explicit reference to the idea that a single language-specific category could be utilized to express multiple comparative concepts of this type. And these are precisely the word classes which Hengeveld would label “flexible”.

## What’s being categorized: Defining the lexeme

This section shows that one’s definition of the lexeme crucially affects one’s position regarding parts of speech and the existence of flexible lexemes. If defined strictly enough, the concept of the lexeme precludes the existence of flexible lexemes. This section therefore presents a definition of the lexeme that is commensurate with the idea of lexical flexibility. I adopt a three-part definition of the sign, similar to Mel’čuk (2006a, 2006b), and make the case that any additional restrictions on the semantic or combinatorial flexibility of the lexeme, such as those that Croft (2001) and Evans and Osada (2005a) attempt to add, are *ad hoc*, arbitrary, and theoretically unsound.

Some initial terminological clarifications are in order. The possible grammatical (morphosyntactic) words of a language may be divided into two classes: lexical words and functional words, with no small amount of gray area between. Both lexical and functional words are types of linguistic signs, defined here as a three-part association between a concept (= signified), a linguistic representation (= sound pattern, signifier) and a set of distributional properties (= syntactics, combinatorics), following Saussure (1986 [1916]) and Mel’čuk (2006a, 2006b). Lexical words may be grouped into lexemes, following Lyons (1977), who defines the lexeme as the ‘root or underlying form’ unifying a set of grammatical words, each of which are taken to be inflected variants of the lexeme. Crystal’s (2003: 265) dictionary of linguistics defines a lexeme as “the minimal distinctive unit in the semantic system of a language. […] The lexeme is thus postulated as the abstract unit underlying such sets of grammatical variants.”

This focus on lexemes as collections of inflectional variants is often used as a criterion for distinguishing between derivation and inflection. That is, derivation is thought to create new lexemes, while inflection does not. An alternative approach is to say that derivation – and especially zero-derivation – does not create new lexemes, but rather constitutes a case of *heterosemy*, a term adapted by Lichtenberk (1991) from Persson (1988) to refer to cases where related forms occur in different grammatical contexts. Examples include the English words *run*, *fish*, and *cry*, all of which have related meanings when used as nouns and verbs. This contrasts with polysemy, which Lyons (1977: 561) defines as an association of related meanings within the same lexeme and same lexical category. A typology which calls the word *fish* in the sentences *I like to fish* and *I like fish* two related instances of a single lexeme is therefore adopting a heterosemous analysis. In Lichtenberk’s formulation, ‘related’ refers primarily to the historical relationship between words, but I see no reason why the relation cannot be a semantic one, no matter how idiosyncratic that relationship it may be. Under this conception, *fish* in the example above should be considered one heterosemous lexeme that exhibits a certain amount of lexical flexibility, and this is the approach adopted here.

Analyzing heterosemy as two instances a single flexible lexeme is very much in line with gradient approaches to categorization. Part of what prototype theory demonstrated was how widely the meaning of a lexeme like ‘bird’ can diverge from its prototypical sense, and yet still count as an instance of that lexeme. The meaning of a lexeme should no longer be defined by rigid sets of necessary and sufficient conditions. Placing arbitrary restrictions on how far the meaning of a lexeme is allowed to vary before it should be called a separate lexeme merely reverts to the categorization methods of classical antiquity. Positing a separate lexeme anytime a word strays too far from its definition or core semantics fails to capture the relationships between terms that are arguably present in the minds of speakers. The example of the Mundari stem *buru‑*, which can alternately be taken to signify the noun ‘mountain’ or the verb ‘heap up’, shows a clear metaphorical semantic connection between the two uses of the term, and a theory which ignores this and simply calls them separate lexemes – no matter how idiosyncratic their semantic relation may be – ignores the cognitive connection between them.

Despite this, many theorists have tried to define additional restrictions into the notion of a lexeme, beyond its simple description as a three-part sign. Croft (2001) for example, restricts the semantics, i.e. the extent to which the signified is allowed to vary, so that lexemes must have a fairly narrow range of meaning; deviant meanings therefore constitute separate lexemes. Evans and Osada (2005a) as well as Mel’čuk (2006a) restrict the syntactics (combinatorics) of the lexeme, so that lexemes may only have one small set of combinatory properties; other combinatorial patterns constitute different lexemes. And yet no one suggests that similar restrictions ought to be placed on the signifier, so that suppletive or inflectional forms would constitute different lexemes as well. Why do we allow for (often drastic) variation in the form of the signifier but no such variation for the signified or the syntactics? Why do we reject such restrictions on the signifier but accept rather ad hoc semantic and combinatorial restrictions?

Croft’s (2001) test for methodological opportunism is relevant here: how narrow do the restrictions on the semantic and combinatorial variation of a lexeme have to be? Why draw the line at the level of propositional act functions, for example? Why not draw it at the level of the grammeme? That is, if the referential and predicative functions of a word constitute different lexemes, why should we stop splitting there? Why shouldn’t the singular and plural forms of a word not also count as different lexemes? After all, there are clear semantic and combinatorial distinctions between the singular and plural of most nouns. Honoring one distinction in defining lexemes while ignoring the other is a simple case of methodological opportunism.

My suggestion, then, is that we should retain the three-part definition of the sign handed down from Mel’čuk but throw out the various ad hoc and unmotivated restrictions on how far a lexeme is allowed to vary. Whereas the traditional definition of the lexeme was an abstraction away from the various inflectional forms of a word, covering the range of variance exhibited by the signifier, the revised definition of a lexeme should similarly be thought of as an abstraction away from the varying inflectional, distributional, and semantic range of possibilities for a lexeme. This allows us to adopt a canonical approach, and assess the *extent* to which two instances of a putative lexeme deviate along three different dimensions: its linguistic representation, its meaning, and its distributional properties. This allows us to construct a canonical typology of the sign, presented in Table 3. Based on these three criteria any two grammatical words purported to be members of the same lexeme can be assessed for how canonically lexeme-like such a collection of senses would be.

Table 3. *A canonical typology of the lexeme*

|  |  |  |
| --- | --- | --- |
| **Criterion** | **More canonical instance** | **Less canonical instance** |
| 1. Syntactics | * Same distribution * *I* ***kicked*** *the ball* vs. *I* ***kick*** *the ball around a lot* | * Different distribution * *he* ***gave*** *thirty dollars at the benefit* vs. *he* ***gave*** *her a book* |
| 1. Meaning | * Same or regularly derivable meaning * nouns that are tools (*a* ***hammer***) > verbs that use the tool (*to* ***hammer***) | * Different or idiosyncratic meaning * *a* ***chair*** vs. *she* ***chaired*** *the meeting* (not the same semantic shift as the similar set, *a* ***table*** vs. *he* ***tabled*** *the suggestion*) |
| 1. Signifier | * Same signifier * *I* ***run*** *daily* vs. *a* ***run*** | * Different signifiers * *I* ***am*** vs. *you* ***were*** |

Noun incorporation is an example of a less canonical collection of senses for a lexeme according to Criterion I. It is less certain whether the incorporated element *nòok* in (7)b should be considered the same lexeme as its independent usage in (7)a.

1. Yucatec (Mayan, Mayan: Mexico)
   1. t‑in‑pʼoʔ‑ø‑ah nòok

compl‑1sg‑wash‑it‑prf clothes

‘I washed (the) clothes.’

* 1. pʼoʔ‑nòok‑n‑ah‑en

wash‑clothes‑antip‑pfv‑1sg.abs

‘I clothes-washed.’ (Bricker 1978: 15)

Canonical and noncanonical sense pairs according to Criterion II are illustrated by deverbal agent nouns in Russian. In (8)a, the meaning of the derived term is regularly computable, whereas the derived meaning of (8)b is somewhat idiosyncratic. Thus the two uses of the term *dvigat’* form a less canonical lexeme than the word pairs in (8)a according to Criterion II.

1. Russian (Slavic, Indo-European: Russia)
   1. pisat’ ‘write’ > pisatel’ ‘writer’

čitat’ ‘read’ > čitatel’ ‘reader’

osnovat’ ‘found’ > osnovatel’ ‘founder’

* 1. dvigat’ ‘move’ > dvigatel’ ‘motor’ (Corbett 2010: 144)

Russian (and coincidentally in this case, its English translation equivalents) also exemplifies canonical and noncanonical collections of senses for a lexeme according to Criterion III. In the examples in (9)a, the signifier has the same form across uses. In (9)b, the form is suppletive, and it is arguable whether the two forms are members of the same lexeme.

1. Russian (Slavic, Indo-European: Russia)
   1. medved’ ‘bear’ > medved‑ic‑a ‘she-bear’

osel ‘donkey’ > osl‑ic‑a ‘she-donkey’

*tigr* ‘tiger’ > *tigr‑ic‑a* ‘tigress’

* 1. byk ‘bull’ > korov‑a ‘cow’

(Mel’cuk 1994: 362; 400–401)

A collection of senses can also form a noncanonical lexeme according to more than one criteria at a time, i.e., a lexeme can be noncanonical in more than one way. Panare shows how a lexeme can be noncanonical according to Criteria I and III simultaneously. The incorporated form *uʼ‑* ‘head’ in (10)b differs both syntactically (Criterion I) and formally (Criterion III) from its non-incorporated form in (10)a. Again, because of the noncanonical nature of this collection of signs as a unified lexeme, there may be disagreement as to whether these constitute the same lexeme at all.

1. Panare (Venezuelan Carib, Cariban: Venezuela)
   1. y‑**ipu**‑n yï‑kïti‑ñe amën

3sg‑head‑poss tr‑cut‑nprf:tr 2sg

‘You cut its head.’

* 1. y‑**uʼ**‑kïti‑ñe amën

3sg‑head‑cut‑nprf:tr 2sg

‘You head‑cut it.’ (Payne 1997: 222)

In sum, lexemes, defined as a three-part sign, have considerable variability – and thus flexibility – along each of the three dimensions of the sign. The typology of the lexeme given here feeds into our typology of flexible categories, since categories consist of a collection of signs. Indeed, the extent to which a lexeme is noncanonical according to the typology above will correlate strongly to the extent to which a lexeme is considered flexible. Many of the criteria for determining lexical flexibility are in fact criteria for assessing the extent to which different words count as the same lexeme. The larger the number of unique grammatical words and their functions which count as the same lexeme, the greater the flexibility of that particular lexeme.

We now turn to the different methodologies that linguists have used when classifying lexemes into lexical categories.

## Approaches to categorization

Having defined the object of our categorization, and having made the important distinction between language-specific categories and comparative concepts, this section classifies and formalizes different approaches to categorization following Croft’s (2001) distinction between ‘lumpers’ versus ‘splitters’, and explains his powerful criticism of ‘methodological opportunism’, which must be adequately addressed in a typology of flexible categories.

Before examining different methods of categorization, it is necessary to define the meaning of the term ‘category’ itself, and what a non-flexible (i.e., rigid) category would look like. category here refers to language-specific groups of lexemes which share certain properties. Clearly there are many lines along which one can categorize a given lexeme. When trying to understand linguistic categories qua categories, i.e., linguistic categories in and of themselves, there are no a priori reasons why we should privilege one method of categorization over another. This point is argued forcefully by Croft (Croft 1991, 2001, 2003), who calls such attempts to handpick relevant criteria “methodological opportunism”. Elsewhere he notes, “The only way to be genuinely rigorous and true to the empirical facts is to admit all distributional criteria as relevant to linguistic analysis.” (Croft 2005: 436). No method of categorization, distributional or other, should be taken as primary when doing grammatical analysis. Therefore I adopt Cristofaro’s (2009: 441) definition of categories as “classificatory labels indicating that a variety of linguistic elements display some selected property.” As Cristofaro points out, this definition is also not the same thing as saying that such a category exists in a speaker’s mental grammar, although this is often quite plausibly the case. Thus a lexeme may receive its classificatory label according to any one of a variety of properties, depending on the specific property selected.

A priori, there is no reason why we should expect the category labels for a given lexeme to always align with each other. If a given set of lexemes were categorized according to all possible properties relevant for linguistic categorization, there are only two logically possible outcomes: all the category labels for that language will pick out the same groups of lexemes, or they will not.

To make this somewhat more concrete: suppose we notice that for a particular language (let’s call it Xish), certain lexemes take a morpheme indicating number, while other lexemes do not. We give a category label of “Class W” to lexemes which mark for number, and a label of “Class X” to lexemes which do not. These labels are arbitrary, their primary purpose being to allow for comparison with other methods of classifying lexemes in this language. Next, we notice that some lexemes take a morpheme indicating person, and some do not. Once again we assign category labels to these lexemes, calling lexemes which mark for person “Class Y”, and lexemes which do not “Class Z”. Now we should ask ourselves, to what extent do these two sets of categories line up? Figure 6 shows the two possibilities.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Possibility A | |  | Possibility B | | |
| *Categorized by number marking* | W | X |  | W | | X |
| *Categorized by person marking* | Y | Z |  | Y | Z | |

Figure 6. *Extent to which categorization methods align*

In the first case, categorization of lexemes in Xish according to number yields the same result as categorizing lexemes in Xish according to person. In other words, all lexemes which are marked for person are also marked for number, and vice versa. If there were no other possible criteria for categorizing lexemes in Xish, then we might be justified in reducing our category labels to just two, and relabeling them something like, for example, Class A and Class B, or Nouns and Verbs, or something else entirely.

In the second case, the two sets of category labels do not pick out the same groups of lexemes in Xish – their extensions are different. Given this, what justification do we have for positing category labels “Class A” and “Class B” for Xish, unless we decide to privilege one (or several) properties over others? This is a theoretical problem which remains even if there are 99 category labels which line up against only 1 which does not.

Linguists have attempted to resolve this problem in various ways. As noted in the introduction, the historical approach was to privilege one or several properties as “essential” for a particular category, and use these properties to decide *the* single categorization for a given lexeme (see Rauh [2010] for an overview of the history of syntactic categorization). More recently, Croft (Croft 1991, 2001, 2005) has taken the opposite approach, subdividing the lexemes of a language every time they show a different distribution, i.e. satisfying a different set of constructions. Croft calls this the “splitting” approach, as opposed to the traditional “lumping” approach, and the result is an approach to lexical categories that posits a tremendously large number of categories for any given language. Figure 7 compares the two approaches.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | number marking as essential  (“Lumpers”) | | | |  | all distinctions essential  (“Splitters”) | | | |
| *Number marking* |  |  |  |  |  |  | |  |  | |
| *Person marking* |  |  |  |  |  |  | |  |  | |
|  | Class A | | Class B | |  | Class A | Class B | | Class C |

Figure 7. *Lumping versus splitting in lexical categorization*

In this schema, white cells represent the presence of the feature in question, and gray cells represent its absence. Each column can be thought of as a separate lexeme or group of lexemes with similar distributions. In categorizing, the lumpers prioritize one method of categorization over another (number marking, in this case). Any lexeme which takes number marking falls into Class A, while any lexeme that does not falls into Class B, regardless of what the evidence from person marking tells us. Therefore, lumpers will divide the lexicon into just two categories (signified by the thick black line). The splitters, by contrast, divide the lexicon into three categories – lexemes which take both person and number marking, lexemes which take number marking but not person marking, and lexemes which take neither person nor number marking. This creates three lexical categories, again signified by the dark lines.

So linguists doing traditional distributional analysis have tended to be categorical minimalists (“lumpers”), while Croft is a categorical maximalist (a “splitter”). Traditional analyses will posit several large categories like “Noun” and “Adjective”, while a constructional approach will posit millions of category labels, depending on which constructions they can appear in.

An alternative to these two approaches is to say that a given lexeme can have multiple category labels. This is the approach adopted by, for example, Anward, Moravscik, and Stassen (1997), Francis and Matthews (2005), Malouf (2000), Spencer (2005), and other “multidimensional”, “multi-modal”, or “cross-categorical” approaches to lexical categories. These approaches are also based on feature clustering, and so in this respect are similar to the canonical analysis presented here. A key difference between such cross-categorical approaches and Canonical Typology, however, is the respective projects they set out to accomplish. Cross-categorical approaches aim to provide an analysis of grammatical categories within specific languages, whereas the canonical typology presented here aims to provides a method of assessing the lexical flexibility of such categories and comparing that flexibility across languages. The two approaches are certainly theoretically compatible, but they are also logically independent from one another.

Hengeveld (1992) adds another element to this mix of approaches. From the framework of Functional Grammar, Hengeveld posits four parts of speech for languages: Noun, Verb, Adjective, and (Manner) Adverb. This is decidedly a lumping approach, and so ignores a great deal of distributional evidence that would suggest partitioning these categories further. These four categories are defined solely by what Croft (2001: 66), following Searle (1969), calls propositional acts – reference and predication (also modification, which Hengeveld omits) – transposed against the syntactic slots of head and modifier, as illustrated by Table 4 (Hengeveld 2013).

Table 4. *Hengeveld’s parts-of-speech classification*

|  |  |  |
| --- | --- | --- |
|  | head | modifier |
| predicate phrase | V | MAdv |
| referential phrase | N | Adj |

What makes Hengeveld’s approach unique, however, is that he posits a distinction between flexible and rigid parts-of-speech systems. Roughly, one can think of his distinction in terms of the difference between *specialized* and *non-specialized* lexemes. Rigid parts-of-speech systems are those which are highly specialized, meaning that its lexemes tend to perform specific syntactic functions and no others. In such a language, Nouns might be used for reference but not modification or predication, for example. Flexible parts-of-speech systems relax these restrictions, so that a Noun might serve both referential and modificational roles, or perhaps even so that a single lexical category can serve the function of all three. Rijkhoff (2007: 718) provides an excellent summary: “In languages with a flexible PoS system, some or all of the functions that are typically associated with the four traditional (rigid) lexical categories are performed by members of the same word class (Types 1–3). In languages with a rigid PoS system (Types 4–7), these functions are distributed over distinct, non-overlapping groups of words.” The advantage in making this distinction is that it allows one to distinguish between categories with rampant zero-conversion, like Warao in (11), and categories where lexemes can serve multiple syntactic functions, but require some type of additional marking in order to do so, as for Mande in (12). The former are flexible categories, and the latter are rigid.

