Lexicalization Patterns: Semantic Structure in Lexical Forms

and

Lexicalization Patterns: Typologies and Universals *

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Abstract

A sentence (or other portion of discourse) is taken to evoke in the listener a meaning complex,

here called a "cognitive representation". The lexical elements of the sentence, to simplify, by and large specify the content of the cognitive representation, while the grammatical elements specify its structure. Thus, looking systematically at the actual notions specified by grammatical elements can give us a handle for ascertaining the very makeup of (linguistic-) cognitive structuring. We accordingly examine a number of grammatically specified notions, observe the categories and systems in which they pattern, and speculate on broader cognitive connections.

Some provisional findings have already emerged. Grammatical specifications for structure are preponderantly relativistic or topological, and exclude the fixed of metrically Euclidean. The categories in which grammatical notions pattern include:

..........................plexity..perspectival mode
..........................state of boundedness..................level of synthesis
..........................state of dividedness ....level of exemplarity
..........................degree of extensionality ....axial characteristics
..........................pattern of distribution................scene-breakup characteristics

Grammatical specification of structuring appears to be the same, in certain abstract characteristics, as the structuring of visual perception.

0. Introduction

A sentence (or other portion of discourse) is taken to evoke in the listener a particular kind of experiential complex--here to be termed a "cognitive representation" or "CR".[1] There appears to be a significant way in which different portions of the language input specify, or code for, different portions of the CR. The major finding is that--for a first approximation--the lexical fraction of a sentence codes mainly for the content, or substance, of a CR, while the grammatical fraction of a sentence codes mainly for the structure of a CR. Determining the structure within a realm of phenomena has been a central concern for analytic science, including linguistics and psychology. Wit grammar seen in the above light it can be used in determining the structure, of the language-related portion of human cognition, with possible connections to further portions. In particular, looking systematically at the actual notions specified by grammatical elements can give us a handle for ascertaining the very makeup of (linguistic-) cognitive structuring.[2] The beginnings of such an endeavor are the aims of this paper.

Several ideas here require some immediate elaboration. The distinction between lexical and grammatical is made entirely formally--i.e., without any reference to meaning--on the basis of the distinction between open-class and closed-class.[3] All open-class elements--i.e., the stems of nouns, verbs, and adjectives[4] –are considered lexical. Everything else is considered grammatical. Included

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[1] The word "evoke" is used because the relationship is not direct. The CR is an emergent, compounded by various cognitive processes out of the sentence elements' referential meanings, understanding of the present situation, general knowledge, etc.

Our term "cognitive representation" is similar in purport to Fillmore's (1975) "scene" but is chosen over that more specifically visual term. The linguistically evoked complex can have much from other sense modalities (notably som/kinesthetic and auditory) as well as meta-model aspects.

[2] Comprehension, rather than production, is the direction we limit ourselves to in the initial endeavor. This direction would seem to yield more immediately reliable findings, since its starting point is with more overtly manifest, hence handleable, forms like grammatical elements rather than with meanings and experiential complexes, which rely more on introspection and reports of introspection. Nevertheless, each direction does involve both the manifest and the experiential sides of language.

[3] This is a classical linguistic distinction. A class in which morphemes are formally gathered is considered open if it is quite large and easily augmentable relative to other classes. A class is considered closed if it is relatively small and fixed in membership.

[4] Also includable here are "lexical complexes" like *lodge a complaint* or *zero in on*. Excluded are ad-

here are all closed-class morphemes and words--inflections, particles, adpositions, conjunctions, demonstratives, etc.--as well as syntactic constructions, grammatical relations, categorial identities, word order, and intonation. Terminologically here, "grammatical *element*" will be used to refer to *any* of these.

The nature of content and of structure, and the distinction between them, are not understood well enough to be addressed analytically in this paper and must be left to our intuitive sense of the matter.[5] Taking them for granted, however, we can now more finely characterize the linguistic-cognitive cross-relationships noted earlier. While most of a CR's content is specified by the lexical fraction of a sentence, the lexical items do usually specify some structural notions along with the contentful ones. The grammatical elements of a sentence more unalloyedly specify only structural notions and specify them more determinately in the case of conflict with a lexical item, establishing perhaps the majority of a CR's structure.[6]

In other work in the present direction--notably Fillmore's (e.g., 1975, 1976)--concern has also been with ascertaining structure, but the sentence elements used as starting-points have generally been lexical items with prominently inmixed structural specifications (like *buy* and *sell*). The present work, in part a complement to the other, takes advantage of grammar's greater directness and completeness in specifying structure.

This paper is divided into three sections. In the first, a sampling of grammatical elements is examined for the notions that they specify, both as an introduction to our method and for the aim of noticing properties common to such notions as well as properties excluded from them. In the second, we present a number of the categories in which grammatically specified notions have been observed to pattern. In the third, we speculate on broader cognitive connections.

1.0 The Nature of Grammatically Specified Notions

In this section we examine a small sampling of grammatical elements for the particular component notions that they specify. The sample will give a heuristic indication of the kinds of notions that get grammatically specified as well as of kinds of notions that possibly never do. The excluded kinds will be seen as readily specifiable by lexical elements. A further comparison between the characteristics of grammatically specified notions and of lexically specified ones is then made. To indicate the major finding at the outset, it seems that grammatical specifications for structure are preponderantly relativistic or topological, and exclude the fixed or metrically Euclidean.

For a first simple case, many languages have inflections for the noun (English has *-0* and *-s*) that specify the *uniplex* or the *multiplex instantiation* of the object specified by the noun. By contrast, no languages appear to have inflections that specify the *redness* or *blueness*, etc.--i.e., the particular *color*--of the object specified by a noun. In the preceding, the underlined are instances of "notions". The first set are grammatically specified and can be readily seen to play a structuring role in a CR.[7] The second set are perhaps never found specified by grammatical elements, though they

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verbs, which seem in all languages to derive from the other three open classes rather than from any open class of specifically adverbial stems.

5 Since the term "structure" has broad usage, we can help focus in on the intended sense with alternative terms: "principles of organization", "pattern of delineations", "schematic framework".

6 The fact of dual lexical specifications that can lead to conflict is a major issue that will be treated below under shifts. Some grammatical elements also cross the line and make contentful specifications along with structural ones. This is a more tangential issue than can be touched on here. The crossing ranges from the incorporation of a single contentful notion to the orderly interweaving of contentful and structural notions. Thus, *upon* in *We rode/sailed/rushed upon the enemy* incorporates the notion of 'attack', seemingly equivalent to the paraphrase 'into attack upon'. The closed-class adverb *tomorrow* is equivalent to the phrase 'during the day that occurs next after the day during which I am now speaking', an example of an organized interlacing.

7 One can note, for example, the effect on one's internal cognitive representation in considering first the

are everywhere found specified by lexical elements (such as *red* and *blue*.)

For another case we consider a deictic like the English *this* or *that* as in *This chair is broken*. A grammatical element of this type specifies the location of an indicated object as being, in effect, on the speaker-side or the non-speaker-side of a conceptual partition drawn through space (or time or other qualitative dimension). This integral specification can be analyzed as containing the following component notions (enclosed by quotes):

(1) a-b. a ‘partition’ that divides a space into ‘regions’/‘sides’
c-e. the ‘locatedness’ (a particular relation) of a ‘point’ (or object idealizable as a point) ‘within’ a region
f-g. (a side that is the) ‘same’ as or ‘different’ from
h-i. a ‘currently indicated’ object and a ‘currently communicating’ entity

Notions that might at first be ascribed to such deictics, such as of distance or perhaps size, prove not to be, on the evidence of sentence-pairs like (2):

(2) a. This speck is smaller than that speck.
b. This planet is smaller than that planet.

