Explaining language universals
Edith A. Moravcsik

0.1. Introduction

The goal of descriptive linguistics is to establish the range and distribution of grammatical patterns that occur in human languages and to explain these findings. For example, we want to know whether languages do or do not have bilabial fricatives and if they do, under what conditions they occur.

Statements of language universals have a double role in this endeavor. On the one hand, they serve to explain facts about individual languages. For example, if we know that all languages have stop consonants, it follows that German has them. On the other hand, universals themselves call for explanations: why should all languages have stops? In this paper, we will explore both of these roles of language universals; but first, a few words on what we will mean by "language universal" and by "explanation".

We will take a **language universal** to be a grammatical characteristic that can be reasonably hypothesized to be present in all or most human languages. A universal

hypothesis is reasonable if it is based on a large, genetically and areally balanced sample; or if it is predicted by an independently motivated principle; or if both are the case. We will use the term universal both for the characteristic itself and also for the statement describing it.

As all generalizations, language universal statements may vary in modality and domain. Re modality: some universals are stated as exceptionless, holding for every member of their universe. These are called **absolute** universals. Others are **probabilistic** (also called statistical), stated as holding for most but not all languages. Re domain: universals may be stated for the entire universe of languages or for a contextually-delimited sub-universe of them. The former are called **unrestricted** universals, the latter are **restricted** (also labeled implicational, or typological). The four types of universals defined by the two parameters are schematized and exemplified in (1).

(1) (a) UNRESTRICTED UNIVERSALS
        (i) ABSOLUTE
            Schema: In all languages, Y.
            Example: In all languages, there are stop
                     consonants.
        (ii) PROBABILISTIC
            Schema: In most languages, Y.
            Example: In most languages, there are nasal
                     consonants.

    (b) RESTRICTED UNIVERSALS
        (i) ABSOLUTE
            Schema: In all languages, if there is X, there
                    is also Y.
            Example: In all languages, if there is /m/,
                     there is also /n/.
        (ii) PROBABILISTIC
            Schema: In most languages, if there is X,
                    there is also Y.
            Example: In most languages, if the basic word
                     order is SOV, manner adverbs precede
                     the verb.

Absolute universals hypothesize that a grammatical property **must** be present in a language. Probabilistic universals say that a grammatical property is present in languages with some degree of **likelihood**. There is also a

third way of constraining what does and does not occur in languages: by stating what is universally **possible,** without being necessary or even probable. An example is a list of all the phonetic segment types that occur in human languages. In the literature, universals are generally understood to be either absolute or statistical (cf. Dryer 1997); but this third type of universals appears to be adopted by Optimality Theory. In this framework, all constraints on language structures are hypothesized to be universal but violable in that they may not be evident in every language (cf. section 0.5.2).

All language universals are merely hypotheses. Although they may hold exceptionless or with a certain degree of probability for a given sample of languages, there is no assurance that additional languages will not turn an absolute universal into a probabilistic feature, or a probabilistic feature into one that is merely possible but not likely. The only kind of crosslinguistic statement that is impervious to refutation is the weakest kind that simply says that a structural pattern is possible in human languages. This is so because once a pattern has been identified in a language, it must of course be possible.

Let us now turn to the definition of the second concept central to this article: **explanation**. The goal of an explanatory endeavor is to resolve a gap in the observer's mind between what he observes as occurring and what he expects to occur. In some cases, what occurs may seem likely but not necessary. If so, the explanatory task is to provide a reason why the actually occurring fact should be necessary. In other cases, what occurs may seem possible but not necessary and not even likely; if so, a successful explanation must render the observed fact at least probable, if not necessary. Yet in other cases, an observed fact may not even seem possible to the observer; if so, the explanation should at the least provide a reason why the observed fact should be possible. These three kinds of explanatory generalizations correspond to the three modality types of language-universal statements identified above.

Explanations differ in their breadth: an explanatory principle may itself be taken as an "explanandum" (Latin for 'something to be explained') calling for more general principles that it can be derived from.

Having characterized the focal concepts of this paper: language universals and explanations, let us turn to the two-fold role that language universals play in explaining language structure.

<u>0.2. Universals as explanations</u>
We will first consider how language universals explain
facts about individual languages. Take the fact that
adpositions in English are preposed to the noun phrase: the
language has prepositions, as in *after class* (unlike the
corresponding phrase in Hungarian: *óra után* "class after",
which contains a postposition).

(2) LANGUAGE-SPECIFIC EXPLANANDUM
    In English, adpositions precede their noun phrases.

    How could this fact be explained? There are three
available avenues of explanation: structural,
historical, and functional.
    A **structural explanation** derives a structural pattern
from a more general one. If, following Dryer (1992), we
classify syntactic constituents as branching and non-
branching (that is, whether they normally consist of more
than one word or just a single word), English turns out to
exhibit a fairly consistent linear pattern that holds
across constituent types: it generally places non-branching
constituents before branching ones. For example, verbs
precede their objects, and noun heads precede their
relative clauses. Since adpositions are generally one-word
- non-branching - constituents as opposed to the noun
phrases they go with, the preposed position of English
adpositions can be probabilistically derived from (3).

(3) LANGUAGE-SPECIFIC STRUCTURAL GENERALIZATION
    In English, most non-branching constituents precede
    branching ones.

    This English pattern is further derivable from a
generalization of crosslinguistic scope. Dryer (1992) has
noted that most languages exhibit a uniform ordering of
syntactic constituents depending on whether they are
branching or non-branching. For example, Norwegian and Thai
follow the English pattern: VO and prepositions, while
Japanese and Turkish show the opposite order: OV and
postpositions.

(4) UNIVERSAL STRUCTURAL GENERALIZATION
    In most languages, either all or most non-branching
    constituents precede branching ones, or all or most
    non-branching constituents follow branching ones.

This is an example of how a universal statement ((4)) provides a structural explanation for a fact about an individual language ((2)).

However, the explanation given in (4) is not maximally satisfying because it is not causal. What would a casual explanation of English prepositions be like? As Haiman remarks: "Everything is the way it is because it got that way." (Haiman 2003: 108) This means that searching for a causal explanation amounts to trying to find a **temporal process** whose input lacks the explanandum and whose output contains it.

If we start with an individual speaker of English and ask why he uses phrases like *around Chicago* and not *Chicago around*, we must conclude that the grammar of English in his head causes him to **use** prepositions rather than postpositions. This raises the next question: why is the grammar of English that the speaker has in his mind the way it is? The answer is that this is the grammar that he has **acquired** based on the ambient language.