1. Warao (isolate: Venezuela)
   1. **yakera**

beauty

‘beauty’

* 1. Hiaka **yakera** auka saba tai nisa‑n‑a‑e.

garment beauty daughter for she buy‑sg‑punc‑pst

‘She bought a beautiful dress for her daughter.’ (Romero-Figeroa 1997: 49)

1. Mande (Garo; Bodic, Sino-Tibetan: India)
   1. **Daʼr**‑aŋ‑gen.

Big‑it‑fut

‘It will get big.’

* 1. **daʼr**‑gipa mande

big‑rel man

‘the big man’

* 1. **Caʼ**‑gen‑ma.

Eat‑fut‑int

‘Will you eat?’

* 1. **caʼ**‑gipa mande

eat‑rel man

‘the man who eats’ (Burling 1961: 27, 33)

In this treatment by Hengeveld, Warao exhibits a flexible Noun-Adjective category, while Garo is said to simply lack the Adjective category, and instead has to resort to non-lexical strategies for the head-modifying function. Note that for Hengeveld, rigidity and flexibility are properties of languages rather than specific categories or lexemes. This is one aspect of the definition of lexical flexibility that will be abandoned. As noted above, the lexeme is the object of our assessment for lexical flexibility, not the language. This is because a given language may exhibit internal variation as to the flexibility of its various categories and individual lexemes. Only in the aggregate, taking all the various lexemes of a language into account, can we say that a language is more or less rigid or flexible.

Based on his sample of the world’s languages, Hengeveld posits the implicational hierarchy for parts of speech shown in (13), where “the more to the left a certain syntactic slot is positioned in the hierarchy, the more likely it is for a language to have a separate class of lexemes for that syntactic slot.” (Hengeveld et al. 2004: 533).

1. Verb > Noun > Adjective > (Manner) Adverb

This hierarchy applies independently of whether the language is rigid or flexible: rigid languages that lack Adjectives will also lack Manner Adverbs; flexible languages that subsume Adjectives into some other category will also subsume Manner Adverbs into some other category. One can compare all possible parts-of-speech systems according to this analysis in a single chart, as shown in Table 5 from Hengeveld and Rijkhoff (2005: 407).

Table 5. *Hengeveld’s typology of parts-of-speech systems*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Head of predicate phrase | Head of referential phrase | Modifier of head of referential phrase | Modifier of head of predicate phrase |
| Flexible PoS systems | Type 1 | contentive | | | |
| Type 2 | verb | non-verb | | |
| Type 3 | verb | noun | modifier | |
| Rigid PoS systems | Type 4 | verb | noun | adjective | adverb |
| Type 5 | verb | noun | adjective |  |
| Type 6 | verb | noun |  |  |
| Type 7 | verb |  |  |  |

This typology is appealing because it captures the intuitive similarity between divergent uses of the same lexeme for different syntactic functions. In short, it maintains the classical parts-of-speech typology (Types 4–7) but introduces the concept of lexical flexibility. Given the shortcomings of classical parts of speech, the project of this paper is to retain the useful notion of lexical flexibility and the intuitions it captures while tossing out the traditional approach to parts of speech. Let us begin to deconstruct the concept and rebuild it on more solid footing.

## Rigid and flexible categories

Croft (2001) provides a nuanced critique of Hengeveld’s typology just presented. His critique focuses heavily on the issue of semantic shift in the different uses of a flexible lexeme. This is a crucial problem for anyone who wants to utilize the notion of a flexible category, because in order for the different functional uses of a word to count as two different realizations of the same lexeme, there must be some sort of underlying core semantics which unites them, or a regular process of relating the meaning of one to the meaning of the other. I have already addressed this issue in part during the discussion of lexemes in Section 3.2 above, and I will comment on it more in Section 4.1.6 below, showing how a canonical approach to defining lexical flexibility escapes these problems.

However, Croft’s other criticisms of Hengeveld’s parts-of-speech classification are quite apposite. Because it privileges syntactic function over other methods of classification, Croft is right to call this schema a case of methodological opportunism, ignoring other types of distributional evidence. To this I would add the critique that Hengeveld’s parts-of-speech classification aims to be at once language-specific and crosslinguistically applicable, thus conflating the two types of categories.

This does not mean that the concept of lexical flexibility is beyond salvaging. All we must do is divorce the concept from Hengeveld’s specific attempt at lexical categorization, and then lexical flexibility can still be framed nonproblematically in a way that is useful to typology. This is possible because Hengeveld establishes his categorization by utilizing language-general concepts: the propositional acts of predication and reference, and the syntactic functions of head and modifier, shown above. To make the concept methodologically sound, we merely have to abandon the idea of flexible categories as being a feature of individual grammars, and instead see it for what it rightly is – a comparative concept that allows for typological comparison. The reason for this should be obvious: one cannot, on the basis of data from a single language, say that the language has a flexible category ranging over categories x and y, precisely because a truly flexible category would be one in which x and y are indistinguishable. One can only call a category flexible if one utilizes categories from outside the language – comparative concepts – to draw a distinction which the language itself does not.

In order to avoid Croft’s charge of methodological opportunism, another adjustment to the concept must be made. Whereas Hengeveld discusses lexical flexibility in terms of the range of syntactic functions a lexeme can cover, we should not limit ourselves to syntactic function alone. No method of classification takes privilege. As such, we can redefine flexible lexemes more broadly as those which range over more than one comparative concept used to categorize the lexicon.

For example, one might define a comparative concept grue as the semantic space ranging over that portion of the color spectrum from 450 nm to 570 nm. It is well known that English divides this semantic space into two lexemes (*green* and *blue*), while Japanese traditionally uses just one (青, *aoi*), and Russian has three (синий / *sinij* ‘dark blue’; голубой / *goluboj* ‘light blue’; зелёный / *zelenyj* ‘green’). According to our revised conception of lexical flexibility, Japanese would be considered the most flexible of the three languages along this particular dimension, because its lexicon is the least specialized in this domain, and *aoi* ranges over the widest number of uses. Russian, by contrast, is more specialized and rigid.

Another example of a comparative concept that might be used for assessing the flexibility of the lexicon is inflectional class, such as noun classes or conjugation classes. Spanish Nouns, for example, are generally rigid lexemes that may only appear with one inflectional class – masculine or feminine. There also exist a smaller number of lexemes may appear with either. This would include most Adjectives as well as a number of Nouns referring to occupations. A typology of Spanish lexeme classes should therefore note that Spanish Adjectives and occupational Nouns are somewhat more flexible than the majority of Spanish Nouns.

The two examples just given are of relatively minor interest for a typology of lexical categorization, but they illustrate an important methodological point, which is that both comparative concepts and lexical flexibility can be applied to categories beyond just the traditional major parts of speech (Noun, Verb, Adjective) or propositional act types (reference, predication, modification). However, because the functions of reference, predication, and modification are of most interest to typologists, they are the ones I will utilize for the purpose of providing examples throughout the rest of this paper, utilizing them as comparative concepts with which to assess lexical flexibility across languages. Occasionally, where more distinctions are required to make the point clear, I utilize the comparative syntactic functions of head and modifier as well. I assume that each of these comparative concepts can be nonproblematically defined in a language-general way.

We can now apply our newly-polished notion of lexical flexibility to the issue of splitting versus lumping. Once the descriptive linguist has categorized the lexicon of a language according to language-internal criteria, the typologist can examine the extent to which the category labels align with each other for a particular language, i.e., the extent to which each method of classifying lexemes consistently divides them into the same groups. If all the category labels or possible classification schemes pick out the same set of lexemes, we may call this a perfectly rigid word class. Although this definition now differs from that given in Hengeveld, Rijkhoff and Siewierska (2004) or Hengeveld and Rijkhoff (2005), the basic notion is the same: “the functions of a lexeme in an actual linguistic expression (e.g., verbal, nominal, adjectival, adverbial function) are […] distributed over distinct, non-overlapping lexemes.” (Hengeveld & Rijkhoff 2005: 406). The essential feature of a rigid word class is that category distinctions always divide up the lexicon in the same way. The more methods of categorizing the lexicon that line up, the more rigid the lexeme class is. Individual lexemes do not “spill over” into the properties of other categories.

We can illustrate this again with Xish. Assume for Xish, some lexemes can take possessive morphology and some cannot, and we call lexemes which take this morphology “Nouns” and those that do not “Verbs”. Then assume that some lexemes in Xish can serve the pragmatic function of reference, and those which do we call “Referents”, and those which do not we call “Predicates”. If these are the only relevant category distinctions in the language, and if the Noun-Verb distinction picks out the exact same set of lexemes as the Referent-Predicate distinction, with no overlap whatsoever, these would constitute perfectly rigid word classes with respect to each other. Put simply, in Xish there are no Nouns which can be used to predicate, and no Verbs which can be used to refer.[[8]](#footnote-8) This is unlike many lexemes of English, such as the noun ‘nose’, which can be used as a verb, *to nose around*. On the other hand, Hengeveld, Rijkhoff, and Siewierska (2004) classify English as being primarily a rigid language, despite its rampant zero-conversion, since (it is claimed) English very clearly differentiates separate word classes for each major type of syntactic slot. At the very least what the canonical typologist can say is, to the extent that English has clearly distinguished word classes for each syntactic slot, it is a rigid language; but to the extent that its lexemes may switch between these different syntactic functions, it is a flexible one. It is then an empirical matter to discover what the actual distribution of lexemes between flexible and rigid actually is, assuming such a task is practically feasible.

We are now in a position to define the notion of a canonical flexible category more precisely:

Flexible Category: *A flexible lexical category is one for which different methods of lexical categorization allow for overlap with other categories, i.e., its lexemes can fulfill multiple functions indiscriminately.*

Another way of stating this is as follows:

Flexible Category′: *For members of a canonical flexible category, the different uses of the same lexeme are maximally indistinguishable from one another.*

In sum, a canonical flexible category is one which serves multiple functions, with minimal or no distinction in form, meaning, or syntactic possibilities. ‘Functions’ in the definition and previous sentence should be interpreted in the non-technical sense. It may be broadly construed to encompass syntactic slots, propositional act functions, types of constructions, or ranges of meaning. A lexeme that can switch between multiple syntactic slots, multiple propositional act functions, multiple construction types, or multiple related meanings, and do so indiscriminately, is clearly more flexible than one that cannot. Notice that these dimensions of flexibility stem directly from our earlier typology of the lexeme. If a lexeme consists of an association of semantics, syntactics, and form, then the most flexible lexeme is one that covers the widest range of functions along each of these dimensions. Also note that the flexibility of word classes in a language is orthogonal to the number of word classes in a language. A monocategorical language would have a single word class which could fulfill multiple roles, but there could just as well exist a language with seven word classes that were each highly flexible, so that any lexeme could function as a member of any class. More on this below.

Another important point regarding the above definitions is the notion of categorical alignment, i.e., the extent to which different methods of classification yield the same results. This is not a new concept in the typological study of lexical categories. Spencer (2005) and Corbett (2013) both adopt a canonical approach in which they adhere to the principle of the morpholexically coherent lexicon (originally put forth by Spencer). This principle, simply stated, says that for a canonically rigid word class the morphology, syntax, and semantics should all be in alignment. So a canonical noun will have a referential function, serve as the head of its phrase, and take nominal morphology. Noncanonical words are ones which deviate on one or more of these dimensions. English Gerunds, for example, have properties of both Verbs and Nouns, and thus constitute a mixed (noncanonical) category. While Spencer and Corbett successfully apply the Canonical approach and the principle of the morpholexically coherent lexicon to the interesting fuzzy cases in lexical categorization, by laying out three broad methods of categorization (morphological considerations, syntactic considerations, and semantic ones), they miss the larger point regarding categorical alignment more generally: for *any* method of categorizing the lexicon, the principle of categorical alignment should hold for the canonical case. There is no particular reason to pick out broader groups of categorization methods and privilege those distinctions over others, especially given that the boundaries between syntax, semantics, and morphology are often difficult to discern in the first place. In practice, however, there is very little difference between Spencer and Corbett’s canonical approach to lexical categorization and my own. This paper simply seeks to make a number of the relevant principles and criteria more coherent and explicit.

So what do canonically rigid and flexible categories look like? Perfectly rigid categories would be those that allow for no functional shift, whether through overt or zero-derivation. It appears that no language approaches this type; all languages have some form of derivation, even if just zero-derivation, although individual lexemes may be severely restricted in which derivational processes they can undergo, and which syntactic functions they can fulfill.

As for flexible categories, perhaps the best examples come from the isolating languages of southeast Asia, most notably Riau Indonesian, where either of the phrases in (14) may have any of the possible meanings in (15).

1. Riau Indonesian (Malayic, Austronesian: Indonesia)
   1. makan ayam

eat chicken

* 1. ayam makan

chicken eat

1. English translations for (14)
   1. the chicken is eating
   2. the chickens are eating
   3. the chicken was eating
   4. the chicken will be eating
   5. the chicken eats
   6. the chicken has eaten
   7. someone is eating the chicken
   8. someone is eating for the chicken
   9. someone is eating with the chicken
   10. the chicken that is eating
   11. where the chicken is eating
   12. when the chicken is eating (Gil 2005: 362–363)

The fact that these two lexemes may be used for such a wide variety of pragmatic and semantic functions, with no formal distinction whatsoever, makes them excellent illustrations of canonically flexible lexemes. Moreover, Gil notes that one cannot even make a *semantic* distinction between their different uses, and that the best way to characterize the meaning of a sentence like *makan ayam* is ‘entity associated with eating and with chicken’ (Gil 2005: 267). This has some remarkable implications:

The above structure constitutes a single unified meaning, encompassing the entire range of interpretations of the sentences in (14), including, among others, those expressed by the various translations of (14) into English provided in (15). In particular, it accounts for the indeterminacy with respect to thematic roles, allowing for the chicken to assume any role whatsoever in relation to the eating; and for indeterminacy with respect to canonical ontological types, permitting makan ayam and ayam makan to denote activities, things, places, times, and so on. (Gil 2005: 367)

From the perspective of flexible categories, what this means is that lexemes in Riau Indonesian like those presented above are completely indistinguishable across different propositional act functions. There is nothing in the formal features of the language to mark when a lexeme is being used in one function versus another, including even prosody.

Of course, if this were all there were to say, one wonders how it would even be possible to communicate in such a language. Gil goes on to illustrate ways in which structures can be “semantically enriched” through various principles of interpretation. But this nicely illustrates an important point: if a language were completely flexible, communicating in it would be difficult if not impossible, and would have to rely entirely on pragmatic inferences, because it would be impossible to distinguish between the different functions of the same lexeme, a point that has been made previously by Hengeveld, Rijkhoff, and Siewierska (2004), Rijkhoff and Van Lier (2013), as well as Frajzyngier and Shay (2003). Therefore we can establish on a priori grounds that word classes are unlikely to be canonically flexible, at the risk of being confoundingly ambiguous. Given such a pronouncement, it is remarkable that Riau Indonesian even approaches the canonical point as closely as it does. Moreover, this also gives us insight into the debate over the noun-verb distinction in languages like Mundari. Clearly these two functions can be distinguished in the language by *some* means, or else speakers would be incapable of distinguishing between referents and predicates. What seems undeniably true, however, is that the means of distinguishing these two functions in Mundari are extremely subtle, and depend a great deal more on things like discourse salience than any formal features or marking.

This section has presented a revised definition of lexical flexibility that addresses the rigorous criteria for lexical flexibility set out by both Croft (2001) and Evans and Osada (2005a). Having defined our canonical point, we can now examine the ways different languages might deviate from this canonical type.

# Flexible categories: The range of the phenomenon

The criteria along which languages might deviate from the canonical can be grouped according to two overarching criteria or principles: indistinguishability, and scope of flexibility. The principle of indistinguishability refers to the fact that different uses of a lexeme in a flexible category should be maximally indistinguishable from one another. In Section 4.1, I will outline seven ways in which categories in various languages might deviate from this principle, constituting our first seven criteria. The principle of maximal scope states that canonical flexible categories will encompass the broadest range of functions possible. By this principle, a word class which subsumes just referential and modification functions is deemed less flexible than a word class which subsumes the functions of reference, modification, and predication. There are three criteria which fall under this principle, and they will be covered in Section 0.

## Indistinguishability

### Indistinguishability of structural coding. One way in which a word class might deviate from the canonical definition is for lexemes of that class to require additional morphological material in order to fulfill a different propositional act function. This is usually accomplished via derivation. Hengeveld (1992: 58) states this criterion somewhat more vaguely noting that a flexible category is one that can fulfill multiple functions “without further measures being taken.” Croft (2001: 66) refers to this as the structural coding of the propositional act functions. Flexible categories, then, are ones where there is no overt structural coding for different functions. While these categories are rigid in the sense that one can always clearly distinguish between what is a noun and what is a verb, they are flexible in that a lexeme may function as either. The different uses of the lexeme are no longer maximally indistinguishable.

