

**Universal underpinnings of language-specific categories.
A useful heuristic for discovering and comparing categories of grammar and beyond**

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1 Introduction

Grammatical categories are at the core of much linguistic description and analysis. It is virtually impossible to describe any language without assuming that its units are classified into categories. For example, when we present data, we need to gloss them. And once glosses are provided, grammatical categories are imposed, no matter what the assumption is about the status of these categories. For any description, let alone analysis, to be useful, linguists must generalize over the individual *Units of Language* such as words, morphemes, intonational tunes, features, etc. (henceforth UoL). The necessity to postulate generalizations over individual UoLs is especially evident when comparing languages to each other for the sake of establishing language universals and the range of variation across languages. One cannot compare individual UoLs to each other because all UoLs are necessarily language-specific. This follows from the assumption that the relation between sound and meaning is arbitrary – hence must be conventionalized on a language specific basis. But comparison can only be meaningful if it is clear what is to be compared. Hence it is useful to classify UoLs such that their grammatical properties can be compared across languages. Comparing languages to each other is really the only way in which we can determine universals and variation. Thus, we are facing a conundrum: it seems that we have to identify a set of categories that can be universally applied to all languages yet linguists still do not agree on what this set of categories might be, and – even more disturbing – there is no consensus as to whether universal categories do indeed exist.

The goal of this paper, is to address this conundrum. Following Wiltschko 2014, I assume that grammatical categories are always language-specific: there is no universal inventory of categories. However, I also assume that there are universal underpinnings for the construction of language specific categories. I show that this is a useful assumption for the discovery and comparison of categories. In fact, I argue that it is a necessary assumption which allows us to understand certain universal patterns of categories. That is, while categories differ across languages, there are also universal patterns that hold across categories and across languages. This suggests that there is a universal mechanism at play that is responsible for these patterns.

The paper is organized as follows. I start by introducing the problem which the need for postulating universal categories for language comparison posits (section 2). I then introduce the framework for the analysis of grammatical categories I have developed in Wiltschko 2014 (section 3). I further proceed to show that this view of categorization is not only useful for the discovery and comparison of traditional grammatical categories but it can also be used to describe and analyse UoLs that are used to facilitate ongoing conversations, i.e., categories of interactional language (section 4). These categories have traditionally neither been part of the empirical domain for theoretical linguists nor for typologists. In section 5, I conclude.

2 The (non-) universality of categories

2.1 An analytical conundrum

Categories have to be diagnosed based on language-specific criteria which are based on distributional patterns, both syntactic and morphological. This holds for lexical and for grammatical categories. For example, in English, nouns are diagnosed by plural marking, which is restricted to (count) nouns, and determiners, among other diagnostics. However, in languages, where plurality is not marked, or where plural marking is not restricted to nouns, plural marking will not serve as a proper diagnostic for the (lexical) category noun. Similarly, in English, the grammatical category tense can be diagnosed by its syntactic and morphological distribution: tense markers attach to the highest verb (either a main verb or an auxiliary), there is only one tense marker per clause, tense marking is obligatory in finite clauses, etc. But again, this is not universally the case. In some languages, tense marking is optional; or it remains marked on the verb even if there is an auxiliary, or it can be marked on nouns. (Wiltschko 2003, Nordlinger & Sadler 2004, Tonhauser 2007).

But if the diagnostics for a particular category are language-specific, then how can we diagnose universal categories? Take for example tense. If a language allows for the marking of past on nouns, do we classify it as a tense marker or not. If we do, then the distributional restriction we observe in English requires explanation. It would mean that tense has different distributional properties across languages. But this begs the question as to whether we are really dealing with the same category. Categories should be identified via their distributional properties. But if, on the contrary, we decide not to classify past marking on nominals as tense, because its distribution differs, then we run the risk of imposing the distributional patterns of a particular language on a putative universal category or vice versa. And indeed, if we do this, then it appears that hardly any markers of temporality would fit the bill of the grammatical category Tense. Thus, the fact that the criteria that identify categories are language-specific makes it virtually impossible to identify universal categories. Either we have to accept that the same (universal) category has different distributional properties or else we have to accept that not everything that we might think of as belonging to a particular (universal) category is in fact an instance of that category. Neither of these approaches is satisfying because we lose the insight that distributional criteria are the hallmark of categorial identity. But then, if we do not have proper diagnostics to determine whether a given category instantiates a universal category, how do we determine whether there are universal categories? How do we even compare the categories of the languages of the world without comparing apples to oranges? This is a serious conundrum that anyone who is interested in comparative linguistics, language typology, or the properties of universal grammar faces.

It is surprising, however, that this conundrum is not discussed in the generative tradition – though it is addressed in the typological literature. In what follows, I review some conclusions that have been drawn based on the empirical mess we find ourselves in if we do not recognize the conundrum just outlined. And I discuss some attempts to dissolve it.

2.2 A theoretical controversy

Given the analytical conundrum introduced above, it is hardly surprising that the issue surrounding the (non-)universality of categories has sparked a theoretical controversy. Within the generative tradition it is common to assume that there is a set of universal categories, and that language variation reduces to picking among this set. In contrast, within the more functionally

oriented typological tradition it is often assumed that universal categories do not exist (Evans & Levinson 2009) and that at the most we can identify some prototypical categories (Hopper & Thompson 1985, Comrie 1989, Langacker 1991, Corbett 1999, which are however instantiated in different ways across different languages. Here I will briefly review the core assumptions within each tradition (see Wiltschko 2014 for detailed discussion).

2.2.1 The generativists' take on categories

Within the generative tradition, there has long been a commitment to the postulation of a *Universal Grammar* (henceforth UG). The arguments for UG have originally derived from considerations of learnability (Chomsky 1965 and subsequent work), which themselves have sparked much controversy, but which do not concern us here. What is important for us is that the assumption of UG has initiated a productive research program, which has led to interesting discoveries about the nature of natural languages, including the range of attested variation. In Chomsky's (1965: 58) terms: "*The real problem is that of developing a hypothesis about initial structure that is sufficiently rich to account for acquisition of language, yet not so rich as to be inconsistent with the known diversity of language.*"

While the concept of UG is meant to capture the cognitive underpinnings of our language faculty, it is still at best a theoretical construct and unsurprisingly the assumptions about the nature of UG have changed significantly over the past decades. This perspective makes the goals of generativists quite different from those of the typologists. Generativists are not so much concerned about the discovery of language universals in the Greenbergian sense. Rather, they are concerned with understanding the make-up of UG. Thus, the concerns are more about the architecture of UG and the algorithms that derive well-formed sentences. Interestingly, the inventories of the ingredients of UG, categories and features, are of much less concern within this framework. Typically, the features and categories are assumed, and often based on traditional pre-generativist assumptions.

Perhaps one of the key assumptions relative to categories within the generative tradition concerns so-called functional categories. That is, ever since Chomsky 1986 it is standardly assumed that sentences are hierarchically structured by means of a universal set of ordered functional categories which dominate the lexical core (e.g. CP>TP>vP>VP). These categories are of a different nature than the categories assumed in the typological tradition. In particular, they create positions which actual UoLs can occupy. But crucially, because movement plays a major role in the derivation of sentences, these positions can be occupied by UoLs that are not a member of the category of the position they move into.¹ For example, in Verb-Second languages the verb is assumed to move into the C, but it is not the case that verbs in such languages belong to the set of complementizers (C). Thus, the postulation of functional categories that define the structural architecture of language, i.e., the functional spine, makes available a second notion of grammatical categories, in addition to those categories that define UoLs. Within the generative tradition it is mostly the nature and inventory of these functional categories which receives attention. Furthermore, the categorial status of UoLs are less often discussed. For both types of categories, however, we find different assumptions regarding their universality and their variation.²

¹ I do not discuss non-transformational versions of the generative enterprise, like HPSG and LFG.

² It is also worth mentioning here that categories like *passive* and the like are considered constructions which have no primitive status and hence are not expected to be universal.

As for the functional categories of the spine, we find the full spectrum of assumptions logically possible. According to strict minimalist assumptions, there is no spine. This is because of the *inclusiveness condition* according to which no information can be introduced that is not already present in the lexicon. Hence, there cannot be any functional categories that exist independent of the UoLs that build the structure. According to this view structure is built by merging UoLs and not by associating UoLs with a pre-determined spine. At the same time however, the category status of these UoLs is barely discussed.

On the other end of the spectrum, we find *cartography*, a framework which assumes a fine-grained functional architecture which provides sites of association for a plethora of different UoLs (which include words, affixes, as well as features). It is worth noting that many of the categories assumed within the cartographic enterprise are virtually identical to classic categories of the Greenbergian typological tradition (including different subcategories of tense, aspect, and mood, etc.).

In between these two extremes (minimalism and cartography) we find much diversity in the inventory of categories generative linguists assume. The lack of consensus regarding the inventory and the nature of functional categories is striking, given that categories comprise, in some sense, the atoms of language. They are the linguistic objects that syntactic derivations operate over.³ In fact there is no generally accepted view on the types of categories we might expect. The categories that have been proposed to exist are diverse and include labels that refer to word classes (*complementizer, determiner*), substantive content and or/phi-features (*tense, number, person*), morphological type (*inflection*) or traditional grammatical categories (*mood, aspect*).

