Language Typology

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Abstract

The study of language typology has two interrelated aims. The first is to catalog attested patterns of cross-linguistic variation in order to discover both linguistic universals and noteworthy statistical tendencies. The second is to find explanations for these patterns, whether in terms of universal factors, such as general characteristics of human cognition, or historically contingent factors, such as patterns of language contact. Language typology has also developed methods to support consistency in the categorization of grammatical patterns across languages and to control for the possibility of biases within language samples.

Keywords: language typology, cross-linguistic diversity, morphosyntax, phonology, semantics, linguist methodology

Key points

- The study of cross-linguistic diversity has led to the discovery of noteworthy linguistic universals across phonology, morphology, syntax, and semantics.
- Linguistic universals are of different types, such as absolute universals, statistical universals, and implicational universals.
- Work on language typology seeks to discover and explain universals, often in terms of functional and historical factors.
- Major methodological concerns for language typology are accounting for potential biases in language samples and finding ways to code cross-linguistic variation consistently.

1 Introduction

The study of language typology focuses on the discovery and explanation of patterns of cross-linguistic variation. Its results include proposals for universals of language as well as the uncovering of significant statistical tendencies across languages. Explanations for the patterns found through typological investigation can involve appealing to general factors, such as properties of human cognition, or historically and culturally specific concerns, such as the dynamics of language contact within a linguistic area.

Languages can differ in obvious ways, such as having divergent word order patterns in clauses (Dryer, 2013a), and in more subtle ways, such as whether they code possession in kinship expressions differently from other nouns (Nichols & Bickel, 2013). Comparing their grammatical properties rigorously requires close attention to methodological concerns, such as how to develop protocols for coding variation consistently across diverse languages. An additional concern is that our ability to study cross-linguistic diversity is constrained by the fact that our dataset is limited to attested languages whose similarities to each other may be due to either universal factors or accidental historical factors. Work on language typology must, therefore, also pay close attention to how a language sample can impact the validity of a study's results.

2 Cross-linguistic universals

The most well-known results in language typology involve the discovery of universal linguistic patterns that emerge when many languages are compared at once. These can be of different kinds (§2.1) and have been uncovered across many areas of grammar, including morphology and syntax (§2.2), phonology (§2.3), and semantics (§2.4). In addition to textbooks on typology (Croft, 2002; Velupillai, 2012; Moravcsik, 2013; Song, 2018), a significant resource for information about linguistic universals, and related typological patterns, can be found in Dryer & Haspelmath (2013). The largest available typological database is Grambank (Skirgård et al., 2023).

2.1 Categorizing typological universals

Work on language typology generally categorizes universals across two distinct dimensions. The first is whether they are *absolute* or *statistical*. The second is whether they are *unrestricted* or *implicational*. The first distinction refers to whether the universal is believed to be found in all languages (absolute), as opposed to a pattern which is found in more languages than can be attributed to chance, even if there are exceptions (statistical). The second refers to a distinction between patterns which are found generally across all languages (unrestricted), as opposed to those that involve relationships holding between specific types of languages (implicational). Implicational universals can be formulated in terms of *if-then* statements along the lines of: *If a language has property X, then it will also have (or tend to have), property Y.*

An example of an unrestricted universal is a statement such as: All languages have a means of expressing negation. There are also unrestricted universals specific either to spoken languages or to sign languages. An example of a universal linked to the auditory-vocal modality is: All spoken languages have vowels. An example of a universal linked to the visual-gestural modality is: All sign languages use both manual signs and non-manual features (such as facial expressions) (Zeshan & Palfreyman, 2017, 182).

An example of a statistical universal in the domain of syntax is: Languages with a basic word order where the subject follows the object are rare (Dryer, 2013a). An example of a statistical universal in the domain of phonology is: Languages with no bilabial consonants are very rare (Maddieson, 2013a).

An implicational universal in the domain of morphology is: If a language can code nouns for number categories such as a dual (to code that there are two entities being referred to) or paucal (to code that a few entities are being referred to), then it also has a means to code nouns for a general plural (Corbett, 2000, 38–42). An implicational universal in the syntactic domain is: If a language's basic clausal word order is Subject-Verb-Object, then it is much more likely to make use of postpositions than prepositions (Dryer,

2013b). As suggested by these two examples, implicational universals can be absolute or statistical in nature.

When universals are examined in aggregate, higher-level generalizations can emerge which allow sets of them to be characterized in terms of a hierarchy that they all conform to. One instance of this is seen in the so-called animacy hierarchy, a version of which is presented in (1) (Croft, 2002, 130). The term *animacy* is used somewhat loosely to describe this hierarchy, as it involves a mix of factors in addition to animacy including the extent to which a given item is likely to be the topic of an utterance, whether it refers to an entity that is clearly individuated, and whether it refers to a human.