In the conventions of Canonical Typology, this criterion is illustrated as follows, on a scale from *more canonical* > *less canonical*:

1. no structural coding needed to change functions > presence of additional structural coding required

A language which has more canonically flexible categories, according to this criterion, is Hanis Coos. Frachtenberg describes it as follows:

All stems seem to be neutral, and their nominal or verbal character depends chiefly upon the suffixes with which they are used. Consequently two different suffixes – one of a verbal and the other of a nominal character – may be added to the stem, nominalizing or verbalizing it, according to the requirements of the occasion. (Frachtenberg 1922: 318)

As the pairs of examples in (16) show, lexemes in Coos are canonically flexible according to Criterion 1, requiring no derivational morphology to change functions. This holds for both the shift from referential to predicational (a–c) and predicational to referential (d–f) uses.

1. Hanis Coos (Coosan, Oregon Coast: Oregon)
   1. po·ʷkw‑is n̥‑pó·ʷkw‑its

‘slave’ ‘I enslaved him’

* 1. hu·ʷm‑is n̥‑hu·ʷm‑is‑its

‘woman’ ‘I marry (her)’

* 1. ƛ̓kwi· ƛ̓kw‑it

‘blanket’ ‘she covered (them) with blankets’

* 1. he·wi· he·w‑is

‘he grew up’ ‘ready’

* 1. sto·uq sto·waqw‑is

‘he stood’ ‘wall’

* 1. ƛ̓e·ts ƛ̓e·y‑is

‘he spoke’ ‘language’

(Frachtenberg 1922: 328–330, 360); (a–c) cited in Mithun (1999: 57)

Tagalog is an isolating language that is similarly flexible according to this criterion.

1. Tagalog (Meso-Philippine, Austronesian: Philippines)
   1. Nagtatrabaho ang lalaki

is.working top man

‘The man is working.’

* 1. Lalaki ang nagtatrabaho

man top is.working

‘The one who is working is a man.’ (Schachter & Shopen 2007: 12)

At the other end of this spectrum of canonicity is Malimiut Iñupiaq. Lexemes are very rigidly classified according to category, but the language has a very robust set of derivational suffixes which allow lexemes to serve other functions, shown in (18).

1. Malimiut Coastal Iñupiaq (Inuit, Eskimo-Aleut: Alaska, United States)
   1. Ulu‑aq‑tuq.

knife‑utilize‑3sg.ind

‘She is using an ulu [traditional woman’s knife].’

* 1. Ulu‑qaq‑tuq.

knife‑have‑3sg.ind

‘She has an ulu.’

* 1. \*Ulu‑tuq.

knife‑3sg.ind

‘She has/is using an ulu.’ (Lanz 2010: 96)

Examples (a) and (b) show that *ulu* ‘knife’ requires derivational morphology in order to be used for predication. Example (c) shows that the use of *ulu* without such derivation is ungrammatical. Similarly, Iñupiaq Verbs must take derivational marking in order to serve as Nouns. This is shown in (19).

1. Malimiut Coastal Iñupiaq (Inuit, Eskimo-Aleut: Alaska, United States)
   1. aŋuniaq‑ ‘to hunt’ > aŋuniaq‑ti ‘hunter’
   2. killaiyaq‑ ‘to sew’ > killaiya‑un ‘sewing machine’

(Lanz 2010: 71)

For the closely-related West Greenlandic language, Sadock (1999: 387) notes that “The majority of derivational affixes are quite specific as to the class of stem to which they can be added and quite determinate as to the class of stem that they form. Of the approximately 500 productive derivational suffixes of West Greenlandic, at least 300 are added unambiguously to one class or the other.”

But while one might be tempted in light of this data to analyze Iñupiaq lexeme classes as strictly rigid, the fact that these lexemes can change their functional roles at all means they still exhibit some flexibility. If they did not, they would not be able to change function at all, even *with* derivational morphology. A language that does not allow for any functional shift is clearly more rigid than Iñupiaq, which allows for functional shift but merely requires additional structural coding. (Note that this analysis of the Iñupiaq data applies to the Mande examples in (12) as well.) In fact, Sadock goes on to note that “Perhaps 10– 20% of the productive derivational affixes derive both nouns and related verbs from the class of stems they apply to,” suggesting that these lexemes are less rigid than their unambiguously-categorized counterparts (Sadock 1999: 387).

This perhaps explains why researchers have at different times stated that “the line of demarcation between the noun and the verb [in Eskimo] seems to be extremely vague” on the one hand (Thalbitzer 1911: 1006), and that “it is hard to imagine a poorer choice of a language group to accuse of not having fundamental part-of-speech distinctions than Eskimo” on the other (Sadock 1999: 384). One anonymous reviewer further suggests that the language “compensates for the rigidity of its word classes by having a rich set of derivational affixes.” The canonical approach is capable of breaking this impasse. Rather than attempting a binary classification of parts-of-speech in Iñuit languages into either rigid or flexible, it notes that they have the property of being flexible in regard to functional shift, as well as the property of being rigid in regard to derivational morphology. The alternative would be for one camp to defend their flexibility, emphasizing the importance of the different functional uses of lexemes, while the other camp would emphasize the importance of derivational morphology, both committing a form of methodological opportunism, with no real progress being made.

Finally, there are in-between cases of Criterion 1 as well, where derivational morphology is optionally present, as in some English adverbs derived from Adjectives shown in (20).

1. English (Germanic, Indo-European: United Kingdom)
   1. He moves **quick**.
   2. He moves **quickly**.

### Indistinguishability of inflection. Derivational morphology is not the only coding capable of distinguishing one class of lexemes from another. If the inflectional marking of a syntactic category differs from that of another category in the language, than the inflectional marking on the lexeme will also distinguish the syntactic function of a given use of a lexeme. In contrast, for strictly isolating languages the inflectional potential of every lexeme is the same regardless of its function (i.e., it has none), so the language is more flexible. Thus, languages which have no class-specific inflectional morphology are more canonically flexible than languages with inflectional morphology, which gives us Criterion 2.

1. *isolating (no inflectional morphology) > synthetic (with inflectional morphology)*

For example, there is a class of lexemes in Swahili which can freely serve as nouns or verbs with no derivational marking. However, Swahili nouns are distinguished by one of fourteen prefixes indicating noun class, while Swahili verbs are distinguished by their various TAM affixes, as well as subject and object agreement. Because of this, it is usually possible to tell whether a word is functioning as a Noun or a Verb.[[9]](#footnote-9) Consider the pairs of words in (21).

1. Swahili (Bantu, Niger-Congo: East Africa)

ku‑ganga ‘to cure’ m‑ganga ‘a doctor’

ku‑zoea ‘to get used to’ ma‑zoea ‘familiarity’

ku‑kosa ‘to err, miss’ ma‑kosa ‘mistakes’

ku‑nywa ‘to drink’ ki‑nywa ‘a drink’

ku‑oa ‘to marry a woman’ nd‑oa ‘a marriage’

ku‑zinga ‘to go around’ m‑zinga ‘a cylindrical-shaped object

(Mohammed 2001: 34)

The Nouns on the right each take their respective noun class prefix,[[10]](#footnote-10) while the verbs on the left are shown with the infinitive prefix *ku‑*. Therefore, even though all the lexemes in (21) undergo a process of zero-derivation, their different functional uses are still distinguishable based on their inflection alone.[[11]](#footnote-11) For languages like Swahili, zero-derivation is not enough to make these different uses indistinguishable. The functional uses of these lexemes are still ‘given away’ by their inflectional marking.

Another way of thinking about Criterion 2 is as follows:

*Criterion 2′ inflection is a property of the syntactic slot > inflection is a property of the lexeme class*

This can be exemplified for *güzel* and many lexemes like it in Turkish, as shown in (22).

1. Turkish (Turkic, Altaic: Turkey)
   1. güzel‑im

beauty‑1sg.poss

‘my beauty’

* 1. güzel bir köpek

beauty art dog

‘a beautiful dog’

* 1. Güzel konuş‑tu‑ø

beauty speak‑pst‑3sg

‘S/he spoke well.’ (Gösel & Kerslake 2005: 49)

This is the case for the majority of Turkish lexemes, and so our typology of lexical flexibility should say that Turkish is largely flexible according to Criterion 2.

Similarly, for the Swahili lexemes in (21), inflection appears to be a property of the syntactic class, i.e. a lexeme does not carry its inflectional morphology with it when it changes functional categories, but instead adopts the inflectional morphology of the syntactic slot in which it appears. For the majority of Swahili lexemes, however, this is not the case, and the inflectional morphology of a lexeme is determined by its particular lexical class. That is, Swahili Nouns both retain their nominal inflection and often appear with a copula when used for predication, as in (23)a, and Swahili Verbs retain their TAM marking or require nominal derivation when used for reference, as in (23)b and (23)c.

1. Swahili (Bantu, Niger-Congo: East Africa)
   1. Yeye ni m‑zungu.

he cop cl1‑white.person

‘He is a white person.’

* 1. Mw‑imba‑ji ni m‑zuri sana.

cl1‑sing‑nmlz cop cl1‑good very

‘The singer is very good.’

* 1. M‑tu a‑na‑ye‑imba ni m‑zuri sana.

cl1‑person 3sg‑prs‑rel‑sing cop cl1‑good very

‘The person who is singing is very good.’ (source: personal knowledge)

Therefore a canonical typology of lexical flexibility for Swahili should state that most lexemes in Swahili are rigid with respect to Criterion 2, but a small percentage of lexemes are flexible.

### Indistinguishability of distributional potential. If flexible word classes must be maximally indistinguishable across different uses, it follows that members of the same category should have the exact same distributional potential in the sense of Croft (2001, 2003). Evans and Osada (2005a: 366–367) call this the criterion of equivalent combinatorics. If certain sets of words do not have the same behavioral properties as others, we cannot say that they are indistinguishable. This is summarized in Criterion 3.

1. *all lexemes have the same distribution > lexemes have different distributions*

It must be reiterated that no particular constructions should be privileged in determining the distribution of a lexeme, in line with Croft’s (2001) Radical Construction approach. All constructions are on the table when it comes to determining distribution.

Autuw shows a language that is rigid according to this criterion. Autuw Verbs inflect for tense, factivity, and aspect, while Adjectives do not, as shown in (24).

1. Autuw (Sepik, Papuan: Papua New Guinea)
   1. rey di‑k‑ik‑iy‑e

3sg fact‑ipfv‑sit‑ipfv‑pst

‘He was sitting/used to sit.’

* 1. wan‑wan‑ke yæn mede

1sg‑1sg‑poss child good

‘My own child is good.’ (Feldman 1986: 60), cited in Croft (2003: 99)

In Makah, by contrast, nearly every semantic class of lexeme may take person, aspect, and mood marking, as shown in (25), making the language more canonically flexible according to Criterion 3.

1. Makah (Southern Wakashan: United States)
   1. kʼupšil baʔas ʔu·yuq

point:mom:ind:3sg house obj

‘He’s pointing at the house.’

* 1. babaɬdis

white.man:ind:1sg

‘I’m a white man.’

* 1. ʔi·ʔi·x̣ʷʔi

big:ind:3sg

‘He’s big.’

* 1. hu·ʔax̣is haʔukʷʼap

still:ind:1sg eat:caus

‘I’m still feeding him.’ (Jacobsen 1979: 110–111), cited in Croft (2001: 30)

Another language that is somewhat rigid according to this criterion is Mojave. As shown in (26), Adjectives and Stative Verbs have the same distributional potential when used as predicates, but when used as modifiers, Verbs must be relativized but for Adjectives relativization is optional.

1. Mojave (River Yuman: United States)
   1. ʔiːpa‑č homiː‑k (iðuːm)

man‑sbj tall‑prs (aux)

‘The man is tall.’

* 1. ʔiːpa‑č suːpaw‑k (iðuːm)

man‑sbj know‑prs (aux)

‘The man knows.’

* 1. ʔiːpa kʷ‑suːpaw‑nʸ‑č ivaːk

man rel‑know‑dem‑sbj is.here

‘The man who knows is here.’

* 1. ʔiːpa (kʷ‑)homiː‑nʸ‑č ivaːk

man rel‑tall‑dem‑sbj is.here

‘The tall man is here.’

* 1. \*ʔiːpa suːpaw‑nʸ‑č ivaːk

man know‑dem‑sbj is.here (Schachter & Shopen 2007: 18–19)

Despite being flexible according to Criterion 2, Turkish lexemes are somewhat rigid according to Criterion 3 (underscoring the importance of evaluating lexical flexibility along more than one dimension). Göskel and Kerslake discuss how lexemes can be differentiated by the types of constructions in which they tend to appear:

In Turkish the boundaries between noun, adjective, and adverb are somewhat blurred. Many lexical items are able to occur with the typical functions of more than one of these classes, although in almost all such cases one function or another is dominant in the actual usage of that item. We call this its primary function. For example, the word *güzel* can occur as a noun […] or as an adverb […]. But in by far the majority of its occurrences the function of the word *güzel* is adjectival […]. (Göksel & Kerslake 2005: 49)

The fact that Turkish lexemes vary in the constructions they appear in, i.e. vary in their distributions, makes them moderately rigid by Criterion 3.

### Indistinguishability of functions. In addition to equivalent combinatorics, the canonical flexible category should also have maximum combinatorics, or bidirectionality as laid out to Evans and Osada (2005a: 375–378). In other words, flexible lexemes should be indistinguishable from one another in terms of the functions they can fulfill. If certain lexemes may fill some functions that other lexemes cannot, these lexemes are rigid according to Criterion 4 below.

1. *maximum combinatorics > restricted combinatorics*

Canonical cases for Criterion 4 are quite rare. However, Classical Nahuatl appears to be a flexible language according to this criterion. Although there are a number of obvious morphological differences between Nouns and Verbs, lexemes of both classes may fulfill either referential or predicative functions, as (27) shows (examples from Evans and Osada (2005a: 360); referential uses are preceded by the demonstrative *in*).

1. Classical Nahuatl (Aztecan (Nahuan), Uto-Aztecan: Mexico)
   1. ø‑tzatʼtzi in ø‑konē‑tl

3sg.sbj.shout dem 3sg.sbj‑child‑abs

‘The baby shouts.’ (i.e., he shouts, the one who is a baby) (Launey 2002: 115)

* 1. ø‑konē‑tl in ø‑tzatʼtzi

3sg.sbj‑child‑abs dem 3sg.sbj‑shout

‘It is a baby who is shouting.’ (Launey 2002: 115)

* 1. ni‑c‑yōllālia in ø‑chōca

1sg.sbj‑3sg.obj‑console dem 3sg.sbj‑cry

‘I console the one who cries.’ (Launey 1994: 59)

* 1. ø‑tlaìiyōhuia in ø‑chōca

3sg.sbj‑suffer dem 3sg.sbj‑cry

‘He who cries suffers.’ (Launey 1994: 59)

Even in largely rigid languages, one finds that large segments of the lexicon can be omnifunctional. This is the case for many words like *bank* in English, shown in (28).

1. English (Germanic, Indo-European: United Kingdom)
   1. Attribution: **bank** money (money owned/created by a bank)
   2. Reference: a blood **bank** (a bank for storing donated blood)
   3. Predication: I **bank** with Capital One (the act of using a bank’s services)

In fact, a single language can exhibit a great deal of variation among its lexemes in regard to Criterion 4. Mithun explains this for Mohawk:

"Some [morphological] words show the morphological structure of verbs but the meanings and syntactic uses of nominals, such as *atáken* ‘see onself’ = ‘mirror’. Some morphological verbs are ambiguous, used sometimes to refer and to serve as arguments of clauses, sometimes to denote actions and to function as predicates, such as *teióiaʼks* ‘it flickers/movie’. And some morphological verbs serve only as predicates, such as *akaterohrókhaʼ* ‘I would watch’.” (Mithun 1999: 59)

Part of Evans and Osada’s motivation for positing this criterion is that the literature regarding the noun-verb distinction has tended to focus on whether or not all words can serve indiscriminately as predicates, but has overlooked the related question of whether all predicates can serve as attributes, referents, etc., without special marking. Such was the case when Swadesh (1938) argued for Nootka as a monocategorical flexible language, based on the classic examples in (29).

1. Nuuchahnulth (Nootka; Southern Wakashan: Canada)
   1. mamuːk‑ma quːʔas‑ʔi

working‑prs.ind man‑def

‘The man is working.’

* 1. quːʔas‑ma mamuːk‑ʔi

man‑prs.ind working‑def

‘The working one is a man.’

* 1. ʔi·ḥ‑maː quːʔas‑ʔi

big‑prs.ind man‑def

‘The man is large.’

* 1. quːʔas‑ma ʔi·ḥ‑ʔi

man‑prs.ind big‑def

‘The large one is a man.’ (Swadesh 1938: 78)

Jacobsen (1979) later pointed out that, while it is true that both nouns and verbs may be used as predicates without any additional structural coding, only nouns may be used as arguments without the presence of the definite *‑ʔi* suffix, as shown in (30).[[12]](#footnote-12) So it is often overlooked that omnipredication is not coterminous with omnifunction. Even though every lexeme in a language can function as a predicate, it may not be the case that every predicate can function as a referent or attribute.

1. Nuuchahnulth (Nootka; Southern Wakashan: Canada)
   1. mamuːk‑ma quːʔas

working‑pres.ind man

‘A man is working.’

* 1. \*quːʔas‑ma mamuːk

man‑pres.ind working

‘A working one is a man.’

Criterion 4 is worth distinguishing from Criterion 3 in more detail. The crucial difference is that while Criterion 3 is concerned with equal distributions, i.e. lexemes that are able to fill all the same constructions, Criterion 4 is concerned with bidirectionality, i.e. the extent to which lexemes of different categories may each function as the other category. In a perfectly flexible language, the two would of course be equivalent. But there may exist languages that exhibit bidirectionality (lexemes of each category may serve the function of any other category), but not completely equivalent combinatorics. Mohawk again serves to illustrate this possibility. The language is bidirectional in that lexemes may function as either Morphological Nouns or Morphological Verbs, but the language lacks equivalent combinatorics in that many lexemes are restricted in their aspectual possibilities when serving as predicates. Compare the first and second examples in each set for (31).