Turning now to what has been said about the inventory of categories of UoLs, we find a similar spectrum (though the discussion is much scarce). On the one hand, we find the assumption that actual UoLs are intrinsically associated with categorial identity, especially those UoLs that would traditionally be classified as belonging to the set of lexical categories. Instead their categorial identity is syntactically conditioned. This is the hallmark assumption of *distributed morphology*. The core evidence for this claim stems from the fact that, in English, roots are frequently multi-categorial, in the sense that the same form can be used as a noun or as a verb or as an adjective, depending on the distribution. An economical way to account for this pattern is to dissociate the categorial label from the lexical entry, which in turn consists of a sound-meaning pairing ($\langle \pi, \Sigma \rangle$) only, i.e., the exponent. The categorial label is “added” by way of syntactic structure. In the context of the functional category T or *v*, a root becomes a verb; in the context of the functional category D or *n*, a root becomes a noun. This is the essence of category-neutral roots. In the context of functional categories, however, the matter of categorization has received less attention. Category-neutrality is not typically assumed for function words, like it is for roots with substantive content, even though we find similar patterns of multi-functionality. For example, in English, *that* can be used as a complementizer or as a demonstrative determiner, depending on its distribution. This pattern is typically attributed to the process of grammaticalization; synchronic explanations are not usually given despite the fact that patterns of multi-functionality are ubiquitous within and across languages. In turn this supports

³ One might object that it is not categories, but features that play that role, however, it is not clear what the difference may be between features and categories and much of what I identify here as being problematic for categories equally holds for features. There is no consensus about the universality and variation for features within the generative tradition.

the classic assumption that categorial identity (κ) is essential for regulating the distribution not only of words of substance (nouns and verbs) but also of functional elements. It is thus essential to gain a good understanding of the sources and properties of κ . What is universal about κ , and what is the range of variation?

This question is much more widely discussed in the typological tradition to which I now turn.

2.2.2 The typologists' take on categories

While there is no consensus on the exact nature of categories in this tradition as well, what unites typologists is the assumption that universal categories should not be assumed *a priori*. Nevertheless, work in this tradition has to assume a baseline notion of comparison, independent of its cognitive status. This is because otherwise cross-linguistic comparison would not be possible in the first place. That is, in order to really establish whether there are linguistic universals there has to be way to compare languages to each other. Because otherwise one doesn't know whether category X in language 1 is the same as category Y in language 2. But since distributional evidence has to be language-specific these properties cannot universally serve as diagnostics. Language-specific differences in distributional diagnostics make it difficult to determine whether or not two categories are identical. And a conclusion one might draw based on these differences is that there simply are no universal categories and hence every language will have to be described in its own terms (Joos 1957, Dryer 1997, Croft 2001, Haspelmath 2007). Nevertheless, some form of universal categories is still assumed as is evident from the way the World Atlas of Languages (WALS) is designed. To make language comparison possible, the categories and/or features of individual languages are labeled in identical ways. Traditional terms such as PERSON, NUMBER, PLURAL, DEMONSTRATIVE, DEFINITE, PRONOUNS, PAST TENSE, IMPERATIVE, etc. are used in the description of individual languages. It is then possible to ask, for example, whether 3rd person pronouns are the same or different from demonstrative determiners (Bhat 2013). Without a notion of 3rd person, pronoun, and demonstrative, it would not be possible to ask this question. But if we assume such notions, then their universal applicability has to be assumed. The same is true for the glossing conventions that are shared among typologists. The Leipzig glossing rules (<https://www.eva.mpg.de/lingua/resources/glossing-rules.php>) consist of rules for interlinear glosses which are supposed to cover linguists' needs in glossing texts and which serve as a standard set of conventions. But if such conventions are established, a certain degree of universality has to be assumed. So, this leaves us with an apparent paradox conundrum. On the one hand, language comparison requires the assumption of universal categories. On the other hand, there is a common denial of universal categories based on the fact that languages simply differ in the kinds of categories they have and in the distributional differences among categories which – according to some criteria – might be considered identical. The type of criteria usually assumed is based on notions of meaning, or what Haspelmath 2007 refers to as “substance”.

The question as to how to deal with this paradox is addressed in various ways in the typological tradition. For example, Haspelmath 2010 proposes a distinction between language-specific *descriptive categories*, and *comparative concepts*. Subscribing to the structuralist insight of *categorial particularism*, descriptive categories are necessarily language-specific and have to be described in their own terms (Boas 1911). This makes sense for the purpose of describing an individual language without the goal of language comparison. To respond to the need of having ‘universal categories’ as a means of comparison, Haspelmath 2010 introduces the notion of a

comparative concept, which is meant to be universally applicable, hence needs to be defined solely in terms of other comparative concepts. Haspelmath (2010: 665) describes them as follows: They are solely defined for the purpose of comparison; they are not part of a particular language system; they are not psychologically real; they cannot be right or wrong but they can only be more or less useful for cross-linguistic comparison; they are often labelled in the same way as descriptive categories, but stand in a many-to-many relationship with them. Most of these comparative concepts are conceptual-semantic in nature; this is because of the typologists' commitment to the assumption that cross-linguistic comparison of morphosyntactic patterns cannot be based on formal patterns. The latter are simply too diverse (Haspelmath 2010: 665). Note further that there is no claim here that these *comparative concepts* do correspond to universal categories; different researchers can define their universal concepts according to the phenomena they are interested in and hence universal concepts differ depending on the researcher and depending on the occasion. This is a very different conceptualization than that of the universal category within the generative tradition.

There are two typological approaches which still assume some kind of universal patterning and thus provide a basis for comparison: Corbett's *canonical typology* (Corbett 1999, 2009, 2015) and Bickel's *multivariate typology* (Bickel 2010, 2011). What both approaches have in common is that they seek to deconstruct categories into dimensions or variables of variation. Within canonical typology the assumption is that there is a canon, a base which defines a canonical category. But explicit criteria are developed to decide whether something counts as more or less canonical. Within multivariate typology, similarities across languages are taken to reveal identity in some regards but differences in others: thus, categories are to be deconstructed into a set of variables which can vary individually and which allow for comparison across languages. Once the constructions of individual languages are analyzed in this way, this approach will allow for the exploration of recurrent patterns across languages.

2.3 The significance of distributional (formal) patterns

So now we have identified an analytical conundrum. Empirical findings in the typological tradition suggest that universal categories do not exist, yet to meaningfully compare languages to each other some universally applicable notion of a category has to be assumed. This implies, however, that to find universal categories, one has to assume them, running into problems of circularity. Moreover, the types of categories postulated for comparison in the typological tradition (including its generative version, namely cartography) are often characterized by meaning rather than form. But this is problematic because we know that, at least for language-specific categories, it is their formal properties that identifies them as a category. So, in what sense can we really speak of a "universal" category if we cannot identify formal diagnostics? In Wiltschko 2014, I address this problem from a generative perspective, identifying two formal diagnostics for categorial patterning.

2.3.1 Patterns of multi-functionality

Recall from above that at least some UoLs are category-neutral in the sense that the same form can be used with different categorial identities, correlating with their syntactic distribution. This is the case for both words of substance (i.e., lexical categories) as well as for words of

grammatical significance only (i.e., functional categories) (see section 2.2.1). What this pattern of multi-functionality suggests is that the sound-meaning pairing $\langle \pi, \Sigma \rangle$ has to be independent of its categorial identity (κ); nevertheless, κ has to associate with $\langle \pi, \Sigma \rangle$ at some point so as to regulate the distribution. We can represent this as in (1) where sound and meaning associate with each other before categorial identity is added, creating a complex UoL.

(1) $\langle \langle \pi, \Sigma \rangle \kappa \rangle$

This view on categorization sheds immediate light on the problem functionalists have identified with the postulation of universal categories. Languages differ in their formal properties of categories, e.g. for example whether a given concept is realized as a word or an affix, whether it precedes or follows other categories, etc. Given the representation in (1), this is not surprising, because these formal properties are subsumed under π , which determine the idiosyncratic conventionalized properties of individual lexical entries.

In light of the preceding discussion the question we are faced with concerns the nature of κ : What is its status language-internally, cross-linguistically, and universally? We need more than semantic concepts to make claims about categories. But formal properties have to be general enough such that they can go beyond the language-specific properties that make language comparison so difficult. I argue that we have to acknowledge that there are indeed universal properties of categorization, ones that cannot be reduced to functional pressures alone. Specifically, in Wiltschko 2014, I identify two universal patterns that all language-specific categories adhere to: patterns of multi-functionality, and patterns of contrast. These patterns can then be used as universal diagnostics for membership in a category; though they still do not diagnose membership in a particular category. I address the latter question in section 3 below.

We have already seen the essence behind patterns of multi-functionality (section 2.2.1 above), which led us to postulate the (partial) independence of categorial identity from sound meaning bundles ($\langle \langle \pi, \Sigma \rangle \kappa \rangle$). To the best of my knowledge, there are no cross-linguistic investigations exploring patterns of multi-functionality; hence we cannot assert with certainty that such patterns are indeed universal. But we find patterns of multi-functionality across unrelated languages and I strongly suspect that all languages have them. So let us assume that patterns of multi-functionality are universal. If this is the case, then it would mean that κ is indeed significant in all languages. Specifically, to model the distribution of UoLs, we cannot rely on the sound and meaning of UoLs alone, but instead, there is a third factor (κ), which regulates their distribution independent of their sound and meaning $\langle \pi, \Sigma \rangle$.⁴

If this is the right way to think about multi-functionality, then we can also learn something about the nature of κ : it has to add a dimension of meaning to a given UoL. This is because the difference in distribution, which is regulated by κ , also correlates with a difference in interpretation of the UoL. Hence, patterns of multi-functionality are a useful heuristic to explore the nature of κ across languages, and thus to deduce its universal properties, if any.

Note that the significance of multi-functionality has been ignored within the generative tradition as a means to explore the logic behind grammatical categories. The phenomenon has

⁴ Patterns of multi-functionality (or rather polysemy) have been a key fact in the development of semantic maps (Croft 2001, Croft and Poole 2008, Haspelmath 1997). The approach I pursue here is different in nature as it takes the syntactic spine, rather than conceptual space, to be the driving force behind some patterns of multi-functionality (especially multi-functionality in the domain of functional rather than lexical categories).

been treated almost exclusively in the study of semantic maps (see footnote 4) and *grammaticalization*. That is, patterns of multi-functionality are often treated as indicating the diachronic development of a given UoL from membership in one category to membership in another. Within formal approaches towards grammaticalization (Roberts & Rousseau 2003) it is viewed as the effect of association with syntactic structure in different positions along the functional architecture. Typically, grammaticalization appears to be upward reanalysis, such that a given UoL starts out in a particular structural position and is then re-integrated into the structure in a higher position. However, even if grammaticalization is at play, we still want to have a synchronic model of patterns of multi-functionality. Moreover, the mere existence of systematic changes in category-membership (which often occur in similar ways across unrelated languages) suggests that there is something universal at play. I submit that without assuming κ , neither the process of grammaticalization nor its effects can be understood.