(1) first and second person pronouns > third person pronouns > proper names > human nouns > non-human animate nouns > inanimate nouns

A hierarchy like the one in (1) can be understood as a claim about how cross-linguistic generalizations will pattern with respect to the categories in the hierarchy. In particular, they should refer to continuous sets of categories from either the top of the hierarchy down or the bottom of the hierarchy up. For example, the animacy hierarchy interacts with the coding of number: If a language codes a singular/plural distinction on elements at a lower position of the hierarchy (e.g., human nouns), then it will also code that distinction on all elements above that position in the hierarchy (e.g., proper names and pronouns) (Corbett, 2000, 56). This is not an absolute universal—the English second-person pronoun *you* presents a counterexample—but it is a statistical one (Comrie, 1989, 187).

The animacy hierarchy is relevant to other grammatical phenomena, such as case marking. For example, verbal objects at higher positions on the hierarchy generally are more likely to be coded for accusative case in languages with such a case than objects at lower positions (Comrie, 2013). Russian provides an example where the interaction can be seen quite clearly. Masculine nouns referring to animate entities are coded for accusative case, while masculine nouns referring to inanimates are not, as seen in example (2) (Comrie, 1989, 132).

(2) *Ja videl mal'čik-a/begemot-a/dub/stol*
1sg see.PST.MASC.SG boy-ACC/hippopotamus-ACC/oak/table
"I saw the boy/hippopotamus/oak/table."

Within phonology, an important proposed universal hierarchy is the sonority hierarchy (Parker, 2011). This defines an ordering of phonological sound classes from those with highest to lowest sonority, with the abstract notion of sonority corresponding roughly to phonetic characteristics of these sound classes, such as whether they tend to be voiced or not. A general version of the sonority hierarchy can be found in (3).

(3) vowels > glides > liquids > nasals > obstruents

The sonority hierarchy is used as a means to characterize patterns of syllabification cross-linguistically, where the segments in syllables generally should increase in sonority from the onset to the nucleus and then decrease in sonority from the nucleus to the coda. Different languages may have more or less complex syllable structures (see §2.3), but the sonority hierarchy broadly predicts that they will all follow this pattern. The same hierarchy has also been proposed as relevant to understand languages where stress assignment is sensitive to different vowel qualities. For example, in some languages, an *a* vowel may attract stress in a context where an *i* vowel does not, and it has been suggested that, within the category of vowels, there is a sonority sub-hierarchy where *a* is more sonorous than *i* and that this is relevant to such patterns.

From the perspective of language typology, universals are understood to be based on empirical observations of a sample of languages and are open to revision as more data is analyzed or as methodological assumptions are further refined. A proposed absolute universal may be revised to a statistical one if a counterexample is found. For example, in his highly influential paper on word order, Greenberg (1963, 62) proposes the absolute implicational universal: If a language has dominant Verb-Subject-Object word order in clauses, it will always make use of prepositions rather than postpositions. Further investigation has revealed exceptions to this pattern (Derbyshire, 1987, 315), even if these are relatively rare. Similarly, Dryer (1989, 278–283) provides detailed consideration of another universal proposed in (Greenberg, 1963, 62): If a language has dominant Subject-Object-Verb clauses word order and the genitive follows the possessed noun, then the adjective likewise follows the noun. Dryer (1989) notes that, while no exception to the pattern is attested, the overall distribution of the available data does not clearly demonstrate that this can be considered a true universal due to the lack of clear statistical significance of the pattern.

Work within the typological tradition on universals can be contrasted with work within the tradition of Universal Grammar which proposes that there are universal features of human language due to the nature of human cognition that can be discovered through methods other than cross-linguistic comparison. However, typological universals in the sense discussed here have been proposed to reflect features of Universal Grammar. This is the case for the animacy hierarchy, presented (1), for example (Kiparsky, 2008, 33–45).

The universal patterns discussed below are limited to those found on the basis of the study of spoken languages. Typological research has yet to properly integrate sign languages, and the emphasis of work on the typology of sign languages has largely been on typological variation within sign languages. Extensive efforts at cross-modal typology have, unfortunately, yet to be undertaken (Zeshan & Palfreyman, 2020).

2.2 Morphological and syntactic typology

The possible space of investigation into language typology is massive, and many aspects of grammar have yet to be the subject of dedicated investigation. Those areas that have been well studied tend to be those of descriptive and theoretical interest in the context of the investigation of individual languages and where relevant data is relatively accessible. Various morphological and syntactic phenomena have seen particularly detailed attention.