1. Mohawk (Northern Iroquoian: United States and Canada)
   1. ka‑rák‑ʌ

n.sg.sbj‑white‑stat

‘it is white’

(Baker 2003: 4)

* 1. Ka‑wis‑a‑hútsi thíka.

n.sg.sbj‑glass‑ø‑black that

‘That glass is black.’

(Baker 2003: 4)

* 1. \*waʼ‑ká‑rak‑eʼ

fact‑n.sg.sbj‑white‑punc

‘it whited’

(Baker 2003: 5)

*t‑yo‑yaʼt‑ʌʼ‑ʌ*

cis‑n.sg.obj‑body‑fall‑stat

‘it has fallen’

T‑aʼ‑ka‑wís‑ʌʼ‑neʼ thíka.

cis‑fact‑n.sg.sbj‑glass‑fall‑punc that

‘That glass fell.’

t‑aʼ‑ka‑yáʼt‑ʌʼ‑neʼ

cis‑fact‑n.sg.sbj‑body.fall.punc

‘it fell’

* 1. Kɑ‑núhs‑aʼ thíkʌ o‑ʼnerohkw‑aʼ‑kʌha.

n.sg.sbj‑house‑nmlz that n.sg.obj‑box‑nsf‑former

‘That old box is a house.’ (e.g., a child’s play house)

Ka‑rák‑ʌ thíka o‑ʼneróhkw‑aʼ.

n.sg.sbj‑white‑stat that n.sg.obj‑box‑nsf

‘That box is white.’ (Baker 2003: 8)

* 1. \*(y)o‑nuhs‑u

n.sg.obj‑house‑stat

‘it is a house’ (Baker 2003: 8)

Examples (a) and (b) illustrate Mohawk’s lexical flexibility between objects, properties, and actions. (b) shows that lexemes denoting property concepts may even incorporate objects as action lexemes do. Example (c) shows that lexemes denoting property concepts have distributional restrictions, namely that they cannot occur in non-stative aspects. And while example (d) illustrates flexibility between referential and predicative functions, example (e) shows that objects serving as predicates may not take any aspectual marking, even stative. Therefore Mohawk is flexible according to Criterion 4, because lexemes are mostly omnifunctional, but rigid according to Criterion 3, because the distributional behavior of lexemes vary.

An interesting question is to what extent these restrictions on a lexeme’s distribution can be chalked up to its semantics (e.g., it may be conceptually impossible to imagine certain lexemes as predicates or referents). Hengeveld and Rijkhoff argue that distributional restrictions on the use of a lexeme may not be so much distributional as they are semantic:

Lexemes are put to use to lexicalize conceptualizations of the world required in certain communicative situations in a certain socio-cultural context. Since there is no reason to assume that all our concepts are equally symmetrical with respect to predicating and referring functions in a particular language, we may expect certain flexible lexemes to occur more as predicates than as arguments, whereas other lexemes are used more often as arguments than predicates. (Hengeveld & Rijkhoff 2005: 412)

Adopting this position changes the evaluation of Mohawk in terms of Criterion 3. This analysis suggests that Mohawk is actually flexible by Criterion 3, and that its rigidity comes instead from semantic criteria, which will be covered under Criteria 6 and 7.

### Indistinguishability of feature values. Another way languages may violate the principle of indistinguishability and thereby exhibit rigidity is for certain members of the lexicon to possess fewer feature values than others. In line with this, Corbett (2013: 6) posits a principle of exhaustiveness[[13]](#footnote-13) for morphosyntactic features which states that, “every feature value applies to all lexical items.” This will be our next criterion.

1. *every feature value applies to all lexical items > not all feature values apply to all lexical items*

Croft’s (2003: 99) criterion of inflectional potential (a subtype of behavioral potential) is superficially similar to this in that it too assesses the number of inflectional distinctions (grammemes) for a lexeme, but is otherwise unrelated. Croft defines inflectional potential as follows: “if the marked value has a certain number of formal distinctions in an inflectional paradigm, then the unmarked value will have at least as many formal distinctions in the same paradigm.” But where Croft’s criterion of inflectional potential is interested in the markedness of non-prototypical uses of a lexeme, i.e. the feature values that appear in one use of a lexeme as opposed to other uses, Criterion 5 here is interested in the inflectional values that a given lexeme is allowed to take as opposed to *other lexemes*.

This criterion is relevant to the issue of lexical categorization because, as Corbett (2013: 16) shows, having lexical items without one or more feature values results in a differentiated lexicon, i.e., the set of lexemes lacking those feature values now demarcate a separate part of speech. For example, while Verbs in Navajo may have the feature values singular, dual, and plural for number, Navajo Nouns may only have the feature values singular and nonsingular. This is shown in (32).

1. Navajo (Diné Bizaad; Athabaskan, Na-Dené: United States)
   1. ʼAtʼééd yigááɬ.

girl.sg walk.sg

‘The girl is walking.’

* 1. ʼAtʼéé‑ké yiʼash.

girl‑nsg walk.du

‘The girls (2) are walking.’

* 1. ʼAtʼéé‑ké yikah.

girl‑nsg walk.pl

‘The girls (3+) are walking.’ (Lorraine Begay-Manavi, native speaker)

Obviously, this is just one of the many features which distinguish Nouns from Verbs in Navajo. Another example is the Nuuchuhnulth data discussed in (29) and (30), where the feature indefinite is unavailable to predicates serving in an argument function, thus making an arguable distinction between Nouns and Verbs. The most classic example of parts-of-speech differentiation by feature values, however, comes from Latin, as in (33). Students of Latin are constantly told that ‘Adjectives must agree in case, number, and gender with the Noun they modify’. Latin Adjectives may therefore take any of the three Latin genders – masculine, feminine, or neuter, as shown in (a–c). Latin Nouns, on the other hand, are for the most part restricted to a single value for gender, shown by (d–e).

1. Latin (Italic, Indo-European: Italy)
   1. lēgat‑us magn‑us

ambassador‑nom.s.m great‑nom.s.m

‘a great ambassador’

* 1. cōpi‑a magn‑a

supply‑nom.sg.f great‑nom.sg.fem

‘a great supply’

* 1. flumen‑ø magn‑um

river‑nom.sg.n great‑nom.sg.n

‘a great river’

* 1. \*lēgat‑a magn‑a

ambassador‑nom.sg.f great‑nom.sg.f

‘a great ambassador’ (other readings possible)

* 1. \*lēgat‑um magn‑um

ambassador.nom.sg.n great‑nom.sg.n

‘a great ambassador’ (other readings possible) (source: personal knowledge)

### Indistinguishability of semantics across functions. We now turn to examining flexibility along the third part of the three-part sign – semantics. Just as canonically flexible lexemes are indistinguishable across uses in terms of form and syntactics, so too should they be indistinguishable across uses in terms of their semantics. This is formalized in Criterion 6.

1. *no semantic shift between functions > large semantic shift between functions*

This stems directly from the canonical typology of the lexeme given in Section 3.2. The further one use of a lexeme diverges from the meaning of another use, the less canonical a lexeme this collection of senses is. But if we invert this criterion and take our canonical point as the opposite end of the spectrum, then we can say that the further that one use of a lexeme diverges from the meaning of another, the more canonically flexible that lexeme is. Nuuchahnulth is one example of a language that is canonically flexible according to this criterion, as shown by the examples in (29), where the semantic shift is negligible.

Mundari has a number of more canonical examples, given in pairs in (34).

1. Mundari (Munda, Austroasiatic: India)
   1. dasi‑ko=ko kami‑ta‑n‑a.

servant‑pl=3pl.sbj work‑prog.or‑intr‑ind

‘The servants are working.’

* 1. dasi‑aka‑n‑a=ko.

serve‑init.prog‑ind=3pl.sbj

‘(They) are working as servants.’

* 1. baRae‑ko=ko susun‑ta‑n‑a.

blacksmith‑pl=3pl.sbj dance‑prog.or‑intr‑ind

‘The blacksmith caste members are dancing.’

* 1. soma=eq baRae‑aka‑n‑a.

Soma=3sg.sbj *baRae*‑init.prog‑intr‑ind

‘Some has become a *baRae* [lower caste member].’

* 1. mastaR isTuDeNT‑ko=eq paRao‑ke‑d‑ko‑a

teacher student‑pl=3sg.sbj teach‑compl‑tr‑3pl.obj‑ind

‘The teacher taught the students.’

* 1. soma=eq mastaR‑aka‑n‑a.

Soma=3sg.sbj teacher‑init.prog‑intr‑ind

‘Soma is a teacher, is working as a teacher.’ (Evans & Osada 2005a: 369–370)

But there are also many cases in Mundari where the semantic shift that accompanies functional shifts is much greater. For example, the Mundari word *hoRo* ‘person, Munda person’, when used in a predicative position, means ‘speak [Munda] language’, rather than ‘be a Munda person’ as one might expect. For this meaning, a copula is required instead. (Evans & Osada 2005a: 371–372).

Linguists differ in how much semantic shift they think is too much for a collection of senses to count as a single lexeme, as has been discussed in Section 3.2. At issue is the precise nature of the semantic shift involved when a single purported lexeme is used for different syntactic or propositional act functions, and whether that “incremental change in meaning” or “accretion in semantics” is significant enough to constitute placing alternative uses of a word into separate lexical entries or even separate lexical categories. There are generally five positions one can take on the issue for any given lexeme:

1. There is no change of semantics; the two uses have the same meaning, or the meaning is vague or underspecified. (Monosemy)
2. The accretion / change in semantics is insignificant; the two uses constitute separate senses within the same lexeme. (Polysemy)
3. The accretion / change in semantics is significant; the two uses belong to separate lexical categories. (Heterosemy)
4. The accretion / change in semantics is significant; the two belong to separate lexical entries in separate lexical categories, and their relationship is solely a diachronic one. (Homonymy)

Linguists who utilize the idea of lexical flexibility are more likely to adopt approaches (I) or (II) (Hengeveld & Rijkhoff 2005; Gil 2001). Evans and Osada (2005a: Section 3.2, 2005b: 446) prefer the heterosemy approach in (III), while researchers like Spencer (2005) adopt the approach in (IV). It is often unclear whether polysemy and heterosemy are meant to imply the existence of just a single lexeme or whether they suggest the existence of multiple lexemes. The defining feature of each is simply whether the set of meanings is ‘related’. Under the flexible analysis adopted here, relation of meaning implies membership within a single lexeme. The appeal of this definition for heterosemy is that it allows one to separate out the lexical status and the categorical status of different senses. One could then say that a collection of senses belongs to the same lexeme yet different lexical categories. This does not appear to be the definition adopted by Evans and Osada, for whom heterosemy implies more than one lexeme at work: “But once we admit semantics to our treatment, we split seed into (at least) two signs, in a relation of heterosemy to one another […]” (Evans & Osada 2005b: 452). In order to capture the semantic relation between signs under this analysis, one must take the association up a level, and utilize Mel’čuk’s (2006a) concept of the vocable: “Related [lexical units] having an identical signifier and sharing non-trivial semantic components in their signifieds are grouped into vocables, so this grouping reflects polysemy” (Mel’cuk 2006a: 241). A related issue is whether the collection of senses are all derived from the same root (schema A), or whether a root is first assigned a category and then given a derivation (schema B), a distinction raised by Arad (2003) for Hebrew.

**schema a schema b**

lexeme

noun

verb

adjective

lexeme

verb

noun

adjective

Figure 8. *Word formation from roots vs. word formation from existing words*

Linguists who adhere to schema A will tend to align with approaches (I) and (II) above, while linguists who adhere to schema B will tend to align with approach (III).

From a canonical perspective, it is no surprise that linguists disagree to such an extent as to the status of senses which deviate significantly from each other, because it is exactly these cases that are noncanonical instances of lexemes along the dimension of semantics, according to our typology of the lexeme given in Section 3.2. Given that this region of the theoretical space we mapped out is so noncanonical, this is precisely the type of phenomenon one would expect disagreement over.

Which of the above positions one takes depends crucially on how much of the semantics of any given use of a word one assigns to the lexical entry, and how much is incremental, inferable from context and other factors. There are two extremes one could take on the issue. On one end of the spectrum, some discussants argue for “precategorical” or “vague” semantics, where lexemes are unspecified for category, and that they acquire the rest of their meaning or clarification in context, either in virtue of their syntactic position in the sentence, or via pragmatic rules and inferences, or through additional inflectional morphology (Gil 2001; Hengeveld & Rijkhoff 2005; Langacker 1987).

Consider the data in (35), again from Nuuchahnulth.

1. Nuuchahnulth (Nootka; Southern Wakashan: Canada)

inikw‑ihl‑minh‑ʼis‑it

fire/burn‑house.loc‑pl‑small‑pst

‘The little fires that were once burning in the house.’

‘Several small fires were burning in the house.’ (Sapir 1921: 134)

*Inikw‑* serves as an excellent example of a lexeme with a vague or unspecified meaning. Its meaning is ‘fire’, but it is underspecified for whether it denotes an *action* involving fire or an *entity* involving fire. Another example is the Swahili data in (21). Under the vague semantics approach, lexemes like ‑*ganga* ‘doctor/cure’ are vague with respect to their predicational or referential status, and so could mean anything having to do with ‘curing’ or ‘cures’. Only when it receives its nominal or verbal inflection in context does it become specified for reference (‘doctor’) or predication (‘to cure’). The meaning of the lexeme isn’t considered to have changed whatsoever. Instead, the meaning is merely interpreted via context. Since there is no change of meaning, there is no reason to partition the lexicon on the basis of lexical semantics, and so the lexeme would be considered flexible.

Spencer (2005) appears to take the opposing stance, and assumes that the lexical representation of a word contains information about the morphological and phonological form of a word, its syntactic category and argument structure, and some kind of basic semantic representation. Lexemes are thus restricted in their flexibility. In this approach, most uses of seemingly similar words would actually constitute distinct lexical entries, therefore precluding the possibility of flexible lexemes. Spencer’s approach therefore accepts only the most canonical, non-divergent uses of a lexeme as constituting one and the same lexical entry, as opposed to the vague semantics approach, which accepts even widely divergent uses as belonging to the same lexical entry.

Croft also criticizes vagueness approaches, stating that “The inability to identify sufficient conditions is the Achilles heel of all vagueness or monosemy definitions.” (Croft 2001: 72). A canonical approach may be useful in preserving the vagueness analysis for semantic shift here. It can avoid the necessity of necessary and sufficient conditions for the definition of a given lexeme by viewing the meaning of the lexeme as emerging from a variety of intersecting features. In short, a vagueness or underspecification approach to lexical flexibility is possible if the meaning of a lexeme is seen as gradient and centered around a prototype or canonical point. Therefore there is no clean cutoff point for when the semantic shift accompanying a functional shift is ‘too great’ to be considered a member of the same lexeme. We should instead assess a lexeme’s canonicity according to the semantic dimension of Criterion 6.

### Indistinguishability of semantic shift across lexemes. Another way for a lexeme to be rigid according to its semantics is if it has an idiosyncratic or unpredictable meaning when undergoing functional shifts. While this is technically just a special case of Criterion 6, it merits separate discussion. Evans and Osada (2005a) make the point that, if one theorizes that lexemes receive their meaning from context, then it should be possible to provide a consistent set of rules which allow the hearer to “fill in” the rest of the meaning from that context. Therefore this accretion in meaning must be entirely predictable by means of a regular set of rules governing how the meaning of a lexeme changes in different contexts. If the meaning-accretion rules are not consistent, then some of that meaning accretion must be stored in the lexicon, and we have yet another means of distinguishing different classes of lexemes. As Enfield (2006: 301) points out, “the alternations observed are neither regular nor productive enough to be captured in the grammar in the strict sense (i.e. such that knowing the rule means not having to consult the lexicon in order to interpret or produce the data). To capture the facts, the descriptive linguist is forced to list these items and alternations in the lexicon, with specifications of the distinct semantic and grammatical properties of each case.” Some lexemes will have one resultant meaning when undergoing functional shift, and other lexemes will have a different resultant meaning when undergoing the same functional shift, therefore justifying a partitioning of the lexicon, making it slightly more specialized and therefore more rigid. The more regularly one can formulate the rules which determine the derived meaning of a lexeme, the more flexible the lexicon. This gives us Criterion 7.

1. *predictable final semantics > unpredictable final semantics*

Evans and Osada appropriately call this the principle of compositionality as well, i.e. the meaning of a lexeme in context must be compositional, attributable to the various features of its distribution. Corbett (2010: 144) also uses this criterion in his canonical typology of derivational morphology (derivation in which the derived semantics is predictable is more canonical than where the derived semantics is idiosyncratic, since this suggests the construction has become lexicalized).

Note that the *predictability* of the semantic shift is orthogonal to the *extent* of the semantic shift. A lexeme undergoing functional shift may drastically change its meaning, but that resultant meaning could also be entirely predictable as a regular type of semantic shift in the language.

There is an interesting implication of this criterion as it relates to Croft’s (2001: 73) universal regarding zero-coded semantic shift: in zero-conversion, there is always a shift towards the semantic class most prototypical for the propositional act function the lexeme is being used for. Example (36), for instance, illustrates for K’iche’ (Quiché) how action words (in this case *tixoh* ‘eat’), when used in referring expressions, shift their meaning to “a person, place, or thing which is a typical salient participant in the action in its semantic frame” (Croft 2001: 74).