Here I consider patterns of multi-functionality an important hallmark of linguistic categorization. It is found universally and thus suggests that there is a universal mechanism at play that serves to categorize UoLs.

2.3.2 Patterns of contrast

Patterns of multi-functionality are not the only signature of κ . In Wiltschko 2014, I argue that patterns of contrast, too, may serve as a universal diagnostic for category membership. To see this, consider the pattern of number marking in English, for example.

- (2) a. *dog* singular
 b. *dog-s* plural

When the noun *dog* is suffixed with the plural suffix *-s*, it is interpreted as plural (2)b; but in the absence of the plural marker, it is interpreted as singular (2)a. Crucially, there is no overt UoL which corresponds to the marking of singularity. We cannot simply assume that an unmarked noun is interpreted as denoting a singularity. For example, in the context of a compound the unmarked noun is not interpreted as singular; a *dog-leash* is not a leash for a single dog, but instead refers to leashes for any dog. Unmarked nouns are completely unmarked for number and are therefore compatible with a singular or a plural interpretation. It is only in syntactic contexts where nouns could be marked for plural that the absence of overt marking is interpreted as singular. Hence, we have to conclude that the interpretation of the apparently unmarked form is syntactically conditioned: in a well-defined syntactic context, silence is interpreted. This is illustrated in (3).

- (3) Lexical entry for the singular UoL (preliminary)
 << π : \emptyset , Σ : singular> κ : NUMBER >

κ is crucial for recovering the interpretation of the silent form (π : \emptyset). In English, a nominal phrase following a determiner, has to be marked for number. If the noun is not marked for plural, then it has to be interpreted as singular. Formally, we can model this by assuming that, in English, the determiner (D) selects for the category NUMBER, which in turn has two contrasting values: *singular* and *plural*. Plural is the marked form, whereas *singular* is unmarked (silent). But without the assumption that there is an underlying category which is interpreted in a certain

way if there is no overt form, silence cannot be interpreted. It is κ , which is responsible for the patterns of contrast, which, just as the patterns of multi-functionality, are ubiquitous in human languages.

Patterns of contrast are not restricted to inflectional paradigms such as number marking in English. For example, in Korean, *ko* is used as a complementizer introducing a finite embedded clause, as in (4).

- (4) ku-uy mal-i kecis-i aniye-ss-ta-**ko** mit-nun-ta.
 he- GEN words- NOM lie- NOM not.be-PST-DECL-COMP believe- PRES-DECL
 ‘I believe that what he said wasn’t a lie (lit. his words were not a lie).’
 Ceong 2019: 131 (127)

But *ko* is not limited to embedded clauses; it can also introduce main clauses no matter their force. This is shown in (5) for declaratives, which are marked by *ta* and in (6) for imperatives, which are marked by *ko*. In this case, *ko* marks the utterance as a reiteration of what the speaker already said. Thus, the speech act is not used to perform an assertion or a command directly (as is the case in the unmarked (a) clauses); rather, it is used to express that the speaker has previously performed said speech act.⁵

- (5) a. na, cha sa-ss-ta↓
 1sg car buy- PST-DECL
 ‘I bought a car.’
 b. cha sa-ss-ta-**ko**↓
 car buy- PST-DECL-COMP
 ‘(I SAID) I bought a car!’ (didn’t you hear what I said?)
 Ceong 2019: 133 (129a/c)

- (6) a. swul sa-la ↓
 alcohol buy- IMP
 ‘Buy a drink!’
 b. swul sa-la-**ko** ↓
 alcohol buy- IMP-COMP
 ‘I’m saying/ I said you should buy a drink!’
 Ceong 2019: 160 (158)

When it introduces a matrix clause, sentence-final *ko* enters into paradigmatic contrast with other UoLs. In (7)-(10) we witness matrix clauses of different force introduced by (*a*)*y* which indicates hearsay. Thus, while *ko* marks the utterance as having been performed by the current speaker, (*a*)*y* marks the utterance as having been performed by someone else and hence that the current speaker has heard about the reported event but has not directly witnessed it.

- (7) a. nayil pi-ka o-n-ta.
 tomorrow rain- NOM come- IMPERF-DECL
 ‘It rains tomorrow.’

⁵ See Ceong 2019 for detailed discussion, including arguments that this is not an instance of ellipsis, but rather it is genuine instance of a matrix clause introduced by a complementizer.

- b. nayil pi-ka o-n-t-ay.
tomorrow rain- NOM come- IMPERF-DECL-ay
‘(I was told by someone that) It rains tomorrow.’
Kwon, 2011: 59, cited from Ceong 2019: 138 (138)
- (8) a. cemsim-ul mekess-ni/nya?
lunch- ACC ate-INT
‘Did you eat lunch?’
b. cemsim-ul mekess-nya-y.
lunch- ACC ate -INT-HEARSAY
‘pro said, did you eat lunch?’⁶
Ceong 2019: 144 table 4-1
- (9) a. cemsim-ul meke-la.
lunch- ACC eat- IMP
‘Eat lunch!’
b. cemsim-ul meku-la-y.
lunch-ACC eat- IMP-HEARSAY
‘pro said, eat lunch!’
Ceong 2019: 144 table 4-1
- (10) a. cemsim-ul mek-ca.
lunch- ACC eat- EXHO
‘Let’s eat lunch!’
b. cemsim-ul mek-ca-y.
lunch- ACC eat- EXHO-HEARSAY
‘pro said, let’s eat lunch.’
Ceong 2019: 144 table 4-1

What is important for our purpose is that in the absence of *ko*, the matrix clause is unmarked. Nevertheless, it is still associated with a specific interpretation, namely it is interpreted as a *first hand* utterance. The speaker is performing the speech act at the time of the utterance. But there is nothing in the sentence itself that marks this aspect of the meaning. Hence, I assume, following Ceong 2019, that the sentence final UoLs *ko* and (*a*)*y* stand in paradigmatic relation not only to each other but also to a silent UoL, which marks the utterance as a first hand utterance. This establishes that patterns of contrast are not restricted to inflectional categories of the familiar type.

We have now seen that there are patterns of multi-functionality and patterns of contrast which are the universal hallmarks of categories. My argument here is that the universality of these patterns arises because of the presence of a universally available mechanism for categorization. That is, it is not the categories *per se* that are universal, it is the underlying mechanism that derives these categories. Neither patterns of contrast nor patterns of multi-functionality are logically necessary: as can be gleaned from the fact that not all UoLs behave in this way. That is, some UoLs behave as modifiers and hence simply add information to the

⁶ *Pro* here indicates that in the Korean example there is no overt constituent. Reference is retrieved contextually.

phrase they modify. As such they do not enter into patterns of contrast and hence cannot license silence to be interpreted (see Wiltschko 2004, 2014 for detailed discussion).

3 Why do languages categorize their UoLs and how?

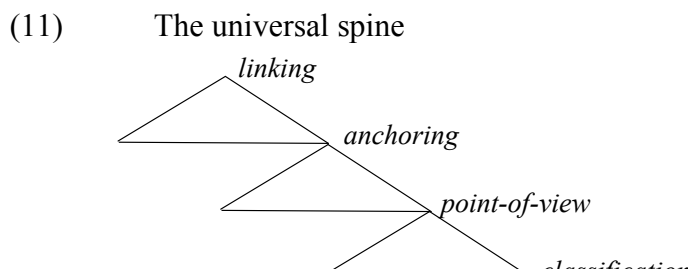
In this section, I introduce the framework developed in Wiltschko 2014 which seeks to reconcile the tension between universalist assumptions (there are universal categories) and typological observations (the inventories of grammatical categories across languages differ dramatically). While the diversity of grammatical categories across languages poses a problem for the universalists, the particularists face the problem of comparison: how can we compare categories to each other in the absence of a common denominator.

To resolve this conundrum within a generative tradition, Wiltschko 2014 proposes that grammatical categories are always language-specific, siding with categorial particularism; however, there are universal properties of categories that suggest that there is an underlying mechanism at play, which restricts the making of language-particular categories. In other words, language-specific categories are constructed in a universally restricted way. In particular, in Wiltschko 2014, I propose that there is a universal spine comprised of a hierarchically organized set of functions (reviewed in 3.1) which are associated with particular formal properties that derive the distributional patterns of categories across languages. The ingredients that serve to construct the language-particular categories are summarized in section 3.2.

3.1 The universal spine hypothesis

One of the key assumptions of the generative tradition that has shaped much research over the past few decades is that there are functional categories that define the architecture of sentence-structure. Though, the precise inventory of (universal) functional categories is a matter of debate, as we have seen (see 2.2.1). In Wiltschko 2014, I argue that the uncertainty in the field regarding the inventory of functional categories results from the failure to recognize the difference between language-particular grammatical categories and the universal basis that underlies the construction of these categories. This is essentially the same argument that Haspelmath 2010 introduces when he distinguishes between language-specific descriptive categories and universally applicable comparative concepts. The difference is that I assume that the universal ‘concepts’ correspond to core abstract functions that define the architecture of a universal spine. They should not vary among researchers depending on their particular goals; instead I claim that they are indeed universal.

In particular, the universal spine I propose in Wiltschko 2014 is comprised of four layers (as in (11)), which are instantiated in the construction of clauses as well as in the construction of nominal arguments. (i) *classification* serves to classify events and individuals into subcategories (e.g. telic vs. atelic events; mass vs. count nouns, etc.); (ii) the introduction of a *point of view* serves to map the classified event or individual to a particular perspective on it (e.g. viewing it as perfective or imperfective); (iii) *anchoring* serves to map the perspectivized event or individual to the deictic center, and (iv) *linking* serves to map the anchored event or individual to the ongoing discourse (see Wiltschko 2014 for detailed discussion and motivation).