The CRs evoked by (2a) and (b) differ greatly, involving tiny objects millimeters apart or huge objects parsecs apart. Yet the sentences differ only lexically, not grammatically. Hence, the CRs’ notions as to the magnitude of size or distance cannot be traced to the deictics (or to other grammatical elements) in the sentences. Thus, the notional specifications of a *this* or a *that* appear, in part, to be genuinely topological: the establishment of a partition remains a constant, but its position can vary unlimitedly (or, using topology’s characterizability as "rubber-sheet geometry", the partition’s distance away can be stretched indefinitely) without any constraints imposed by the deictics’ specifications per se. This finding about deictics alerts us to noticing whether any grammatical elements make specifications about magnitude. A spot check through English and various other languages suggests that--while there are apparently grammatical specifications for relative magnitude[8]--there are possibly never any for absolute or quantified magnitude, whether of size, distance, or other parameters.

For a third case, we consider the type of adposition that specifies, for a moving object, certain characteristics of path and of point- or frame-of-reference. An example of this type is English *through* as used, e.g., in:

(3) a. I walked through the water.
b. I walked through the timber (i.e., woods).

In this usage, *through* specifies, broadly, ‘motion along a line that is within a medium’. The component notions contained here include:

sentence *I looked at the dog* and then *I looked at the dogs.* The addition of the grammatical element *-s* has a major effect on the delineational breakup of--to put it visually--the scene before the mind’s eye.

[8] For example, augmentative and diminutive inflections, insofar as they refer to actual size, seem to specify size relatively greater or lesser than the norm for an object. And grammatical elements specifying distance (like English *way* and *just* appearing, e.g., before *up there*) appear to specify notions of ‘far’ and ‘near’ that are relative to the current situation.

(4) a-e. ‘motion’--i.e., ‘one-to-one correspondences’ between ‘adjacent’ points of ‘space’ and adjacent points of ‘time’
f. motion that describes a ‘line’
g. the locatedness of a line within a ‘medium’
h-i. a medium, i.e., a region of three-dimensional space set apart by the locatedness within it of ‘material’ that is in a ‘pattern of distribution’ of a certain range of character (still to be determined)

Again, with (3a) and (b) differing only lexically, any notional differences in their CRs cannot be attributed to *through*. Thus, not within the specificational purview of that element are: the ‘kind of substance’ comprising the medium and the ‘sensorimotor characteristics’ attendant on executing the motion--as, here, those attendant on wading vs. weaving amidst obstacles. With other sentence pairs like

(5) a/b. I crawled/ran through the timber.
(6) a/b. I zig-zagged/arced through the timber.

it can be further determined that ‘rate of motion’ and ‘shape/contour of linear path’ are also not specified by the grammatical element.

As one step in a program to ascertain any properties common to grammatically specified notions, the notions just found are gathered together in Table 1. For heuristic purposes, the notions are very provisionally divided into three groups on the basis of their relation to topology. In group (a) are the notions that properly belong, or are readily definable, in the actual mathematical system of topology. In group (b), the notions might not be part of topology proper but intuitively seem like those that are--and might be includable in a related mathematical system that could be constructed. In group (c) are the notions that fall outside of any usual conception of a mathematical system. The number of notions in the first two groups combined is 13, while the third has 6--an indication of a preponderant propensity for grammatical elements to specify quasi-topological notions. The ratio in this direction is in fact improved if we consider that even several notions in group (c)--the bottom three--resemble topological ones in the sense of involving relativistic relationships between quantities rather than absolutely fixed quantities.

(7) **Table 1: Some notions found to be specified by grammatical elements**

a. *typological*	b. *topology-like*	c. *non-topological*
partition	same	matter
region/side	different	space
point	pattern of distribution	time
line	‘‘adjacency’’ of points	motion
locatedness	(monotonicity)	medium
within		currently
		indicated/communicating
		entity
uniplexity		
multiplexity		
one-to-one correspondence		

For a complementary program of ascertaining any properties excluded from grammatical specification, the notions found above not to be specified by the elements investigated are listed in Table 2. Rather than topological, topology-like, or relativistic, these notions involve Euclidean-geometric concepts (e.g., set distance, size, contour), quantified measure, and various particularities of a quantity--in sum, characteristics that are absolute or fixed.

(8) **Table 2: Some notions seemingly never specified grammatically**

absolute/quantified magnitude (of distance, size, etc.)	kind of substance
shape/contour of line	speed
sensorimotor characteristics	color

The provisional conclusion to be drawn from these findings is that, if grammatical specifications largely correspond to (linguistic-) cognitive structuring, then the nature of that structure is largely relativistic or topological rather than fixed or absolute.

In a search for contrasts between grammatical and lexical specification, a difference that presents itself at this point is that the relativism vs. absolutism restrictions do not apply to the latter. Lexical items can specify topological and relativistic concepts, as the very words listed in Table 1 attest to. And they can also specify Euclidean or absolute concepts. Thus, for the notion of color in Table 2, there are such lexical items as *red*, *blue*; for contour, there are *circle, straight*; for quantified magnitude, there are *inch, mile*; for sensorimotor characteristics, there are *wade, nimble, effort*.

For a further contrast between the grammatical and the lexical type of specification, we consider the full complement of both element-types in a single whole sentence, viz., that selected in (9):

(9) A rustler lassoed the steers.

We first list the grammatical elements present in the sentence and the notions that they specify:

(10)	a.	*-ed*:	‘occurring at a time before that of present communication’
	b.	*the*:	‘has ready identifiability for the addressee’
	c.	*a*:	‘not before in discussion or otherwise readily indentifiable for addressee’
	d.	*-s*:	‘multiple object’
	e.	*a...o*:	‘uniplex object’
	f.	the gram. category of ‘‘verb ’’ for *lasso’*:	‘eventhood’
	g/h.	the gram. category of ‘‘noun’’ for *rustler/steer*:	‘objecthood’ (one possible spec. of ‘‘N’’)
	i/j.	the gram. relations of ‘‘subject’’/‘‘object’’ for *rustler/steer’*:	‘agent’/‘patient’ (among possible specs.)

k.	active voice:	‘point-of-view at the agent’
l.	intonation, word-order, state of auxiliaries:	‘the speaker ‘‘knows’’ the situation to be true and asserts it’

The lexical items in the sentence can have their specifications characterized as follows:

(11) **A complex of concepts involving:**

a.	*rustler*:	property ownership, illegality, mode of activity
b.	*steer*:	appearance, physical makeup, relation to animal kingdom institution of breeding for intended purposes, esp. human consumption
c.	*lasso*:	certain materials (a body and a lasso) in certain configurations movement sequences of materials’ parts concomitant mental intentions, directings, monitorings, etc.

In surveying the lists, we can see these differences emerge: The grammatical elements are more numerous and their specifications seem simpler and more structural. Together, their specifications seem to determine the main organizational and communicational delineations of the CR evoked by the sentence. The lexical elements are fewer in number, but their specifications are more complex and seem to comprise most of the content of the CR. The lexical specifications are complex in three ways: compared to a grammatical specification, each has a) more total information, b) greater intricacy of information, and c) more different types of information together.

These grammatical-lexical differences can be set into further relief by in turn varying one element-type while keeping the other constant. Thus, varying only the grammatical elements of (9), as is done in (12), seems to alter the organizational and communicational characteristics of the scene but to leave its basic contents intact:

(12) Will the rustlers lasso a steer?

Varying only (9)’s lexical elements, as in (13), shifts us to a new scene altogether, and yet the essential breakup of the scene and of the communicative setting seem to remain the same:

(13) A machine cancelled the stamps.

2.0 Categories of Grammatically Specified Notions

The preceding sampling of grammatical elements has yielded a set of notions helpful toward discovering common properties. But the set has been small and haphazardly arrived at. With a broader and more systematic investigation, patterns of organization become evident. Grammatically specified notions can be seen to pattern in categories, and the categories, in turn, in integrated systems. In this section we look at some of these categories and systems.