1. Kʼicheʼ (Quiché; Mayan, Mayan: Guatemala)

lē k‑ā‑ø‑tixoh

the prs‑2sg.erg‑3sg.abs‑eat

‘what you eat’ (lit. ‘the you-eat-it’)

(Jacobsen 1979: 114) cited in (Croft 2001: 74)

But if more canonically flexible lexemes are ones where the semantic shift during zero-conversion is predictable, and if the propositional act function always adds some predictability to the resultant meaning during conversion, this implies that all instances of zero-conversion are at least marginally flexible. This perhaps helps explain why zero-conversion is the phenomenon most frequently pointed to as an example of lexical flexibility.

More canonically flexible examples along this criterion include (36) above for Kʼicheʼ, as well as (37) and (38) for Mwotlap and Makah respectively. What makes these canonical instances is that they all follow the predictions of Croft’s universal for semantic shift. That is, they each entail a semantic shift of the type object > become object. Less canonical and more idiosyncratic examples will be seen below.

1. Mwotlap (Oceanic, Austronesian: Vanuatu)

kōyō ma‑tavak kē, tō kē ni‑ēntē‑yō togolgol

3du prf‑adopt 3sg then 3sg aor‑child‑3du straight

‘They have adopted him, so that he (became) their legitimate son.’

(François: 131)

1. Makah (Southern Wakashan: United States)

ɬa·xʼukšʔal

man:mom:now:ind:3

‘He’s gotten to be a man.’ (cf. *ɬa·xʼuk* ‘man’)

(Jacobsen 1979: 114), cited in Croft (2001: 74)

Anytime a particular functional use of a lexeme becomes lexicalized, this is also grounds for calling the lexeme rigid. Mithun (2000) notes that many Morphological Verbs in Iroquoian languages, for example, have actually been lexicalized so that their primary interpretation is for reference (see for example (55) from Cayuga below). Example (39), from Tuscarora, illustrates an extremely rigid lexeme of this type with the stem *téskr‑* ‘stink’.

1. Tuscarora (Northern Iroquoian: United States and Canada)

ka‑téskr‑ahs

n.sbj‑stink‑ipfv

‘goat’ (lit. ‘it stinks’) (Mithun 1976: 234), cited in Croft (2001: 68)

All theorists seem to agree that the final semantics resulting from a functional shift must be in some way predictable. By “final semantics”, I merely refer to the complete compositional meaning associated with a word after taking into account all the relevant contextual information; it is useful to oppose this with the lexical or “core” semantics, and here I suggest that the two are related roughly as shown in (40).



In a certain sense, to say that the final semantics is predictable is trivial. As Nicholas Evans has pointed out to me (p.c.), the final semantics must be conventionally predictable somehow, or we would never be able to communicate at all. Criterion 7, then, refers not to whether the final compositional semantics is predictable per se, but whether there is a constant relation between the lexical semantics and the final compositional semantics. If no derivational, morphosyntactic, pragmatic, or cognitive rules can be used to consistently derive one use of a word from another, then we must say that the difference in meaning between those two uses of a word lies in the lexical semantics. The reason there is so much disagreement in the literature about this process is because different authors vary on what they allow the second term in the equation in (40) to contain. Evans and Osada and Croft allow for only syntactic position and some aspectual information – all other processes (e.g., pragmatics) are not deemed consistently predictable enough to render the final semantics. By contrast, Hengeveld and Rijkhoff, as well as Gil, incorporate a great deal more into the process of semantic interpretation, including a number of pragmatic interpretation principles. It all comes back to differing intuitions regarding the lexeme, and the limits on its range of functions, meanings, or combinatorics, as outlined in Section 3.2.

English is a good illustration of the problem of idiosyncrasy. While it is certainly possible for many English verbs to serve as nouns through a process of zero-derivation, the language is inconsistent as to the resulting meaning of those nouns. Thus a *kiss* is part of the act of *kissing*, but a *hammer* is not something produced by *hammering*, while a *spy* is someone who partakes of the act of *spying*. Based on the semantics alone, then, we can subdivide English into several classes of lexemes, depending on the resultant meaning after zero-conversion has taken place.

A counterargument to this position is that the final semantics of a lexeme is entirely predictable and derivable from consistent rules of interpretation, but that Evans, Osada, and Croft do not allow for enough of these rules to count. While they acknowledge that the syntactic slot and aspectual information contribute to the process of meaning accretion, they discount other regular, rule-driven processes from morphology and pragmatics. Consider the English derivations above: we can explain this difference in the final semantics by the fact that a hammer is a tool, while a spy is an agent. It is entirely predictable, then, for the verbal forms of *hammer* and *spy* to refer to the process of using a tool on the one hand and the process of doing an action on the other, because of the different natures of the entities involved.

Of course, as one anonymous reviewer notes, this type of explanation has limited potential, and will not always explain the difference in the resultant meanings of lexemes. Evans and Osada (2005a: 374) note that, while Mundari does have a set of lexemes with predictable increments in meaning from noun to verb, not all lexemes follow this pattern. This is shown in the table in (41).

1. Mundari (Munda, Austroasiatic: India)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Nominal Sense | Verbal Sense | Instrumental Verb |
| * 1. laTab | ‘scissors’ | ‘cut with scissors’ | none |
| * 1. kaTu | ‘knife’ | ‘forge into a knife’ | *had* ‘cut with a knife’ |
| * 1. aq‑sal | ‘bow and arrow’ | ‘make a bow of something’ | *ToTeq* ‘shoot with an arrow’ |
| * 1. kapi | ‘axe’ | ‘form into a hunting axe-head; strike somebody with one’s hunting axe’ | *maq* ‘cut with an axe’ |

For some lexemes signifying tools, the resultant verbal use of the lexeme conveys the action of utilizing that tool, as in (a). Other tool lexemes have a formally distinct verb for conveying the instrumental reading, as in (b); in this case, the verbal use of the tool lexeme in question conveys the action of manufacturing that tool. So far this is completely predictable, and therefore nonproblematic for identifying regular patterns of semantic increment in functional shift. The problem comes with certain lexemes that, when used as verbs, can convey either the action of manufacturing the tool or a specialized instrumental meaning, and that also exist alongside a distinct form for the more general instrumental meaning (as in [c] and [d]). The distribution of tool lexemes into one type or the other is, at least at present, unpredictable and idiosyncratic. Therefore it is impossible to specify a general rule for deriving the verbal meaning of a tool lexeme from its nominal one.

Dixon also illustrates semantic idiosyncrasy in functional shift for Fijian, noting that the verbal uses of the terms for the three major celestial bodies are “essentially idiosyncratic, and cannot be predicted from the meaning of the corresponding noun.” (Dixon 2010a: 48).

Table 6. *Idiosyncratic semantic shift for derivation in Fijian*

|  |  |  |
| --- | --- | --- |
|  | as noun | as verb |
| sun | ‘ball of fire in the sky by day’ | transitive verb, generally used in reflexive construction: *sun oneself* ‘lie in a place where the sun shines on one’ |
| moon | ‘large illuminated object in the sky at night’ | intransitive verb, typically followed by *around* or *away*: ‘spend time doing nothing in particular’ |
| star | 1. ‘small point of light in the sky at night’ 2. ‘an object with four, five or six points in a regular pattern’ 3. ‘person who plays a leading role in a performance, etc.’ | 1. – 2. ‘place a star or asterisk on or against an item’ 3. intransitive verb: ‘play a leading role in a performance, etc.’ |

But while such idiosyncrasies are a crucial issue in the debate over lexical flexibility, they in no way invalidate the concept. The canonical approach handles this by stating that lexemes which undergo idiosyncratic semantic shifts when shifting functional uses are less canonically flexible than semantic shifts with predictable meaning. But these lexemes may still be flexible according to many other criteria. At the same time, it is not clear that even these idiosyncrasies should be considered a limiting factor in lexical flexibility, since lexeme-specific semantic shifts are still a matter of linguistic convention, and so in a certain sense are just as predictable as lexeme-general rules of semantic shift. A competent speaker of the language is in both cases capable of predicting the resultant meaning. Therefore, depending on one’s views regarding how the final semantics is determined in a process of zero-derivation and what counts as ‘predictable’, different theorists will likely have drastically opposing views on whether zero-derivation constitutes evidence for flexible or rigid categories, as was the case for the Mundari debate. The advantage of the canonical typology presented here is that it is neutral with regard to this debate, but still provides a framework for assessing flexibility regardless of one’s position on semantic shift. From the perspective of those who believe semantic shift imposes a limit on flexibility (Croft, Evans, Osada), most so-called flexible languages should be viewed as rigid in regards to Criterion 7, but could still be called flexible along a number of other parameters. Theorists who believe that semantic shift presents no problem for lexical flexibility, and that lexemes are vague or underspecified (Hengeveld, Rijkhoff), would see most (perhaps all) languages as flexible according to Criterion 7. Since the different criteria are in principle logically independent, one might even hold to a theory of the lexicon which states that all lexemes are vague or their meaning emergent / epiphenomenal, and therefore all languages are canonically flexible according to Criterion 7 (thereby obviating the need for it), but vary in their flexibility according to other criteria.

What can the canonical typologist say to all of this? Simply this: if the final semantics is not regularly and consistently predictable according to known or theorized processes of semantic interpretation (whatever they are assumed to be), then we are forced to subsume more information into the lexical entry of a word, allowing for greater differentiation and subcategorization of the lexicon. Thus, the most canonical flexible word class will have a completely predictable process of arriving at the final semantics, hence Criterion 7.

## Scope of flexibility

Scope of flexibility refers to how extensive the flexibility of a particular word class can be, whether across lexemes or across functions. The more extensive the scope of the flexibility, the more canonically flexible the word class. This is the principle of maximal scope. Let us first consider scope of functions.

### Scope across functions. More flexible word classes encompass a broader range of functions than more rigid word classes. The most flexible word class, then, is one which may be used for all possible functions in a language, and word classes are more flexible the greater the number of functions they encompass. This is summarized in Criterion 8.

1. *a lexeme spans multiple functions > a lexeme covers just one function*

‘Function’ here refers primarily to the syntactic slot or the propositional act function of the lexeme and the various permutations thereof, not limited to just the ‘big three’ syntactic types (one could, for instance, include incorporation as a type of syntactic function). In this formulation, flexible lexemes have a wider distribution than rigid ones.

A nice feature of this criterion is that it captures the unique place of fossilization in the lexicon. Highly rigid lexemes according to this criterion are sometimes referred to as ‘fossil words’, and occur only in a few highly restricted idiomatic constructions, as for the English examples in (42), or in a very narrow range of distributions, as for Spanish in (43).

1. English (Germanic, Indo-European: United Kingdom)
   1. run **amok**
   2. **beck** and call
   3. by **dint** of
   4. **kith** and kin
   5. days of **yore**
2. Spanish (Italic, Indo-European: Spain)
   1. conmigo

with:me

‘with me’

* 1. contigo

with:you

‘with you’ (source: personal knowledge)

It is also possible to illustrate lexical rigidity using functions other than the classic ‘big three’. Take the sociolinguistic functions of taboo speech such as mother-in-law language. The lexemes in languages with taboo speech are rigid with respect to the sociolinguistic functions they may fulfill, and are generally restricted to one social dimension or the other. Dyirbal is one such language. Example (44) shows the same conceptual sentence in everyday speech (a) and mother-in-law speech (b).

1. Dyirbal (Pama-Nyungan: Australia)
   1. giña‑n=bi wuygi‑wuygi gulu wuga‑n
   2. giña‑n=bi maŋgay‑maŋgay gulu jayma‑n

dem‑f=too redup‑old.person not give‑pst

‘These old ladies [lit. ‘feminine old people’] were also not given [any].’

(Dixon 2010b: 215–216)

The lexemes *wuygi‑wuygi* and *wuga‑* are restricted to everyday speech (known as Guwal), while *maŋgay‑maŋgay* and *jayma‑* are restricted to mother-in-law speech (known as Jalnguy). These two sets of lexemes are therefore rigid with respect to each other, in terms of their sociolinguistic functions.

Much more common is the slightly less rigid case, where a certain category of lexemes may appear in many of the distributions associated with a particular propositional act function. Any introductory textbook in linguistics or syntax contains syntactic frames of the type that serve to illustrate this:

1. Some syntactic test frames for English Nouns
   1. The \_\_\_\_\_ makes a lot of noise.
   2. I heard a \_\_\_\_\_ yesterday. (Yule 2010: 87)

On the highly flexible end of the spectrum are lexemes which can appear in the distributions typically associated with more than one propositional act function. Tonkawa is one such example, shown in (46) (glosses not provided in the original). Mithun notes for Tonkawa that “The same stem (theme) may become nominal, verbal, adjectival, or adverbial, depending on the affixes attached to it and its position in the clause.” (Mithun 1999: 57), and Hoijer goes so far to say that “To apply the classificatory notion of “parts of speech” to Tonkawa would be to do extreme violence to the spirit of the language.” (Hoijer 1933: 24). Examples (a) and (b) show that the stem *xa·x‑* ‘arrive’ may fulfill both referential and predicative functions. The discussion of Tonkawa is also somewhat unique in that examples are given not just for noun-verb flexibility, but also for flexibility covering adverbial function. The stem *tʼcel* may take nominal inflection as in (c), or function as a standalone adverb, as in (d). This is not too different from locative nouns in English (e.g. *home*, *west*), which may function as both referents and modifiers.

1. Tonkawa (isolate: United States)
   1. **xa·x**‑anoʼ

arrive‑3sg

‘he is arriving’

* 1. **xa·x**‑anoʼ‑ʼa·la

arrive‑3sg‑nom.sg.def

‘the one to arrive’

* 1. **tʼcel**‑ʼa·yʼik ha·noʼ

up/top‑dat go:3sg

‘he goes to the top’

* 1. **tʼcel** ha·noʼ

up/top go:3sg

‘he goes upward’ (Hoijer 1933: 25), cited in Mithun (1999: 57–58)

Crosslinguistically, lexical flexibility seems to be most commonly realized as an amalgamation of the modifying function into some other function. These languages are the ones for which it is commonly debated whether they lack an adjective class. Table 7 summarizes the different ways property concepts (PCs) can be incorporated into other lexical categories.

Table 7. *Typology of morphosyntactic treatment of property concepts* (Payne 1997: 56)

|  |  |  |
| --- | --- | --- |
|  | **Treatment of PCs** | **Example** |
| 1 | PCs lexicalized as verbs | Acehnese |
| 2 | PCs lexicalized as nouns | Finnish |
| 3 | PCs sometimes nouns, sometimes verbs, depending on discourse | Dutch |
| 4 | Some PCs lexicalized as nouns, others as verbs | Yoruba |
| 5 | PCs form a distinct Adjective class | English |

Another example of type 1 is Lango, where “there is no grammatical construction in Lango which is attributive and does not involve embedding,” i.e., all attributive concepts are realized as relativized verbs (Noonan 1992: 103). Property concepts take the same subject agreement prefixes as other verbs, shown in (47)a, and form nominalizations, agent nouns, and gerunds in the same way as other verbs.[[14]](#footnote-14) (47)b and (47)c show that attributive concepts behave like any verb in the attributive function. Without the attributive particle, only a predicative use is possible, as shown in (47)d.

1. Lango
   1. à‑râc

1s‑bad:hab

‘I’m bad’

* 1. kùll à ɲwé

warthog att 3s:smelly:hab

‘a smelly warthog’ (= ‘a warthog that’s smelly’)

* 1. kùll à òwòpə́

warthog att 3s:follow:prf:1sg.obj

‘a warthog that followed me’

* 1. kùl ɲwé

warthog 3s‑smelly‑hab

‘the warthog is smelly’ (Noonan 1992: 103–104)

Sometimes the scope of flexibility of a class of lexemes can be extremely small. Consider some representative examples of Nouns in Swahili in (48), which may alter their meaning by merely changing their noun class prefix. Since noun class prefixes in Swahili carry semantic connotations, these examples may also be considered a case of vague semantics.[[15]](#footnote-15)

1. Swahili (Bantu, Niger-Congo: East Africa)
   1. m‑tu ki‑tu

cl1‑entity cl7‑entity

‘person’ ‘thing’

* 1. m‑toto u‑toto ki‑toto

cl1‑child cl11‑child cl7‑child

‘child’ ‘childhood’ ‘infant’

* 1. ch‑umba ny‑umba

cl7‑living.area cl9‑living.area

‘room’ ‘house’

* 1. m‑ti ki‑ti

cl3‑wood cl7‑wood

‘tree’ ‘chair, stool’ (source: personal knowledge)

These lexemes are flexible, but their flexibility is limited to a handful of alternations with other inflectional classes. Therefore, Swahili Nouns are much closer to being canonically rigid than they are flexible, but to say that this is a “rigid” category and to leave it at that overlooks some interesting flexible behavior in this class of lexemes. This once again illustrates one of the important advantages of the canonical approach to typology: a finer appreciation of the middle ground between well-defined phenomena.

### Scope across lexemes. A second way to evaluate the scope of lexical flexibility in a language is to assess the number of lexemes which exhibit flexibility. How much does lexical flexibility permeate the lexicon in the language? Evans and Osada call this their principle of exhaustiveness:

The principle of exhaustiveness states that it is not sufficient to find a few choice examples which suggest word class flexibility. Since word classes are partitionings of the entire lexicon, equivalent statements need to hold for all relevant words in the lexicon that are claimed to have the same class. (Evans & Osada 2005a: 378)

This is represented by Criterion 9.