The universal spine serves as the basis for the construction of language-specific categories. Specifically, I propose that language-specific UoLs are used to further substantiate the abstract functions of the spine. For example, TENSE is constructed by associating temporal content (past) with the anchoring category as in (12), where c represents language-specific category and κ represents the universal categorizer it associates with.

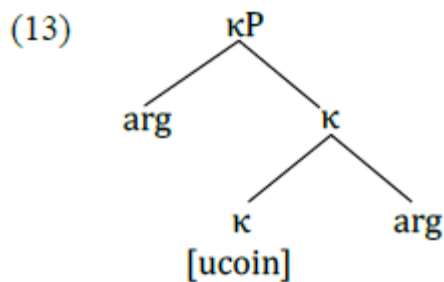
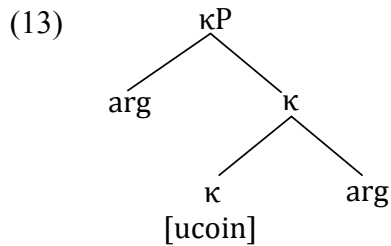
$$(12) \quad c:\text{TENSE} = \kappa:\textit{anchoring} + \text{UoL}:\textit{past}$$

Temporal content is well-suited to substantiate the anchoring category because it allows to establish a relation between the reported event and the deictic center. However, it is not the only content that may associate with $\kappa:\textit{anchoring}$. Essentially any type of substantive content that allows to establish, in principle, a relation between the reported event and the deictic center can substantiate $\kappa:\textit{anchoring}$. In Ritter & Wiltschko 2014, we argue that other categories traditionally classified as *deictic* can serve the same function, namely spatial distinctions (*here* vs. *there*), and person. Temporal content will relate the event to the deictic center via times, location via place, and person via participants. In each case it is asserted whether or not the event coincides with the time, the location or with the participant of the utterance context. This is the essence of anchoring. Note that according to this view, *deixis* is not an intrinsic property of UoLs; rather it comes about when a given UoL is associated with the spine. Thus, the same universal category ($\kappa:\textit{anchoring}$) can be instantiated with different substantive content, constructing categories that are superficially very different, yet have the same formal and functional properties. On the other hand, UoLs with similar content may associate with the spine in different ways. For example, UoLs with temporal content do not always associate with $\kappa:\textit{anchoring}$. They can, for example also associate with the spine as modifiers resulting in very different formal properties than those that associate with $\kappa:\textit{anchoring}$. On this view, language variation arises because the UoLs that associate with the spine are always language-specific and hence the categories that they serve to construct will also be language-specific. However, the construction of these language-specific categories is constrained by the spine and its formal properties, to which we turn next.

3.2 Universal ingredients of categorization

In Wiltschko 2014, I argue that it is not only the functional properties of the spine that are universal, but also the formal properties associated with the spine. In this section, I briefly review these properties, and how they derive the universal formal properties of categories: patterns of contrast and patterns of multi-functionality.

Each layer in the spine consists of a categorizer κ which relates two abstract arguments. One of these arguments occupies a position traditionally known as the specifier position; the other occupies the complement position (or the specifier of the complement position). The arguments (arg) are conceived of as abstract situation arguments which contain times, locations, and participants. Depending on the substantive content of the UoL which associates with κ , different aspects of the situation are related to each other. The relation between these arguments is established via an abstract feature [coin(cidence)] for verbal categories and [ident(ity)] for nominal categories. This feature is intrinsically associated with κ no matter what the functional content of the particular κ is. This is illustrated in (13).



The significance of coincidence for our understanding of categorial identity has already been established in Hale 1986. He conceived of it as a feature that can operate over different domains including aspect, case, complementizers, and tense. It is not uniformly marked morphologically, and it can “be observed in parts of the grammar which are not otherwise intimately related” (Hale 1986: 238).

I argue that [coin] and its nominal counterpart [ident] are in fact the only universal features; it underlies the construction of all grammatical categories and features. In particular, I propose that it is intrinsically unvalued [*u*coin]. In the course of a derivation it is valued to either a positive [+coin] or a negative [-coin] specification. Valuation can proceed via the substantive content of the UoL that associates with κ . If it is valued positively, it specifies the relation between the two arguments as coinciding; if it is valued negatively, it specifies the relation between the two arguments as non-coinciding. For example, the UoL that signifies *pastness* values [*u*coin] as [-coin] thereby ordering the temporal arguments as non-coincidental: the event time does not coincide with the utterance time. The contrasting UoL (silent in English) will value [*u*coin] as [+coin] thereby ordering the temporal arguments as coincidental: the event time coincides with the utterance time. But if the content of the valuing UoL is locational, for example, then the coincidence feature will order event location relative to utterance location.

On this view then, UoLs are simple sound meaning bundles, as in (14)a, which receive their grammatical and thus categorial properties via the universal spine. Of course, UoLs are conventionally associated with the information where and how they associate with the spine (as in (14)b but the point is that we can isolate the sound meaning bundle $\langle \pi, \Sigma \rangle$ from the categorial identity that derives from the spine.

- (14) Lexical entries for past UoL
 a. $\langle \langle \pi: -ed, \Sigma: \text{past} \rangle \rangle$
 b. $\langle \langle \pi: -ed, \Sigma: \text{past} \rangle \kappa: \textit{anchoring} \rangle = c: \text{TENSE}$

In this way, the USH is conceptualized as a framework that derives language specific grammars and the categories that these grammars make use of. Grammatical categories (c) are constructed with UoLs and the universal spine, as in (15).

(15) $c = \kappa + \text{UoL}$

The assumption that grammatical categories are constructed as in (15) captures the fact that they are always language-particular: it is because one of the key ingredients of categories, namely UoLs, is always language-specific. However, at the same time we also capture the fact that there are universal patterns associated with all categories. This is because the other ingredient of grammatical categories, κ , is universal and κ is what is responsible for the universal formal properties of grammatical categories. Patterns of contrast arise because UoLs that associated with κ will be contrastive, while UoLs that associate as modifiers will not be. Patterns of multi-functionality arise because for any given UoL, its interpretation will differ depending on where and how it associates with the spine. The functions intrinsically associated with the layers of the spine will affect its interpretation. In this way, syntax not only mediates the relation between sound and meaning for complex expressions but also for simplex ones. Thus, the USH satisfies Haspelmath's (2007: 119) desideratum that "*comparison cannot be category-based, but must be substance-based, because substance (unlike categories) is universal*". The substance of the spine allows for comparison of categories across languages even when these categories do not share the same formal properties. However, according to the USH, it is not the lexical substance of UoLs that we need to compare. If we were to compare, for example, UoLs with temporal content across languages, we might find that they don't share the same formal properties, giving the impression that there are no universal categories. It is only via the abstract functions that the spine provides that language-comparison can successfully identify the universal underpinnings of categorization.

Thus, the USH sets itself apart from other attempts to define underlying universal patterns of categorization (including cartography in the generative tradition and canonical typology or multivariate typology in the functional tradition) in that it predicts that the substantive content of categories can be quite different even though they instantiate the same functional categories (such as tense and location for example). Thus, based on the USH the apparent absence of a particular category (say tense) would prompt a researcher to look for other categories with a similar abstract function. Hence the USH makes for a novel way to look at typological patterns. Whether or not the predictions of the USH are superior than those of other approaches will have to be determined.

In sum, what the USH allows us to do is to compare language-specific categories via a third element (Humboldt's *tertium comparationis*), namely the spine. In Wiltschko 2014, I emphasized the linguistic reality of the spine, without claiming psychological reality. It was conceived of as a heuristic for discovery and comparison. Its usefulness can be gleaned from how successful it is in allowing for these tasks. One way to do this is of course to study the familiar grammatical categories across the languages of the world and see whether they can indeed be properly compared across languages. Another way is to explore UoLs that are not typically explored, neither in the generative, nor in the typological tradition, namely categories of interaction (but see Evans et al. 2018a, b; Dingemanse 2020). I turn to this in the next section.

4 Beyond grammatical categories: the categories of interaction

When people interact with each other in conversational dialogue, they do this in ways that go beyond formulating sentences of the type traditional grammatical descriptions seek to describe and analyse. On the one hand, utterances in interaction are not always complete sentences; on the other hand, interactional language also differs in that it is filled with UoLs that serve to negotiate the interaction, but which are not typically assumed to be part of grammar. To see this, consider, for example, the exchange in (16).

- (16) A: Oh wow, look at that!
 B: Mmmmhmmmmmm!
 A: What a great view, eh?
 B: Yeah, I know, eh?

UoLs that are exclusively found in interactional language, and which are not typically considered to be part of grammar, include: *oh*, *wow*, *mmmmhmmmmmm*, *eh*, and *yeah*. Without these UoLs, the interaction would have a very different flavor. While these UoLs are certainly not required for the well-formedness of the utterances, they are generally required for successful interaction. Hence, they comprise an important aspect of human language and therefore should be part of linguistic description. There are properties associated with such UoLs which suggest that their form, function, and distribution is systematic in ways that suggest that they, too, should be analyzed as being associated with categorial identities that regulate their distribution. For example, they adhere to constraints just as regular UoLs do. To see this, consider what happens when the order of some of the UoLs in (16) is changed as in (17); the utterances become ill-formed suggesting that there is a grammar that regulates their distribution.

- (17) A: *Wow oh, look at that!
 A: *Eh, what a great view?

Moreover, it appears that all languages have UoLs of this sort. For example, Dingemanse et al. 2013 find that *huh* is a *universal word*: it is used with similar form, function, and distribution across a sample of 31 genetically and geographically unrelated languages. This is a striking result especially given that universals of this sort have not been established in the grammatical domain. While we have seen above that we do in fact find universal patterns in the domain of traditional grammatical categories, this universality certainly does not extend to form meaning correspondences.