But neither of these two processes – language use and language acquisition – provides a direct cause for how the grammar of English as a communal resource got to be the way it is because both acquisition and use presuppose the existence of a language to start with. To answer that question, we have to probe into the history of the language. A **historical** explanation of English prepositions will have to make reference to an earlier stage of the language with no prepositions and derive the present stage from it; such as (5).

(5) LANGUAGE-SPECIFIC HISTORICAL GENERALIZATION
    Source: In English, all prepositions whose source is
            traceable within the history of the language
            have arisen either from verbs of verb-object
            phrases or from possessum constituents of
            possessive phrases.
    Process: Linear order is preserved.

This generalization derives some – although not all – English prepositions from non-prepositions. Examples are *concerning the weather*, where the preposition comes from the verb *to concern*, and *inside (of) the house*, where the source construction was a possessive one ("in the side of the house").

(5) has some explanatory force but it calls for an explanation itself. Why did these changes occur in English and why did linear order remain invariant? A look at other

languages shows that these historical processes are not unique to English: adpositions are generally derived from genitives (e.g. in Basque and Buriat, cf. Bybee 1988: 354) or from verbs (e.g. in Mandarin Chinese, cf. Li & Thompson 1974) and the original order is generally preserved. The hedge "generally" is necessary: Harris and Campbell (1995: 212-215) provide interesting examples where in the course of the genesis of adpositions, constituent order has changed. The universal tendency is stated in (6).

(6) UNIVERSAL HISTORICAL GENERALIZATION
    Source: In most languages, adpositions have
            historically arisen from verbs of a verb-object
            phrase or from possessum constituents of a
            possessive phrase.
    Process: Linear order is generally preserved.

(6) is a language universal which provides a historical explanation for English prepositional order ((2)).

   The occurrence of the changes in English is probabilistically explained by (6). But why should the change from transitive verb constructions and possessive constructions to adpositions be crosslinguistically common and why should linear order be generally preserved in the process? In her study of historical origins, Bybee remarks: "Ultimately, we are brought back to the synchronic plane where we must ask what cognitive processes are behind... the development of new adpositional phrases from nouns in genitive constructions." (Bybee 1988: 354) In other words, historical change – or the lack of it – must be driven for by **function:** by the goals that humans seek to achieve in using language and the physical and cognitive means available to them in the pursuit of these goals. Given that these goals and means are assumed to be universal within the human species, functional explanations cannot be language-specific: they must be universal. Here is a relevant universal functional principle.

(7) UNIVERSAL FUNCTIONAL GENERALIZATION
    In all languages, the semantic and phonological
    reduction of frequently occurring phrases serves ease
    of production without impairing comprehensibility.
    Changing linear order in the process does not enhance
    either production or comprehension.

Semantic and phonological reduction in the genesis of adpositions is illustrable on the examples of *inside*,

outside, and *besides.* Semantically, the obligatoriness of spatial reference has been relaxed (cf. *besides this problem*). Phonologically, the original genitive preposition *of* has been fully lost in the case of *besides* (originally "by the side of") and is on its way out in *inside (of)* and *outside (of)*.

   The discussion in this section illustrated one of the two ways in which language universals figure in linguistic explanations: they explain language-specific facts. The universal generalizations cited above serve to explain prepositional order in English ((2)) structurally ((4)), historically ((6)), and functionally ((7)). The concept of functional explanations will be further discussed in section 0.5. We will now turn to the other role of universals: serving as explananda themselves. In the next three sections, we will explore structural, historical, and functional explanations for universals.

0.3. Universals as explananda: structural explanations

   As we saw in section 0.2, a language-specific fact is explained structurally if it can be shown to follow from a more comprehensive structural generalization. In the two case studies below, universals are explained in this manner.

0.3.1. Subjacency

Transformational generative grammar has analyzed English wh-questions as involving a movement rule that displaces wh-words from their underlying position to the beginning of the sentence. For example, the sentence **What** *did Sue give her husband?* is derived from *Sue gave her husband* **what***?*

   However, not all wh-questions derived by this analysis turn out to be grammatical. (8a) and (8b) are well-formed but (8c) is not.

(8) (a) **What** *do you propose ___?*
    (b) **What** *do you propose ___ was the reason?*
    (c) ***What** *do you make the proposal that ___ was the reason?*

An obvious guess at why (8c) is ungrammatical is that the underlying position of the wh-element is too far from its "landing site" – i.e. from the position into which it moves. Consider the underlying structures of the sentences of (8):

(9) (a) *[You propose* **what***]*$_S$*?*

(b) *[You propose [**what** was the reason]ₛ]ₛ?*
(c) **[You make [the proposal that [**what** was the reason]ₛ]ₙₚ]ₛ?*

In (9a), the word *what* moves out of its clause into a clause-external initial position: *[**What** [you propose ___]ₛ]ₛ?* In the process, it crosses only one major syntactic juncture: the left boundary of its clause. The sentence is grammatical. In (9b), which is also grammatical, wh-movement applies twice: first, the word *what* moves outside its own clause resulting in *[You propose **what** [___ caused the problem]ₛ]ₛ?*, and then it moves to the front of the entire sentence. In the course of each of the two movements, it crosses only one clause boundary.

In (9c), however, the *wh*-word's journey to the left is more complicated. As in (9a) and (9b), it first moves out of its clause resulting in *[You make [the proposal that **what** [___ caused the problem]ₛ]ₙₚ]ₛ?* But now, on its way to crossing the left boundary of the entire sentence as it did in (9a) and (9b), it must also cross the left boundary of the noun phrase that its clause is embedded in: *[the proposal that **what** caused the problem]ₙₚ*. Based on this extra hurdle, the explanation of why (9c) is ungrammatical might be a constraint against moving a question word across both a noun phrase and a clause boundary. This principle, known as the Complex NP Constraint, was first formulated by John R. Ross in 1967 and hypothesized to be universally valid. We will take it to be an explanandum.

(10) UNIVERSAL EXPLANANDUM
     A question word cannot be moved in a single step
     across both a noun phrase boundary and a clause
     boundary.

What more general structural principle might (10) be derived from and thus explained by? There are also other constructions where the syntactic distance between underlying position and landing site seems to be constrained. Consider passives.