With respect to syntax, the most well-studied topic is word order, in particular at the level of the clause but also within the noun phrase (Dryer, 2007), and generalizations about word order represent some of the classic examples of implicational universals (see §2.1). One important discovery of global-scale studies of word order is the presence of large, continent-scale linguistic areas where specific word order patterns dominate, as found for Subject-Object-Verb word order in Asia (except for Southeast Asia) (Dryer, 1989).

Morphosyntactic phenomena connected to encoding the relationship between verbs and clausal arguments, under the broad heading of grammatical relations (Bickel, 2011) are also relatively well-studied typologically, including how noun phrases are coded

for their grammatical role in the clause, e.g., via case marking (Iggesen, 2013) or verbal agreement (Bickel & Nichols, 2007, 229–235) and how verbal morphology can be used to alter the number of arguments associated with the verb syntactically via so-called valency-changing processes, like passivization and causativization (Dixon & Aikhenvald, 2000). A related area of grammar is relative clause formation, where there is evidence for the existence of a grammatical hierarchy (see §2.1), known as the accessibility hierarchy, a version of which is presented in (4) (Comrie, 1989, 156).

(4) subject > direct object > non-direct object > possessor

The accessibility hierarchy describes a generalization regarding whether a noun phrase taking on a specific grammatical role in a language can be relativized. If a language allows a noun phrase in a lower position on the hierarchy to be relativized, then the prediction is that all higher grammatical categories can also be relativized. English, for example, allows possessors to be relativized as in an example like, *the man whose son ran away*, and, as predicted, allows the other grammatical roles in the hierarchy to be relativized as well. Malagasy, as described by Comrie (1989, 156), only allows subjects to be relativized. This is not as limiting as it might seem, however, due to the presence of valency-changing verbal morphology in Malagasy which allows arguments that might not normally serve as subjects to take on the subject role in the relative clause.

Another well-studied area of morphosyntactic typology is agreement, for example whether a verb agrees with its subject or whether nominal modifiers such as determiners agree with the noun. The most common grammatical features relevant to agreement are person, number, and gender. Comprehensive discussion of gender and agreement can be found in (Corbett, 1991, 2006).

Typological work has also investigated the traditional grammatical domain of word classes, such as noun, verb, and adjective. Key typological questions for the investigation of word classes involve the general criteria and language-specific patterns that can be used to identify them. Semantic and pragmatic criteria are generally used as an initial basis of dividing words into potential classes, e.g., where words for objects and with referential function are expected to be nouns and words for actions and with predicative function are expected to be verbs. The key language-specific question is whether these semantic and pragmatic classes of words have distinct morphological and syntactic properties from each other. When word classes are understood in terms of an overlap of semantic/pragmatic properties and morphosyntactic properties, most languages show a clear noun/verb distinction, but this is not true for adjectives where words that might be expected to be adjectives instead behave like verbs or nouns. Bisang (2011) provides general discussion of word classes from a broad typological perspective.

One of the earliest kinds of typological classification that still remains in use involves the general morphological structure of words within a language and, in particular, the extent to they are coded for inflectional categories and the ways that these are coded. Three idealized morphological types have been proposed: isolating languages, which show no (or minimal) inflectional morphology; agglutinating languages, which make use of inflectional morphology where each morpheme is easily segmentable and has a single clear meaning; and fusional languages, where the boundaries between morphemes may be difficult to determine and where a single inflectional morpheme may encode multiple semantic categories. The significance of these types for discovering genuine typological generalizations has not been clearly established (Haspelmath, 2009). It has been suggested that languages with these different morphological types develop through a historical cycle where isolating languages become agglutinating languages through processes of grammaticalization (see §3), and agglutinating languages, in turn, become fusional languages through processes that render the morphological structure of their words less analytically transparent. This may be a tendency, but exceptions to the cycle have been documented (Igartua, 2015).

2.3 Phonological typology

While the study of morphosyntactic typology has most typically been the domain of specialists in typology, rather than scholars who also focus on formal approaches to morphology and syntax, such a divide is not as evident for phonological typology. The most extensive typological studies of phonological patterns can often be found within the formal literature (Hyman, 2018). Major areas of investigation within phonological typology have been been variation in phoneme inventories, syllable structure, and prosodic systems.

