A canonical typology of flexible categories

Abstract

A common debate in typology concerns methodologies for lexical categorization. Of particular contention is the notion of "flexible categories", which many linguists feel glosses over important evidence for categorization. In an attempt to resolve these tensions, this article presents a typology of flexible categories from the perspective of Canonical Typology. Attempts to define "the" set of categories for a language are abandoned in favor of a gradient approach which evaluates the extent to which certain classes of lexemes in a language are rigid or flexible. This article outlines a number of different criteria by which languages vary in this regard.

Keywords: *canonical typology, flexible categories, lexical categories, parts of speech, rigid categories, word classes*

1. Introduction

A recent problem in typology concerns the nature and existence of so-called "flexible word classes",[1] i.e., lexical categories within a language which appear (from an extralinguistic, typological, or universal perspective) to subsume multiple semantic and pragmatic distinctions so as to make them categorically indistinguishable within a given language (Hengeveld 1992; Rijkhoff 2007, 2010; Van Lier & Rijkhoff, forthcoming). Clearly, the notion of flexible word classes itself depends on some notion of prototypes, crosslinguistic categories, comparative concepts, or canonical definitions (Corbett 2004; Haspelmath 2010; Lakoff 1987). Despite this difficulty, Dixon (1977: 20) prominently proclaimed that "not all languages have the major word class Adjective."[2] That is to say, these languages have a language-particular, "flexible" lexical category which subsumes the comparative concept adjective along with another concept like verb into one category.[3] And although linguists must still determine whether this particular language or that one lacks a category Adjective (e.g., Floyd 2011), today many linguists accept the idea that at least some languages exist without it, regardless of their theoretical approach to comparative linguistics (e.g., Croft 2003; Schachter & Shopen 2007).

The focus of recent debates, however, is far more controversial, and centers on whether there exist languages for which even the basic noun-verb distinction is collapsed into a single, perfectly flexible category (the collection of articles in Evans & Osada [2005a, 2005b] and Hengeveld & Rijkhoff [2005] being of primary interest here; for a comprehensive list of discussions on this topic in the literature, see Evans & Osada [2005a: 352]). While the debate

[1] Some terminological distinctions are in order: I use the terms *word class*, *lexical category*, and *functional category* to refer to language-particular descriptive categories in the sense of Haspelmath (2010). *Word class* is here used as an umbrella term to encompass both lexical categories and functional categories. I also adhere to Haspelmath's distinction between crosslinguistic categories and comparative concepts, and I likewise reject the notion of crosslinguistic categories as the basis for comparative linguistics. More on this in Section 2.

[2] Dixon has since reneged on this position (Dixon 2010; Dixon & Aikhenvald 2004), suggesting that the category Adjective is universally instantiated in the world's languages.

[3] I shall adopt the increasingly common convention of denoting language-particular categories with terms beginning with an initial capital ("Adjective"), and comparative concepts with an initial lowercase ("adjective").

focuses crucially around the noun-verb distinction due to the long-standing nature of the claim that all languages distinguish these two fundamental classes (see Chelliah & de Reuse, [2011: 291-292] for an overview), it also raises the broader theoretical issue of what constitutes flexible word classes more generally. What 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) attempt to answer these questions, providing four criteria which they claim should be utilized in identifying a flexible language. However, since their focus is on whether any languages lack the noun-verb distinction, their criteria – although useful – do not fully elucidate the concept of a flexible category more generally. What is needed instead is a model of flexible categories which allows for the comparison of word classes in individual languages to either each other or some theoretically predetermined notion of flexible categories.

The canonical approach to typology (Brown, Chumakina, & Corbett, forthcoming; Corbett 2004) is particularly useful for addressing this type of theoretical problem. 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 we have established the theoretically possible ways a language might deviate do we look at individual languages to see how this theoretical space is populated, allowing us to determine how far a given construction or phenomenon is from the canonical point, and to categorize its particular type of deviation.

This paper therefore seeks to define flexible and rigid word classes through the framework of canonical typology, and examines canonical and noncanonical instances of these categories from various languages. Noting that different classification schemes, when applied to the same language, will pick out different sets of lexemes[4] as belonging to the same class, I define rigid categories as those where, no matter what property(s) are used as the basis for categorization, the members of the class remain the same. Put differently, a *rigid word class* uniquely maps to one set of properties or functions, which do not overlap with the properties or functions of any other word class. A *flexible word class*, by contrast, is one which has maximal overlap of properties between categories. Members of a perfectly flexible word class can thus function as any lexical category – noun, verb, adjective, adverb, etc.

This paper is organized as follows: In Section 2, I first lay out my assumptions regarding crosslinguistic categories. Then in Section 3 I outline the canonical approach to typology in greater detail. In Section 4.1 I define in more detail what is meant by *category* and *rigid word class*, and then in Section 4.2 I begin to define the notion of *flexible category* and several principles to which it adheres. In Section 5, I establish the theoretically possible ways a word class might vary in regards to its flexibility or rigidity. At the same time, I illustrate how categories in various languages fall on different points on the continuum from most flexible to most rigid, i.e., I determine whether any of the theoretical possibilities just outlined are actually instantiated in language. Section 6 is devoted to the problem of semantics as it relates to lexical categorization and derivation, which, as we will see, merits special attention. Finally, in Section 7, I conclude that no language exhibits the canonical instance of a flexible category, but that

[4] The reader will notice that I am careful to use the term *lexeme* throughout this paper, as distinguished from *word*, which might be thought of as a specific instantiation of a lexeme in a particular form. So while EAT is a lexeme, *eats, eating, eat,* and *ate* are some of its instanced words. It is the lexeme which is interesting to the topic of this paper, because it is the lexeme which bears properties such as the ability to take tense/aspect marking and other properties used for lexical categorization.

some languages come extremely close. The canonical approach to typology thus highlights for us the number of unique and interesting ways languages vary in this regard.