The grammatical elements here will not be treated in isolation, but in association with lexical items. That is, the grammatically specified structural notions will be considered in interaction with that portion of lexical specification that is also structural. This interaction entails cognitive processing, and different cases of such processing will be considered along the way.

The note on methodology should be made that our direction of analysis has been from grammatical specification to category, not the reverse. That is, the categories considered below were *discovered* to be relevant to the specifications of various grammatical elements. They were not part of some a priori conceptual schema which then sought corroborative examples.

2.1 Dimension / Kind of Quantity

The category of "dimension" has two member notions, ‘space’ and ‘time’. The kind of "quantity" that exists in space is--in respectively continuous or discrete form--‘matter’ or ‘objects’. The kind of quantity existing in time is ‘action’ or ‘events’ ("action" is meant to refer to any obtaining circumstance, not just (willed) motion). In tabular form, these notions relate thus:

(13)	space:	matter/objects
	time:	action/events

A number of grammatical and lexical referents are specific with regard to one or the other pole of this category. But since the category cross-cuts the ones treated next, we will not exemplify it here but will endeavor in the following to present both space and time examples side by side.

2.2 Plexity

The category here to be termed "plexity" is a quantity’s state of articulation into equivalent elements. Where the quantity consists of only one such element, it is "uniplex", and where it consists of more than one, it is "multiplex". When the quantity involved is matter, plexity is, of course, equivalent to the traditional category of "number" with its component notions "singular" and "plural". But the present notions are intended to capture the generalization from matter over to action, which the traditional ones do not.[9]

Specifications as to plexity are made by both lexical items and grammatical elements, and the interplay between the two when they are both in association must be noted. Example English lexical items that basically specify a uniplex referent are--for matter and action, respectively--*bird* and *(to) sigh*. They can occur with grammatical elements that themselves specify a uniplexity, like those underlined in (14a) (many languages have here a more regular, overt system of markers than English). But they can also occur with grammatical elements that specify a multiplexity, as in (14b). In this association, such elements can be thought to trigger a particular cognitive operation--in this case, one of "multiplexing". By this operation, an original solo referent is, in effect, copied onto various points of space or time.

			matter	*action*
(14)				
	a.	*uniplex*	*A* bird flew in.	He sighed (*once*).
	b.	*multiplex*	Bird*s* flew in.	He *kept* sigh*ing*.

The reverse of the preceding circumstances is also to be found in language. First, there are lexical items that intrinsically specify a multiplexity. English examples are *furniture* or *timber* (i.e., ‘standing trees’) for matter and *breathe* for action, as used in (15a). And, too, there are grammatical elements able to appear in association here, as in (15b), that signal an operation the reverse of

9 It is true that there are the traditional terms "semelfactive" and "iterative" referring, respectively, to one and more than one instantiation of an event. But there is no real equivalent to number: "aspect" includes too much else about the temporal structure of action. And in any case, none of the traditional terms refer generally to both the dimensions.

multiplexing--one that can be called "unit-excerpting". By this operation, a single one of the specified equivalent units is taken and set in the foreground of attention.

(15) *matter*
action
a. *multiple* Furniture overturned in the ’quake...
She breathed without pain.
b. *uniplex* *A piece of* furniture overturned...
She *took a breath*/breathed *in*...

The grammatical elements that above signaled multiplexing-- *-s* and *keep -ing* --have a directly manifested surface form. The ones signaling unit-excerpting are in part abstract in form, as represented in (16):

(16) *matter* *action*
(a) N_{unit} of + ____ V_{dummy} (a) [____ + X]$_N$
e.g.a piece of furniture take a breath
or: ____ + Prtcle (: *in*)

2.3 State of Boundedness

Another category of attributes specified both grammatically and lexically for a quantity is its "state of boundedness". When a quantity is specified as "unbounded", it is conceived as continuing on indefinitely with no necessary characteristic of finiteness intrinsic to it. When a quantity is specified as "bounded", it is conceived as demarcated off as an individuated unit entity.

Among English examples of lexical items, *water* and *(to) sleep* seem basically to specify unbounded quantities, whereas *sea* and *(to) dress* seem basically to specify bounded ones. These specifications are demonstrated by the words’ respectively unacceptable and acceptable occurrence with the grammatical element "*in* NP extent-of-time", which specifies boundedness:

(17) *matter*
action
a. *unbounded* *We flew over water in 1 hr.
*She slept in 8 hrs.
b. *bounded* We flew over a sea in 1 hr.
She dressed in 8 mins.

Now, there are grammatical elements suitable for co-occurrence with unbounded-type lexical items which therewith, in effect, trigger a cognitive operation of "bounding". By this operation, a portion of the specified unbounded quantity is demarcated and placed in the foreground of attention. Examples of such grammatical elements in English are:

(18) *matter* (a) $N_{bounded\text{-}quantity}$ of + ____
action for $N_{extent\text{-}of\text{-}time}$ + ____

Particular cases of them in use are:

(19) We flew over *a body of* water in 1 hour.
She slept *for 8 hours*.

The question arises whether the reverse of the preceding circumstances is ever to be found in language. Entailed would be the existence of grammatical elements that, when used with lexical items specifying a bounded quantity, would trigger an operation of "debounding". By this, e.g., the referent of *sea* would be shifted to 'pelagic water', and that of *(a) tear*, to take another lexical bounded case, would shift to 'lachrymal fluid'. It seems likely that such grammatical elements exist; the closest candidate known to the author is the French suffix *-age*, but this has a range of meanings and many occurrence restrictions--and does not, e.g., happen to combine with the French words for "sea" or "tear".[10]

2.4 State of Dividedness

The category of "state of dividedness" refers to a quantity's internal consistency. A quantity is "discrete" (or "particulate") if there are breaks in its continuity. Otherwise, the quantity is "continuous".[11] Both lexical and grammatical elements are sensitive, in their specifications, to the distinctions of this category. But there appear to be no grammatical elements that solely specify discreteness or continuity for a quantity, and also none that signal an operation for reversing a quantity's lexically specified state of dividedness.[12] In consequence, there is difficulty in demonstrating this category explicitly by itself, and so we defer its treatment until the next section, where it can be seen in interaction with the other categories.

2.1 - 2.4 The Disposition of a Quantity

The preceding four categories of attributes all pertain to a quantity simultaneously and, taken together, can be considered to constitute a *system* of attributes that may be termed a quantity's "disposition". The particular intersections of the several attributes will be the main object of attention here. These, firstly, can be schematized as in (20):

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[10] The mechanism actually resorted to by both English and French in many such cases, including that of *tear*, is the use of the plural, as in:

(i) Tear*s* flowed through that channel in Hades.

There seems to be a sequence of cognitive operations here in getting from a bounded to an unbounded quantity. Speculatively, the bounded quantity is first treated as a uniplex entity, it is then multiplexed, the resultant entities are conceived as spatially juxtaposed, and their boundaries are lastly effaced.

[11] The present category may be prone to confusion with the preceding one. Contributory here is the normal meaning range of *continuous*, which as easily covers 'boundlessness' as it does 'internal seamlessness'. However, the two categories can vary independently. Thus, in the preceding section, the lexical examples given for unboundedness, *water* and *sleep*, happened also to be internally continuous; but the same demonstration of unboundedness could have been made with internally discrete examples like *timber* and *breathe*.

[12] There do exist certain mechanisms for such reversal. Thus, taking an unbounded case, the continuity-specifying word *water* can be shifted toward being cognized as discrete by the locution *particles of water*, as in:

(i) Water/Particles of water filled the vessel.

However, the grammatical complex used here does not directly specify the shift but, like the one in Note 10, seems to involve a several-stage route of cognitive operations.