The typological study of phoneme inventories has considered the cross-linguistic frequency of different phonemic distinctions and general patterns in the structure of phoneme inventories. Such investigation, for example, has found that consonants such as *n*, *m*, and *t* are quite frequent cross-linguistically and that voiceless fricatives are more common than voiceless fricatives (Gordon, 2016, 45–46). It also has led to discoveries about phoneme inventory size, such as the fact that the majority of languages make use of between five and seven distinctive vowels (Gordon, 2016, 50).

The study of syllable structure considers what kinds of syllables are found across languages and, in particular, how complex syllables onsets and codas can be. Some languages only allow syllable structures with a CV pattern (i.e., a single consonant followed by a single vowel), though languages also allowing syllables consisting only of V or of CVC are also common (Gordon, 2016, 85–86). For languages that allow syllables to have coda consonants, the consonants allowed in codas tend to be more restricted than those allowed in onsets (Gordon, 2016, 98). The study of syllable structure has led to the discovery of the sonority hierarchy (see (3)) as well as implicational universals relating to syllable complexity, such as the fact that if a language allows syllable onsets or codas to consist of two consonants, it will also allow onsets and codas to consist of a single consonant. That is, a language allowing CCV syllables will also allow CV syllables, and a language allowing CVCC syllables will also allow CVC syllables (Gordon, 2016, 85).

A salient way in which languages can differ phonologically is in the nature of their prosody. An important prosodic division is between languages which make use of contrastive tone against those that do not. Another significant division is whether there are noticeable patterns of syllable stress in words of a language or not. If stress is present, languages can then be divided into those where stress is lexically contrastive and those where its position is predictable. There appears to be a statistical correlation between the presence of a tone system in a language and the absence of a clear stress system. However, languages with both stress and tone do not appear to be especially rare (Maddieson, 2011, 536–540). Overall, prosodic typology is not as well studied as segmental typology or syllable typology, and has been more focused on developing adequate ways of classifying languages in terms of their prosodic characteristics than discovering universals (Hyman, 2006).

A final significant area of phonological research with typological implications is the study of phonological processes, in particular segmental alternations. Work of this kind is more typically done under the auspices of formal phonology rather than typology, though its typological relevance is clear, especially regarding the development of explanations for typological patterns (see §3). These processes can be classified into broad categories such as assimilation, lenition, and epenthesis, and many of them are associated with an extensive literature (see Gordon (2016, Chap. 5)). Work surveying specific classes of phonological alternations can lead to the discovery of universal patterns, such as the fact that consonant harmony involving coronal consonants is more common than other types of consonant harmony (Hansson, 2010, 42).

2.4 Semantic typology

Semantic typology focuses on the way that semantic categories are expressed linguistically. Work in this domain can focus on specific lexical domains typically associated with independent words, such as kinship terminology, as well as the expression of more abstract categories, such as tense and aspect, to observe how languages vary in the ways that these concepts are expressed (Moore et al., 2015).

The most well-known work within semantic typology is almost certainly the examination of color terms found in Berlin & Kay (1969), which found that the meanings of color terms did not vary randomly across languages but, rather, followed an implicational pattern where the presence of a basic term for some color domain (e.g., 'blue') implied the existence of basic terms for other color domains (e.g., 'white', 'black', 'red', 'green', and 'yellow' but not 'brown') (Berlin & Kay, 1969, 4). While the universal validity of these claims has been questioned by later research (see, e.g., Evans (2011, 518–519)), this work was influential for initiating interest in the broader investigation of universal patterns in the lexical expression of universal aspects of human experience.

The study of the cross-linguistic expression of motion events has also been a significant area of semantic typology, in particular by demonstrating how languages can differ with respect to how logically different kinds of meaning can be systematically combined in the meanings of classes of lexical items (Talmy, 2007). For example, motion verbs in some languages typically encode both the fact of motion taking place and the direction of motion, while in other languages, motion verbs may typically encode the combination of motion and the manner in which motion occurred. The former possibility is found in Romance languages, as seen in a verb like *enter*, which was borrowed into English from French and focuses on motion into a specific place. The latter can be found in a verb like *crawl*, which combines motion with a specific way of moving.

Other areas that have been investigated in semantic typology—in some cases in ways overlap with work on morphosyntactic typology (see §2.2)—include tense-aspect systems (Dahl, 1985), the linguistic expression of spatial relations (Levinson, 2003), and nominal possession (Rose & Van linden, 2023).

3 Explaining typological patterns

In addition to uncovering universal patterns, language typology also considers possible explanations for them. This is, of course, not a concern only to scholars who consider themselves typologists, since the explanation of universal patterns of grammar is of interest to a wide range of linguists. Linguists working on formal approaches to morphosyntax that are assumed to model universal aspects of linguistic cognition have sought to develop models that make predictions in line with observed typological generalizations (Baker & McCloskey, 2007), and similar approaches have been taken within work on phonology as well (Gordon, 2016, 22–41).