2. Crosslinguistic categories

As mentioned at the outset, the notion of flexible word classes is necessarily predicated on the ability to make some type of crosslinguistic comparison between languages. However, to make a crosslinguistic comparison is not necessarily the same as saying say that the same category exists in two distinct languages. As Haspelmath (2010) shows, these "crosslinguistic categories" are impossible constructs, and thus invalid for use as theoretical tools. What we can do in typology, however, is suggest that the individual categories of different languages are similar to or different from each other in various key ways, utilizing Haspelmath's notion of comparative concepts. In this section, I make explicit the comparative concepts I will utilize for the purpose of comparing categories across languages.

The notion of flexible versus rigid categories was first laid out in Hengeveld (1992: 63-71) and later elaborated upon in, inter alia, Rijkhoff (2007) and Hengeveld & Rijkhoff (2005). While Hengeveld and Rijkhoff do not make explicit their assumptions regarding categorical universalism and the existence of crosslinguistic categories, they do, in comparing word classes across languages, make frequent reference to "functions" rather than "categories", utilize conceptual-semantic primitives, and ground their comparisons in language-general rather than language-specific terms (e.g., "head of predicate phrase", "head of referential phrase"). Thus, according to Hengeveld and Rijkhoff's approach, one can appropriately classify the word classes of a particular language according to the set of comparative concepts that word class may express. Flexible word classes are those which encompass multiple grammatical functions.

This is very much in line with Haspelmath's notion of comparative concepts. 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." (p. 670) 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 and Rijkhoff would label "flexible".

It is these type of comparative concepts which I will make use of in this paper – ones which are conceptual-semantic and language-general – for the purpose of establishing the flexible or rigid nature of word classes in particular languages. In particular, I find Croft's (2001) distinction between the pragmatic functions of reference, predication, and modification (what Searle would call "propositional acts") to be especially useful, as well as Hengeveld and Rijkhoff's syntactic functions (e.g., "head of predicate phrase"), and will apply them frequently throughout the paper as comparative concepts. Though there are numerous other comparative concepts one might bring to bear for the purpose of comparing word classes crosslinguistically, these two sets (hereto referred to as *pragmatic functions* or *syntactic functions*) should suffice to make the general point.

3. Canonical typology

The canonical approach to typology has been put forth by Corbett (2001, 2004, 2006, among numerous others) as a means of a) drawing attention to frequent but oft-overlooked phenomena,

interesting features which are obscured and ignored in more statistical approaches to typology; and b) separating out distinct phenomena which have been previously treated as identical. Many typologists have since utilized this approach, including, inter alia, Baerman, Brown, and Corbett (2005), Comrie (2003), Evans (2003), Polinsky (2003), and Spencer (2005). The distinguishing characteristic of this 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. This does not necessarily mean that the canonical type is frequent or even prototypical. Instead, canonical typology can be seen as adopting a feature-clustering approach to typology, where the canonical instance of a phenomenon is canonical precisely because it exhibits various expected sets of properties at once. 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. For example, canonical nouns in English take plural marking, but there are many nouns in English which do not (e.g., mass nouns). 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 nouns which lack plural marking are less canonical than nouns which do not.

In canonical typology, these various properties of a phenomenon 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. To utilize a visual metaphor like that in Figure 1, 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. A mass noun, for example, is a noncanonical English noun in a different way than irregular plurals are noncanonical English nouns.

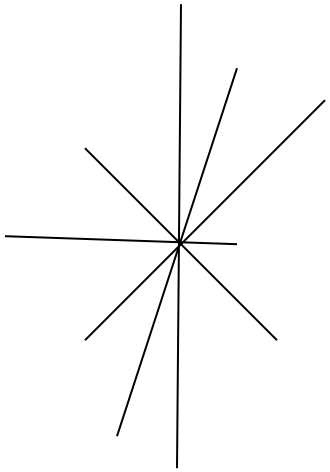

Figure 1. *Conceptualizing the canonical point*

A common application of the canonical approach to typology is 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 by which these vowels are defined include things like 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, for example.

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 short, 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. One first identifies the phenomenon of interest and all its associated criteria/properties, and then establishes all the logically possible ways in which a language might deviate from the canonical instance along different dimensions. Only then does one look to see whether any languages realize these potential possibilities. Note that, in the case of the vowel chart, it does not matter whether one takes as the canonical point a high and front vowel or a low or back vowel, or something else entirely. What matters is the ability to establish an easily identifiable starting point – some canonical instance, defined as a comparative concept – from which to begin establishing dimensions of variation – the criteria.

Another extremely 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 dimension between canonical points A and B. Thus Figure 2 is a useful way to conceptualize the phenomena under investigation in this paper.

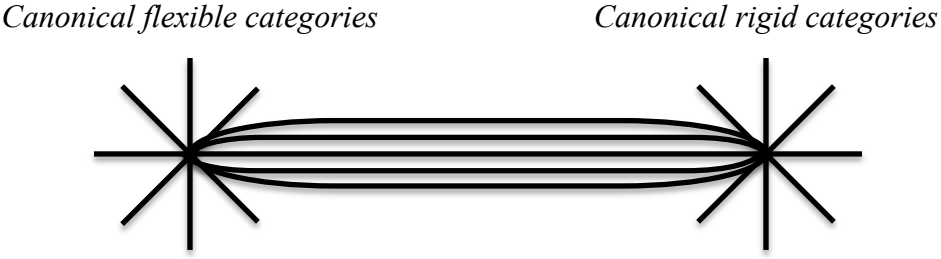

Figure 2. *The continuum of flexibility*

This is the method which will be followed in this paper, beginning first with the identification of the canonical case of the phenomenon in question (flexible categories, in Section 4), and then examining all the ways in which a language can be noncanonical according to the associated criteria (Section 5).

4. Defining flexible categories

4.1 Categories and rigid word classes

Before defining the notion of flexible category, 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. Unlike Croft (2005), I do not take the distributional properties of a lexeme to be its essential characteristics for

the purpose of categorization. Clearly there are many lines along which we can categorize a given lexeme – its syntactic behavior, its morphological coding, its semantics, its pragmatic function, its phonological structure, etc. 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. Instead, we simply observe that there are many ways in which a lexeme can be categorized.

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 is 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 3 shows the two logical possibilities.

	POSSIBILITY A		POSSIBILITY B	
Categorized by number marking	W	X	W	X
Categorized by person marking	Y	Z	Y	Z

Figure 3. *Extent to which classification 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 Class A and Class B, or "Nouns" and "Verbs".