1. *every lexeme in the language is flexible > only some lexemes are flexible*

A reviewer points out that there are many ways in which a lexeme could be flexible, and so one could assess a language according to Criterion 9 for each of the criteria that have already been outlined. This is quite apposite, since it illustrates a point that I have made numerous times throughout this paper – flexibility is a multifaceted phenomenon that must be assessed according to a variety of criteria. Only in the aggregate can we make statements like ‘this language is flexible’ or ‘this lexeme is rigid’. There is, however, some utility to these aggregate statements. It does not seem inappropriate to say ‘this lexeme is largely rigid’ if it shows rigidity according nine of the ten criteria proposed here. This is a useful shorthand for summarizing the overall flexibility of a lexeme, category, or language.

Dixon takes this criterion to its extreme conclusion, and states that “For a language to qualify [as having a flexible Noun-Verb category], *every* noun must have secondary function as head of an intransitive predicate, and *every* verb must have secondary function as head of an NP.” (Dixon 2010a: 44). Such a requirement, however, is entirely unhelpful. This rather intransigent position only serves to instigate polarization in the debate. A much more fruitful approach, and the one suggested by canonical typology, is to say that the higher the percentage of flexible lexemes in the language, the more flexible that language may be considered.

Evans and Osada evaluate Mundari according to this criterion, and show that the language deviates somewhat from the canonical, because not all of its lexemes in the Noun-Verb class under consideration have the same distribution. According to their detailed 105-word sampling, “around 72% of the lexical items can function as either nouns or as verbs, a figure slightly higher than the corresponding figure for English, but well short of the 100% that would be required to establish a lack of word class distinctions in the language.” (Evans & Osada 2005a: 382–383). A larger but less detailed sample of 5,000 words suggests that only around 52% of lexemes can function as both nouns and verbs. Therefore if we posit a single unified lexical category for Mundari, we must say that it is not an entirely flexible category, although it does indeed exhibit a great deal of flexibility. I am aware of no other attempts to assess the extent of flexibility in the lexica of other languages. Much interesting work could still be done in this area.

Related to Criterion 9 is the productivity of any derivational morphology required for a lexeme to change functions. Some derivational morphology is extremely productive, such as the ‑*ing* nominalizer in English, which any verb may take. Every verb in English, therefore, exhibits at least a small amount of lexical flexibility by being able to appear in a gerund form. However, the English suffix ‑*en*, which forms causatives, has limited productivity, and may only be used with adjectives ending in /p, t, k, s, ʃ, d/ (Dixon 1982: 22). Therefore the scope of flexibility for English Adjectives is somewhat narrow, since only Adjectives with a specific phonological form may shift to a causative function.[[16]](#footnote-16) Portuguese has a similar restriction on functional shift, where only transitive verbs may take the suffix ‑*ável / ‑ivel* ‘having the capacity of the object of V’, as illustrated in (49).

1. Portuguese (Italic, Indo-European: Portugal)
   1. confiar ‘trust’ > confíável ‘someone who can be trusted’
   2. brilhar ‘shine’ > \*brilhável

(Sandmann 1988:67), cited in Aikhenvald (2007: 52–53)

### Scope across both lexemes and functions. If a category covering a broad range of functions is more canonically flexible than one that only ranges over a few (Criterion 8), it follows that the perfectly flexible category would be the only lexical category in its language. If this category encompasses every function, it obviates the need for any other lexical categories. The canonically flexible lexeme class, then, will be the only lexeme class in its language, giving us Criterion 10.

1. *monocategorical language > multicategorical language*

This criterion may also be derived just as easily from Criterion 9. If all lexemes in a language are perfectly flexible, then there is no basis for differentiating lexemes into separate categories, and the language will be monocategorical. Put differently, a canonically flexible category will have maximum scope across both lexemes and functions, subsuming the entire lexicon into one giant flexible category. Hengeveld’s Type 1 language, with its single Contentive category, is meant to capture this notion of a monocategorical flexible language.

*A priori*, there are two ways we might expect a language to be monocategorical: through omnipredication or through omnireference (i.e., every lexeme in the language is expressed as a predicate, or every lexeme in the language is expressed as a referent, though in the perfectly monocategorical language it might not be possible to discern the difference). What might an omnireferential language look like? Languages often accomplish different functions using juxtaposition alone, including coordination (50), possession (51), and predication (52), among others.

1. Sarcee (Athabaskan, Na-Dené: Canada)

ìstlí gútsìs dóóní ìcīctcùd, gīní

horse scalp gun I.capture they.say

‘“I captured horses, scalps, and guns”, they say’

(Cook 1984: 87), cited in Haspelmath (2007: 7)

1. Chalcatongo Mixtec (Mixtecan, Oto-Manguean: Mexico)

kačíní peðrú

hat Pedro

‘Pedro’s hat’ (Macaulay 1996), cited in Dryer (2007a: 181)

1. Gude (Chadic, Afro-Asiatic: Nigeria)

gusə nə minə

short sbj woman

‘The woman is short’ (Hoskison 1983:70), cited in Dryer (2007b: 230)

But despite the logical possibility of a language which might function entirely via nominal juxtaposition, there is very little evidence that such languages exist (once again illustrating the nature of the canonical type as a logical possibility that makes no prediction as to its actual existence in languages). Tagalog, however, may approach the canonical type: Himmelman (Himmelmann 2008: 290) suggests that “All Tagalog V[erb]-words are necessarily derived. […] Semantically, an oriented action is derived from an expression which denotes a THING, STATE, NAME OF AN ACTION, RESULT OF AN ACTION, etc.” According to this analysis, the unmarked (in the literal sense of unaffixed) form of Tagalog lexemes is nominal in meaning, implying that Tagalog is more omnireferential in nature than omnipredicative. Still, this would then make Tagalog an exception rather than the norm, as predicted by Hengeveld’s parts-of-speech hierarchy.

What, then, would an omnipredicative language look like? The most canonical case comes not from natural languages, but from artificial ones, namely Predicate Calculus (Evans & Osada 2005a: 359). Predicate Calculus is an artificial language where every lexical item does function as a predicate without derivation, and with no difference in distribution. Thus the referential, predicative, and attributive functions can all be realized in the same way, as shown in (53).

1. Predicate Calculus
   1. run(x) ‘x runs’
   2. red(x) ‘x is red’
   3. horse(x) ‘x is a horse’

Surprisingly, some languages do appear to come remarkably close to this canonical type. One language purported to behave this way is Cayuga, shown in (54).

1. Cayuga (Northern Iroquoian: United States)

a‑hó‑hto̹ː’ ho‑tkwe̹’t‑a’ ne̹ːkyẽ̹ h‑o̹kweh

pst‑it:to\_him‑become\_lost it:him‑wallet‑be this he:it‑man

‘This man lost his wallet’

(Sasse 1993: 657)

However, Mithun (2000) makes it quite clear that strong differences exist between nominal and verbal stems, including differences in the form and function of their affixes, and whether they require additional structural coding to shift functions. Based on the details of that paper, it seems that Cayuga lexemes are actually more *rigid* than flexible according to many of the criteria outlined here, and that the analysis of Cayuga as omnipredicative is purely apocryphal. Still, Mithun does point out that “A striking feature of natural speech in Iroquoian languages, however, is the relative rarity of nouns. It can be attributed in part to noun incorporation” (Mithun 2000: 412). At the same time, a large portion of what are otherwise Morphological Verbs may serve as referents, especially when they are used as descriptive labels for objects, as in (55).

1. Cayuga (Northern Iroquoian: United States)

kao̜tanéhkwi

ka‑ro̜t‑a‑nehkwi

n.a‑log‑ep‑haul.ipfv

‘it hauls logs’ = ‘horse’ (Mithun 2000: 412)

This is precisely what we would expect from an omnipredicative language. All words may be verbs morphologically, but those verbs would still need to be used to refer with no small amount of frequency. So while Cayuga clearly isn’t omnipredicative, it does exhibit some interesting properties which approach the canonical type.

Having discussed the canonical cases for scope of flexibility across both lexemes and functions, we can now examine the variety of ways in which these two variables might interact. Since Criterion 8 and Criterion 9 can deviate from the canonical independently of one another, a number of logical possibilities arise. We can schematize each of these possibilities by transposing the range of functions in a language on one axis against its range of lexemes (or lexeme classes) on the other. Note that the functions axis consists of comparative concepts (in this case, the points from Croft’s (2003: 187) conceptual space for parts of speech), while the lexemes axis is language-specific. Under such a schema, the canonically rigid language will categorize and divide its lexicon similar to the representation in Figure 9. Malimiut Iñupiaq, as we saw in examples (18) and (19), comes close to being of this type.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | object reference | object modifier | object predication | action reference | action modifier | action predication |
| Lexeme 1 | A |  |  |  |  |  |
| Lexeme 2 |  |  |  |  |  |
| Lexeme 3 |  | B |  |  |  |  |
| Lexeme 4 |  |  |  |  |  |
| Lexeme 5 |  |  | C |  |  |  |
| Lexeme 6 |  |  |  |  |  |
| Lexeme 7 |  |  |  | D |  |  |
| Lexeme 8 |  |  |  |  |  |
| Lexeme 9 |  |  |  |  | E |  |
| Lexeme 10 |  |  |  |  |  |
| Lexeme 11 |  |  |  |  |  | F |
| Lexeme 12 |  |  |  |  |  |

Figure 9. *A canonically rigid language, with non-overlapping lexical categories*

This representation shows how each set of lexemes is restricted to only one function, and likewise each function is realized by only one lexical class. The lexemes of Class A cannot be used for any function other than object reference, for example, while action reference may only be realized by the lexemes in Class D.

The canonically flexible lexical category, by contrast, would be one in which any lexeme could be used for any function, so the entire chart would consist of one continuous word class. Between these two poles lay a number of other possibilities. Figure 10 and Figure 11 show two ways in which a language might sit between these two extremes of flexible and rigid.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | object reference | object modifier | object predication | action reference | action modifier | action predication |
| Lexeme 1 |  |  |  |  |  |  |
| Lexeme 2 |
| Lexeme 3 |  |  |  |  | A |  |
| Lexeme 4 |  |
| Lexeme 5 |  |  |  |  |  |  |
| Lexeme 6 |  |  |
| Lexeme 7 |  |  |  |  |  |  |
| Lexeme 8 |  |  |  |
| Lexeme 9 |  | B |  |  |  |  |
| Lexeme 10 |  |  |  |
| Lexeme 11 |  |  |  |  |  |  |
| Lexeme 12 |  |  |  |  |  |

Figure 10. *An extremely flexible language with two overlapping lexical categories*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | object reference | object modifier | object predication | action reference | action modifier | action predication |
| Lexeme 1 | A |  |  |  |  |  |
| Lexeme 2 |  |  |  |  |  |
| Lexeme 3 |  |  |  |  |  |
| Lexeme 4 |  |  |  |  |  |
| Lexeme 5 |  | B | | | | |
| Lexeme 6 |  |
| Lexeme 7 |  |
| Lexeme 8 |  |
| Lexeme 9 |  |
| Lexeme 10 |  |
| Lexeme 11 |  |
| Lexeme 12 |  |

Figure 11. *A language with two non-overlapping lexical categories, one of which (category B) is extremely flexible*

Figure 10 represents a language not too unlike English: some words may only serve as action predicates (lexemes 11 and 12), while others may fill any function in the language (lexemes 1 and 2, perhaps similar to the English *bank* in example (28)). Figure 11 represents a language with only two lexical categories – Noun and Verb – with all other functions subsumed under the Verb category. Any language purported to lack an Adjective class would be similar to this case. Note that while word class A is rigid with respect to B, word class B itself is still an extremely flexible category unto itself. In this respect, Figure 11 might be similar to languages like Mundari, where certain lexemes (e.g., kin terms) may not function as Verbs, but the Verb category itself is quite flexible.

# Conclusion

In the spirit of Canonical Typology, this paper has shown that the phenomenon of lexical flexibility is complex, multifaceted, and admits of a much wider range of possibilities than has been previously noted in the literature. It has outlined ten criteria for assessing the lexical flexibility of the lexemes in a language, and shown how languages may vary according to each of these criteria. Table 8 summarizes these dimensions of variation.

Table 8. *Criteria for flexible and rigid categories*

|  |  |  |
| --- | --- | --- |
|  | Flexible | Rigid |
| *Criterion 1* | No Structural Coding | Structural Coding Required |
| *Criterion 2* | Isolating | Synthetic |
| *Criterion 3* | Equivalent Combinatorics | Unequivalent Combinatorics |
| *Criterion 4* | Maximum Combinatorics | Restricted Combinatorics |
| *Criterion 5* | Uniform Feature Values | Different Feature Values |
| *Criterion 6* | No Semantic Shift | Large Semantic Shift |
| *Criterion 7* | Predictable Final Semantics | Unpredictable Final Semantics |
| *Criterion 8* | Multifunctional Categories | Monofunctional Categories |
| *Criterion 9* | Rampant Lexical Flexibility | Partial Lexical Flexibility |
| *Criterion 10* | Monocategorical Language | Multicategorical Language |

These criteria stem from two undergirding principles: the principle of indistinguishability (Criteria 1–7), which states that for a lexeme to be flexible its different uses must be indistinguishable from one another, and the principle of maximal scope (Criteria 8–10), which states that the broader the scope of a flexible category in terms of either the functions or lexemes it encompasses, the more flexible that category is. These principles are necessary features of what it means to be a flexible category, defined as a category whose lexemes can fulfill multiple functions (be they semantic, combinatorics, or formal) indiscriminately.

The immediate benefit of the present study is to provide a method for resolving the debates regarding lexeme classes in different languages. In order to demonstrate this, I will now (briefly and non-exhaustively) apply the eleven criteria listed above to the debate on Mundari, illustrating how Canonical Typology provides a more nuanced assessment of lexical flexibility for the language. The following discussion draws exclusively from Evans and Osada’s (2005a) paper.

Mundari appears to lack anything that might be called derivational morphology to distinguish the different functions of a lexeme, so it is flexible according to Criterion 1. However, Mundari is a synthetic language, so the function of a given use of a lexeme can be distinguished according to which inflectional morphology it happens to take when fulfilling that function: “Most verbs, […] and all adjectives, can only be placed into an argument slot if they are followed by appropriate aspectual and transitivity markers” (Evans & Osada 2005a: 376). Mundari is therefore more rigid than flexible according to Criterion 2.

There are a few cases where Mundari lexemes do not have equivalent combinatorics, and so are slightly rigid. For most Mundari Verbs and Adjectives used in an argument slot, “where the referent is 3rd person singular, they must be followed by a special form of the agreement affix (*‑iq* instead of *‑eq*), which is effectively a subordinator.” (Evans & Osada 2005a: 376). This does not hold for all lexemes, however, nor does it apply to Verbs in complement positions. Evans and Osada also mention no other formal differences in combinatorics for these lexemes. So while most lexemes called Verbs in Mundari do not exhibit perfectly equivalent combinatorics, they are certainly not heavily restricted in their combinatorics either, and are therefore only marginally rigid according to Criterion 3, and largely flexible overall.

Mundari is more rigid with respect to Criterion 4, the criterion of maximum combinatorics or bidirectionality. Certain lexemes (proper names, certain kinship terms, animal names, plant terms) are unable to undergo functional shift from nominal to predicative uses. These lexemes are clearly rigid. Most Mundari Nouns (approximately 74% according to Evans and Osada’s sample) may however be used to predicate. Mundari Nouns are therefore somewhat rigid according to Criterion 4. Verbs appear to be less flexible, with only 65% of the surveyed lexemes allowing for nominal uses.

Evans and Osada do not discuss the available feature values of different lexeme classes, but it does not appear as though lexemes are limited in the feature values they can take when changing function. Whereas Adjectives in Mohawk, for example, may only appear in the stative aspect, Evans and Osada mention no such restrictions for Mundari. In the absence of further evidence, I therefore tentatively assess Mundari as flexible according to Criterion 5.

Moving on to semantics, Mundari is largely rigid according to Criteria 6 and 7. While in some examples given by Evans and Osada, the semantic shift between different functional uses of a lexeme is small (‘teach’ > ‘is a teacher’; ‘servant’ > ‘work as servant’), in other cases the semantic shift is large or idiosyncratic (‘mountain’ > ‘heap up’; ‘hill, forest’ > ‘make a clearing on the slope of a hill in order to grow dry crops thereon’; ‘fowl’ > ‘acquire fowl’; ‘river’ > ‘dig (like a river)’). Evans and Osada (Evans & Osada 2005a: 373) note that “it is common for the semantic difference between argumental and predicate uses to exceed that attributable to the syntactic position, or the small perturbations due to interactions with the aspectual system.” Based on this assessment, if we take ‘common’ to mean ‘in the majority’, Mundari should be considered more rigid than flexible along the dimensions of Criteria 6 and 7.

When lexemes are flexible in Mundari, they tend to be flexible between referential, predicative, and modifying uses. Therefore they are primarily flexible according to Criterion 8. Evans and Osada very helpfully provide an in-depth treatment of Criterion 9. Their sample of 3,824 Mundari lexemes shows that 52% may be used either as Nouns or Verbs, and that the rest are limited to use as just one or the other. In this case we can very precisely say that Mundari is 52% flexible according to Criterion 10, or nearly just as flexible as it is rigid. Finally, the different syntactic categories of Noun, Verb, and Adjective can be clearly distinguished in the language, so Mundari is rigid according to Criterion 10.

So is Mundari a flexible language or a rigid one? The result of our cursory assessment, summarized in Table 9, shows that this question cannot (and should not) be answered in the simple affirmative or negative. If one aggregates the various criteria, I think one can justifiably say that Mundari is on net more flexible than rigid, but nor should one ignore that Mundari has a number of very rigid properties for many of its lexemes.