There are two lessons to be learned from this. First, we have to include interactional language in the domain of investigation of language universals and variation. And second, we have to take seriously sound-meaning correspondences which do not conform to the familiar arbitrariness. Both these empirical domains are usually ignored in both typological and generative traditions. In this section I show that the USH is a framework which allows for the discovery and comparison of categories in these domains as well. It allows us to compare the form, function, and distribution of interactional UoLs across languages for the sake of establishing language universals and the range of variation in this domain as well. I start by introducing a proposal to extend the universal spine to accommodate interactional language (section 4.1). I then explore a few categories of interactional language (section 4.2). Next, I show how the USH allows for a straightforward analysis of instances where the sound meaning relation does not abide to Saussurian arbitrariness, i.e., it provides a novel way capture iconicity (section 4.3). And finally, I present a preliminary analysis of *huh* within using these assumptions (section 4.4).

4.1 The extended universal spine.

When we talk, we do not only say things, we do things with what we say. This was the major insight of Austin 1962 which led to the development of speech act theory. It is evident when it comes to performative utterances such as *I promise to go to bed soon* where the utterance is a promise. However, as Ross 1970 points out, it is true also for declarative clauses which do not contain a performative verb. In this case, what we do with the utterance is *telling* it to the addressee. Ross 1970 suggests that what we do is directly encoded in the utterance, even when this encoding is not overtly spelled out. In particular, he proposes that a silent performative predicate (aking to *tell*) dominates the sentence: its subject is the speaker, its direct object is the proposition uttered, and its indirect object is the addressee. In the course of the derivation, this performative clause is deleted. This is illustrated in (18).

$$(18) \quad s[\cancel{I-VP}[\cancel{tell-VP}[\cancel{you}]-s-\cancel{that} s[\textit{prices slumped}]]]]$$

Ross' performative hypothesis has been dismissed almost immediately after it was proposed (Anderson 1971, Fraser 1974, Leech 1976, and Mittwoch 1976) for various empirical and theoretical reasons, some having to do with the demise of generative semantics. However, there has been a resurrection of the syntacticization of speech acts in the generative tradition. That is, assuming that the clausal architecture consists of a series of hierarchically organized functional categories allows for a reconceptualization of the original speech act structure proposed by Ross. Many of the arguments against the speech act structure disappear when it is analyzed as being comprised of functional architecture (see Wiltschko & Heim 2016, Wiltschko, in preparation for discussion). One of the seminal papers that re-conceptualized Ross' idea in terms of functional architecture is Speas & Tenny 2003. They propose that there is a recursive functional category that encodes speech act meaning (SAP) and which takes the speech act participants as arguments. This is illustrated in (19).

$$(19) \quad \textit{sap}[\textit{Spkr} [\textit{sa}_{\textit{SAP}}[\textit{CP}[\textit{UTT SA} [\textit{ADR}]]]]]]$$

Many proposals have since put forward that seek to capture the same insight (and many phenomena of natural language have been successfully analyzed utilizing this type of speech act structure (Rizzi 1997, Etxepare 1997, Cinque 1999, Ambar 1999, Speas and Tenny 2003, Hill 2007, Coniglio & Zegraen 2010, Haegeman and Hill 2013, 2014, Haegeman 2014, Paul 2014, Zu 2015, and Haegeman 2015, a.o.). However, what most of these proposals have in common is that they seek to take Ross’ insight at face value and translate it directly into functional architecture. For example, Speas & Tenny’s 2003 proposal essentially encodes “I tell you that” in the form of functional speech act structure. However, this research agenda on the syntacticization of speech acts misses years of development within Speech act theory ever since Austin’s work. Within more recent developments of speech act theory, it is acknowledged that what people do when they say something is first and foremost to *interact*. Moreover, speech acts are not primitives and hence labelling a functional category as SAP misses the complexity of speech acts (see Wiltschko, in prep. for detailed discussion). Note further that within the functional typological literature the significance of conversational interaction on grammatical form is acknowledged and many grammatical categories are analyzed as resulting from functional pressure of human interaction. However, UoLs that are dedicated to facilitate conversational interaction such as confirmationals and response markers are rarely discussed in these frameworks as well. It is precisely to accommodate these types of UoLs that Wiltschko & Heim 2016 propose an extension of the universal spine. Specifically, they propose that there are two structured layers dominating the spine of propositional structure: *grounding* (GroundP) and *responding* (RespP) (see also Wiltschko 2017, in prep.) This is illustrated in (20).

- (20) the extended universal spine
 [Interactional language [propositional language]]
 [Responding [Grounding [Linking [Anchoring [PoV [classification]]]]]]]

The core function of *Grounding* is to encode the attitudes of the interlocutors towards the propositional content of the utterance: whether they believe what is being said or not, how long they may have believed it, or how strong. In other words, *grounding* is about expressing commitment in the sense of Gunlogson 2008 (see also Heim 2019). To capture the interactive nature of GroundP, Wiltschko & Heim 2016 propose that GroundP is articulated and consists of two separate projections: a speaker-oriented GroundP (Ground_{Spkr}P) and an addressee-oriented one (Ground_{Adr}P). This facilitates the negotiation of common ground as it allows for situations in which the interlocutors share a common belief as well as those in which there is an imbalance in belief states. This is, after all, the core goal of a typical conversation: to achieve equilibrium in belief states, a common ground.

The core function of the second layer of structure, RespP is to facilitate the interaction *per se*, i.e., turn-taking. As such, the function of RespP is sensitive to the turn-type of which I assume there are two basic ones: *initiation* and *response* (Wiltschko, in prep.). In the initiation phase, RespP is responsible to encode what the current speaker (the initiator) expects the interlocutor to do with the utterance. In English, for example, rising intonation encodes that the initiator expects the interlocutor to respond and hence to take the next turn. In contrast, in the response phase, RespP is responsible for encoding whether or not the current utterance is in fact a response to the previous turn.

The functional architecture of the extended interactional spine is otherwise identical to the functional architecture of the propositional spine. There is a transitive head (κ) which is

intrinsically associated with an unvalued coincidence feature [*u*coin]. It relates two abstract arguments: the propositional content of the utterance occupies the complement position; the interlocutor’s ground occupies the specifier position. If the coincidence feature is valued positively, it specifies that the propositional content is in the belief set of the interlocutor (p coincides with Ground), if it is valued negatively, it specifies that the propositional content is not in the interlocutor’s ground. This is illustrated in (21).

(21) [Ground_{Spkr} [+/-coin]_{Ground CP}]_{Ground-spkr}

In the RespP, the specifier is occupied by the response set. Depending on the turn-type, the response set is either that of the current turn-holder or that of the other interlocutor. In the initiation phase, [+coin] specifies that the utterance is placed into the other’s response-set. It results in what Beyssade & Marandin 2006 refer to as the Call on Addressee; [-coin] specifies that the utterance is not placed in the other interlocutor’s response set and thus that the current turn-holder wishes to continue their turn. In contrast, in the response phase, [+coin] specifies that the current utterance is in the response set of the current interlocutor and hence identifies it as a response; [-coin] specifies that the utterance is not in the response set of the current interlocutor and hence that what is being said should not be taken as a response. This is illustrated in **Error! Reference source not found.**

(22) [Resp-set [+/-coin]_{Resp} GroundP]_{RespP}

This proposal does not face the same problems as those that simply translate Ross’ performative hypothesis into the functional architecture. It captures the interactive nature of language that goes beyond “I give this utterance to you”. This is in line with much recent work on the semantics and pragmatics of speech acts which views assertions as proposals to update the common ground. As such conversational negotiations can be viewed as a combination of expressing commitment to what is being said as well as engagement with the interlocutor (Heim 2019). The proposal also does justice to the fact that speech acts are not primitives and that there are UoLs across unrelated languages that are dedicated to this type of conversational interaction. I turn to a discussion of such UoLs in the next subsection.

4.2 Confirmationals, response markers, and other categories of interactional language

The assumption that there is a layer of structure above the propositional structure dedicated to regulating dialogical interaction predicts that there should be UoLs that associate with these layers. Moreover, it predicts that these UoLs will be linearized at the sentence periphery. This is because the higher in the structure a given UoL associates with the spine, the more peripheral it will be linearized, either sentence-initially or sentence-finally. And this is indeed what we find in many unrelated languages.

Consider again the conversation in (16) repeated below. We observe sentence-initial *oh*, *wow*, and *yeah*, sentence-final *eh* and stand-alone *mmmmhmmmmmm*.

(16) A: oh wow, look at that!
B: Mmmmhmmmmmm!

- A: What a great view, eh?
 B: yeah, I know, eh?

Let us consider each of these UoLs in turn. The sentence initial *oh* marks change of (mental) state, acknowledging new information (Heritage 1998). In (16), this change of state concerns the belief state of the speaker: *oh* is used to express that the speaker is surprised by what he is seeing right now (the view). The use of *wow* immediately following *oh* reinforces the significance of the change of state by adding emotional evaluation; it marks the speaker's state as one of heightened emotions related to being surprised. The other sentence-initial UoL (*yeah*) in (16) is a response marker; here it marks agreement with the previous utterance.

At the other end of the sentence we find sentence-final *eh* in two utterances. Following the exclamative '*What a great view!*' it marks that the initiator A is seeking confirmation from their interlocutor. That is, the propositional content in the exclamative expresses a positive evaluation of the current situation and *eh* is used to elicit confirmation that the interlocutor shares this evaluation. In their response, the responder B also tags their utterance with *eh*. It is also used to elicit confirmation. Note, however, that the function of *eh* differs significantly from regular tag-questions, which typically elicit confirmation that the content of the utterance is true or, as is the case with exclamatives, that it is appropriate (Exclamatives cannot be said to be true or false). Following *I know*, regular tag questions would not be felicitous, at least not in this context. If appropriate at all, it would be interpreted as rude, which is not the case for *eh*.