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. The most common approach historically 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 excellent overview of the history of syntactic categorization). More recently,

Croft (2005) has taken the opposite approach, subdividing the lexemes of a language into as many language-particular categories as possible. Since the ways in which lexemes can be categorized are so numerous, however, the result is an approach to lexical categories which posits that every construction is its own unique category. Figure 4 compares the two approaches.

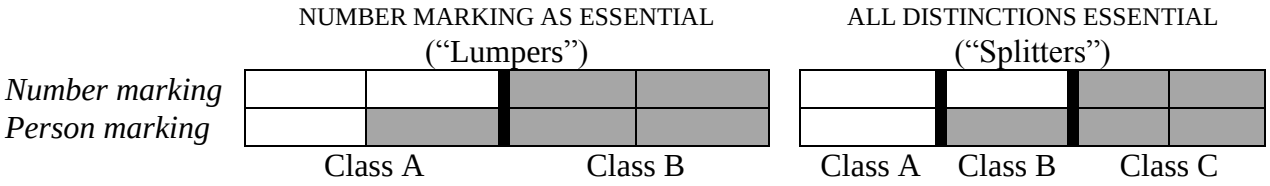

Figure 4. *Lumping versus splitting in lexical categorization*

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. 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, and lexemes which take neither person nor number marking. This creates three lexical categories, again signified by the dark lines.

As disparate as they are, these two approaches have a unifying characteristic: both assign just one category label to a lexeme (or construction). Ontologically, the only distinction between the two approaches is that linguists doing traditional distributional analysis have tended to be categorical minimalists ("lumpers", in Croft's terminology), while Croft is a categorical maximalist (a "splitter").). Traditional analyses will posit several large categories like "Noun" and "Adjective", while Croft's analysis will posit millions of category labels, one for each specific construction. What neither approach suggests is that a given lexeme may have multiple category labels. This is the approach adopted by, for example, Anward, Moravcsik & 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 I think are ultimately more helpful. My analysis of lexical categories shares many features with their own.

The concept of a flexible category, then, is difficult to motivate if looked at from either the point of view of traditional, categorically minimalist analysis, or Croft's maximalist one, because both assign just one category label (although Croft's notion of prototypes might be considered cross-categorical as well). Instead, cross-categorical approaches allow us to 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 are in line for a given class of lexemes, we may call this a perfectly rigid word class, following Hengeveld, Rijkhoff & Siewierska (2004) and Hengeveld & Rijkhoff (2005). Although they approach the definition differently, 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.

An example would be enlightening at this point. 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.[5] This is unlike many lexemes of English, such as how the noun nose can be used as a verb, *to nose around*.[6] On the other hand, Hengeveld, Rijkhoff and Siewierska (2004) classify English as being primarily a rigid language, despite its rampant zero-conversion, since English very clearly differentiates separate word classes for each major type of syntactic slot. At the very least what we can say is, to the extent that English has clearly distinguished word classes for each syntactic slot (syntactic slots being the particular comparative concept which Hengeveld et al. choose to utilize), 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 possible.

4.2 Flexible categories

Having defined the concept of rigid word classes, we are now in a position to define the notion of a canonical flexible category:

(1) 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 the role of multiple pragmatic or syntactic functions indiscriminately.*

Another way of stating this is as follows:

(2) FLEXIBLE CATEGORY′: *For members of a canonical flexible category, the different functional uses for the same lexeme are maximally indistinguishable from one another.*

The canonical flexible category is one which serves multiple syntactic or pragmatic functions, with minimal or no distinction in form or meaning. 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

[5] 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.

[6] This assumes, of course, that both uses are part of the same lexical entry, a tricky issue to which we will return to in Section 6.

exist a language with seven word classes that were each perfectly 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 (forthcoming) 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 (including phonology), 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, in 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 does a canonically flexible category look like? Perhaps the best examples come from the isolating languages of southeast Asia, most notably Riau Indonesian, where either of the phrases in (3) may have any of the possible meanings in (4) (Gil 2005: 362-363):

(3) a. *makan* *ayam*
eat chicken

b. *ayam* *makan*
chicken eat

(4) a. the chicken is eating
b. the chickens are eating
c. the chicken was eating
d. the chicken will be eating
e. the chicken eats
f. the chicken has eaten
g. someone is eating the chicken
h. someone is eating for the chicken
i. someone is eating with the chicken
j. the chicken that is eating
k. where the chicken is eating
l. when the chicken is eating

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: 367). This has some remarkable implications:

> The above structure constitutes a single unified meaning, encompassing the entire range of interpretations of the sentences in [3], including, among others, those expressed by the various translations of [3] into English provided in [4]. 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 syntactic, semantic, and pragmatic 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, it would be impossible to communicate in it, because it would be impossible to distinguish between the different functions of the same lexeme. Therefore we can establish on a priori grounds that no word class can ever be canonically flexible, at the risk of being truly and 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.

5. Flexible categories: The range of the phenomenon

Having defined our canonical point, let us begin to look at the ways different languages might deviate from this canonical type. The criteria along which languages might deviate from the canonical can be grouped according to two overarching criteria or *principles*: indistinguishability and maximal scope of flexibility. The *principle of indistinguishability* refers to the fact that different functional uses of a lexeme in a flexible category should be maximally indistinguishable from one another (such as Riau Indonesian in (3) and (4) above). In Section 5.1, I will outline six ways in which categories in various languages might violate this principle, constituting our first six criteria. The *principle of maximal scope* simply 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 four criteria which relate to this principle, which I will outline in Section 5.2.

5.1 Indistinguishability

One way in which a word class might deviate from the canonical definition is for lexemes of that class to not allow for overlap in their categorization, but to still fulfill multiple pragmatic functions. This is usually accomplished via derivation. So 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 can function as either. The different uses of the lexeme are no longer maximally indistinguishable.