(11) (a) **The puppy** *was fed cat food.*
     (b) **The puppy** *seems to have been fed cat food.*
     (c) ****The puppy** *seems that it is likely to have been fed cat
          food.*

Here are sketches of the underlying structures.

(12) (a) *[Was fed **the puppy** cat food.]ₛ*
     (b) *[Seems [to have been fed **the puppy** cat food.]ₛ]ₛ*

(c) *[*Seems that [it is likely [to have been fed **the puppy** cat food.*]*S]*S]*S

    Just as in wh-movement, a leftward movement is involved here. The movement of *the puppy* from (12a) to (11a) involves no crossing of any noun phrase or clause boundary (unlike wh-words, subjects are assumed to be inside the clause). The movement of *the puppy* from (12b) to (11b) involves the crossing of the single boundary of the clause *[to have been invited John to Mary's house]*S. But in (12c), the movement of *John* out of its underlying structure involves the crossing of two clause boundaries: the left boundary of the clause *[to be invited ...]*S and the left boundary of the clause *[it is likely to...]*S. We might therefore offer the following hypothesis.

(13) UNIVERSAL STRUCTURAL GENERALIZATION
    A noun phrase cannot be moved in a single step
    across more than one clause boundary.

    A single generalization may now be formulated to encompass the two constraints in (10) and (13) if we create the concept "major constituent" as a cover term for clause and noun phrase:

(14) UNIVERSAL STRUCTURAL GENERALIZATION
    A constituent cannot be moved in a single step across
    more than one major constituent boundary.

This principle, known as Subjacency (cf. Chomsky 1986: 28-31) was tentatively proposed as an absolute language universal. Languages have subsequently turned up that violate it (cf. Hawkins 2004: 193-197) and thus it is at best a statistical universal. If so, it provides a probabilistic structural explanation for our initial explanandum in (10).

0.3.2. Constituent order
In the past 40 or so years, a number of crosslinguistically recurrent correlations have been found among the orderings of different syntactic constituents. Here are some of property clusters Dryer has observed in a sample of 625 languages (Dryer 1992):

(15) UNIVERSAL EXPLANANDUM
    Languages tend to have either
    - Verb & Object,

- Verb & Manner Adverb,
- Noun & Relative Clause, and
- Adposition & Noun Phrase,
or
- Object & Verb,
- Manner Adverb & Verb,
- Relative Clause & Noun, and
- Noun Phrase & Adposition.

Illustrations below come from Rapa Nui (a VO language) and
Japanese (an OV language).

(16)
RAPA NUI   JAPANESE

Verb & Object   **Object & Verb**
to'o i   te moni   *okane o   toru*
take ACC the money   money ACC take
              'take the money'

Verb & Manner Adverb   **Manner Adverb & Verb**
hapi riva   *yoku benkyoosuru*
learn well   well study
                'study well'

Noun & Relative Clause   **Relative Clause & Noun**
te poki noho oruga   *sono booto ni tomatteiru*
the boy stay upon   the boat on staying
  o   te miro   *otokonoko*
  GEN the boat   boy
        'the boy who stays on the boat'

Adposition & Noun Phrase   **Noun Phrase & Adposition**
i   te money   *okane o*
ACC the money   money ACC
            'the money (ACC)'

   If the uniformly ordered constituents were as different
as their labels show them to be, we would not expect them
to be uniformly ordered across languages. If they do
exhibit linear likeness, this must be because they are
alike in some way. Here are three proposals from the
literature each of which envisages a different way in which
the constituents whose order tends to be correlated across
languages are reduceable to the same type.

(17) UNIVERSAL STRUCTURAL GENERALIZATIONS
    (a) HEADS AND DEPENDENTS
        In any one language, all **head** constituents tend to
        be ordered the same way relative to their
        dependents. (Bartsch & Vennemann 1972: 131-
        139, Vennemann 1973: 40-47)

    (b) BRANCHING AND NON-BRANCHING CONSTITUENTS
        In any one language, all **branching constituents**
        tend to be ordered the same way relative to their
        non-branching co-constituents. (Dryer 1992)

    (c) MOTHER-NODE-CONSTRUCTING AND NON-MOTHER-NODE-
        CONSTRUCTING CONSTITUENTS
        In any one language, all **mother-node-constructing
        constituents** tend to be ordered the same way
        relative to their **non-mother-node-constructing co-
        constituents.** (Hawkins 1994)

    For Vennemann ((17a)), what defines the classes of
uniformly ordered constituents is whether they are heads or
dependents. Thus, verbs, adpositions, and nouns are heads,
with their co-constituents being dependents. As already
mentioned in section 0.2, for Dryer ((17b)), the relevant
classificatory property is whether a category branches or
does not branch. Verbs, adpositions, and nouns do not
branch – they are single words - while their co-
constituents do. Hawkins' structural principle ((17c)) is
ultimately function-based: it calls for minimizing the
number of words that it takes the hearer to identify the
immediate constituents of a sentence when proceeding from
left to right.
    The operation of Hawkins' principle (called Early
Immediate Constituents) is illustrated in (18) for verb-
complement and adposition-noun phrase order for 'walk in
parks'.

(18) (a)   [**Verb** [**Preposition** NounPhrase]$_{PP}$]$_{VP}$
        e.g. *walk in   parks*

     (b)   [[NounPhrase **Postposition**]$_{PP}$ **Verb**]]$_{VP}$
        e.g. *parks   in   walk*

     (c)   [[**Preposition** NounPhrase]$_{PP}$ **Verb**]]$_{VP}$
        e.g. *in   parks   walk*

     (d)   [**Verb**   [NounPhrase **Postposition**]$_{PP}$]$_{VP}$

e.g. *walk   parks   in*

According to Hawkins' theory, the hearer wants to know as soon as possible that the verb phrase consists of a verb and an adpositional phrase. (18a) and (18b) are optimal in this respect. In (18a), in the space of the first two words *walk in*, the hearer gets the entire picture. From *walk*, he recognizes one of the immediate constituents of the verb phrase: the verb; and from the preposition *in*, which follows immediately, he constructs the prepositional phrase. In (18b), too, verb and adposition are adjacent. In contrast, in (18c) and (18d), these two mother-node-constructing constituents are separated: the intervening words put processing on hold.

Each of the three principles in (17) explains the particular implicational universals in (15) by subsuming them under more general principles of structure.