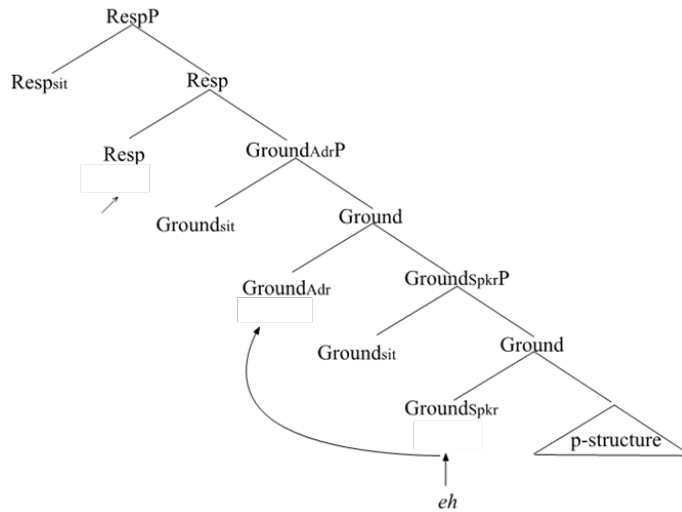
- (23) I know, don't I.

Rather, *eh* in (16) is used to elicit confirmation that the interlocutor A really knows that the current speaker B agrees with A's assessment. It is precisely these types of UoLs which the extended universal spine is meant to accommodate.

4.2.1 A syntactic analysis of sentence final *eh*?

Let us consider the sentence final-tag *eh*. Wiltschko & Heim 2016 analyse this tag as associating with $\text{Ground}_{\text{Spkr}}$ or $\text{Ground}_{\text{Adr}}$ (see also Wiltschko 2017, Thoma 2016, Wiltschko et al. 2018, Wiltschko in prep.). It values [*ucoin*] positively expressing that the propositional content is in the speaker's ground and, if it also associates with $\text{Ground}_{\text{Adr}}$, it also expresses that the propositional content is in the Addressee's ground. While, of course, the speaker cannot be certain about the content of their interlocutor's belief set, they can make some educated guesses about it. What is expressed is thus not what is actually in the addressee's set of beliefs, it is what the current speaker believes to be there. But this does not yet explain the fact that the use of *eh* also indicates a request for confirmation for the speaker's beliefs. The key to understanding this lies in the fact that *eh* is associated with rising intonation. It is this intonational tune which is used to indicate that the current speaker requests a response (Heim et al. 2016). In particular, the final rise on *eh* positively values [*ucoin*] in Resp hence indicating that the current speaker places the utterance into their interlocutor's response set: they request a response, which in turn is interpreted as requesting confirmation. Depending on whether *eh* occupies $\text{Ground}_{\text{Spkr}}$ or $\text{Ground}_{\text{Adr}}$ the current speaker may either request that their belief about the propositional content is true or appropriate or alternatively that their assessment of the Addressee's belief set is appropriate. This analysis is schematized in (24).

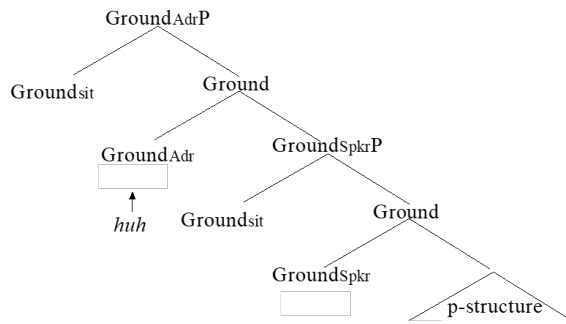
(24) A syntactic analysis of *eh*



The syntactic analysis within the framework of the extended universal spine hypothesis has several advantages over previous analyses. First, in previous treatments of *eh*, it was analysed as being associated with many different functions (Holmes 1983, Gold & Tremblay 2006) without an explicit account for what accounts for these functions. The present analysis recognizes that there are several factors that contribute to the function of *eh*; it is not only a matter of associating several functions with the UoLs itself (Wiltschko et al. 2018). The contributing factors include the UoL, which in this analysis serves to value the coincidence feature in the grounding layer. In addition, the rising intonation associated with *eh* contributes the request for confirmation and is analysed as a separate UoL. Evidence for this comes from the fact that *eh* can also be used with level intonation in which case, no request for response ensues. This is known as the narrative use of *eh*. Moreover, the content of the spine itself plays an important role in the interpretation of *eh*. That is, the Grounding layers are responsible for encoding that the content is in the speaker's or in the addressee's ground, with the two different functions being associated with different syntactic representations. And the response layer is responsible for expressing that a response is requested. The content of what is to be confirmed depends on the complement of the head with which *eh* associates.

The advantage of decomposing the function of *eh* into several independent components lies in the fact that it allows us to make predictions about universals and variation that we may find in this domain. For example, we predict that we might find sentence-final tags that are only Addressee-oriented. And indeed, this is precisely what sentence final *huh* does in English: it is used to confirm the addressee's belief but does not express that the propositional content is in the speaker's ground. Within the analysis developed here, it is associated with Ground_{Adr} only, as shown in (25).

(25) A syntactic analysis of *huh*.



Evidence for this analysis comes from the data in (26). In the context of the conversation in (16), *huh* cannot be used (26)a. This is because people usually know if they know something and do not require confirmation. Hence, in this context it would not be appropriate not to specify that the propositional content is in the speaker's ground. In contrast, it is possible to ask for confirmation that the propositional content is in the addressee's ground if it concerns content that the addressee has privileged access to, as in (26)b.

- (26) a. *Yeah, I know huh.
 b. You know everything, huh?

This is one way in which the present analysis can account for the kind of variation we observe in the UoLs that serve this function. Moreover, if indeed there is a grammar that regulates the form, function, and distribution of these interactional UoLs, we expect them to be able to enter paradigmatic relations.

4.2.2 The paradigmatic organization of sentence final particles. Evidence from Mandarin.

That is, the unvalued coincidence feature in the grounding and the responding layer should in principle be valuable positively or negatively and hence there should be UoLs that instantiate negative values. In what follows I discuss evidence based on Mandarin Chinese which shows that this prediction is indeed borne out.

There are many sentence-final particles in Mandarin, but here I only consider four that enter into the kind of paradigmatic contrasts predicted by the present analysis. *de* and *a* are speaker-oriented particles. *de* is used to convey that what is being said is in the speaker's ground, as illustrated in (27). According to Li, An and Zhang (1998) the function of final *de* is to express certainty. Specifically, by using *de* the speaker conveys that she is not just reporting on an event, but in addition she is expressing her attitude towards this report, namely that she is certain. It is for this reason that in the context in (27), it is obligatory to add *de*.

- (27) **Context:** John was told that Mary drives to work. He wonders whether he can catch a ride. But he is not sure whether Mary drives every morning. He runs into Bob, Mary's husband, and wants to know whether it really is true. Bob says:
- a. *Ta meitian zaoshang kaiche shangban de.*
 She every.day morning drive work PRT
 '(I confirm that) she drives to work every morning.'
- b. **Ta meitian zaoshang kaiche shangban.*

She every.day morning drive work
'She drives to work every morning.'

In contrast, the sentence final particle *a* serves to express that the content of the utterance is new to the speaker. In other words, it conveys that up until now the proposition was not in their ground. This is illustrated in (28).

- (28) Student: *Dou wancheng le. Wo xianzai deng zhe biye le*
Everything is done. Now I am waiting for my graduation.'
Advisor: *Buguo ni hai xuyao fabiao yi pian lunwen.*
But you need to publish one more paper (before you graduate).
Student: *Shenme? Wo hai dei xie yi pian lunwen a*
What? I still must write one CL thesis PRT
What? I still have a thesis to write (I didn't know that).

The difference between *de* and *a* provides exactly the type of paradigmatic contrast our analysis predicts. *de* conveys that the speaker knows *p*, whereas *a* conveys that the speaker doesn't know *p*. Thus, I analyse *de* as valuing [*u*coin] in Ground_{Spkr} positively, and *a* as valuing it negatively.

A similar contrast is found with the addressee-oriented particles *ma* and *bei*. *Ma* is used to convey that (the speaker thinks that) the addressee already knows what is being said whereas the latter is used to convey that (the speaker thinks that) the addressee doesn't already know what is being said. Consider first *ma*. There are two ways in which the speaker might assume that the addressee already knows what they are saying. First, the speaker may have first-hand experience of the addressee witnessing the truth of the proposition as in (29).

- (29) Context: Mary gave John a puppy. After a month, John calls Mary to ask which kind of dog food is better for his dog. He says to Mary:
Ni shangci gei wo le tiao gou ma ...
You last.time give me asp cl dog prt
Wo xiang wen ni nage paizi de gouliang hao.
I want to ask yo which brand of dog food is good.
'Remember you gave me a dog last time.
Now I want to ask which food is good for him.'

With the use of *ma* the speaker reminds the addressee of their common knowledge. Note however that the English translation contains '*remember*' which has no direct correlate in the Mandarin utterance. It simply is an effect of the use of *ma* which conveys that the speaker thinks that the addressee knows what is being said.

A second way in which a speaker can be sure that the addressee already knows what is being said comes about when it is an obvious state of affairs. For example, Wang 2009 argues that *ma* is used to express the obviousness of a fact or state of affairs; and according to Chappell and Peyraube (2016:323) *ma* is used for "*situations which are viewed as highly evident in nature and which follow logically from the given facts*". This is shown in (30).

- (30) a. *Diqiu weirao taitang zhuan.*
Earth round sun turn

- The earth goes around the sun.
 b. *Diqiu weirao taiyang zhuan ma.*
 Earth round sun turn PRT
 '(It's known by all that) the earth goes around the sun.'

Finally, there is also a particle (*bei*), which can be used if the speaker thinks that the addressee does not already know what she is telling him. This is illustrated in (31)

- (31) **Context:** Mary knows that John doesn't like cats. But one day, as they are shopping together in the supermarket, Mary observes that John is looking at cat toys, and the following conversation ensues.