In the canonical approach, this criterion is illustrated as follows, on a scale from *more canonical > less canonical*:

Criterion 1 *no morphology needed to change functions > presence of derivational morphology required*

A language which has more canonically flexible categories, according to this criterion, is Mundari:

(5) a. *buru=ko* *bai-ke-d-a*
mountain=3PL.SBJ make-COMPL-TR-IND
'They made a mountain.'

b. *saan=ko* *buru-ke-d-a*
firewood=3PL.SBJ "mountain"-COMPL-TR-IND[7]
'They heaped up the firewood.' (Evans & Osada 2005a: 30)

Here the lexeme *buru* 'mountain' can serve both referential (5a) and predicative (5b) functions without requiring derivational morphology. By contrast, the Malimiut coastal dialect of Iñupiaq sits close to the opposite end of this spectrum of canonicity. Lexemes are very rigidly classified according to category, but Iñupiaq has a very robust set of "derivational" suffixes which allow lexemes to serve other functions:

(6) a. *Ulu-aq-tuq.*
knife-UTILIZE-3SG.IND
'She is using an ulu.'[8]

b. *Ulu-qaq-tuq.*
knife-HAVE-3SG.IND
'She has an ulu.'

c. **Ulu-tuq.*
knife-3SG.IND
'She has/is using an ulu.' (Lanz 2010: 96)

Examples (6a) and (6b) both illustrate that the noun *ulu* 'knife' requires derivational morphology (*-aq* 'use' or *-qaq* 'have') in order to be used for predication. Example (6c) shows that the use of

[7] The quotes in this gloss are from Evans & Osada, who used them to indicate their skepticism that these two uses of *buru* belonged to the same lexeme. I do not share their skepticism.

[8] An *ulu* is a traditional woman's knife.

ulu as a noun without such derivation is ungrammatical. Similarly, Verbs must take derivational marking in order to serve as Nouns:

(7) a. *aŋuniaq-* 'to hunt' > *aŋuniaq-ti* 'hunter'
b. *killaiyaq-* 'to sew' > *killaiya-un* 'sewing machine' (Lanz 2010: 71)

Thus Iñupiaq has rigid word classes in that each lexeme belongs to a clearly distinguished word class, but is still surprisingly flexible in that it has a rich set of derivational affixes which allow words of one class to function like words of another.

There are also in-between cases, where derivational morphology is optionally present, as in some English Adverbs derived from Adjectives:

(8) a. *He moves quick.*
b. *He moves quickly.*

One might analyze quick and other adjectives with similar distributions as being in the process of becoming more flexible lexemes, due to their increasing ability to function as adverbs with no overt derivational morphology.

Not only can derivational marking distinguish different uses of the same lexeme, but often inflectional marking can as well. For example, there is a class of lexemes in Swahili which can freely serve as nouns or verbs with no derivational marking ("zero conversion"). However, Swahili nouns are distinguished by 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] Consider the following examples (Mohammed 2001: 34):

(9) *ku-ganga* 'to cure'	*m-ganga* '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-zinga 'to go round'	*m-zinga* 'a cylindrical-shaped object'
ku-oa 'to marry a woman'	*nd-oa* 'a marriage'

The nouns on the right each take their respective noun class prefix, while the verbs on the left are shown with the infinitive/gerundive prefix *ku-*. Therefore, even though all the lexemes in (9) undergo a process of zero-derivation, their different functional uses are still distinguishable based on their inflection alone.[10] For languages like Swahili, zero-derivation is not enough to make these different uses indistinguishable – more is required. Thus, languages which have no inflectional morphology are more canonically flexible than languages with inflectional morphology, which gives us Criterion 2:

Criterion 2 isolating (no inflectional morphology) > synthetic (with inflectional morphology)

[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.

[10] We can be sure this is a case of zero-derivation because many Swahili lexemes do require overt derivation morphemes, e.g., *ku-soma* 'to read' versus *m-soma-ji* 'reader'. Here, the *m-* class prefix is inflectional, while the *-ji* suffix is derivational (specifically, an agent nominalizer).

Next, if flexible word classes must be maximally indistinguishable across different uses, it follows that members of the same category should have the exact same distribution, or *equivalent combinatorics* (Evans & Osada 2005a: 366-367). If certain sets of words do not have the same behavioral properties as others, we cannot say that they are indistinguishable. This leads us to Criterion 3:

Criterion 3 *all words in a category have the exact same distribution > a subset of words in a category have different distributions*

Any lexical category posited for a language will therefore be more or less canonically flexible depending on whether its members all adhere to the same distribution. Evans and Osada point out 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 (1939) argued for Nootka as a monocategorical flexible language, based on data like that in (10):

(10) a. *mamuːk=ma* *quːʔas-ʔi*
working=PRS.IND man-DEF
'The man is working.'

b. *quːʔas=ma* *mamuːk-ʔi*
man=PRS.IND working-DEF
'The working one is a man.' (Swadesh 1939: 78)

However, later linguists pointed out that while both 'man' and 'work' could serve as either an argument or predicate, only 'man' could function as an argument without a determiner (Jacobsen 1979):

(11) a. *mamuːk=ma* *quːʔas*
working=PRS.IND man
'A man is working.'

b. **quːʔas=ma* *mamuːk*
man=PRS.IND working
'A working one is a man.'

This fixation on omnipredication is understandable, given that the most canonical flexible category is, as we will see, part of a monocategorical, omnipredicative language. What gets overlooked is that omnipredication does not equate with omnifunction. In other words, just because every lexeme in a language can function as a predicate, it may not necessarily be the case that every predicate can function as a referent or attribute.

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). Mohawk exhibits such restrictions on flexibility with respect to verbs and adjectives. Data like that in (12) and (13) seem at first blush to suggest that Mohawk lacks a separate category Adjective, and instead has a flexible Adjective-Verb category:

(12) *ka-hútsi* compare: *t-a'-ka-yá't-ʌ'-ne'*
N.SG.SBJ-black CIS-FACT-N.SG.SBJ-body-fall-PUNC
'it is black' 'it (e.g., a cat) fell'

(13) *Ka-wis-a-hútsi thíkʌ.* compare: *T-a'-ka-wís-ʌ'-ne' thíkʌ.*
N.SG.SBJ-glass-Ø-black that CIS-FACT-N.SG.SBJ-glass-fall-PUNC that
'That glass is black.' 'That glass fell.' (Baker 2003: 4)