0.4. Universals as explananda: historical explanations

As was discussed in section 0.2, structural explanations are not causal: they do not provide a process which brings about something. Causal explanations of language structures – as of cultural constructs in general – must be historical. As we also saw in section 0.2, historical explanations must make reference to sources: earlier stages of the language, and to processes that are responsible for changing the old structure to a new one. Let us see what sources and processes could be found to explain language universals historically.

What are possible historical **sources** of universals? An **unrestricted universal** may simply have been inherited from an ancestral language. For instance, the fact that all languages have oral vowels may be due to the fact that the ancestral language(s) from which all languages derived had oral vowels – a possibly accidental property. (On how grammar might have arisen in the prehistoric evolution of human language, see for example Hurford et al. (ed.) 1998).

The source of **restricted universals** in terms of direct inheritance is more complex. Take first a **bidirectional implication**: the mutual correlation of two properties, such as that verbs and adpositions tend to be on the same side of their co-constituents, resulting in languages either having VO order and prepositions, or OV and postpositions. This cannot be explained by direct inheritance from a single ancestral language having one of the two patterns since that would leave the languages having the other pattern without a source. We would have to posit two source

languages – or two dialects of a language - each having one
of the two patterns.

   The explanation of **unidirectional implications** in terms
of direct inheritance requires even richer assumptions
about source languages. Regularities according to which "if
a language has X, it also has Y." could not have been
directly inherited either from a single original language
or from two ancestral languages because they allow for
three different language types while excluding one. For
example, the universal according to which if a language has
an /m/, it also has an /n/ amounts to the claim that there
are languages with both /m/ and /n/, languages that have
neither, and languages that have /n/ but no /m/ (but no
language with an /m/ and no /n/). In order to explain this
implication in terms of direct inheritance, three ancestral
languages need to be posited: one with both /m/ and /n/,
one without either, and one with /n/ but no /m/.

   Let us now turn to the second necessary component of
historical explanations: **processes** deriving a new structure
from an old one. For universals, what we need to explain is
why the inherited patterns have **not** changed in the course
of history in spite of the pervasive transformations that
languages undergo in the course of centuries and millennia.
Why are universals never sources of historical change? For
example, if an ancestral language had alveolar stops, why
did they not disappear in at least some languages in the
course of centuries and millennia? And if a universal is
not absolute but only probabilistic, we have to explain why
the original pattern has remained invariant in most
languages but has changed in others.

   These considerations show the complexities of explaining
universals in terms of direct inheritance from ancestral
languages (cf. Comrie 2003). Nonetheless, recent
typological research has shown that crosslinguistic
clusterings of grammatical properties are often confined to
particular language families and to particular geographic
areas (Nichols 1992, Bisang 1996, Blake 2001, Bickel 2005).
Thus, the overall prevalence of clustering tendencies may
indeed be due to inheritance from languages ancestral to a
given language family or to extensive language contact.

   So far, we considered explaining universals in terms of
universal sources and universal lack of change. Below, we
will see two cases of universals explained **by universal
sources and universal constraints on change**.

0.4.1. The order of nominal and pronominal objects

Consider the following implicational universal as an explanandum.

(19) UNIVERSAL EXPLANANDUM
In all languages, if the pronominal object follows the verb, so does the nominal object. (Greenberg 1963: 25).

According to this generalization, there may be languages where both kinds of objects follow the verb (as in Modern English) and languages where both kinds precede the verb (as in Turkish); but if one follows the verb and the other precedes it – as in French – it is always the pronoun that precedes, not the noun. (20) illustrates the three permitted patterns.

(20) English
(a) *I saw* **Bill***.*
(b) *I* saw **you***.*

(21) Turkish:
(a) **Billi** *gördüm.*
Bill I:saw

(b) **Seni** *gördüm.*
you$_S$ I:saw

(22) French:
(a) *J'ai vu* **Bill***.*
I:have seen **Bill**

(b) Je **t'** ai vu.
I **you$_S$** have seen

Here is the historical background of (19). French is a daughter language of Latin, which tended to place both noun and pronoun objects in front of the verb as Turkish does today. English is a daughter language of Proto-Germanic, for which the same order pattern has been reconstructed. We can thus posit the following three historical stages (O_N stands for noun object, O_P stands for pronominal object; changes are in bold):

(23)

	ORDER PATTERNS:		LANGUAGES:	
	O_N:	O_P:	ROMANCE:	GERMANIC:
Stage I:	$O_N V$	$O_P V$	Latin	Proto-

				Germanic
Stage II:	**VO$_N$**	O$_P$V	French	Old English
Stage III:	VO$_N$	**VO$_P$**	-----	Modern English

(23) shows that the change from preverbal to postverbal order of objects occurred in both language families and that in each case, nominal objects were in the vanguard of change with pronominal objects lagging behind. English has completed the change by extending it to pronominal objects, while French has not.

Thus, the French and Old English pattern can be explained by the hypothesis that in historical change, pronouns lag behind nouns. This is supported by independent evidence. In Old English, both nouns and pronouns had case, gender, and number inflection. In today's English, nouns still show number but they have no case inflection except for the genitive clitic 's, and they lost their gender inflection. Personal pronouns, however, still retain not only number but also some case and gender distinctions. The same thing happened in French case marking.

Note that the conservative nature of pronouns explains the universal in (19) only if we assume that OV-to-VO order is possible but VO-to-OV order is not. This is because in a VO-to-OV change, pronouns, being more conservative, would still be post-verbal when nouns are already preverbal – a synchronic stage excluded by (19). The non-occurrence of VO-to-OV is questionable in its unqualified form, however: Li & Thompson 1974 argued that Mandarin Chinese has undergone just this change and Ratcliff (2005) has shown the same for Bukhara Arabic. But the Mandarin case did not involve a direct re-ordering of verb and object and the change in Bukhara Arabic was induced by language contact. With appropriate qualifications, (24) summarizes the explanation of (19).

(24) UNIVERSAL HISTORICAL GENERALIZATION
    Source: In all languages, in spontaneous historical change, the source of the direct inversion of verb and object is OV and not VO.
    Process: In all languages, in historical change, pronouns lag behind nouns.

0.4.2. Definite articles and demonstratives

In most languages that have definite articles, the article's
phonological shape is similar to that of a demonstrative.
Examples are English *the* and *that*, German *der* and *dieser*,
and Hungarian *a(z)* and *az*.