(20) *discrete* *continuous*

multiplex *unbounded*

uniplex *bounded*

+ the distinction between *matter* and *action*, which cross-cuts all of the above[13]

Each intersection of attributes indicated here has been found specified by various lexical items. An example or two (most seen earlier) is given for each intersection in (21):[14]

(21) A:	timber/furniture (to) breathe	B:	water (to) sleep
A:	(a) family (to) button up	B:	(a) sea/tear (to) zip up
a:	(a) bird (to) sigh		

Now if the particular contentful referent for which one chooses a lexical item happens to be wedded, by that lexical item, to an unwanted set of structural specifications, there generally are grammatical means available for altering this to a desired set. Such means range in directness from specifying the single apt alteration to involving a circuitous sequence of operations. A number of starting- and ending-points for alterations, and the means for accomplishing them, are indicated in (22):

(22) A ≻ A	a stand of timber breathe for 1 hr.	B ≻ B	a body of water sleep for 1 hr.
A ≻ a	a piece of furniture take a breath/breathe in	————	
A ≻ a	a member of a family go through a step of buttoning up	————	
A ≻ A	members of a family (A ≻ a ≻ A)	B ≻ B	tears (*tearage) (B ≻ a ≻ A ≻ B)

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[13] For schematizing action along the one-dimensional time axis, an adaptation of the two-dimensional A, B, [add bars above the preceding two letters] A, and B diagrams would be necessary--and can be readily visualized.

[14] The lexical types for several of these intersections, it should be noted, do have traditional terms. Thus, nominal forms of the a, A, and B [add bar above preceding] types, respectively, have been called count nouns, collective nouns, and mass nouns. And verbal forms of the a and B [bar above] types, respectively, have been called punctual and durative verbs.

The matrix presented here augments, systematizes, and generalizes the traditional notions.

	button on and on		zip on and on
a ≻ A	trees keep sighing	————	
a ≻ A	a stand of trees (A ≻ A ≻ A) sigh for a while	————	

2.5 Degree of Extensionality

Implicit in the vertical dimension of the schematic arrangement in (19) is a further category[15] that can be called "degree of extensionality". This category has three member notions, terms for which are given in (23) together with schematics of the notions for the linear dimension:

(23)	*point*	*bounded extent*	*unbounded extent*
	●	●——●	- - - ———— - - -

Lexical items with either a matter or an action referent can make concurrent structural specifications for their referent as to its basic degree of extensionality. Three examples--specifying objects of different linear extensionalities--are the words

(24) *speck* *ladder* *river*

Now a lexical referent that is perhaps most basically to be conceived as of one particular degree of extensionality can, by various grammatical specifications that induce a shift, be idealized as being of some other degree of extensionality. For a first example, consider the event referent of *climb a ladder*, which seems basically of bounded linear extent (of time), as is in fact manifested in (25) in conjunction with the grammatical element "*in* + NP extent-of-time":

(25)..She climbed up the fire-ladder in 5 mins.

With a different accompanying grammatical element, like the "*at* + NPpoint-of-time" in (26), (as well as different contextual specifications), the event referent of the preceding can be shifted toward idealization as a point of time--i.e., as being point-durational:

(26)..Moving along on the training course, she climbed the fire-ladder at exactly midday.

This shift in the cognized extensionality of the event can be thought to involve a cognitive process of "reduction" or of "taking the long-range view". This shift can also go in the other direction. The event referent can be idealized as an unbounded extent from the effect of grammatical elements like "*keep -ing1", "-er and -er"1, and "as* + S", as in (27):

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[15] It may be considered an extension of the category of state-of-boundedness via the incorporation of the notion of uniplexity.

(27) ..She kept climbing higher and higher up the fireladder as we watched.

Here there would seem to have taken place a cognitive process of "magnification" or of "taking the close-up view". In such a process, a perspective is established whereby the existence of any exterior bounds falls outside of view and attention--or, at most, are asymptotically approachable.

The preceding event referent was continuous, but a discrete case can exhibit the same shifts of extensionality. One such case, perhaps to be considered as most basically of bounded extent, is shown with that degree of extensionality in (28a). But the referent can also be idealized as a point, as in (28b) (it is clear that the cows here did not all die at the same moment, and yet the spread of their death times is conceptually collapsed into such a single moment). Or, the referent can be idealized as an unbounded extent, as in (28c):

(28) a. The cows all died in a month.
b. When the cows all died, we sold our farm.
c. The cows kept dying (and dying) until the serum finally arrived.

The alternative idealizations of extensionality just seen as specifiable for an event referent are generally also available for an object referent. Thus, e.g., the referent of *(a) box* can be specified for idealization as a point or as a bounded extent (of area or volume). Some grammatical elements making such specifications are illustrated in (29). Also set forth here are the homologies between these and the event-specific elements:

(29)	*point*	The box is 20 ft. away from the wall. I read the book 20 yrs. ago.
	bounded extent	The box is 2 ft. across. I read the book in 2 hrs.
	(point within) bounded extent	The ball is in the box. She arrived as I was reading the book.

2.6 Pattern of Distribution

The pattern of distribution of matter through space or of action through time is a further category of notions that can be both grammatically and lexically specified.[16] For action through time--the only dimension we will be looking at now--this category together with the preceding one largely constitute the traditional category of "aspect".

Several of the main patterns of distribution for action through time are shown schematically in (30) (the dots here, representing situatedness in complementary states, should really be adjacent, but they are sketched apart with a connecting line to show the crossing of state-interfaces). Shown, too, are example verbs whose basic distributional specifications are as in the corresponding schematic:

---

[16] This category might be considered an extension or generalization of the "disposition of a quantity". Clearly, this category and the preceding five all belong together in treating the greater disposition of a quantity, but the relationships have not yet all been worked out.

(30) one-way non-resettable one-way resettable full-cycle steady-state gradient

die	*fall*	*flash*	*sleep*	*widen*
			carry	

One can determine that these lexical items have the specifications indicated by noting the grammatical elements with which they can and cannot occur (or, to put the latter case in our terms: ...grammatical elements toward whose specifications they will not shift). A full demonstration is not in order here, but a few examples show the principle: The resettable type of a one-way event is distinguished from the non-resettable type by its compatibility in sentences like: *He fell 3 times*, which the other lacks: **He died 3 times.* This same one-way form is distinguished from a full-cycle form by its ability to appear in sentences like: *He fell and then got up,* which the latter cannot do: **The beacon flashed and then went off.*

We can now consider the circumstance where a verb of one type appears with grammatical elements of another type and shifts in certain of its specifications of distribution. For an example we again take *die,* whose basic specifications can be adjudged as point-durational one-way non-resettable--schematizable, now more precisely, as: . This verb is used with its basic specifications in a sentence like (31a).

(31) a. He died as she looked on.
b. He was (slowly) dying as she looked on.

But in a sentence like (31b), the grammatical element "*be* + *-ing*" induces a shift. In effect, the infinitesimal interval between the two states involved for *die*--viz., ‘aliveness’ and ‘deadness’--is spread out, with the creation thereby of an extent-durational gradient. This is the shift in the distribution pattern’s structural type. But concomitantly, a shift in the basic contentful referent is engendered. Instead of ‘dying’, the new gradient refers to ‘moribundity’. The distinction becomes clear in noting that one can have been dying without having died, and, correlatively, one can have died without having been dying.[17]

2.7 Perspectival Mode

A specified action (which, in our terms, can as equally be static as involve change) has been seen to have its own, perhaps most basic, pattern of distribution through time. But, as it turns out, there can be independent specification for a mode of attending to the action that has a distinct temporal pattern of distribution, one that is either equal or unequal to the action’s. In what we shall now consider, there are two types of such "attentional" or "perspectival mode" viz.:

[17] Our main purpose here is to note the shift in structure type. The shift in content, which will doubtless prove to have some regularity, is not clearly understood at this point.