Both examples show that adjectives are treated verbally. However, the tentative Adjective-Verb category in Mohawk is noncanonical according to the principle of indistinguishability, in that adjectival uses of verbs do not quite have the same range of morphological options available to them. Adjectival uses can only appear in stative aspect, for example, and differ in their method of agreement:

(14) a. **wa'-ká-rak-e'* compare: *t-a'-ka-yá't-ʌ'-ne'*
FACT-N.SG.SBJ-white-PUNC CIS-FACT-N.SG.SBJ-body-fall-PUNC
'it whited' 'it fell'

b. **ká-rak-s* compare: *t-ka-yá't-ʌ'-s*
N.SG.SBJ-white-HAB CIS-N.SG.SBJ-body-fall-HAB
'it whites' 'it falls' (Baker 2003: 5)

Hengeveld and Rijkhoff would likely argue that the restrictions on the adjectival use of verbs in Mohawk are not so much distributional as they are semantic. As they point out point out:

> 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)

But Baker, in discussing this data, calls this type of subtlety in categorization the 'unanswerable question' in linguistics – should we posit a separate category of adjectives for Mohawk? The canonical approach to typology is agnostic with respect to this question. What the canonical approach tells us, by contrast, is that if we refer to a unified Adjective-Verb class for Mohawk, it is a slightly noncanonical case of an otherwise extremely flexible lexical category.

In addition to equivalent combinatorics, the canonical flexible category should also have *maximum combinatorics*, or *bidirectionality* (Evans & Osada 2005a: 375-378), and this gives us Criterion 4:

Criterion 4 maximum combinatorics > restricted combinatorics

Canonical cases for Criterion 4 are quite rare, perhaps limited to some of the more extreme cases already discussed (e.g., Riau Indonesian). However, sometimes large segments of the lexicon of a language are omnifunctional. Such is the case for a number of words in English:

(15) Attribution: ***bank*** *money* (money owned/created by a bank)
Reference: *money* ***bank*** (a bank for storing money)
Predication: *I* ***bank*** *with Wells Fargo* (the act of storing money in a bank)

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.

Another way the principle of indistinguishability might be violated is for certain members of the lexicon to possess fewer or more feature values than others. Corbett (forthcoming: 6) posits a *principle of exhaustiveness* for canonical morphosyntactic features which states that, "every feature value applies to all lexical items." This will be our fifth criterion:

Criterion 5 *every feature value applies to all lexical items > not all feature values apply to all lexical items*

This is relevant to the issue of lexical categorization because, as Corbett (forthcoming: 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, Nouns may only have the feature values SINGULAR and PLURAL:

(16) a. *'at'ééd* *yigáát*
girl.sg walk.SG
'the girl is walking'

b. *'at'éé-ké* *yi'ash*
girl-PL walk.DU
'the girls (2) are walking'

c. *'at'éé-ké* *yikah*
girl-PL walk.PL
'the girls (3+) are walking'

Obviously, this is just one of the many features which distinguish Nouns from Verbs in Navajo. But a perhaps clearer example is the Nootka data discussed above (see example [11]), where the feature INDEFINITE is unavailable to predicates serving in an argument function, thus distinguishing between Nouns and Verbs, and violating the principle of indistinguishability. The last criterion falling under the principle of indistinguishability deals directly with the semantics of flexible lexemes, namely that, if a lexeme is to be maximally indistinguishable across different functional uses, then its "core" semantics must remain the same as well. Again we run into the tricky problem that, if the meaning of a lexeme remains the same across functions, how do we

know when it is serving one function or when it is serving another? The standard response to this question has been to posit some process of accretion in meaning, to say that these lexemes are underspecified or vague, and 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 2005: 368-375; Hengeveld & Rijkhoff 2005: 413-416; Langacker 1987).[11] Considering our Swahili data in (9) again, this approach assumes that lexemes like *ganga* 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').

However, Evans and Osada (2005a) make the excellent point that 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. In other words, 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. If the meaning-accretion rules are *not* consistent, then we have yet another means of distinguishing different classes of lexemes in the lexicon.

English is a good illustration of this problem. 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. Therefore Criterion 6 is as follows:

Criterion 6 *predictable final semantics > unpredictable final semantics*

A possible counterargument to this position, however, is that the final semantics of a lexeme *is* entirely predictable and derivable from consistent rules of interpretation, but that Evans and Osada did 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 overlook a variety of 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.

Therefore, depending on one's views regarding how the final semantics is determined in a process of zero-derivation, different theorists will likely have drastically opposing views on whether zero-derivation constitutes evidence for flexible or rigid categories, as was the case in the discussion between Evans and Osada (2005a) on the one hand, and Hengeveld and Rijkhoff (2005) on the other.

We will return to these issues in greater depth in Section 6.

[11] The exact details of this process of semantic enrichment are the subject of some debate. I am inclined to agree with Hengeveld et al. in saying that the meaning of flexible lexemes is vague, not underspecified.

5.2 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.

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 7:

Criterion 7 *a category covers multiple prototypical categories or functions > a category covers just one function*

Samoan is reported to be one example of the canonical case, as noted by Mosel and Hovdhaugen (1992: 73-74, 77, cited in Rijkhoff 2007: 715): "there are no lexical or grammatical constraints on why a particular word cannot be used in the one or the other function. […] all full words which function as a noun and verb phrase nucleus can also be used as attributive modifiers." Notice that this addresses Evans and Osada's cautionary note regarding bidirectionality. Mosel & Hovdhaugen focus not just on predication, but also on whether predicates can modify and refer.

An even more flexible language according to this criterion is Tonkawa, a language isolate of Texas. Cited in Mithun (1999: 57-58), the discussion of the Tonkawa data is unique among the literature on flexible lexemes in that examples are given not just of noun-verb flexibility, but also of flexibility covering adverbial functions. This can be seen in (17a) and (17b) below. The stem t'cel may be inflected to serve as a noun (17a), or may stand uninflected to serve as an adverb (17b).

(17) a. *t'cel-'a:y'ik* *ha:no'*
up-DAT he.goes
'he goes to the top'

b. *t'cel* *ha:no'*
up he.goes
'he goes upwards' (Hoijer 1931: 25; morpheme breakdown not given)

Thus Tonkawa is more canonically flexible according to Criterion 7 because the scope of its flexibility extends not just to nominal and verbal functions, but adverbial functions as well.