(25) UNIVERSAL EXPLANANDUM
     Definite articles tend to be similar in phonological
     form to one of the demonstratives of the language.

   The historical explanation is that definite articles
most frequently develop from demonstratives (Diessel 1999:
128, Heine and Kuteva 2002: 109-111).

(26) UNIVERSAL HISTORICAL GENERALIZATION
     Source: In all languages, the most frequent
             historical source of definite articles is
             demonstratives.
     Process: In all languages, in the course of history,
              phonological form changes incrementally.

(26) is further derivable from a broader generalization. In
the course of demonstratives turning into definite articles
in certain contexts, two things happen: the demonstrative's
phonological form is diminished and its meaning is
generalized from spatial deixis to definiteness.
Formal and semantic reduction are symptoms also of other
changes where a lexical item turns into a grammatical
formative, such as in the development of the English future
marker *will* from the lexical verb *will* 'want', or in the
development of English prepositions (cf. section 0.2). The
general process is called grammaticalization (cf. Pagliuca
(ed.) 1994, Hopper & Traugott 1993, Givón 2002: 203–222,
Newmeyer 1998, chapter 5, and the various articles of issue
#23 of 2001 of the journal *Language Sciences*).
    Grammaticalization is described in (27).

(27) UNIVERSAL HISTORICAL GENERALIZATION
     Source: In all languages, functional elements tend to
             derive historically from lexical elements.
     Process: In all languages, this change happens through
              incremental phonological and semantic
              reduction.

If we classify demonstratives as lexical elements and
definite articles as functional ones, and if we further
assume that definite articles developed recently enough so
that phonological reduction has still kept the skeletal

phonetic properties of their source, (25) follows from and is thus explained by (26), which in turn is explained by (27).

0.5. Universals as explananda: functional explanations

Crosslinguistically consistent patterns of historical change can be readily identified; but what causes them? As noted in section 0.2, trying to explain historical change takes us back to synchrony: communally-shared language structures are shaped by the individual-based processes of language acquisition and language use.

Human cognition and physiology **cannot** be invoked as direct causes of synchronic language structure: the body and mind of an English speaker do not directly cause the grammar of English to be the way it is: the language is given to the speaker and to the language learner. Apart from instances of conscious "language engineering", the speaker is not like an architect that builds something from scratch and is thus fully in charge of what the structure will come out like; he is more like a person who inherits a house and perhaps re-models it a bit. Thus, the relationship here is only a permissive one: all synchronic language structure must be permitted by human cognition and physiology.

On the other hand, human cognition and physiology **must** be invoked as direct causes of

- **language use** (performance; how the person puts to use the language system he has acquired);
- **developmental change:** how the person acquires the language system he is exposed to; and
- **historical change:** how language is modified in the process of use and acquisition. Sources of change rooted in individual behavior are mis-perceptions, mis-interpretations, and changes in frequency of use (cf. Blevins 2005: 32-33). Although the changes are not brought about by single individuals but are caused by their cumulative effects (cf. Keller 1994), the processes are still rooted in the needs and capabilities of language learners and language users. Explanations of linguistic structures that show how the goals and means of language participate in bringing about historical change through the processes of language acquisition and language use are appropriately called **functional** explanations.

In the linguistic literature, functional explanations are often pitted against explanations in terms of the Innateness Hypothesis. This hypothesis holds that universal properties of languages are wired into the human brain and

they form a separate module apart from other aspects of cognitive capabilities (cf. Hoekstra & Kooji 1988, Penke & Rosenbach (ed.) 2004; Hauser et al. 2002). Thus, it has often been assumed that a universal grammatical feature is explained **either** by language function **or** by it being part of the innate linguistic endowment of humans.

However, explanations of language structure in terms of language function and in terms innate principles are not at odds. First, by the definition adopted here, explanations in terms of innate knowledge must be viewed as functional since they make crucial reference to cognitive means. Second, the innate properties may be goal-related: necessary or at least conducive to knowing and using language (cf. Kirby 1999, Chapter 5, Hawkins 2004: 267).

The compatibility of functional explanations and those appealing to innateness can be shown for the four universals discussed above. The tendency for grammatical structures to observe the principle of subjacency (section 0.3.1) may be innate but at the same time it may be functionally-based: relating two positions in the sentence at a great syntactic distance may hamper comprehension (cf. Hawkins 2004: chapter 7). Similarly, the crosslinguistically uniform ordering of certain syntactic constituents (section 0.3.2) may ease parsing, as claimed by Dryer and Hawkins, but at the same time it may also be an innate preference. The resistance of pronouns to losing inflection and to changing position (section 0.4.1) can also be functionally explained: due to the frequent use of pronouns, inflection is merged with stem and thus ceases to be a separate morpheme that might get lost. Similarly, the pronoun ceases to be a separate word by getting stuck to the verb as a clitic and thus it cannot easily be repositioned by rules of word order. This explanation is functional but at the same time it may be linked to innate properties of the mind. Finally, the grammaticalization process that is responsible for the evolution of demonstratives into definite articles (section 0.4.2) is an instance of ritualization – a general process manifested in changes that non-linguistic symbols also undergo over time (Haiman 1994, Bybee 2005). This tendency is also a plausible candidate for innateness.

What does remain an issue separating the two approaches is whether the innate devices are "domain-specific" – i.e., applicable to language only (as generally assumed in explanations invoking innateness) - or whether the language-relevant cognitive properties of humans are the same as those operative in non-linguistic cognition (cf.

Newmeyer 2003, 2005, Tomasello 2003, MacWhinney 2004).
While this is an empirical question, Occam's razor favors
the latter.
    Here follow two case studies of functional explanations
of universals.

0.5.1. <u>Resumptive pronouns in relative clauses</u>
One of the ways relative clause constructions differ across
languages is the way reference to the head is made in the
relative clause. The relative clause may or may not include
a pronominal copy of the head. English normally does not
use such resumptive pronouns but Persian does.

(28) (a) English
        the man that I gave milk to ____

     (b) Persian
        mardi ke   man shir-râ **be u** *dadâm*
        man   that I   milk-OBJ **to him** gave:S1
        'the man that I gave milk to'

    Keenan and Comrie (1977) have found that in those
languages that use resumptive pronouns in relative clauses,
the occurrence of the pronoun is predicted by the
constituent type that is "relativized" – i.e., that is,
understood as referring to the head of the relative clause.
Here is the generalization, which at the same time serves
as an explanandum.