(32) The assuming of:

a. a steady-state long-range perspective point
with synoptic scope of attention
b. a moving close-up perspective point
with local scope of attention

To illustrate, we first consider an example with a basically steady-state referent, viz., objects in location. The (32a) type of perspectival mode--the one more congruent with such a referent--holds in (33a), multiply specified/determined there by the set of grammatical elements shown underlined. But by substituting grammatical elements coding for the (32b) perspectival mode, as is done in (33b), the scene evoked can be shifted to one where one's mental gaze or one's own projected location jumps in turn from object to object. In effect, a steady-state multiplexity of objects has been converted to a sequential multiplexity of events, viz., of conceptualized encounters with the objects.

(33) a. There *are* houses *here and there in* the valley
b. There *is a* house *every now and then through* the valley

In a comparable case, the moving-perspective form, shown in (34b), is the only mode that can be specified using everyday language. One must resort to scientific language, as in (34a), in order to establish the synoptic perspective:

(34) a. The telephone poles' heights form a gradient that correlates with their locations on the road.
b. The telephone poles get taller the further down the road they are.

The reverse of the preceding circumstances is also encountered. An example involving a sequential multiplexity of events is shown in (35a) with the more congruent moving-perspective mode specified. In (35b), the same referent instead becomes the object of synoptic viewing. In metaphorical terms, the effect here is as if the vertical line is tilted up into present-moment horizontality for integrated or summational assessment.

(35) a. I took *an* aspirin *time after time during/in the course of* the last hour.
b. I *have* taken *a number of* aspirins *in* the last hour.[19]

2.8 Level of Synthesis

The category to be considered now pertains to bounded quantities, like those schematized in the A/B row in (19). One form of locution already seen to specify such quantities is the particular

[19] A major function of perfect forms in language indeed appears to be the one involved here. More particularly, the perfect seems able to specify the temporal counterpart of matter located within a bounded extent of space, as in (1). That is, a sentence containing the perfect, as in (ii), suggests a paraphrase like that in (iii), which is homologous with (1):

(i) There were 5 aspirins on the table.
(ii) I have taken 5 aspirins in the last hour.
(iii) There were 5 aspirin-takings in the last hour.

(In support of this interpretation, as pointed out to me by Peyton Todd, the perfect can be noted always to involve a temporal span bounded at both ends.)

type of "NP *of* NP" construction illustrated in (36a). Here the second NP specifies the *identity* of the quantity involved, itself conceptualized as without intrinsic bounds, while the first NP specifies the *bounding* (or "*portion-taking*") per se of the quantity:

(36)	a.	a set of trees	a body of water
	b.	a cluster of trees	a puddle/drop of water

Now, beyond the fact alone of bounding off a portion, the first NP can additionally specify the particular *configuration* or *form* that the portion takes, as in (36b).[20] Especially with regard to internally discrete quantities--as with *a cluster of trees*--the two NPs can here be seen as coding for two different "levels of synthesis": The later NP specifies an unsynthesized multiplexity, while the earlier NP specifies a particular gestalt synthesized therefrom.

There is a further cognitive distinction involved here that language usually makes: either level of synthesis can be placed in the foreground of attention while the other level is placed in the background. One grammatical form that specifies this involves placing the foregrounded NP-type first, as shown in (37a). With the use of this grammatical device, moreover, predications can be made that pertain solely to one level of synthesis or the other, as seen in (37b):

(37) a. the cluster of trees / the trees in the cluster
b. That cluster of trees is small.
The trees in that cluster are small.

There are certain surface forms, furthermore, whose referents are keyed to applying to only one or the other level of synthesis. Thus, *together (toward each other)* tends to correlate with multiple objects, while *in (upon itself)* tends to correlate with a composite thereof:

(38) The bricks in the pyramid came crashing together/?in.
the pyramid of bricks came crashing in (upon itself)/?together

The preceding has involved shifting attention from a multiplexity to the gestalt that it constitutes. Also encountered in language are means for specifying the reverse: shifting attention from a gestalt to the components that constitute it. This procedure can take place when the starting lexical item specifies an entity taken to be already at the more synthetic level, as is the case with *iceberg* in (39a). By grammatical devices like those seen in (39b), such an entity can be broken down from conception as a coherent whole and presented in terms of component parts and their interrelations:

(39) a. The iceberg broke in two.
b. The two halves of the iceberg broke apart (*in two).

Again we encounter a surface form--*in two*--that correlates with only one level of synthesis and not the other.[21]

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[20] All three notions--identity of a quantity, portion-taking of a quantity, configuration of the portion--are generally specified simultaneously (or "conflatedly"--see Talmy (1975)) by lexical items that would fit in the A/b row of (20). For example, *(a) tear* specifies not only a certain shape of quantum, but also the material involved: lachrymal fluid. Such words generally do not participate in an "NP of NP" construction--like **a tear of milk*--unless they in fact accede to a shift toward the type of word represented in *drop*.

2.9 Level of Exemplarity

The specification for a multiplexity of objects can have a further cognitive distinction made pertaining to it. This distinction does not affect the basic reference to all the members of the multiplexity, but addresses how attention is directed therein. Either the full complement of the multiplexity is in the foreground of attention, with perhaps individual items here and there singled out in the background of attention. Or a single exemplar out of the multiplexity is placed in the foreground of attention, with the remaining items more dimly conceived in the background of attention. Perhaps most languages have several grammatical devices for specifying this distinction as to the "level of exemplarity". But English stands out in the extensiveness of its forms: there are different pairs of grammatical elements that mark the distinction for a number of distinct types of multiplexity. A rather full list of these pairs is illustrated in (40):

(40)...a........Oysters have siphons/a siphon.

2.10 Other Categories and Processes

More notional categories and cognitive processes have been worked up than there is opportunity to present here. Some of this other material is treated in an earlier work, Talmy (1977) (which itself lacks some of the material presented here). But we will briefly indicate some of the concepts involved.

The adjectives in a pair like *sick/well* behave differently in association with grammatical elements specifying vectoral degree, as shown in (41). In this they parallel the behavior of certain spatial expressions like *at the border/past the border*:

(41)		sick/past the border.
	He’s *slightly*	
		*well/*at the border.
		well/at the border.
	He’s *almost*	
		?sick/?past the border.

---

[21] There is a foursome of apt terms that can be applied to the two levels of synthesis in the two directions of shift, as indicated in (i). Employed is the term "Figure" as it is used in my other work (Talmy 1978, 1976):

(i)	cluster:	"composite Figure"	iceberg:	"meta-Figure"
	trees:	"multiple Figures"	2 halves:	"component Figures"

[22] For the plural form *oysters*, the plural form *siphons* is ambiguous as to whether there are one or more siphons per oyster. All the other combinations unambiguously indicate the number of siphons per oyster. Thus, the exemplar form is always unambiguous in this regard--one of its advantages over the full-complement form. This same arrangement holds through the list.

[23] I have long wondered what the differences between *each* and *every* might be. One apparent difference shows up here. *Each* seems to be the exemplar counterpart of *all the* but not of *all* without *the* (**Each oyster has a siphon* makes a poor generic assertion). *Every* is not constrained in this way, though it does strike me as more comfortably the counterpart of *all* without *the*.

[24] One more pair can be added to this list by adjoining two complementary unpaired forms from two different languages. The English form *some,* as in *some friends of mine,* requires the plural and has no singular counterpart. The Italian form *qualque,* as in *qualque amico mio,* requires the singular and lacks a plural.