Most languages with flexible categories, however, limit their flexibility to an amalgamation of the modifying function with some other function. This is the most common way in which languages exhibit flexibility in their lexicon. Payne (1997: 65) summarizes the different ways in which "property concepts" can be incorporated into other lexical categories, repeated here as Table 1. As the literature is replete with examples of such languages, I will not provide additional examples here.

Table 1. *Typology of morphosyntactic treatment of property concepts (PCs)*

	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

Sometimes the scope of flexibility of a class of lexemes can be extremely small. Consider some representative examples of Nouns in Swahili, which may alter their meaning by merely changing their noun class prefix:

(18) a. *m-tu* 'person'
ki-tu 'thing'

b. *m-toto* 'child'
u-toto 'childhood'
ki-toto 'infant'

c. *ch-umba* 'room'
ny-umba 'house'

d. *m-ti* 'tree'
ki-ti 'chair, stool'

These lexemes are flexible, but their flexibility is limited to an extremely small range of semantic functions, such as ANIMATE, ABSTRACT, DIMINUTIVE, and INANIMATE, among others (see Contini-Morava [1996] for more details on the semantics behind these different noun 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 important and interesting flexible behavior in this class of lexemes. This is one of the benefits of the canonical approach to typology – a finer appreciation of the middle ground between well-defined phenomena.

It follows from Criterion 7 that the category with the broadest possible scope of functions will encompass every function in the language, thus obviating the need for any other categories. The canonically flexible word class, then, will be the only word class in its language:

Criterion 8 monocategorical language > multicategorical language

Logically, there are two ways we might expect a language to be monocategorical: through omnipredication or through omnireference. That is, every lexeme in the language could be expressed as a verb, or every lexeme in the language could be expressed as a noun. Granted, if the language has only one category which encompasses both the functions of reference and predication, perhaps it is nonsensical to even talk about "nouns" versus "verbs" in such a language, even if we are careful to define them as comparative concepts. But I assume that omnipredicative languages might include things like TAM marking on all its lexical words, while omnireferential languages might mark all it lexemes with case. While it is admittedly difficult to imagine what an omnireferential language might look like, we cannot preclude the

possibility based on theoretical reasons alone. In fact, many grammatical functions in different languages are accomplished via juxtaposition of nouns alone, including coordination (19), possession (20), and predication (21), among others.

(19) Sarcee (Cook 1984, cited in Haspelmath 2007: 7)
ìstlí gútsìs dóóní ìcīctcùd, gīní
horse scalp gun I.capture they.say
'"I captured horses, scalps, and guns", they say'

(20) Chalcatongo Mixtec (Macaulay 1996, cited in Dryer 2007a: 181)
kačíní peðrú
hat Pedro
'Pedro's hat'

(21) Gude (Hoskison 1983, cited in Dryer 2007b: 230)
gusə nə minə
short SBJ woman
'The woman is short'

Yet despite the theoretical possibility of an omnireferential language, none of the world's languages appear to approach this type. Instead, there only appear to be languages which come close to being omnipredicative. It is an interesting question for cognitive linguistics why this should be the case.

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 is able to 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:

(22) RUN(x) 'x runs'
RED(x) 'x is red'
HORSE(x) 'x is a horse'

Surprisingly, some languages come remarkably close to this canonical type. Cayuga is one:

(23) Cayuga (Sasse 1993: 657, cited in Rijkhoff 2007: 715)
a-hó-htọ:' *ho-tkwẹ't-a'* *nẹ:kyẽ* *h-ọkweh*
PST-it:to_him-become_lost it:him-wallet-be this he:it-man
'This man lost his wallet'

Sasse (1993: 657) suggests that the literal translation of this passage is, "It became lost to him, it is his wallet, he is this man." That a language can so closely approximately the monocategorical, omnipredicative language, is quite remarkable.

So far, I have shown that there are a variety of ways word classes can differ in regards to the scope of functions they encompass. Just as important is the extent to which flexibility permeates the lexicon, i.e., the number of lexemes which can be flexible in their use. Evans and Osada note this as well:

> 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 can be restated in terms of our ninth criterion:

Criterion 9 every lexeme in the language is flexible > only some lexemes are flexible

Evans and Osada applied this criterion in determining the flexibility of nouns and verbs in Mundari, as we have seen. However, I am aware of no other attempts to assess the extent of flexibility in the lexicon for word classes in other languages. Much interesting work could still be done in this area.

Having discussed scope of flexibility both across functions and across the lexicon, we can now examine the variety of ways in which these two variables might interact. A language could have very few words which are extremely flexible, for example, or it could have many words which exhibit only slight flexibility, or any configuration of possibilities in between. If we transpose a range of functions against the range of lexemes in a language, the canonically rigid language will categorize and divide its lexicon similar to Figure 5. Malimiut Iñupiaq, as we saw in examples (6) and (7), comes close to being of this type.

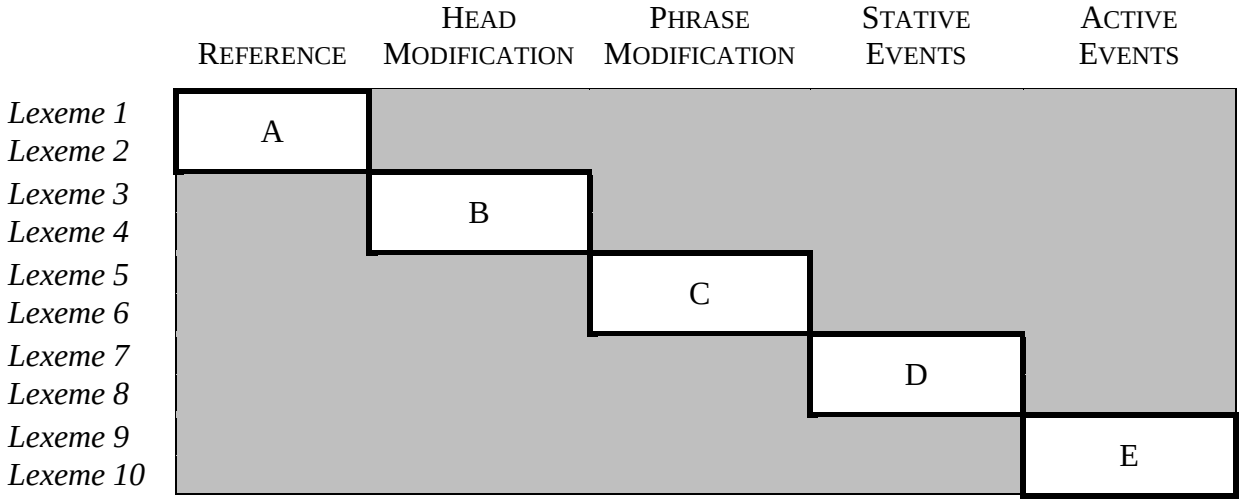

Figure 5. *A canonically rigid language, with non-overlapping lexical categories*