Table 9. *A preliminary assessment of lexical flexibility in Mundari*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Flexible | Rigid | Mundari |
| *Criterion 1* | No Derivational Marking | Derivational Marking | flexible |
| *Criterion 2* | Isolating | Synthetic | rigid |
| *Criterion 3* | Equivalent Combinatorics | Unequivalent Combinatorics | slightly rigid |
| *Criterion 4* | Maximum Combinatorics | Restricted Combinatorics | slightly rigid |
| *Criterion 5* | Uniform Feature Values | Unequal Feature Values | flexible |
| *Criterion 6* | No Semantic Shift | Large Semantic Shift | rigid |
| *Criterion 7* | Predictable Final Semantics | Unpredictable Final Semantics | rigid |
| *Criterion 8* | Multifunctional Categories | Monofunctional Categories | flexible |
| *Criterion 9* | Monocategorical Language | Multicategorical Language | rigid |
| *Criterion 10* | Rampant Lexical Flexibility | Restricted Flexible Lexicon | equally flexible and rigid |
| *Criterion 11* | Open Class | Closed Class | flexible |

The preceding discussion should make it clear that typologists, when debating the dividing lines between lexical categories, should no longer adopt simplistic, binary approaches to lexical categorization. The degree of flexibility we ascribe to a lexical category depends crucially on which criterion one is considering. Failure to consider all these criteria ignores relevant data and commits methodological opportunism. To require, as Dixon (2010a: 45) and Evans and Osada (2005a: 378) do, that every lexeme in a class be canonically flexible in order to be called a flexible category, simply handpicks a single criterion according to which the language is more rigid (Criterion 9, in this case), and privileges this criterion over other criteria along which the language may actually be quite flexible. To deny the existence of Noun-Verb flexibility in languages like Mundari or Nootka denies the fact that there are incredibly fascinating differences between the way lexemes behave in these languages and more rigid ones like Spanish. Lexical flexibility is not a binary feature of categories; it is a gradient one, measured in terms of strength of presence or absence. The canonical typology presented here specifies some of the parameters that typologists can use to make such comparisons, thereby providing a framework for investigating the nature and causes of these different parts-of-speech systems, rather than simply sweeping these differences under the rug. The overall effect is to point the way to a much clearer definition of word-class flexibility, while still observing the rigorous criteria for demonstrating word-class merger set out in Evans and Osada (2005a) and Croft (2001). Along the way, I have demonstrated the usefulness of Canonical Typology in resolving polarized debates and avoiding definitional impasses.

Once we acknowledge that salient differences exist between languages in terms of their lexical flexibility, a number of new, theoretically significant research questions arise:

* Does lexical flexibility spread through the lexicon in a manner similar to the spread of sound changes through a lexicon?
* Do changes in the lexical flexibility of a language exhibit areal traits? Can lexical flexibility or the lack thereof be spread through language contact?
* Does the diachronic loss of certain types of morphology lead to a more lexically flexible lexicon? Did Old English, for example, exhibit less lexical flexibility than Modern English?
* Can lexical flexibility be accurately quantified in principle? In practice? What would such quantitative data tell us?
* Do pidgin and creole languages exhibit more or less lexical flexibility than non-contact languages?
* Which types of lexemes tend to be the most flexible? Do they follow Hengeveld’s parts-of-speech hierarchy?
* Does lexical flexibility correlate with frequency in any way?
* Can the concept of grammatical flexibility be defined in a more general way, so that it applies to both lexical and functional units? Might there be flexible determiners, for example, and what would these look like?

In addition, the typology presented here may add new fuel to the debate regarding semantic shift, or provide a framework in which to continue the discussion.

Perhaps more interestingly, in examining the properties of a canonical flexible lexeme, we have discovered the properties of a canonically flexible language. In order to define the canonical flexible category, we necessarily had to place certain restrictions on what a language which had such a category would look like. We discovered that such a language would be omnipredicative, monocategorical, isolating, and have regular processes for deriving final semantics. In short, the canonical flexible language will look exactly like Gil’s (2005) description of Isolating-Monocategorical-Associational languages. Although no language exhibits canonically flexible categories, we have seen that languages do approach this point in a number of unique and interesting ways.

A final potential implication of this paper is that it may be better to view parts of speech as epiphenomenal, consisting of a variety of intersecting properties, than as criterial, consisting of necessary and sufficient features. This in turn implies that parts of speech do not themselves have any real grammatical status in languages, but instead are abstractions or prototypes that emerge from the interaction of these intersecting variables, variables that are themselves the actual phenomena of substance in the language.

In conclusion, linguists should be asking themselves the degree to which various lexemes exhibit behavior that is more-or-less canonically flexible. While it is probably true in a certain sense that “people who say that in language X there is no distinction between noun and verb simply haven’t looked hard enough” (Dixon 2010a: 38), it is also true that, just because we can distinguish some behavioral differences among lexemes doesn’t mean that flexibility in the lexicon is meaningless or nonexistent. Flexible lexemes should be of tremendous typological and theoretical interest to linguists. In general, linguistics would be well-served by abandoning rigid classification schemes that cause unproductive polarization in debates, in favor of more emergent and gradient models which emphasize things like strength of association, degree of grammaticality, extent to which properties are shared, etc. Only through these methods can we appreciate the finer minutiae of language, those remarkable and unpredictable phenomena that hide between the canonical and the periphery, and come to understand the diverse and fascinating ways in which a language can be.

Correspondence address: Department of Linguistics, 3432 South Hall, University of California Santa Barbara, CA 93106-3100. U.S.A.; e‑mail: [dhieber@umail.ucsb.edu](mailto:dhieber@umail.ucsb.edu); website: [www.danielhieber.com](http://www.danielhieber.com)

Acknowledgements: My foremost thanks go to Greville Corbett, Elaine Francis, and Bryce Inouye for their instruction and inspiration. Thanks are also due to Irina Nikolaeva for her comments on an earlier draft, to my anonymous reviewers whose comments greatly improved the rigor and quality of the final product. The following institutions also have my gratitude for providing the stimulating atmosphere and resources that supported this research: the Linguistic Institute 2011 at The University of Colorado Boulder, the research and content development departments at Rosetta Stone, and the University of California at Santa Barbara. Finally, my loving thanks to Jacob Hill, for his inexhaustible patience and steadfast logical rigor. All errors are, of course, wholly my own.

Abbreviations: 1 first person, 2 second person, 3 third person, a agent-like argument of transitive verb, abs absolutive, antip antipassive, aor aorist, art article, att attributive, aux auxiliary, caus causative, cis cislocative, cl1, cl2, etc.: noun class 1, etc., compl completive, dat dative, def definite, du dual, ep epenthetic element, erg ergative, f feminine, fact factual, fut future, hab habitual, ind indicative, init.prog initiated progressive, int interrogative, intr intransitive, ipfv imperfect(ive), it iterative, loc locative, m masculine, mom momentaneous, n neuter, n‑ non‑ (e.g. nsg nonsingular), nmlz nominalizer, nom nominative, obj object, pfv perfective, pl plural, poss possessive, prf perfect(ive), prog.or progressive oriented, pst past, punc punctual, redup reduplicated form, rel relativizer, sbj subject, sg singular, stat stative, top topic, tr transitive

# References

Aikhenvald, Alexandra Y. 2007. Typological distinctions in word-formation. In Timothy Shopen (ed.), *Language typology and syntactic description, Vol. 3: Grammatical categories and the lexicon*, 2nd edn, 1–65. Cambridge: Cambridge University Press.

Anward, Jan, Edith A. Moravcsik & Leon Stassen. 1997. Parts of speech: A challenge for typology. *Linguistic Typology* 1(2). 167–184. doi:10.1515/lity.1997.1.2.167.

Arad, Maya. 2003. Locality constraints on the interpretation of roots: The case of Hebrew denominal verbs. *Natural Language & Linguistic Theory* 21(4). 737–778. doi:10.1023/A:1025533719905.

Auwera, Johan van der & Volker Gast. 2011. Categories and prototypes. In Jae Jung Song (ed.), *The Oxford handbook of linguistic typology* (Oxford Handbooks), 166–189. Oxford: Oxford University Press.

Baerman, Matthew, Dunstan Brown & Greville G. Corbett. 2005. *The syntax-morphology interface: A study of syncretism*. Cambridge: Cambridge University Press.

Baker, Mark C. 2003. *Lexical categories: Verbs, nouns, and adjectives* (Cambridge Studies in Linguistics 102). Cambridge: Cambridge University Press.

Boas, Franz. 1911. *Handbook of American Indian languages, Vol. 1* (Bureau of American Ethnology Bulletin 40). Washington, D.C.: Government Printing Office (Smithsonian Institution, Bureau of American Ethnology).

Boas, Franz. 1922. *Handbook of American Indian languages, Vol. 2* (Bureau of American Ethnology Bulletin 40). Washington, D.C.: Government Printing Office (Smithsonian Institution, Bureau of American Ethnology).

Boas, Franz. 1933. *Handbook of American Indian languages, Vol. 3*. Hamburg, New York: Glickstadt.

Bricker, Victoria Reifler. 1978. Antipassive constructions in Yucatec Maya. In Nora C. England (ed.), *Papers in Mayan Linguistics* (Miscellaneous Publications in Anthropology 5; Studies in Mayan Linguistics 2), 3–24. Columbia, MO: University of Missouri Museum of Anthropology.

Brown, Dunstan, Marina Chumakina, & Greville G. Corbett (eds.). 2013. *Canonical morphology and syntax*. Oxford: Oxford University Press.

Burling, Robbins. 1961. *A Garo grammar* (Deccan College Monograph Series 25). Poona: Deccan College.

Bybee, Joan. 1985. *Morphology: A study of the relation between meaning and form* (Typological Studies in Language 9). Amsterdam: John Benjamins.

Chafe, Wallace. 2012. Are adjectives universal? The case of Northern Iroquoian. *Linguistic Typology* 16(1). 1–39. doi:10.1515/lingty-2012-0001.

Comrie, Bernard. 1976. *Aspect: An introduction to the study of verbal aspect and related problems* (Cambridge Textbooks in Linguistics). Cambridge: Cambridge University Press.

Comrie, Bernard. 2003. When agreement gets trigger-happy. In Dunstan Brown, Greville G. Corbett, & Carole Tiberius (eds.), *Agreement: A typological perspective* (Transactions of the Philological Society 101[2]). Oxford: Blackwell.

Contini-Morava, Ellen. 1996. “Things” in a noun class language: Semantic functions of grammatical agreement in Swahili. In Edna Andrews & Tishai Tobin (eds.), *Towards a calculus of meaning: Studies in markedness, distinctive features, and deixis* (Studies in Functional and Structural Linguistics 43), 251–290. Amsterdam: John Benjamins.

Cook, Eung-Do. 1984. *A Sarcee Grammar*. Vancouver: University of British Colombia Press.

Corbett, Greville G. 2003. Agreement: Canonical instances and the extent of the phenomenon. In Geert Booij, Janet DeCesaris, Angela Ralli, & Sergio Scalise (eds.), *Topics in morphology: Selected papers from the third Mediterranean Morphology Meeting*, 109–128. Barcelona: Universitat Pompeu Fabra.

Corbett, Greville G. 2005. The canonical approach in typology.. In Zygmunt Frajzyngier, Adam Hodges, & David S. Rood (eds.), *Linguistic diversity and language theories* (Studies in Language Companion Series 72), 22–49. Amsterdam: John Benjamins.

Corbett, Greville G. 2006. *Agreement* (Cambridge Textbooks in Linguistics). Cambridge: Cambridge University Press.

Corbett, Greville G. 2007a. Canonical typology, suppletion, and possible words. *Language* 83(1). 8–42. doi: 10.1353/lan.2007.0006.

Corbett, Greville G. 2007b. Deponency, syncretism, and what lies between. In Matthew Baerman, Greville Corbett, Dunstan Brown and Andrew Hippisley (eds.), *Deponency and morphological mismatches* (Proceedings of the British Academy 144), 21–43. Oxford: British Academy and Oxford University Press.

Corbett, Greville G. 2009. Canonical inflectional classes. In Fabio Montermini, Gilles Boyé, & Jesse Tseng (eds.), *Selected proceedings of the 6th Décembrettes*, 1–11. Somerville, MA: Cascadilla Proceedings Project.

Corbett, Greville G. 2010. Canonical derivational morphology. *Word Structure* 3(2). 141–155. doi:10.3366/E1750124510000565.

Corbett, Greville G. 2013. Canonical morphosyntactic features. In Dunstan Brown, Marina Chumakina, & Greville G. Corbett (eds.), *Canonical morphology and syntax*, 48–65. Oxford: Oxford University Press.

Cristofaro, Sonia. 2009. Grammatical categories and relations: Universality vs. language-specificity and construction-specificity. *Language and Linguistics Compass* 3(1). 441–479.

Croft, William. 1991. *Syntactic categories and grammatical relations: The cognitive organization of information*. Chicago: Chicago University Press.

Croft, William. 2001. *Radical Construction Grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780198299554.001.0001.

Croft, William. 2003. *Typology and universals*, 2nd edn. (Cambridge Textbooks in Linguistics). Cambridge: Cambridge University Press.

Croft, William. 2005. Word classes, parts of speech, and syntactic argumentation. *Linguistic Typology* 9(3). doi: 10.1515/lity.2005.9.3.391

Croft, William. 2007. Beyond Aristotle and gradience: A reply to Aarts. *Studies in Language* 31. 409–430. doi: http://dx.doi.org/10.1075/sl.31.2.05cro.

Croft, William & D. Alan Cruse. 2004. *Cognitive linguistics* (Cambridge Textbooks in Linguistics). Cambridge: Cambridge University Press.

Crystal, David. 2003. *A dictionary of linguistics and phonetics*, 5th edn. Malden, MA: Blackwell.

Dahl, Östen. 1985. *Tense and aspect systems*. Oxford: Blackwell.

Dixon, R. M. W. 1977. Where have all the adjectives gone? *Studies in Language* 1(1). 19–80. doi:10.1075/sl.1.1.04dix.

Dixon, R. M. W. 1982. *Where have all the adjectives gone? and other essays in semantics and syntax* (Janua Linguarum 107). Berlin: Mouton.

Dixon, R. M. W. 2004. Adjective classes in typological perspective. In R. M. W. Dixon & Alexandra Y. Aikhenvald (eds.), *Adjective classes: A cross-linguistic typology* (Explorations in Linguistic Typology 1), 1–49. Oxford: Oxford University Press.

Dixon, R. M. W. 2010a. *Basic linguistic theory, Vol. 1: Methodology*. Oxford: Oxford University Press.

Dixon, R. M. W. 2010b. *Basic linguistic theory, Vol. 2: Grammatical topics*. Oxford: Oxford University Press.

Dryer, Matthew S. 1997. Are grammatical relations universal? In Joan Bybee, John Haiman, & Sandra Thompson (eds.), *Essays on language function and language type: Dedicated to T. Givón*. Amsterdam: John Benjamins.

Dryer, Matthew S. 2007a. Noun phrase structure. In Timothy Shopen (ed.), *Language typology and syntactic description, Vol. 2: Complex constructions*, 2nd edn., 151–205. Cambridge: Cambridge University Press.

Dryer, Matthew S. 2007b. Clause types. In Timothy Shopen (ed.), *Language typology and syntactic description, Vol. 2: Complex constructions*, 2nd edn., 224–275. Cambridge: Cambridge University Press.

Enfield, N. J. 2006. Heterosemy and the grammar-lexicon trade-off. In Felix K. Ameka, Alan Dench, & Nicholas Evans (eds.), *Catching language: The standing challenge of grammar writing* (Trends in Linguistics, Studies and Monographs 167), 297–320. Berlin: Mouton de Gruyter.

Evans, Nicholas. 2003. Typologies of agreement: Some problems from Kayardild. In Dunstan Brown, Greville G. Corbett, & Carole Tiberius (eds.), *Agreement: A typological perspective* (Transactions of the Philological Society 101[2]). Oxford: Blackwell. 313–337.

Evans, Nicholas & Toshiki Osada. 2005a. Mundari: The myth of a language without word classes. *Linguistic Typology* 9. 251–390. doi: 10.1515/lity.2005.9.3.351.

Evans, Nicholas & Toshiki Osada. 2005b. Mundari and argumentation in word-class analysis. *Linguistic Typology* 9(3). 442–457. doi:10.1016/j.amepre.2012.05.007.

Feldman, Harry. 1986. *A grammar of Autuw*. Canberra: Australian National University.

Floyd, Simeon. 2011. Re-discovering the Quechua adjective. *Linguistic Typology* 15(2011). 25–63. doi:10.1515/LITY.2011.003.

Frachtenberg, Leo J. 1922. Coos. In Franz Boas (ed.), *Handbook of American Indian languages, Vol. 2* (Bureau of American Ethnology Bulletin 40), 297–429. Washington, D.C.: Government Printing Office (Smithsonian Institution, Bureau of American Ethnology).

Frajzyngier, Zygmunt & Erin Shay. 2003. *Explaining language structure through systems interaction* (Typological Studies in Language 55). Amsterdam: John Benjamins.

Francis, Elaine J. & Stephen Matthews. 2005. A multi-dimensional approach to the category “verb” in Cantonese. *Journal of Linguistics* 41(2). 269–305. doi:10.1017/S0022226705003270.

François, Alexandre. 2005. A typological overview of Mwotlap , an Oceanic language of Vanuatu. *Linguistic Typology* 9(2005). 115–146. doi:10.1515/lity.2005.9.1.115.