This behavior can be accounted for by positing that such adjectives are not simply "opposites", but, rather, imply for some semantic notion, e.g., that of ‘health’, a particular abstract topological axis of which each adjective labels a certain portion. The forms here seem in particular to imply a line bounded at one end; *well* refers to the end-point while *sick* refers to the remainder of the line. These are the lexical items "axial characteristics", i.e., the particular (topological) relations each has to a particular semantic axis and to other items along the same axis. Certain grammatical elements, like those underlined in (41), also specify axial characteristics. Used incompatibly, they can cause a shift in an associated adjective’s specifications. Thus, in (42), *sick* seems to label an end-point, and of a different axis as well, that of ‘feeling bad’:

(42)..(After eating the shrimp, he felt worse and worse and) he was almost sick at one point/he finally got sick in 5 hrs.

Lexical expressions like *cottage* and *hotel room* may be taken to have ‘‘associated characteristics’’–here, respectively, those of ‘permanent residence’ and ‘temporary lodging.’ These attributes may mesh or conflict with the specifications of another element in the same sentence, e.g., with the directional adverb *home* which specifies a permanent residence. In the case of conflict, as in (43b), the lexical item is operated on by a cognitive process that leaves its essential characteristics intact but replaces its incidental characteristics:

(43) a. He drove home to his cottage in the suburbs.
b. He drove home to his hotel room.

The "scene-breakup characteristics" of a lexical item like *serve* refer to its basic specification of a dyadic event, in particular, a social event involving the two roles of ‘host’ and ‘guest’, as is manifested in (44a). But in a sentence like (44b), such a lexical item shifts to specifying a monadic event comparable to a basically monadic lexical expression like that in (44c). This shift in (43b) takes place in accommodation of the subject-plus-reflexive’s single-role specification. (Though this grammatical element is determinative in setting the role-number as monadic, the verb’s influence remains: blended in here is the metaphoric suggestion of a dyad, as if both ‘host’ and ‘guest’ are to be found in the "I"):

(44) a. The host served me some dessert from the kitchen.
b. I served myself some dessert from the kitchen.
c. I went and got some dessert from the kitchen.

A major aim in cognitive linguistics must be to investigate the interactions between lexical and grammatical specifications arising in a single sentence. Included here are the cognitive accommodations that take place where there are conflicting specifications. A number of interactions have been provisionally identified, and four seem definitely established: operations, shifts, blends (of two kinds: superimposed and introjected), and juxtapositions. The last three of these are treated at length in Talmy (1977).

2.11 Nesting

The operations and shifts seen in 2.1 - 2.6 need not take place singly. The output of one can serve as the input to another, up to as many as five hierarchical levels of "nesting". While there are a number of interesting examples of this for different types of matter and action, we will go directly to illustrating one of the longest cases:

(45) a. The beacon flashed (as I glanced over).
b. The beacon kept flashing.
c. The beacon flashed 5 times in a row.
d. The beacon kept flashing 5 times at a stretch.
e. The beacon flashed 5 times at a stretch for 3 hrs.

In (45a), the lexical verb *flash* appears with its basic structural specification as a point-durational full-cycle uniplex event. This undergoes the process of multiplexing, to yield the unbounded multiplexity in (45b). This then undergoes bounding in (45c). This bounded multiplexity is then first put through the process of reduction to become idealized as a point, and this is in turn multiplexed, yielding (45d). This new unbounded multiplexity is finally then bounded in (45e). The nesting of structural specifications in this last stage can be represented schematically as in (46):

(46)..[(’’’’’) - (’’’’’)......(’’’’’) - (’’’’’)]

3. Further Cognitive Connections

Grammatically specified structuring appears to be similar, in certain of its characteristics and functions, to the structuring in other cognitive domains, notably that of visual perception. In particular, the characteristic of being quasi-topological can be pointed to, and three major functions can be identified: classification, synoptics, and continuity. The thinking here is not equally far along on all these matters, but something of its directions can be indicated.

Grammatical specifications can be seen to constitute a classification with regard to the vast variety of learned, conceived, and perceived material. They gather different portions of the material together into subdivisions distinct from each other. By this, any particular currently cognized element is associated with its implicit "subdivision-mates". An illustrative case here are the twenty-odd motion-related prepositions in English, such as *through* and *into* which together subdivide the domain of ‘paths considered with respect to reference-objects’. This domain covers a great and varied range, but any particular "path" falls within the purview of one or another preposition, associated there with other "paths". The associations are often language-specific and sometimes seem arbitrary or idiosyncratic. Thus, as seen earlier, classed together by *through* are such dissimilar cases as a straightforward liquid-parting course (walking through water) and a zig-zag obstacle-avoiding course (walking through timber). The question arises why such distinctions should be effaced by the grammatical system, while they are observed by the lexical and other cognitive systems. Why are grammatical elements--say, such prepositions--not a large and open class marking indefinitely many distinctions? One may speculate that the cognitive function of such classification lies in rendering contentful material manipulable--i.e., amendable to transmission, storage, and processing--and that its lack would render content an ineffective agglomeration.

The original assumption made in this paper about grammatical specification involved the synoptic function. That is, the grammatical elements of any particular sentence together specify the structure of the cognitive representation evoked by that sentence. Their specifications act as a scaffolding or framework across which contentful material can be splayed or draped. It can be speculated that such structure is necessary for a disparate quantity of contentful material to cohere in any sensible way or to be simultaneously cognized as a gestalt.

In the course of discourse, a great welter of notions pass in rapid succession. But there are several ways in which a cognitive continuity is maintained through this flux and a coherent gestalt is summated over time. For one, there are cognitive processes whereby the successive notions generally can be sensibly connected together or fit into a conceptual matrix. For another, rhetorical specifications--all the *yes...buts, on the other hands,* and a number of subtler elements not generally recognized for this--direct the illocutionary flow and make up the "logical" tissue of the discourse. Through this, grammatical elements appear to play a determinative role. Their specifications establish a structural level with greater temporal constancy amidst more fleeting aspects of content.

These forms of grammatically specified structuring seem to parallel forms discernable in the operation of visual perception.[25] First, the perception of any particular object is mediated by its association with related objects in a classificatory schema.

Secondly, the welter of visual sensations cognized at any given moment for some whole scene is rendered coherent by the perception of structural delineations running through it. One specialized form of this is discernable when one intends to move through a space, say, from one to the opposite corner of a restaurant. The sensations of tables, chairs, etc. are, in effect, perceived in simplified spatial arrangements as if from an aerial view, and the plot of a course one could follow through that is sensed.

Thirdly, in the course of motion through space over time, there is a great flux of visual sensations rushing past, but a sense of continuity is maintained by the perception of structure running through the successive scenes. Two levels of "scene-structure constancy" are maintained. In the first, the perceived delineations afford greater permanence than the sensory flux, but do slowly shift. This is the level where, say, in walking past a table, its perceived outline is maintained but shifts gradually from a quadrilateral into a trapezoid and back to a quadrilateral. A deeper level of greater constancy is also maintained, from which the table continues to be perceived as a rectangle no matter where one is in relation to it. For a final parallel with grammatical specification, the topology-like nature of visual perception is evident here. For certain abstract characteristics of a scene and its contents are maintained constant while other, more metrical and Euclidean characteristics are free to vary without relevance thereto.

3.2 Summary of typological and universal findings

SYMBOLS USED TO CHARACTERIZE THE TYPE OF EACH FINDING:

A.......= a principle of analysis

T.......= a typology, involving:

..............................any factor by which languages differ from each other

+T.....= a preponderant tendency across languages, involving:

....................a factor that holds for most languages, though not for all

–T.....= a crosslinguistic rarity, involving:

....................a factor that holds for few languages, though not for none

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[25] It seems likely that the language-related portions of the brain could have evolved to their present functions only in the presence of these already existing cognitive mechanisms and have incorporated their operation.