Mary: *Ni zenme kan mao de dongxi?*
 Why are you looking at the cat stuff?
 John: *Wo erzi jian huilai yi zhi mao bei*
 (You haven't know that) my son picked up a cat somewhere
 ...*yiding yao yang*
 ...and wants to keep it anyway

We can analyse *ma* and *bei* as UoLs that associate with $\text{Ground}_{\text{Adr}}$ such that *ma* values [*u*coin] positively whereas *bei* does so negatively.

We have now seen that there are four Mandarin sentence final particles which neatly instantiate the paradigmatic contrast expected by the syntactic analysis I have developed. There are particles used to convey speaker-old and -new information, respectively as well as particles that are used to convey addressee-old and -new information, respectively. This is summarized in Table 1.

	Speaker-oriented	Addressee-oriented
old	<i>de</i> : $\text{Ground}_{\text{Spkr}}[+\text{coin}]$	<i>ma</i> : $\text{Ground}_{\text{Adr}}[+\text{coin}]$
new	<i>a</i> : $\text{Ground}_{\text{Spkr}}[-\text{coin}]$	<i>bei</i> : $\text{Ground}_{\text{Adr}}[-\text{coin}]$

Table 1 The paradigm of grounding particles in Mandarin

Finally, another virtue of the syntactic analysis developed here is that it views syntax as mediating between form and meaning. The distribution of UoLs is regulated by the syntactic spine and moreover, by virtue of being associated with the spine in a certain way UoLs are enriched with the spinal functions. In this way, the spine contributes to the interpretation of UoLs and furthermore it functions as a point of comparison for categories across languages. This is significant in that it allows us to compare UoLs with superficially very different properties. The universality of categories is defined via spinal functions, which are universally hierarchically configured and not via the idiosyncratic properties of language-specific UoLs. This allows us, for example, to make sense, in a formal way, of the observation that the functional load of sentence-final particles in languages such as Mandarin or Japanese is carried by intonational contours in English (Wakefield 2010, 2012)) which I turn to next.

4.2.3 The functional equivalence of particles and intonation

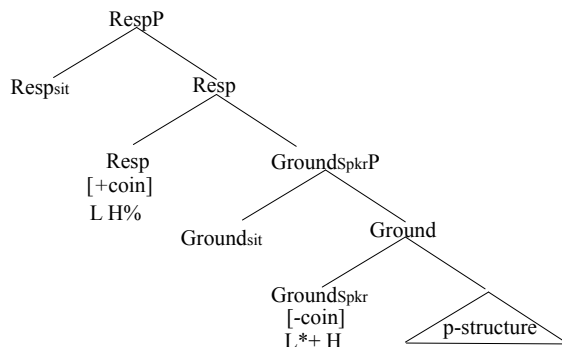
While we have seen that English does have some sentence-final particles, its inventory is not nearly as rich as that of East-Asian languages. For example, it lacks a sentence-final particle that would value [*ucoin*] in Ground negatively, i.e., there is no particle that would be used to express that the propositional content is not part of the speaker's or the addressee's ground. To convey this meaning, speakers of English can make use of a particular contour, namely the so-called incredulity contour. It is used to express uncertainty and disbelief (Ward and Hirschberg 1985) as shown in (32).

- (32) Incredulity contour
 A: I'd like you here tomorrow morning at eleven.
 B: Eleven in the morning!
 L*+H L*+H L H%

Ward & Hirschberg 1986: 3 (2)

The response move by B expresses disbelief, and – according to Ward and Hirschberg 1985 – the disbelief is encoded context-independently via the sentence final fall-rise contour. The context-independence of this interpretation is crucial, as it clearly suggests that the contour itself is meaningful, i.e., functions as a UoL. Consequently, I propose that intonational tunes associate with the spine and may serve to value the coincidence feature associated with spinal heads. In particular, the incredulity contour is syntactically complex: it associates with both $\text{Ground}_{\text{Spkr}}$ and Resp . [*ucoin*] in $\text{Ground}_{\text{Spkr}}$ is valued negatively thereby encoding that the utterance is not in the speaker's ground. This captures the observation that L*+H L H% conveys disbelief and uncertainty. I further propose that the incredulity contour is also associated with Resp : it positively values the coincidence feature thereby indicating that the speaker requests a response. Specifically, I assume that the complexity of the incredulity contour (a rising accent L*+H and a rising boundary tone L H%) correlates with syntactic complexity: the rising accent negatively values [*ucoin*] in $\text{Ground}_{\text{Spkr}}$ encoding disbelief, whereas the rising boundary tone positively values [*ucoin*] in Resp encoding a request for a response. This is illustrated in (33).

- (33) Analysing the Incredulity contour



While there are several analysis that have recently been developed that suggest that intonational tunes function like morphemes (Truckenbrodt 2012) and as such are associated with the spine (Davis 2011), the present proposal differs in several ways. In particular, I assume that sound itself is interpreted along the spine. This is the topic of the next subsection.

4.3 How sound is meaning

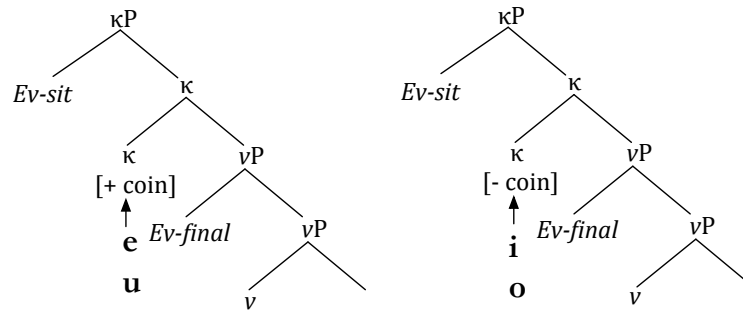
In the last sub-section we have seen that UoLs with different properties may associate with the same position along the spine: for example particles and intonational tunes may both be associated with the same position along the spine. This accounts for the fact that they carry a similar functional load. Hence the spine serves as a tool for cross-linguistic comparison of categories. Note, however, that intonational tunes constitute a very different type of UoL: unlike other UoLs, which are typically bundles of sound and meaning ($\langle \pi, \Sigma \rangle$), intonational tunes only have meaning once they associate with the spine. They cannot even be pronounced in isolation. Moreover, many intonational tunes receive virtually identical meanings across different languages. This suggests that the relation between sound and meaning for intonational tunes may not be as arbitrary as is the case for other UoLs. I propose that this property of intonational tunes can be modelled if we assume that it is the sound itself that associates with the spine, rather than a bundle of sound and meaning. This is illustrated in (34).

(34) $\langle \pi, \kappa \rangle$

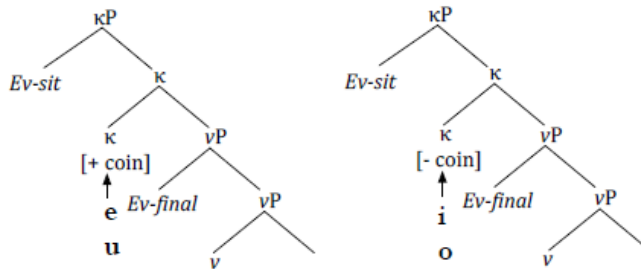
The claim here is that sound appears to have meaning by virtue of being associated with the spine. Since the spine is universally associated with the same functions, this results in (near) universal (non-arbitrary) sound-meaning relations. This is at the root of so-called iconicity. That is, particular properties of intonational tunes may serve to value the coincidence feature by virtue of their phonetic properties. In particular, Heim 2019 argues that in English intonational tunes can be decomposed into pitch duration and pitch excursion: pitch duration serves to encode speaker commitment while pitch excursion serves to encode addressee engagement. On the present analysis, commitment is a function of GroundP while engagement is a function of RespP. The precise mechanism with which these phonetic properties are interpreted goes beyond the scope of this paper.

I note, however, that the prosodic properties of intonational tunes are not the only way in which sound may be interpreted along the spine by serving to value the coincidence features of the functional heads. Here I briefly review evidence from Yamato Japanese discussed in Fujimori 2011 to the effect that vowel-quality serves as a perfect predictor for the telicity of verbs. In particular, Fujimori demonstrates that mono-syllabic verbs containing /e/ or /u/ are always telic, and those with /i/ or /o/ are always atelic (verbs with /a/ can be either telic or atelic). This holds for all verbs in Yamato Japanese. In addition, based on experimental evidence, Fujimori 2011 shows that Japanese speakers are sensitive to this distinction even in nonce verbs. This is precisely the type of behavior we may expect from a system where a particular sound serves to value [*ucoin*]. In particular, within the USH, telicity may be analysed as follows. Within the classification layer of VPs, we identify two abstract arguments: the event situation and the final event situation. Events are interpreted as telic (i.e., as having a natural endpoint) if the final event is specified to coincide with the event situation (i.e., if [*ucoin*] is positively valued). In contrast, events are interpreted as atelic (i.e., as not having a natural endpoint) if the final event is specified to not coincide with the event situation (i.e., if [*ucoin*] is negatively valued). This is illustrated in (35).