The canonically flexible lexical category, by contrast, would be one in which any lexeme could be used for any pragmatic function, so the entire chart would consist of one continuous word class. Figure 6 and Figure 7 show two ways in which a language might sit between these two extremes of flexible and rigid.

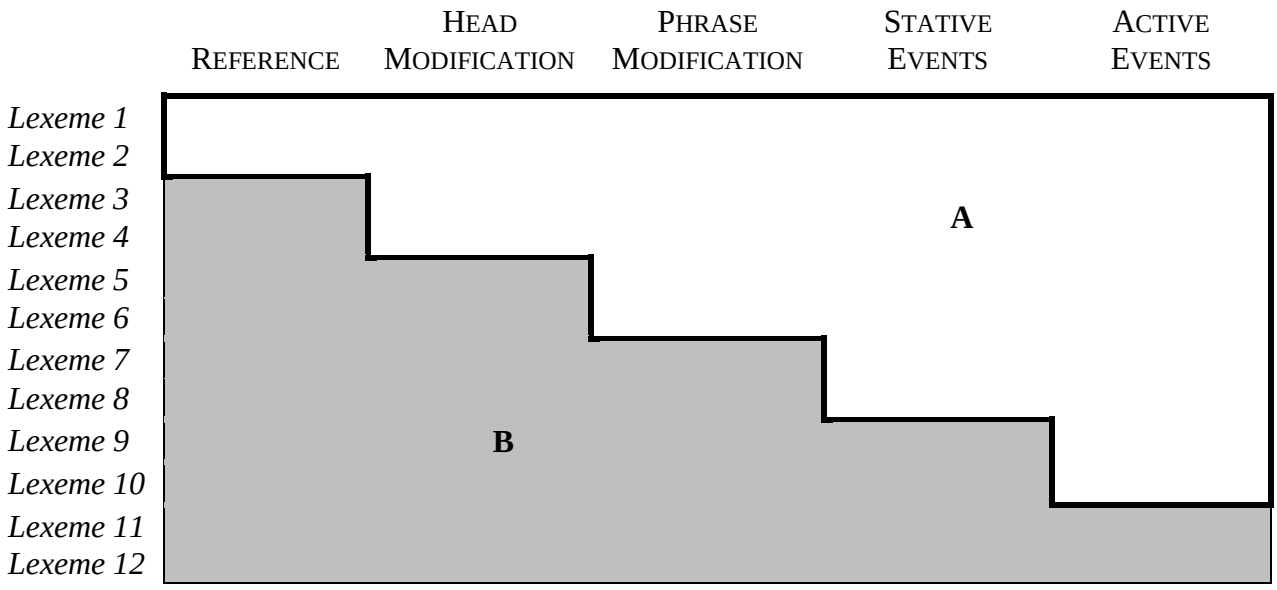

Figure 6. *An extremely flexible language with two overlapping lexical categories*

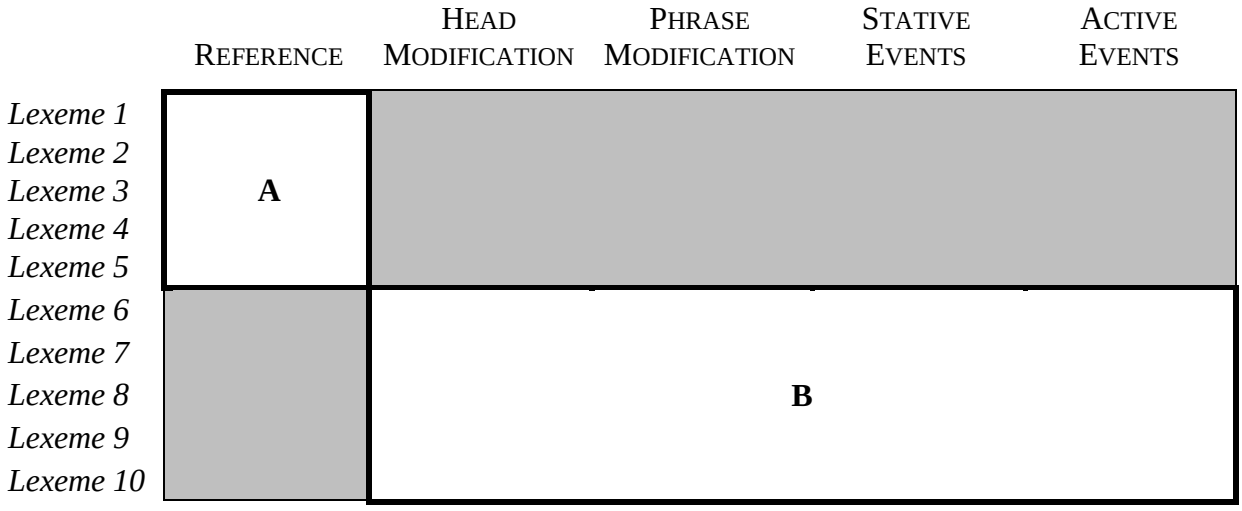

Figure 7. *A language with two non-overlapping lexical categories, one of which (category B) is extremely flexible*

Figure 6 represents a language not too unlike English, with some words which can only serve as referents (lexemes 3 and 4), and others that can serve for any function in the language (lexemes 1 and 2), and most words sitting somewhere on the spectrum in between. Figure 7 represents a language which has only two lexical categories, Noun and Verb, with the remaining functions being collapsed into the Verb category. Note that while word class A is rigid with respect to B, B is itself an extremely flexible category.