(29) UNIVERSAL EXPLANANDUM
     In all languages, on the scale of relativizable
     constituents, known as the Accessibility Hierarchy, if
     a language uses resumptive pronouns for any one type,
     it also uses them for all types to the right.

     Accessibility Hierarchy
     Subject > Direct Object > Indirect or Oblique Object >
        Genitive

For example, if a language has constructions like *the book
that I have read **it***, where the resumptive pronoun
represents the direct object, it also has constructions
like *the man that I have given the book **to him**,* where the
resumptive pronoun stands for the indirect object.
    Hawkins offers a functional explanation for why this
should be so. The hearer's task is to identify the referent
of the co-referential noun phrase in the relative clause.

Not representing the referent by a pronoun in the relative
clause is good for the speaker: for him, brevity is at a
premium. But the interests of the hearer are different. If
there is a pronoun to refer to the head, the expression is
closer to diagrammatic iconicity, where each semantic
argument is explicit in the syntactic structure (Keenan
1987) and is thus easier to understand. If there is no
pronoun, finding the referent is more difficult and this
difficulty increases with the distance between the head –
called the filler - and the gap where the coreferential
noun phrase would stand in a main clause. In languages
where the order of major constituents is Subject & Direct
Object & Indirect Object and the relative clause follows
the head, this distance turns out to be small for subject
relatives, larger for direct-object relatives and still
larger in indirect-object relativization. This is shown in
(30).

```
(30) N-HEAD [Subject  Direct Object  Indirect Object
         |_____|              |               |
         |_____|               |
         |_____|
```
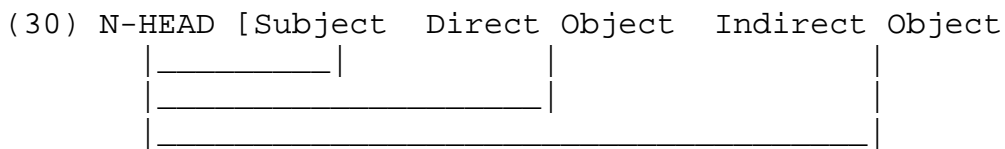
Thus, resumptive pronouns appear to step in to aid
comprehension where relative clause structure gets more
difficult to process.
   Hawkins' functional explanation relying on filler-gap
distance extends beyond relative clauses (1999, 2004,
chapter 7). Another filler-gap construction is wh-questions
where, as in English *What did you see?* etc., the wh-word is
not in its subcategorized position. As we saw in our
discussion of Subjacency (section 0.3.1), increased
distance between filler and gap in wh-questions also
results in reduced grammaticality.
   Hawkins' overall hypothesis is that grammars in general
respond to the complexity of filler-gap constructions: the
distribution of gaps relative to their fillers is shaped by
processing constraints. If a gap is permitted in a
construction, it is also permitted in all simpler
constructions of that type. If it is not permitted in a
construction, it is also not permitted in the more
difficult subtypes of that construction.
   The particular universals captured by (29) are thus
explained by the following general functional principle.

(31) UNIVERSAL FUNCTIONAL PRINCIPLE
     For all languages, the more difficult a construction

to process, the more likely that the language will use a more explicit expression type.

In other words, "[g]rammatical conventions are 'frozen' processing preferences" (Hawkins 1999: 279).

As we noted above, functional principles cannot directly explain synchronic language structure since the language is given to its user and its learner rather than designed by them from scratch. Functional principles can only explain language change. How does (31) come to guide historical change? The key factor must be frequency (cf. Newmeyer 1998: 127, Haspelmath 1999, Kirby 1999: 20, Bybee and Hopper 2001, Bybee 2005): preferred structures are used more often and eventually become the only choice.

0.5.2. The case-marking of objects
Languages differ in how they case-mark direct objects. Hungarian is a language that case-marks all direct objects, shown on the example in (32).

(32) *A kutya megharapja az* **ember-t.**
     the dog bites   the **person-ACC**
     'Dogs bite people.'

At the other end, Lisu marks no direct objects. Since subjects are not case-marked nor are they differentiated from direct objects in other ways, subject-object ambiguity may arise as in (33). (simplified from Li & Thompson 1976: 472; TM = postposed topic marker)

(33) *Làthyu nya* **ánà** *khùa.*
     people TM **dog** bite
     'People, dogs bite them.' OR
     'People, they bite dogs.'

The picture becomes more complex if we look at Hebrew. Hebrew falls between Hungarian and Lisu in that it marks some direct objects but not others. In particular, definite direct objects must be case-marked by the prepositional clitic 'et but most indefinite ones may not (Aissen 2003: 453).

(34) (a) *Ha-sere   her'a* **'et-ha-milxama.**
         the-movie showed **ACC-the-war**
         'The movie showed the war.'

     (b) Ha-sere   her'a **milxama.**

the-movie showed **war**
        'The movie showed a war.'

    There is additional variation. Some languages – for
example, Catalan and Pitjantjatjara - are more restrictive
than Hebrew: they obligatorily case-mark only certain
definite direct objects: (strong) personal pronouns
(Catalan) and personal pronouns and proper names
(Pitjantjatjara). The rule in Turkish in turn is more
relaxed than the one in Hebrew: Turkish case-marks not only
all definite direct objects but also indefinite objects
provided they refer to a specific individual.
    Here is the summary of the facts about the
crosslinguistic distribution of direct-object case-marking:

(35) UNIVERSAL EXPLANADUM
    In all languages, if direct objects of a certain kind
    are case-marked, so are all other kinds to the left on
    the following scale.

    Personal Proper Definite Indefinite Indefinite
    pronoun name   common   specific   non-specific
                    nominal nominal   nominal

    What explains (35)? Working within the framework of
Optimality Theory, Aissen proposes that there are two
universal constraints at work here: Iconicity and Economy.

(36) UNIVERSAL FUNCTIONAL GENERALIZATIONS
    (a) THE ICONICITY CONSTRAINT
        For all languages: given a markedness opposition
        of two nominals, the marked member should be
        case-marked (where a nominal of the scale in (35)
        is marked relative to all other nominals to its
        right).

    (b) THE ECONOMY CONSTRAINT
        For all languages: no noun phrase should be case-
        marked.

The two constraints are at cross-purposes: Iconicity
requires case-marking under certain conditions while
Economy bans case-marking under all conditions. They are
both functionally-based: Iconicity serves clarity and thus
the hearer's interests while Economy saves effort for the
speaker.