+U ...= a positive universal, involving:

..............................a factor that holds characteristically or without exception within every language

–U ....= a negative universal (universal exclusion), involving:

..............................a factor that holds only uncharacteristically or not at all within every language

U′......= an integrated property of universal grammar — i.e., of language in general — summed across different language types, involving:

..............................a factor that MAY occur (is not excluded from occurring) in any language

Statements of the **U′**-type and statements of the **T**-type are interconvertible, incorporating equivalences of the form:
‘‘Language exhibits property P’’(‘‘exhibit’’ here implies ‘partiality’) <==> ‘‘Some languages have property P and some do not’’

> ......= a relative principle, involving:

..............................a factor that pertains only to a set of languages already possessing a particular other factor; hence:

> U ......= an implicational universal

> T.......= a subtypology

/ ....= a principle involving

..............................two factors of different ‘‘universality’’ types

(In brackets, we indicate the sections or other locations within the chapter where each finding is described).

A. properties of language organization

1. **+U**: Language distinguishes the two levels of meaning and of surface form. There are properties pertaining to each level independently, and also to their interrelations (i.e., properties of lexicalization). [0.0]

2.......**A**: Within a language, a property or pattern is ‘‘characteristic’’ if it is colloquial, frequent, and pervasive. [1.]

3.......**A/U, T**: Morphemes’ ‘‘usages’’ or ‘‘usage ranges’’—a particular subset of their semantic and syntactic properties, wholly exclusive of their core meanings — relate them to each other in systematic patterns within the same language and across languages, even where there is no common core meaning. [0.1]

4.......**+U**: For any semantic category of ‘‘grammatical’’-type meaning (e.g., aspect, causativity) that is represented lexically in a language, two kinds of lexical items generally occur: those that incorporate only a single value of the category, and those that can express some range of the category’s values. [0.1, 1.5, note 12, 1.6, 1.8, 1.9.0]

B. properties of semantic organization

5.......**U′/+U**: Language distinguishes at least the semantic categories of Motion event, (fact of) Motion, Figure, Ground, Path, Manner, Cause, Precursor, Purpose, Result, causativity, agency, intention, volition, induction, undergoerhood, personation, primary/secondary focus (as for valence), and aspect, as well as the remaining categories listed in Table 2.14 (except nos. 19 and 35). Many of these categories have systematic realization in every language. [body of text]

6.......**+U**: A state of locatedness is conceived and subdivided into parts in the same way as an event of translational movement. (The term ‘‘Motion event’’ is here used for both). [0.2]

7.......**+U**: A Motion event has four components: Figure, Motion, Path, Ground. [0.2]

8.......**+U**: Languages distinguish between translational and confined Motion. The latter encompasses: rest, rotation, oscillation, expansion/contraction, and ‘‘confined wander’’. Languages generally analyze a complex movement into a combination of these two types. [note 9]

9.......**U′**: The semantic category of causativity encompasses more and finer distinctions than the generally recognized causative/noncausative opposition. Within the causative are at least: the resulting-event, causing-event, instrument, author, agent, self-agent, and inducive types; and within the noncausative are: the autonomous and undergoer types. [1.6, ex (21), note 14]

10.....**+U**: Semantic properties involving the different causation types are:

a.......An event can be conceptualized independently of any causal connections (the autonomous type) [1.6]

b.......An agent’s intention can extend over different lengths of a causal sequence (the author type vs. the agent type) [1.6]

c.......Agency involves an event of will and one of body(-parts) [note 18]

d.......Body motion can be the end goal of agency (the self-agentive type) [1.6]

e.......Agency can itself be caused (the inducive type) [1.6]

f. ......The Instrument is a derived notion: the Figure of a causing event is the Instrument within the whole causal sequence [note 17]

g.......The self-agentive type tends to become conceptualized as the autonomous and, in a parallel way, the inducive as the simple agentive. [note 19]

11.....**−T**: In addition to the familiar type of aspect—an action’s distribution with respect to time itself—a few languages have systematic indication of a secondary type: the distribution of one action with respect to another ongoing action, in particular, to one of locomotion. [2.7]

C. properties of surface forms

12.....**U′**: Language distinguishes at the surface two underrecognized grammatical categories: the verb ‘‘satellite’’ and the ‘‘verb complex’’ The verb root together with all satellites present constitutes the verb complex. [2.0]

13.....**T**: Some languages have full systems of satellites, while other languages have virtually no satellites. [2.0-2.8, 3.1]

14.....**+U**: In a Motion event sentence, if the Ground nominal is an anaphoric or deictic pronoun, it can generally be omitted. Adpositions must then also be omitted while satellites must not. [2.1, note 43]

15.....**> −T**: Languages having both satellites and adpositions generally keep them formally distinct. English and Mandarin seem to have a rare part of speech—the ‘‘satellite-preposition’’—that coalesces the two forms. [2.1]

D. properties of the relations between the semantic and the surface levels

16.....**+U/A**: Elements at the semantic and at the surface levels of language do not necessarily correspond one-to-one. Theories of lexicalization have described the following types of semantic-surface relations (i.e., lexicalization types), categorized by the quantities of elements involved:

at the semantic level	at the surface level
a) no semantic content	1) no surface element
b) a single semantic element	2) a single morpheme
c) a combination of semantic elements	3) a combination of morphemes

types of semantic-surface correspondence:	yielding at the surface:
a-1	-----
a-2 / a-3	a ‘‘dummy’’ element/expression
b-1 / c-1	a ‘‘zero’’ form or a deleted underlying form
b-2	a simplex morpheme (the prototypical form)
b-3	an idiom or collocation
c-2	conflation
c-3	conflation occurring over a collocation

....................[In the last case, the elements of (c) must not correspond one-one with the elements of (3)] [0.0-0.1]

17......**A**: Besides the preceding lexicalization types, there are two further ways to account for a semantic component that is taken to be present at the surface:

It arises by semantic/pragmatic interpretation in accordance with the context and general knowledge.

It is not really present after all, once the referent situation is viewed from an alternate perspective by ‘‘semantic resegmentation’’ [0.1, note 4]

18......**A**: A zero form can behave exactly like a normal morpheme with its own precise meaning and syntactic properties [note 2]

19......**+U**: Languages possess a ‘‘shifter’’ type of closed-class element. When used with a lexical item that incorporates notion A of a particular semantic category (e.g., of aspect, causation, or valence), it shifts notion A to notion B within the same category. [1.5, Table 2.4, 1.7.0, 1.8]

20......**+T**: A language’s possession of a productively occurring shifter that changes notion A to notion B tends to correlate with a comparative lack in that language of lexical items that incorporate notion B. [1.5, 1.9 (57)]

21......**A**: The verb root, since it is a single morpheme, is a surface form relevant to the comparison of lexicalization patterns across languages; the whole verb is not, because it can contain varying numbers of affixes. [1.0]

22......**+U**: The ‘fact-of-Motion’ component of a Motion event always appears in the verb root. [1.1-1.4]

23......**T**: In its most characteristic expression of a Motion event, a language will conflate in the verb root, together with ‘fact of Motion’, one of these components: the Figure, or the Path, or the Circumstance (i.e., a circumstantial Manner/Cause/Precursor event). [1.1 - 1.4, note 8]

24......> **T**: With a particular Motion component characteristically conflated in the verb root, languages form subtypologies on the basis of which of the remaining components appear in the satellite. [2.6]

25......**–U**: No language conflates the Ground component with ‘fact of Motion’ for its most characteristic expression of Motion. [1.4]

26......**–U**: No language combines TWO out of the Figure, Path, Ground, and Circumstance components to conflate with ‘fact of Motion’ for its characteristic expression of Motion. [1.4]

27......> **+U**: Languages of the Circumstance-conflating type have a system of polysemous verbs (lexical doublets), with one usage expressing Circumstance alone and the other Circumstance conflated with Motion. There generally also occur verbs with only one or the other usage, as well as suppletive pairs with complementary usages. Conflation of this sort with an additional Motion clause can yield lexical triplets. [1.1]