Within the subdiscipline of typology, other kinds of explanations tend to be favored, in particular those which see universal patterns as emerging from functional pressures on linguistic systems connected to their role in communication. Such explanations generally see these pressures as shaping languages through patterns of diachronic change where grammatical systems across languages converge on similar structures that are functionally effective for communication in some way. For example, higher-frequency semantic combinations (e.g., nouns referring to humans being used for singular reference) may be coded with less material than lower-frequency combinations (e.g., nouns referring to humans being used for plural reference) for this reason (Good, 2008a, 17).

Common patterns of diachronic change have also been suggested as ways to explain universal patterns even in the absence of a functional motivation. For example, Greenberg (1978, 71) provides a partial explanation for the universal pattern that all languages with nasal vowels also have oral vowels as deriving from the fact that nasal vowels often historically derive from oral vowels that become nasalized in specific environments. More broadly, diachronic accounts for universals can consider both the historical source of a pattern and its result on the restructured grammatical system and whether or not the result suggests that a functional-communicative pressure may have motivated the change (Schmidtke-Bode, 2018). Work on historical patterns of sound change (see, e.g., Blevins (2004)) as well on grammaticalization (Narrog & Heine, 2021, Chap. 8) plays an important role in the development of diachronic explanations for cross-linguistic generalizations.

In addition to the role of general historical factors as a means of explaining typological patterns, the specific histories of languages and language families have also been seen as significant in the explanation of certain phenomena. This is particularly true for areal linguistic patterns, where typological features dominate a given linguistic area—even across genealogically unrelated languages—due to patterns of language contact (Koptjevskaja-Tamm, 2011). These patterns can be quite large in scale, as seen, for instance, in the dominance of SOV word order in Central Asia (Dryer, 2013a). They are often most apparent in cases where a typological property that is otherwise cross-linguistically rare is found in genealogically unrelated languages across a relatively large area, as is seen, for instance, in the distribution of labial-velar consonants across West and Central Africa (Maddieson, 2013b).

4 Typological methods

The cross-linguistic generalizations uncovered through typological investigation are the results of work on language typology that are of most general linguistic interest. Within the subfield of linguistic typology, the development and refinement of methods to facilitate cross-linguistic comparison are also central concern. The two methodological areas that have seen the greatest attention are how to account for the possibility of bias in the sampling of languages within a typological survey that could skew the results of a given investigation and how to code linguistic data in ways that allow for

systematic cross-linguistic comparison while also appropriately accounting for the observed patterns of variation.

At early stages of investigation, typological studies may make use of a convenience sample of languages where data is relatively accessible. Such samples are useful for obtaining an initial sense of the range of grammatical variation that may be found within a given domain and for hypothesis raising, but they cannot be used to make strong inferences, for example regarding potential universals (Nichols, 2007, 235). When typological investigation intends to discover or verify universals or test specific hypotheses, it becomes crucial to account how the structural linguistic features of the sampled languages, their genealogical history, and contact relationships may skew the variation found in the dataset and make drawing reliable conclusions difficult. Typological studies have historically typically handled concerns around sampling by restricting data collection to a pre-selected sample of languages where there is an expectation of independence among them for the features being studied (Bakker, 2011). More recently, increasingly sophisticated statistical techniques are being used to deal with the problems of potential bias in datasets in ways which allow larger samples to be used even if the sampled languages are clearly not all structurally, genealogically, and areally independent (Bickel, 2015).

Typological investigation as generally practiced requires attention to the details of the coding of languages or constructions for the specific linguistic types that they are assumed to instantiate in the context of a given study. For example, typologizing over the basic clausal word order of the languages in a sample (see §2.1) requires a means of determining which word is "basic" when word order variation is present in a language. Since a notion like "basic" can be subjective, for coding purposes, more objective operationalizations of such abstract notions are typically used, such as patterns of frequency (Dryer, 1995). While most typological studies determine their protocol for coding variation at an early point of investigation, other approaches have been proposed that allow for more flexibility to deal with unanticipated variation as it is discovered over the course of the research (Witzlack-Makarevich et al., 2022).

5 Summary

The study of language typology has revealed numerous cross-linguistic patterns of interest across all domains of grammar, including the discovery of apparent linguistic universals and other constraints on grammatical variation. It has also developed a distinctive set of methods in order to address the problems inherent to comparing the diverse grammars of the world's languages.

See Also: [To be added following editor's advice]

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