How exactly do the two constraints – Iconicity and Economy - account for the crosslinguistic variability of direct-object case-marking? According to Optimality Theory, conflicts between constraints are resolved by ranking. For Lisu, the Economy Constraint reigns supreme: the language complies with it on all levels of the markedness hierarchy in that it does not case-mark even the most marked types of direct objects on the scale. Thus it violates all the requirements of Iconicity. Catalan, which case-marks pronominal direct objects only, is less insistent on Economy: it ranks it lower than the top requirement of Iconicity that calls for case-marking on the most marked direct objects: personal pronouns. Pitjantjatjara, Hebrew, and Turkish accord less and less role to Economy in favor of Iconicity. Finally, Hungarian discards Economy altogether and marks all objects.

As in the case of resumptive pronouns (section 0.5.1), the crucial links between function and structure must be frequency: functionally preferred structures are more frequent and with time they become conventionalized into grammars.

0.6. Conclusions

This paper has discussed the ways in which language universals play a role in explaining language structure. On the one hand, they serve as explanations of facts of individual languages. On the other hand, they call for explanations themselves. They may be explained structurally if they are derivable from a more general structural regularity; historically by appropriate assumptions about initial stages and historical processes; and functionally if they follow from the goals and means of humans as driving language acquisition and language use.

Our discussions highlighted some of the complexities of explaining universals resulting from conflicting explanatory principles especially with respect to functional explanations (Newmeyer 1998: 137-153, Frajzyngier and Shay 2003). The last case study above – the explanation of direct object marking – illustrates conflict between Iconicity and Economy, the latter favoring the speaker, the former serving the hearer. But not all conflicting desiderata result from the tug-of-war between speaker and hearer. In Natural Morphology – a framework to which the nature and resolution of conflicting principles is central – languages are held to three types of criteria which may be in conflict: compliance with universals, adherence to features of the type that a language belongs

to, and consistency with the language-specific features of a language (cf. Dressler 1997, 2003).

There are also other conflicting functions in language. While economy and ease of parsing may shape the development of novel structures, their propagation is often influenced by social factors which may be diagonal to structural desiderata. People may prefer structures that are used by prestigious speakers even if they are less communicatively effective (cf. Kirby 1999, Chapter 3, Nettle 1999, chapter 7, Croft 2000).

In addition to the complexity of attempting to explain universals functionally, there are also necessary limits to the task: we cannot expect all grammatical phenomena to be equally determined by language function, not even if they are universal (Newmeyer 2003). In thinking about functional explanations of instrumental objects in general, Sanders takes knives as an example of cultural constructs (Sanders 1977). He notes that while all structural properties of a knife have to be compatible with its function, not all of them are necessary for it. There are certain structural properties of knives – such as having a handle at all that is not made of cotton candy – that are **determined** by the knife's function. Others are **conducive** to its function but not necessary, such as a convenient length and shape of the knife's handle. This means that some functional principles may be tendencies rather than requirements. And, thirdly, a carved geometric pattern on the knife's shaft is merely **compatible** with but immaterial to its cutting function. Similarly, some grammatical properties may be necessitated by language function, others may be preferred but not necessary, and again others may be merely permitted by function without being indispensable or even advantageous.

Further readings

Butterworth, B., Comrie, B., and Dahl, Ö. (ed.) 1984. *Explanations for Language Universals*. New York: Mouton.

Croft, W. 2003. *Typology and Universals.* Second edition. Cambridge: Cambridge University Press.

Givón, T. 2002. *Bio-linguistics, The Santa Barbara lectures.* Amsterdam/Philadelphia: Benjamins.

Haspelmath, M., and König, E., and Oesterreicher, W., and Raibel, W. (ed.) 2001. *Linguistic Typology and Language Universals*. Volume I. Berlin: Walter de

Gruyter, 360-419.

Hawkins, J. A. (ed.) 1988. *Explaining Language Universals*. Oxford: Blackwell's.

Hawkins, J. A. 2004. *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.

Kirby, S. 1999. *Function, Selection, and Innateness. The Emergence of Language Universals.* Oxford: Oxford University Press.

Moore, J., and Polinsky, M. (ed.) 2003. *The Nature of Explanation in Linguistic Theory.* Stanford: Center for the Study of Language and Information.

Nettle, D. 1999. *Linguistic Diversity*. Oxford: Oxford University Press.

Newmeyer, F.J. 2005. *Possible and Probable Languages.* Oxford: Oxford University Press.

Nichols, J. 1992. *Linguistic Diversity in Space and Time.* Chicago: The University of Chicago Press.

Penke, M., and Rosenbach, A. (ed.) 2004. *What Counts as Evidence in Linguistics? The Case of Innateness.* Special issue of *Studies in Language* (28, 3).

Song, J. J. 2001. *Linguistic Typology: Morphology and Syntax.* Harlow: Longman.

References

Aissen, J. 2003. 'Differential object marking: iconicity vs. economy', *Natural Language and Linguistic Theory* 21: 435-483.

Bartsch, R., and Vennemann, Th. 1972. *Semantic Structures. A Study in the Relation between Semantics and Syntax.* Frankfurt am Main: Athenäum.

Bickel, B. 2005. 'Typology in the 21st century: major current developments'. Paper presented at the workshop "Typology in American linguistics: an appraisal of the field", Oakland, CA.

Bisang, W. 1996. 'Areal typology and grammaticalization: processes of grammaticalization based on nouns and verbs in East and Mainland South East Asian languages'. *Studies in Language* 20: 3, 519-597.

Blake, B. J. 2001. 'Global trends in language'. *Linguistics* 39, 5: 1009-1029.

Blevins, J. 2004. *Evolutionary Phonology. The Emergence of Sound Patterns*. Cambridge: Cambridge University Press.

Bybee, J. L. 1988. 'The diachronic dimension in explanation', in J. A. Hawkins (ed.), 350-379.

Bybee, J., and Hopper, P. (ed.) 2001. *Frequency and the Emergence of Linguistic Structure.* Amsterdam/Philadelphia: Benjamins.

Bybee, J. 2005. 'From usage to grammar: the mind's response to repetition'. Presidential address given at the meeting of the Linguistic Society of America, Oakland, CA.

Chomsky, N. 1986. *Barriers*. Cambridge, MA: MIT Press.