28......> **–U**: In languages of the Circumstance-conflating type, a Purpose event is excluded from Circumstance. Purpose cannot conflate with ‘fact of Motion’ (although it CAN be incorporated in non-Motion verbs). That is, the Motion component can conflate with a prior or a concurrent, but not a subsequent, event. [note 8]

29......> **+U/–T**: Languages of the Figure- and the Circumstance-conflating types apply their conflation pattern to the expression of both motion and location. Some languages of the Path-conflating type apparently also do so. But most languages of this type apply their conflation pattern only to the case of motion. [1.1-1.3, note 11]

30......**+U**: Verb roots always incorporate an aspect component (or a range thereof); they do not present their core referent abstracted away from properties of temporal distribution (with certain caveats). [1.5]

31......**T**: In expressing certain semantic domains in the verb root, languages differ in the aspect type that they characteristically incorporate for those domains. [1.5]

32......**–U**: (Seemingly) no language’s verb roots distinguish between the ‘‘causing-event’’ type and the ‘‘instrument’’ type of causation. [note 20]

33......**–U**: (Seemingly) no language’s verb roots distinguish systematically between the ‘‘autonomous’’ and the ‘‘resulting-event’’ types of causation, though they do do so in occasional instances. [note 20]

34......**+U**: A language’s verb roots that express the ‘‘causing-event’’ or ‘‘instrument’’ type of causation can generally also express the ‘‘author’’ and ‘‘agent’’ types. [1.6]

35......**T**: Languages differ in the degree of pervasiveness shown in each by a favored lexicalization pattern (such as lexicalized causation, aspect-causation, or valence), both within a semantic category and across semantic categories. [1.6 (end), 1.7.1, 1.9.1]

36......**T**: In the main, a language will characteristically conflate in the verb root, together with a ’state’ notion, one of three aspect-causative types: the stative, the inchoative, or the agentive. Some languages’ roots characteristically serve to express more than one of these conflation types. [1.7]

37......**–U**: No language characteristically expresses both the stative and the agentive but not the inchoative with the same verb root—nor with the same inflections or auxiliaries, where these are the main indicators of aspect-causation. [1.7]

38......> **T**: Languages having the same characteristic aspect-causative type can form a subtypology by differing in their pattern for deriving the remaining aspect-causative types. [Table 2.5 + ex (36)]

39......**–U**: A verb root can refer to both state-location and state-entry, but it cannot refer to either of these and also to state-departure. Possibly, no verb root in fact ever lexicalizes the notion of leaving a state. (Thus, a verb ‘die’ should be interpreted to mean ‘enter death’, not ‘leave life’: in any language, the verb could be cognate with the former noun but not with the latter). [1.7.2]

40......**+T/–U**: A language’s grammatical elements and derivational patterns that indicate ‘state-entry’ can, in quantity of forms and usages, generally exceed, may equal, but are never less than, those indicating ‘state-departure’. [1.7.2, note 32]

41......**T**: Each language’s verb roots characteristically lexicalize person-involved action either in the monadic or in the dyadic personation type, or in a form covering both types. [1.8]

42......**+U**: As a possible psycholinguistic principle, the valence lexicalized for a mental event correlates with whether the experiencer is felt as initiatory or as reactive. [1.9.1]

43......**+T**: Preponderantly, verbs of ‘wanting’ (as well as of ‘valuing’ and certain other semantic categories) lexicalize the valence so that the experiencer is in the initiator role (showing up as subject). [1.9.1]

44......**+U**: In every language, the Figure constituent is higher on the case hierarchy than the Ground constituent in their basic precedence. [1.9, 2.8]

45......**U′**: Either basic or inverted Figure-Ground precedence can be required by a particular lexical item or a particular semantic notion. A requirement of the semantic type can hold over a whole language, over a whole language family, or perhaps also universally. [1.9, 2.8]

46......**+U**: Languages can represent the same semantic element at the surface with different levels of salience—foregrounding it or backgrounding it. [3.1]

47......**+U**: Other things being equal, a semantic element is backgrounded by expression in the main verb root or in any closed-class element (including the satellite—hence, anywhere in the verb complex). Elsewhere it is foregrounded. [3.1]

48......**T**: Languages differ greatly as to the quantity and types of semantic elements that they can express as backgrounded. [3.1]

49......**+U/T**: A greater ‘‘cost’’ attaches to a notion’s foregrounded, as against backgrounded, expression within a sentence, due to its greater claim on space, attention, and canons of style. Accordingly, a language tends oftener to omit a notion requiring foregrounded expression, leaving it at most to be inferred from context. Consequently, a language with greater provision for backgrounding regularly expresses more information than a language with lesser provision. [3.1]

50......**+U**: By our interpretation, all incorporation of Result, whether in verb root or in satellite, is as main event, not as subordinate event. [Table 2.14: nos. 1 and 5]

51......**–U**: Unlike the other Phase notions, that of ‘stopping’ does not appear in closed-class elements (such as verbal auxiliaries, satellites, or inflections). (Cf. principles 39-40 about the restrictions on ‘state-departure’). [Table 2.14: no. 12]

52......> **+U/–U**: ‘Number’, when appearing in verb inflections, refers to the grammatical subject or object whereas, when incorporated in the verb root, it refers to the semantic Patient—and apparently to no other semantic roles. [Table 2.14: no. 17]

53......**–U**: Only a limited and small set of semantic categories can appear in the verb complex to qualify a referent event’s participants—mainly: ‘person’, ‘number’, ‘distribution’, ‘status’, ‘gender/class’. All other semantic categories—e.g., ‘color’, ‘symmetry’—are excluded. [Table 2.14]

54......**U′**: For our three verb-complex constituents—the verb root, satellite, and inflections—semantic categories with generally clear representation in all three are: ‘polarity’, ‘phase’, ‘aspect’, ‘causativity’, ‘personation’, ‘number’, ‘valence/voice’, ‘factivity/evidence’, ‘speech act type’, ‘status of interlocutors’. [Table 2.14]

55......**–U**: Semantic categories excluded from the verb root but not inflections are: ‘gender/class of an actor’, ‘tense’, ‘person’, ‘mood’. [Table 2.14]

56......**–U**: Semantic categories excluded from verb inflections but not the root are: the main action or state (including ‘Result’), Motion event components, and Circumstance (nos. 1-8), as well as ‘distribution of a (multiple) actor’, ‘status of the actors’, ‘(deictic) Direction’, ‘speaker’s attitude’. [Table 2.14]

57......**U′**: Whereas many semantic categories show up either in the verb root or in verb inflections but not in both, most of these categories do show up in the satellite. [Table 2.14]

58......**–U**: Although readily occurring elsewhere in the verb complex—for example, as particle words—the semantic categories of ‘hedging’, ‘rate’, ‘relation to comparable events’, ‘spatial locale’, and ‘(deictic) spatial location’ are possibly never expressed in the verb root, satellite, or inflections, while the categories of ‘degree of realization’, ‘status of actors’, and ‘temporal locale’ are only marginally expressed there. [Table 2.14]

References

Fillmore, C. 1975. An alternative to checklist theories of meaning. In: Berkeley studies in syntax and semantics, vol. 1. University of California, Berkeley.

------------. 1976. The need for a frame semantics within linguistics. In: Statistical methods in linguistics. Stockholm: Skriptor.

Talmy, L. 1975. Semantics and syntax of motion. In: Syntax and semantics, vol. 4. J. Kimball, ed. Academic Press.

--------. 1976. Semantic causative types. In: Syntax and semantics, vol. 6. M. Shibatani, ed. Academic Press.

--------. 1977. Rubber-sheet cognition in language. In: Papers from the 13th regional meeting, Chicago linguistic society. University of Chicago.

--------. 1978. Figure and ground in complex sentences. In: Universals of human language. Greenberg, Ferguson, Moracsik, eds. Stanford University.