Geeraerts, Dirk. 2006 [1989]. Prospects and problems of prototype theory. *Cognitive linguistics: Basic readings*, 141–166. Berlin: Mouton de Gruyter. (Originally published in *Linguistics* 27(4), 587–612, doi:10.1515/ling.1989.27.4.587.)

Gil, David. 2001. Escaping Eurocentrism: Fieldwork as a process of unlearning. In Paul Newman & Martha Ratliff (eds.), *Linguistic fieldwork*, 102–132. Cambridge: Cambridge University Press.

Gil, David. 2005. Isolating-monocategorial-associational language. *Handbook of categorization in cognitive science*, 348–377. Amsterdam: Elsevier.

Gordon, Lynn. 1986. *Maricopa morphology and syntax* (UC Publications in Linguistics 108). Berkeley: University of California Press.

Göksel, Aslı & Celia Kerslake. 2005. *Turkish: A comprehensive grammar* (Routledge Comprehensive Grammars). London: Routledge.

Haspelmath, Martin. 2007. Coordination. In Timothy Shopen (ed.), *Language typology and syntactic description, Vol. 2: Complex constructions*, 2nd edn., 1–51. Cambridge: Cambridge University Press.

Haspelmath, Martin. 2010. Comparative concepts and descriptive categories in crosslinguistic studies. *Language* 86(3). 663–687. doi:10.1353/lan.2010.0021.

Hengeveld, Kees. 1992. *Non-verbal predication: Theory, typology, diachrony* (Functional Grammar Series 15). Berlin: Mouton de Gruyter.

Hengeveld, Kees. 2013. Parts-of-speech system as a basic typological determinant. In Jan Rijkhoff & Eva van Lier (eds.), *Flexible word classes: A typological study of underspecified parts of speech*. Oxford: Oxford University Press.

Hengeveld, Kees & Jan Rijkhoff. 2005. Mundari as a flexible language. *Linguistic Typology* 9(3). 406–431. doi:10.1515/lity.2005.9.3.391.

Hengeveld, Kees & Marieke Valstar. 2010. Parts-of-speech systems and lexical subclasses. *Linguistics in Amsterdam* 3(1), 1–24. <http://dpc.uba.uva.nl/aclc/03/nr01/a02>.

Hengeveld, Kees, Marieke Valstar, Jan Rijkhoff & Anna Siewierska. 2004. Parts-of-speech systems and word order. *Journal of Linguistics* 40(3). 527–570. doi:10.1017/S0022226704002762.

Himmelmann, Nikolaus P. 2008. Lexical categories and voice in Tagalog. In Peter K. Austin & Simon Musgrave (eds.), *Voice and grammatical relations in Austronesian languages*, 247–293. Stanford: CSLI Publications.

Hoijer, Harry. 1933. Tonkawa: An Indian language of Texas. In Franz Boas (ed.), *Handbook of American Indian languages, Vol. 3*, 1–148. Glickstadt: Hamburg, New York

Hopper, Paul J. & Sandra A. Thompson. 1980. Transitivity in grammar and discourse. *Language* 56(2). 251–299. <http://www.jstor.org/stable/413757>.

Hopper, Paul J. & Sandra A. Thompson. 1984. The discourse basis for lexical categories in Universal Grammar. *Language* 60(4). 703–752. <http://www.jstor.org/stable/413797>.

Hoskison, James Taylor. 1983. *A grammar and dictionary of the Gude language*. Columbus: Ohio State University dissertation.

Hyman, Larry M. 2009. How (not) to do phonological typology: the case of pitch-accent. *Language Sciences* 31(2–3). 213–238. doi:10.1016/j.langsci.2008.12.007.

Jacobsen, William H., Jr. 1979. Noun and verb in Nootkan. In Barbara Efrat (ed.), *The Victoria conference on northwestern languages, 1976* (Heritage Record 4), 83–155. Victoria, British Columbia: British Columbia Provincial Museum.

Lakoff, George. 1987. *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago: University of Chicago Press.

Langacker, Ronald W. 1987. Nouns and verbs. *Language* 63(1). doi: <http://www.jstor.org/stable/415384>.

Lanz, Linda A. 2010. *A grammar of Iñupiaq morphosyntax*. Houston: Rice University dissertation.

Launey, Michel. 1994. *Une grammaire omniprédicative*. Paris: CNRS Editions.

Launey, Michel. 2002. Compound nouns vs. incorporation in Classical Nahuatl. In Nicholas Evans & Hans-Jürgen Sasse (eds.), *Problems in polysynthesis*, 113–134. Berlin: Akademie-Verlag.

Lichtenberk, Frantisek. 1991. Semantic change and heterosemy in grammaticalization. *Language* 67(3). 475–509. <http://www.jstor.org/stable/415035>.

Lyons, John. 1977. *Semantics, Vol. 1*. Cambridge: Cambridge University Press.

Macaulay, Monica. 1996. *A grammar of Chalcatongo Mixtec* (University of California Publications in Linguistics 127). Berkeley: University of California Press.

Malouf, Robert. 2000. Verbal gerunds as mixed categories in Head-Driven Phrase Structure Grammar. In Robert Borsley (ed.), *The nature and function of syntactic categories* (Syntax and Semantics 32), 133–166. New York: Academic Press.

Mel’cuk, Igor. 1994. Suppletion: Toward a logical analysis of the concept. *Studies in Language* 18. 339–410. doi:10.1075/sl.18.2.03mel.

Mel’cuk, Igor. 2006a. Explanatory combinatorial dictionary. In Giandomenico Sica (ed.), *Open problems in linguistics and lexicography*, 225–355. Monza, Italy: Polimetrica.

Mel’cuk, Igor. 2006b. *Aspects of the theory of morphology*. (Trends in Linguistics, Studies and Monographs). Ed. David Beck. Berlin: Mouton de Gruyter. doi:10.1515/9783110199864.

Mithun, Marianne. 1976. *A grammar of Tuscarora* (Garland Studies in American Indian Linguistics). New York: Garland.

Mithun, Marianne. 1999. *The languages of Native North America* (Cambridge Language Surveys). Cambridge: Cambridge University Press.

Mithun, Marianne. 2000. Noun and verb in Iroquoian languages: Multicategorisation from multiple criteria. In Petra M. Vogel & Bernard Comrie (eds.), *Approaches to the typology of word classes* (Empirical Approaches to Language Typology 23), 397–420. Berlin: Mouton de Gruyter.

Mohammed, M. A. 2001. *Modern Swahili grammar*. Nairobi: East African Educational Publishers.

Nakayama, Toshihide. 1997. *Discourse-pragmatic dynamism in Nuu‑chah‑nulth (Nootka) morphosyntax*. Santa Barbara: University of California, Santa Barbara dissertation.

Nikolaeva, Irina & Andrew Spencer. n.d. Nouns as adjectives and adjectives as nouns. Unpublished ms. <http://privatewww.essex.ac.uk/~spena/PossMod/8adjnoun-language-revised-final-non-anon.pdf>.

Noonan, Michael. 1992. *A grammar of Lango* (Mouton Grammar Library 7). Berlin: de Gruyter.

Paciaroni, Tania. 2012. Noun inflectional classes in Maceratese. In Sascha Gaglia & Marc-Oliver Hinzelin (eds.), *Inflection and word formation in Romance languages* (Linguistics Today 186), 231–270. Amsterdam: John Benjamins.

Palancar, Enrique L. 2012. The conjugation classes of Tilapa Otomi: An approach from Canonical Typology. *Linguistics* 50(4). 783–832. doi:10.1515/ling-2012-0025.

Payne, Thomas E. 1997. *Describing morphosyntax: A guide for field linguists*. Cambridge: Cambridge University Press.

Persson, Gunnar. 1988. Homonymy, polysemy, and heterosemy: The types of lexical ambiguity in English. In Karl Hyldgaard-Jensen & Arne Zettersten (eds.), *Symposium on Lexicography III: Proceedings of the Third International Symposium on Lexicography*, 269–280. Tubingen: Niemeyer.

Peterson, John. 2005. There’s a grain of truth in every “myth”, or, Why the discussion of lexical classes in Mundari isn’t quite over yet. *Linguistic Typology* 9(3). 391–441. doi:10.1515/lity.2005.9.3.391.

Polinsky, Maria. 2003. Non-canonical agreement is canonical. In Dunstan Brown, Greville G. Corbett, & Carole Tiberius (eds.), *Agreement: A typological perspective* (Transactions of the Philological Society 102[2]), 279–312. Oxford: Blackwell.

Rauh, Gisa. 2010. *Syntactic categories: Their identification and description in linguistic theories* (Oxford Surveys in Syntax and Morphology 7). Oxford: Oxford University Press.

Rijkhoff, Jan. 2003. When can a language have nouns and verbs? *Acta Linguistica Hafniensia* 35(1). 7–38. doi:10.1080/03740463.2003.10416072.

Rijkhoff, Jan. 2007. Word Classes. *Language and Linguistics Compass* 1(6). 709–726. doi:10.1111/j.1749-818X.2007.00030.x.

Rijkhoff, Jan. 2008. On flexible and rigid nouns. *Studies in Language* 32(3). 727–752. doi:10.1075/sl.32.3.12rij.

Rijkhoff, Jan, & Eva Van Lier (eds.). *Flexible word classes: A typological study of underspecified parts-of-speech*. Oxford University Press.

Romero-Figeroa, Andres. 1997. *A reference grammar of Warao* (Languages of the World Materials). Munich: LINCOM.

Rosch, Eleanor. 1973a. On the internal structure of perceptual and semantic categories.. In T. E. Moore (ed.), *Cognitive development and the acquisition of language*, 111–144. New York: Academic Press.

Rosch, Eleanor. 1973b. Natural categories. *Cognitive Psychology* 4(3). 328–350. doi: 10.1016/0010-0285(73)90017-0.

Rosch, Eleanor. 1975a. Cognitive reference points. *Cognitive Psychology* 7(4). 532–547. doi: 10.1016/0010-0285(75)90021-3.

Rosch, Eleanor. 1975b. Cognitive representations of semantic categories. *Journal of Experimental Psychology* 104(3). 192–233. doi: 10.1037/0096-3445.104.3.192.

Rosch, Eleanor. 1975c. Principles of categorization. In Eleanor Rosch & Barbara J. Lloyd (eds.), *Cognition and categorization*, 27–48. Hillsdale, NJ: Erlbaum.

Ross, John R. 1987. Islands and syntactic prototypes. *Papers from the 23rd Annual Regional Meeting of the Chicago Linguistic Society, Part 1: The General Session*, 309–320. Chicago: Chicago Linguistic Society.

Ross, John Robert. 1972. The category squish: Endstation Hauptwort. In Paul M. Peranteau, Judith N. Levi, & Gloria C. Phares (eds.), *Papers from the 8th Regional Meeting Chicago Linguistic Society*, 316–329. Chicago: Chicago Linguistic Society.

Sadock, Jerrold M. 1999. The nominalist theory of Eskimo: A case study in scientific self-deception. *International Journal of American Linguistics* 65(4). 383–406. <http://www.jstor.org/stable/1265857>.

Sandmann, Antonio José. 1988. *Formação de palavras no Português Brasileiro contemporâneo*. Curitiba: Editora UFPR.

Sapir, Edward. 1921. *Language: An introduction to the study of speech*. New York: Harcourt, Brace & Company.

Sasse, Hans-Jürgen. 1993. Das Nomen – eine universale Kategorie? *Sprachtypologie und Universalienforschung* (STUF) 46(3). 187–221.

Sasse, Hans-Jürgen. 2001. Scales between nouniness and verbiness.. In Martin Haspelmath, E. König, & W. Oesterreicher (eds.), *Language typology and language universals*, 495–509. Berlin: de Gruyter.

De Saussure, Ferdinand. 1986 [1916]. *Course in general linguistics*. London: Open Court.

Schachter, Paul & Timothy Shopen. 2007. Parts-of-speech systems. In Timothy Shopen (ed.), *Language typology and syntactic description, Vol. 1: Clause structure*, 2nd edn., 1–60. Cambridge: Cambridge University Press.

Searle, John R. 1969. *Speech acts: An essay in the philosophy of language*. Cambridge: Cambridge University Press.

Spencer, Andrew. 2005. Towards a typology of “mixed categories”. In C. Orhan Orgun & Peter Sells (eds.), *Morphology and the web of grammar: Essays in memory of Stephen G. Lapointe* (Stanford Studies in Morphology and the Lexicon), 95–138. Stanford: CSLI Publications.

Stassen, Leon. 1997. *Intransitive predication* (Oxford Studies in Typology and Linguistic Theory. Oxford: Oxford University Press.

Stirtz, Timothy M. 2011. *A grammar of Gaahmg: A Nilo-Saharan language of Sudan* (LOT Dissertation Series 296). Utrecht: LOT.

Swadesh, Morris. 1938. Nootka internal syntax. *International Journal of American Linguistics* 9(2). 77–102. <http://www.jstor.org/stable/1263060>.

Thalbitzer, William. 1911. Eskimo. In Franz Boas (ed.), *Handbook of American Indian languages, Vol. 1* (Bureau of American Ethnology Bulletin 40). Washington, D.C.: Government Printing Office (Smithsonian Institution, Bureau of American Ethnology).

Velupillai, Viveka. 2012. *An introduction to linguistic typology*. Amsterdam: John Benjamins.

Yule, George. 2010. *The study of language*, 4th ed. Cambridge: Cambridge University Press.

1. When discussing parts of speech, I follow the orthographic convention of Comrie (1976:10), Bybee (1985:141), Dahl (1985:34), Croft (2001:52), and Haspelmath (2010:674) in using initial capitals (e.g. ‘Noun’) to refer to the categories of particular languages, and lowercase terms (e.g. ‘noun’) to refer to comparative concepts formulated for the purpose of typological comparison. Like Haspelmath, I take the categories of a given language to be language-specific, and therefore not applicable to other languages. Comparative concepts, by contrast, have no status in the grammars of particular languages, and are instead conceptual tools for the purpose of making typological comparisons. As such, comparative concepts must always be formulated in language-general rather than language-specific terms. The error of classical antiquity, of course, was to conflate these two concepts, and treat the categories of Greek as comparative concepts to be instantiated in other languages. [↑](#footnote-ref-1)
2. Note that the former is merely a special case of the latter. [↑](#footnote-ref-2)
3. The double quotation marks in this gloss are from Evans and Osada, who use them to indicate their skepticism that these two uses of *buru* and *jom* belong to the same part of speech. [↑](#footnote-ref-3)
4. For a complete bibliography of works adopting a canonical approach to typology, see <http://www.surrey.ac.uk/englishandlanguages/research/smg/canonicaltypology/bibliography/index.htm>. [↑](#footnote-ref-4)
5. This discussion is adapted from and modeled heavily on Dixon (2010b:4–6). [↑](#footnote-ref-5)
6. ‘Nerb’ and ‘Voun’ are given these names for their intermediate status. The criteria are as follows: (a) compatibility with the “propriety suffix” ‑*ma* ‘associated with’; (b) case inflection; (c) compatibility with nominal classifiers; (d) cross-referencing object pronoun; (e) body-part incorporation; (f) number indicator; (g) adverb incorporation; (h) cross-referencing benefactive pronoun; (i) tense-aspect-mood suffix; (j) compatibility with the ‘primary auxiliary’; (k) other cross-referencing pronouns. [↑](#footnote-ref-6)
7. Dryer (1997) argues forcefully for a similar, language-specific approach to grammatical relations. [↑](#footnote-ref-7)
8. Note that in the above example, labels like “Noun” are defined solely in terms of a single property distinction – the label does not hold over more than one type of classification. Once adopted for labeling the possessive-nonpossessive distinction, the labels Noun and Verb cannot be justifiably applied to other methods of classification (say, the case-noncase distinction), unless both methods of classification pick out the exact same set of lexemes. [↑](#footnote-ref-8)
9. There is the occasional exception where the forms are ambiguous in isolation, e.g., *waganga* ‘they cure’ and *waganga* ‘doctors’, but context serves to distinguish them. [↑](#footnote-ref-9)
10. For more on the semantics of the Noun class prefixes in Swahili, see Contini-Morava (1996). [↑](#footnote-ref-10)
11. We can be sure this is a case of zero-derivation because many Swahili lexemes do require overt derivation morphemes, e.g., *kusoma* ‘to read’ versus *msomaji* ‘reader’. Here, the *m‑* class prefix is inflectional, while the *‑ji* suffix is derivational (specifically, an agent nominalizer). [↑](#footnote-ref-11)
12. Nakayama (1997) suggests, and Mithun (1999: 62–63) summarizes, how the definite marker in Nuuchahnulth may be better analyzed as a specifier of syntactic structure, i.e., a marker of argument status, rather than an inherent lexical category marker. This would mean that even the subtle evidence for a noun-verb distinction in the lexicon of in Nuuchahnulth may be unfounded. [↑](#footnote-ref-12)
13. This is unrelated to the principle of exhaustiveness presented by Evans and Osada (2005a:20). Their principle of exhaustiveness refers to the percentage of the lexicon that exhibits flexibility, and will be covered here under Criterion 9. [↑](#footnote-ref-13)
14. There are a few differences between the two types of lexemes: 1) some PC lexemes have suppletive plural stems; 2) PC lexemes have independent tone while the tone of normal verbs is determined by aspect and mood; 3) PC lexemes lack infinitives and subjunctives. [↑](#footnote-ref-14)
15. Their semantic connotations for the noun classes in these examples are as follows: Class 1: animate; Class 7: inanimate, diminutive; Class 9: inanimate, loanwords; Class 11: abstract nouns. [↑](#footnote-ref-15)
16. They make still participate in analytic causative constructions, of course, but in this case they retain their attributive function, e.g., *I made him jealous*. [↑](#footnote-ref-16)