Comrie, B. 2003. 'On explaining language universals', in Tomasello (ed), 195-209.

Croft, W. 2000*. Explaining Language Change. An Evolutionary Approach*. Harlow: Longman.

Diessel, H. 1999*. Demonstratives. Form, Function, and Grammaticalization.* Amsterdam/Philadelphia: Benjamins.

Dressler, W.U. 1997. 'Universals, typology, and modularity in Natural Morphology', in R. Hickey, S. Puppel (ed.) *Language History and Linguistic Modelling*. Berlin: Mouton de Gruyter. 1399-1421.

Dressler, W.U. 2003. 'Naturalness and morphological change', in B.D. Joseph and R.D. Janda (ed.) *The Handbook of Historical Linguistics.* Oxford: Blackwell's. 461-471.

Dryer, M.S. 1992. 'The Greenbergian word order correlations', *Language*, 68, 81-138.

Dryer, M.S. 1997. 'Why statistical universals are better than absolute universals', *Papers from the Panels. Chicago Linguistic Society* 33. Chicago: The Chicago Linguistic Society, 123-145.

Frajzyngier, Z., and Shay, E. 2003. *Explaining Language Structure through Systems Interaction.* Amsterdam/Phildalephia: John Benjamins.

Givón, T. 2002. *Bio-linguistics, The Santa Barbara Lectures.* Amsterdam/Philadelphia: Benjamins.

Greenberg, J. H. 1963. 'Some universals of grammar with particular attention to the order of meaningful elements', in J. H. Greenberg (ed.) *Universals of Language*, Cambridge, MA: MIT Press. 73-113.

Haiman, J. 1994. 'Ritualization and the development of language', in Pagliuca (ed.), 3-28.

Haiman, J. 2003. Explaining infixation, in J. Moore and M. Polinsky (ed.) *The Nature of Explanation in Linguistic Theory.* Stanford: Center for the Study of Language and Information. 105-120.

Harris, A. C., and L. Campbell. 1995. *Historical Syntax in Cross-linguistic Perspective.* Cambridge: Cambridge University Press.

Haspelmath, M. 1999. 'Optimality and diachronic adaptation', *Zeitschrift für Sprachwissenschaft* 18, 2: 180-205.

Hauser, M.D., and N. Chomsky, and W.T. Fitch. 2002. 'The faculty of language: what is it, who has it, and how did it evolve?' *Science*, vol. 298, issue 5598.

Hawkins, J. A. (ed.) 1988. *Explaining Language Universals*. Oxford: Blackwell's.

Hawkins, J. A. 1994. *A Performance Theory of Order and Constituency*. Cambridge: Cambridge University Press.

Hawkins, J. A. 1999. 'Processing complexity and filler-gap dependencies across grammars', *Language* 75, 2, 244-285.

Hawkins, J. A. 2004. *Efficiency and Complexity in*

Grammars. Oxford: Oxford University Press.

Heine, B., and Kuteva, T. 2002*. World Lexicon of Grammaticalization.* Cambridge: Cambridge University Press.

Hoekstra, T., and Kooji, J.G. 1988. 'The innateness hypothesis', in J. A. Hawkins (ed.) 31-55.

Hopper, P., and Traugott, E.C. 1993. *Grammaticalization*. Cambridge: Cambridge University Press.

Hurford, J.R., and Studdert-Kennedy, M, and Knight, C. (ed.) 1998. *Approaches to the Evolution of Language*. Cambridge: Cambridge University Press.

Keenan, E. L. 1987. 'On surface form and logical form', in Keenan, E.L., *Universal Grammar: Fifteen Essays*, London: Croom Helm. 89-120.

Keenan, E. and Comrie, B. 1977. 'Noun phrase accessibility and universal grammar', *Linguistic Inquiry* 8, 1: 63-99.

Keller, R. 1994*. Language Change: the Invisible Hand in Language.* (German original published in 1990) London: Routledge.

Kirby, S. 1999. *Function, Selection, and Innateness. The Emergence of Language Universals.* Oxford: Oxford University Press.

Li, Ch. and Thompson, S. A. 1974. 'An explanation of word order change SVO → SOV', *Foundations of Language* 12, 2: 201-214.

Li, Ch., and Thompson, S.A. 1976. 'Subject and topic: a new typology of language', in Ch.N. Li (ed.) 1976. *Subject and Topic.* New York: Academic Press, Inc., 491-518.

MacWhinney, B. 2004. 'A multiple process solution to the logical problem of language acquisition', *Journal of Child Language,* 31, 4: 883-914.

Moore, J., and Polinsky, M. (ed.) 2003. *The Nature of Explanation in Linguistic Theory.* Stanford: CSLI.

Nettle, D. 1999. *Linguistic Diversity*. Oxford: Oxford University Press.

Newmeyer, F. J. 1998. *Language Form and Language Function*. Cambridge, MA: MIT Press.

Newmeyer, F.J. 2003. 'Grammar is grammar and usage is usage'. *Language* 79, 4: 682-707.

Newmeyer, F.J. 2005. *Possible and Probable Languages*. Oxford: Oxford University Press.

Nichols, J. 1992. *Linguistic Diversity in Space and Time.* Chicago: The University of Chicago Press.

Pagliuca, W. (ed). 1994. *Perspectives on Grammaticalization.* Amsterdam/Philadelphia: Benjamins.

Penke, M., and Rosenbach, A. (ed.) 2004. *What Counts as Evidence in Linguistics? The Case of Innateness.* Special issue of *Studies in Language* (28, 3)

Ratcliff, R. R. 2005. 'Bukhara Arabic: a metatypized dialect of Arabic in Central Asia'. In É. Á. Csató, B. Isaksson, C. Jahani (ed.) *Linguistic convergence and diffusion. Case studies from Iranian, Semitic, and Turkic.* London: Routledge, 141-159.

Sanders, G. A. 1977. 'Functional constraints on grammars'. In Juilland, A. (ed*.) Linguistic Studies Offered to Joseph Greenberg on the Occasion of His Sixtieth Birthday.* Saratoga: ANMA Libri & Co., 161-178.

Tomasello, M. 2003. *Constructing a Language. A Usage-based Theory of Language Acquisition.* Cambridge: Harvard University Press.

Vennemann, Th., genannt Nierfeld. 1973. 'Explanation in syntax', in J. P. Kimball (ed.) *Syntax and Semantics*, volume 2. New York: Seminar Press. 1-50.