One last criterion is worth mentioning here, although I will not discuss it in detail. Corbett (forthcoming) has already done a good deal of legwork in defining many of the properties of canonical word classes, and in addition to one already discussed above, there is one more of Corbett's criteria which is relevant to the study of flexible categories. Corbett's third criterion relates to open versus closed classes stating that canonical lexical classes are open ones. In the

same way, because open classes of lexemes encompass a broader range of lexemes, they are more canonically flexible than closed or restricted classes of lexemes:

Criterion 10 open class > closed or restricted class

Now we turn to the hotly debated and messy area of semantics in lexical categorization.

6. The problem of meaning in flexible categories

The complex and rigorous debate regarding the exact nature of semantics in languages with flexible word classes revolves almost entirely around a single contentious criterion, already mentioned as Criterion 6 above, and repeated here for convenience:

Criterion 6 predictable final semantics > unpredictable final semantics

At issue is the precise nature of the semantic shift involved when a single lexeme is used for different pragmatic 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 four positions one can take on the issue for any given lexeme:

(24) a. The accretion/change in semantics is insignificant; the two uses constitute separate instances of the same lexeme within a single flexible category. (Hengeveld & Rijkhoff 2005)

b. The accretion/change in semantics is significant; the two uses belong to separate lexical categories, but are derived from the same lexical entry, even if the process is one of zero-derivation. (Evans & Osada 2005a)

c. The accretion/change in semantics is significant; the two uses belong to separate lexical entries in separate lexical categories.

d. There is no semantic relationship between the two uses except a diachronic one; the word is polysemous.

Which position 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 compositional, inferable from context and other factors. As expected, there are two extremes one could take on the issue. On one end of the spectrum, discussants like Hengeveld and Rijkhoff (2005) have argued for "precategorical" or "vague" semantics, where the meaning of lexemes lacks category labels, but that upon insertion into the sentence, the syntax, morphology, pragmatics, and cognitive processing serve to fill out the rest of the semantics. 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. In this approach, most uses of seemingly similar words would actually constitute distinct lexical entries.

One thing all theorists seem to agree on, however, is that the "final semantics" 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 (25):

(25) $$Lexical\ Semantics + \left\{ \begin{matrix} derivation \\ morphosyntax \\ pragmatics \\ cognitive\ biases \end{matrix} \right\} = Final\ Compositional\ Semantics$$

In a certain sense, to say that the final semantics is predictable is trivial. As Nicholas Evans (p.c.) notes, and as I have noted above, the final semantics *must* be conventionally predictable somehow, or we would never be able to communicate at all. Criterion 6, then, refers not to whether the final compositional semantics is predictable per se, but whether there is a constant of 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 above equation to contain. Evans and Osada (2005a) 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 (2005) and Gil (2005) incorporate a great deal more into the process of semantic interpretation, including a number of pragmatic interpretation principles.

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 (Criterion 6).

7. Conclusion

Table 2 summarizes the ten ways in which a word class can vary on a scale of flexibility.

Table 2. *Criteria for flexible and rigid categories*

	FLEXIBLE	RIGID
Criterion 1	Zero-derivation	Derivation
Criterion 2	Isolating	Synthetic
Criterion 3	Equivalent Combinatorics	Unequivalent Combinatorics
Criterion 4	Maximum Combinatorics	Restricted Combinatorics
Criterion 5	Uniform Feature Values	Unequal Feature Values
Criterion 6	Predictable Final Semantics	Unpredictable Final Semantics
Criterion 7	Multifunctional Categories	Monofunctional Categories
Criterion 8	Monocategorical Language	Multicategorical Language
Criterion 9	Rampant Lexical Flexibility	Restricted Flexible Lexicon
Criterion 10	Open Class	Closed Class

These criteria stem from two undergirding principles, the *principle of indistinguishability* (1-6), which states that for a lexeme to be flexible its different uses must be indistinguishable from one another, and the *principle of maximal scope* (7-10), 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. Both of these principles in turn are necessary features of what it means to be a flexible category, defined as one whose lexemes can fulfill the role of multiple pragmatic or syntactic functions indiscriminately.

Perhaps more interestingly, in examining the properties of a canonical flexible word class, 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) model of an Isolating-Monocategorical-Associational language, which suggests some potentially exciting implications for the general nature of human cognition as it relates to the language faculty and lexical categorization. Although no language exhibits canonically flexible categories, languages do approach this point in a number of unique and interesting ways.

This article has illustrated the many ways in which a word class can be more or less flexible according to the criteria above, following the method of canonical typology. In doing so, it has become apparent that binary or strict categorization methods are inappropriate when investigating lexical categories in a language. For example, the debates regarding flexible categories have proceeded as follows: a flexible category is proposed which encompasses several functions in a language (e.g., noun and verb in Mundari [Hengeveld 1992], or noun and adjective in Quechua [Hengeveld & Valstar 2010]); more detailed analysis then shows that there are features which suggest separating out these categories (Evans & Osada 2005a; Floyd 2011); and

linguists then take up opposing sides on the issue. But I would like to suggest that this is largely unproductive.

Instead, linguists should be asking themselves the *degree* to which various lexemes exhibit behavior that is more-or-less canonically flexible. Given a detailed enough analysis, I doubt that any proposed flexible category will hold up as being truly and canonically flexible. But simply because we can distinguish separate classes of lexemes based on their behavior does not mean that flexibility in the lexicon is nonexistent, or that flexible lexemes should not be of tremendous typological and theoretical interest. In general, linguistics would be well-served by parting with the method of the positivistic sciences, abandoning rigid classification schemes that utilize binary operators 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 which hide between the clear-cut cases and the prototypes, and come to understand the diverse and fascinating ways in which a language can be.

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Abbreviations: 3 third person, CIS cislocative, COMPL completive aspect, DAT dative, DEF definite, DU dual, FACT factual mood, HAB habitual aspect, IND indicative mood, N neuter, PST past tense, PL plural, PUNC punctual aspect, PRS present tense, SG singular, SBJ subject, SG singular (Navajo), SUBJ subject, TR transitive

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