(35) The sound valuation of telicity



(35) The sound valuation of telicity



But what aspect of these vowels might be responsible for this pattern? In terms of features that have traditionally served to classify vowels to define natural classes (*low/high* and *front/back*) this pattern is somewhat unexpected. Neither /e/ and /u/ nor /i/ and /o/ form a natural class in terms of these features. However, as Fujimori 2011 observes, there is a way in which these sets of vowels form a natural class: /e/ and /u/ are close to the tongue rest position (i.e., ([central]) while /i/ and /o/ are far from the tongue rest position, they are produced at the edges of the vocal tract. In contrast, /a/ is somewhat neutral. I suggest that it is precisely this phonetic property which is interpreted on the spine: it values the coincidence feature iconically. Closeness of the tongue rest position is interpreted as [+coin] while distance is interpreted as [-coin]; and the neutrality of /a/ with respect to this phonetic property is interpreted as neutrality in terms of coincidence as well. Hence /a/ may be interpreted either way and does not correlate with telicity. Again, we see how the assumption that the spine is intrinsically associated with substance (the function and the abstract arguments associated with each layer as well as the coincidence feature) allows us to model iconicity. In particular, the coincidence feature provides the interface between the spine and the language-specific UoLs such that the UoLs serve to value it. Typically, UoLs consist of sound and meaning ($\langle \pi, \Sigma \rangle$) and typically it is the meaning (Σ) which serves to value [ucoin]. However, nothing precludes sound (π), as well, to serve this function. In fact, there is no privileged relation between either sound or meaning and the spine. Both belong to different cognitive domains, and both interface with the spine. It is in this way, that syntax (here conceived of as the spine) mediates between sound and meaning. Iconicity arises if it is sound alone that is interpreted by the spine. This is possible by associating sound alone with the spine, as is the case with intonational tunes, which on their own are not associated with a meaning. But it is also possible by associating a regular sound meaning bundle $\langle \pi, \Sigma \rangle$ with the spine. But instead of using its meaning to value [ucoin], it is the sound which does the job. This is what happens with Yamato Japanese verbs.

This analysis accounts for the iconic properties of this pattern, but it also leaves room for arbitrariness, at least in two ways. First, UoLs differ as to whether they consist of sound alone (like intonational tunes) or whether they also include meaning. Second, UoLs that consist of sound and meaning may differ as to how they interact with the spine: via its meaning or via its sound. And third, if it is the sound that is interpreted, languages may differ as to which phonetic property of the sound is interpreted. For intonational tunes in English, Heim 2019 has shown that it is pitch duration and pitch excursion which are interpreted; for vowels in Yamato Japanese, Fujimori has shown that it is the centrality or periphery of the vowel which is interpreted. However, everything else being equal we might expect systems that use other phonetic properties of vowels to be interpreted (see Dingamane 2018, for a recent overview of the properties of ideophones).

In sum, the USH provides a new way of dealing with unconventional associations between sound and meaning including ideophones: in particular the assumption that the spine has substance which is interpreted in interaction with UoLs allows for sounds to be interpreted as well. This accounts for certain universal patterns of interpretation precisely because the functions that interface with these UoLs are universal. It differs from previous approaches towards intonational meaning according to which the tunes or tones themselves are viewed as morphemes (see Truckenbrodt 2012 for a recent generative approach, and 2019 for a detailed overview).

4.4 The category of *huh*.

I have now shown how the USH allows for cross-linguistic comparison of grammatical categories. Furthermore, I have shown how we can apply the same framework to compare categories which are not typically taken to be grammatical categories, namely those that characterize interactional language (including discourse markers and intonational tunes). There are two assumptions which I have introduced that make this possible. The first assumption is that the structure which regulates the distribution and function of UoLs includes structure with functions to regulate dialogical interaction (GroundP and RespP). The second assumption is that sound can be interpreted by the spine resulting in what is known as non-arbitrary meaning. Hence there are UoLs that consist solely of sound rather than being sound-meaning bundles where the relation between sound and meaning is arbitrary. Such UoLs reveal the function of the spine because there is no language specific meaning associated with the UoL.

I now suggest that these two assumptions allow us to understand the properties of *huh* discussed above. According to Dingamane et al. 2013, *huh* is found across many unrelated languages with virtually identical form and function. In terms of its form, it is universally realized as a single syllable with at most a glottal onset consonant, an unrounded low front central vowel, and questioning intonation. In terms of its function, it is universally used as an *open other-initiated repair* strategy. That is, repair of a given turn is initiated not by the speaker but by the other participant. It serves to signal that the interlocutor has problems understanding what was being said, but it leaves open what the problem is. Based on these findings Dingamane et al. 2013 argue that *huh* is a universal *word*. It is classified as a word because it does not behave like an involuntary grunt. For example, it adheres to phonological constraints of the language at hand, and it displays patterns of acquisition that are akin to words, rather than to involuntary sounds). The universality is striking because it contradicts the Saussurian arbitrariness usually observed with (simplex) words. According to Dingamane et al. (2013:7) its universality is the result of “cultural evolution in the adaptive context of its interactional

environment.” Specifically, they identify its context of use as one where the interlocutor uttering it has to signal that no response can be given and this has to happen fast. The need for speed in turn requires a form with the least amount of effort. It has to be fast due to the rules of turn-taking, which are universally constrained. Typically, the break between turns is no longer than 100–300ms (Stivers et al. 2009, Pomerantz 1984). But this requires that planning an utterance has to happen well-before a turn has come to an end. (Levinson & Torreira 2015). If there is a problem understanding a given turn, the interlocutor has to signal this fast and without much effort and it will have to serve as a request to solve the problem (typically by repeating the utterance). According to Dingamane et al. (2013: 7) “These requirements are met rather precisely in the combination of minimal effort and questioning prosody that characterises the OIR [other initiated repair; MEW] interjection across languages.”

In the context of the framework I have developed here, the mechanism that underlies the creation of this universal form follows straightforwardly. Suppose that all that is required in this context is to signal a request for response. If nothing else is added, the previous interlocutor will interpret this to mean that their interlocutor is not able to respond to the turn they just finished. That is, the utterance itself is maximally unmarked; all it is, is a request for response. However, intonational tunes cannot occur without some form of phonological substance and to provide this the maximally unmarked form is used. This is in part universally determined, but in part language specific (as discussed in Dingamane et al. 2013). Thus, I argue that the phonological properties of *huh* follow from the fact that it merely serves as a host for the intonational melody responsible to request a response. This is typically rising intonation, and indeed in most of the 10 languages investigated in Dingamane et al. 2013, *huh* is realized with rising intonation. The only two exceptions are Icelandic and Cha’palaa which use falling intonation, and interestingly, in these languages, falling intonation is also used in questions, which are the prototypical speech acts that require a response.

In as much as the analysis of *huh* developed here is on the right track, we can conclude that the assumptions that define the extended USH are useful ones. That is, under standard assumptions about the way sound-meaning bundles are compared the properties of *huh* are surprising on many levels. Words, are not usually universal. But assuming that all that this particular sound does is provide a host for the intonational tune that is used to request a response its properties fall into place. Like intonational tunes themselves, *huh* can be viewed as pure sound that associates with the spine, with the resulting meaning being purely based on the spinal function. If one accepts the universal spine as a system that derives both in the propositional as well as in the interactional structure then, nothing more has to be said about the properties of *huh*. They fall out from the system, no further assumptions are needed.

5 Conclusion: How to do typology

The goal of this paper was to explore the question regarding the universality of categories and their range of variation. We started with an analytical conundrum: how is it possible to compare languages to each other if we do not assume a set of universal categories which we can use as the standard of comparison. But then, if we do that, how can we actually discover universal categories, if we have to presuppose them. Thus, comparative linguistics brings with it an intrinsic problem of circularity. This conundrum, while not often explicitly acknowledged, is at the root of a theoretical controversy that has a long tradition. Generative linguists assume the existence of universal categories based on arguments having to do with the cognitive

underpinnings of natural language, while (functional) typologists deny them based on the seemingly limitless diversity the languages of the world display.

In this paper, I have explored a way to resolve this conundrum and to bridge the gap between the generative and the functional typologists' perspective. While I agree with the core assumption that grammatical categories are not universal, I do not agree with the more general assumption that there is nothing universal about grammatical categories. In particular, I have reviewed, the core tenets of Wiltschko's 2014 Universal Spine Hypothesis (USH), according to which grammatical categories are necessarily language specific because they are always constructed, and hence can be constructed in different ways. Nevertheless, there is a universal core that restricts the construction of these language specific categories, and this core is the universal spine. The universal spine consists of a set of hierarchically organized structures which are intrinsically associated with functions, and which in turn add meaning to the language-specific units of language (UoLs) that associate with the spine. On this view, language variation in the inventory of grammatical category results from the fact that one of the ingredients of grammatical categories is language-specific UoLs. On the other hand, the universality of categorial patterns I identified derives from the fact that the universal spine is implicated in the creation of categories. It derives universal patterns of contrast and universal patterns of multi-functionality. Without the assumption that there is an underlying mechanism that is responsible for categorization, these patterns would be coincidental.

I then showed how these assumptions derive categorial patterns in the familiar domain of grammatical categories. In my own experience, the usefulness of the USH lies in the fact that it allows us to ask new questions. That is, when we observe that a given language appears to lack a category that we may have expected to be universally attested (e.g. TENSE) then the USH leads us to expect that this language will have another category that fulfills the same function (namely *anchoring* in the case of tenselessness).

But I have also applied the same logic to categories that are restricted to interactive language. That is, when we are having conversations, sentences often contain UoLs which are not always considered to be in the scope of grammatical analysis. However, I have argued that we can extend the universal spine to include a layer of structure which is responsible for regulating interactive language. Hence, the universal spine truly serves as a tool for discovery and comparison. In this novel empirical domain, we cannot fall back onto assumptions that derive from traditional grammars, because traditional grammars never compared the categories that belong to the language of interaction.

But this approach towards grammatical categories, including those of interactional language, requires detailed and careful investigation of data that are often not part of typical descriptions. We cannot simply assume that a UoL with a particular meaning will have to be analysed as belonging to the same category as its notional equivalent in the language(s) of comparison. It is for this reason that this type of typological research cannot easily be large-scale. Especially when working on understudied languages, fieldwork has to be conducted to determine the grammatical categories of propositional and of interactional language that this language constructs. But this doesn't make the enterprise less valid. It takes time to get to the core of a language and so too it is not surprising that it takes a long time to get to the core of UG. While descriptions of surface properties are useful to some degree, they run into the danger of leading to false generalizations which takes us further away from the core.

In as much, as the USH with its extension to include interactional language is successful, we can begin to think about the psychological underpinnings of the spine.

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