

GRAMMAR AS IMAGE

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Abstract

This paper presents some fundamental concepts of "space grammar", a theory of language structure presently being formulated. This theory bases grammatical structure squarely on conceptualization and eschews the postulation of a syntactic or morphological component separate from an account of meaning and lexicon. Instead grammar is claimed to represent an elaborate symbolic structuring of conceptual content for purposes of linguistic expression, involving image and perspective at various levels. This is most obviously true for lexical units, which must be defined relative to established conceptual complexes and which orient these complexes to present a certain "profile" to the language user. The paper suggests that much the same can be said for basic grammatical constructs, for example the notion "subject". An attempt is made to sketch the perspective and imagery involved in the construction of complex morphological and grammatical structures from more basic units. The concepts presented allow one to explain certain properties of constructions considered to be of central importance to grammar.

I propose to examine language from a perspective quite different from that embodied in current established linguistic theory. The perspective is that of "space grammar", a theory that is largely inchoate but not quite entirely non-existent. Given the limited space and the preliminary status of the model, I can offer here only the briefest glimpse of how this model approaches linguistic phenomena and the kind of descriptions of language structure that emerge. Certainly I cannot convince anyone of its value who is not predisposed to be convinced. This is of necessity the kind of paper that an author characterizes as "suggestive" or "exploratory" even though he is fully convinced that it represents ultimate truth. Despite the unavoidable succinctness, I hope to deal in a cogent and original way with a sample of linguistic data that includes phenomena generally recognized to be of central importance to grammar and how we conceive of it.

I start from the observation that people manifest impressive conceptual plasticity. The flow of consciousness is a continuing and ever-changing stream of conceptualization, partly perceptually driven but often largely or wholly deriving from the resources of memory and imagination. Particularly impressive is the ability of people to manipulate a conceptual situation, to view it from many angles, through lenses of different focus and power, and to transform it into myriad fantastic shapes in which they can nevertheless recognize the original. This conceptual plasticity can be illustrated by such examples as the metaphors of poetry and everyday speech, the capacity to find pictures in cloud formations, the creation of mythical beasts such as griffins and unicorns, the phenomenon of figure-ground reversal, scientific reifications like "gravity", "energy", and "momentum", and—in speech—the constant efforts of the attentive speaker to assess the knowledge and viewpoint of his interlocutor on the subject under discussion, to update this assessment throughout the flow of discourse, and to adjust the content of his utterances accordingly.

It is a truism that reality is not objectively given to us. Rather we structure reality in accordance with our own perceptual routines, cognitive abilities, expectations, beliefs, imagination, and desires. Somehow, though, we manage to develop a conception of reality and our position within it that is coherent enough to allow us to function effectively and that is similar enough from person to person to allow occasionally successful communication.

This brings us to language. There is no question that our symbolic abilities in general, and language in particular, are highly instrumental in fashioning our conception of reality, especially in its more abstract features. But though I have worked some with Hopi, I do not take a strongly Whorfian view of things. I do not think that conventions of language structure destroy our conceptual plasticity to any significant degree, and I further believe that the flow of cognition—while often clothed in linguistic form—has considerable autonomy. We use language to objectify and express our thoughts, but linguistic expressions do not constitute these thoughts.

Although I think any interestingly strong version of the Whorfian

hypothesis is dubious, it is undeniably true that languages embody divergent codifications of conceived reality. I argued in Langacker 1976 that corresponding expressions in different languages—or even alternate expressions in the same language—often view identical conceptual situations through different "images", highlighting different aspects of the conceptual situation or looking at it from different perspectives. This is true of both lexical items and grammatical constructions. For example, all the expressions in (1) can describe the conceptual situation in Figure 1.

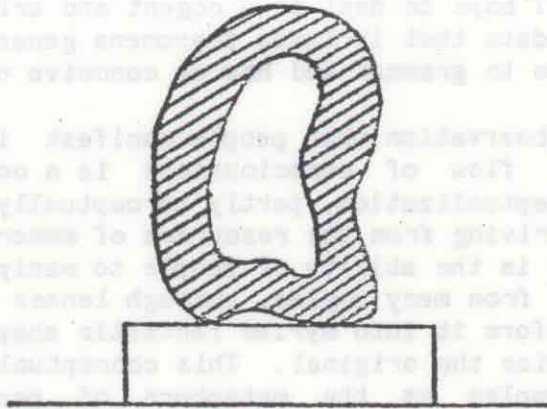


Figure 1

- (1)(a) The statue is on the pedestal.
- (b) The statue is resting on the pedestal.
- (c) The statue is standing on the pedestal.
- (d) The statue is sitting on the pedestal.
- (e) The pedestal is under the statue.
- (f) The pedestal is supporting the statue.

(1)(a) and (e) are simple locatives, but they portray the situation from contrasting perspectives, (a) locating the statue in relation to the pedestal and (e) the converse; (b) emphasizes the lack of motion, (c) focuses on the vertical orientation of the statue by analogy to human posture, and so on. The array of expressions that can code a given conceptualization is a matter of linguistic convention. Languages differ both in the kinds of expressions—hence the kinds of images—they provide that could conceivably "fit" such a conceptual structure, and in which ones they actually allow to do so (i.e. in conventional usage).

Contrary to the whole thrust of modern linguistic theory, I want to argue that this simple example is typical of grammar as a whole. I deny the existence of a valid distinction among semantics, syntax, morphology,

and lexicon. Grammatical structure is conventionalized semantic structure; it involves images, hierarchies and layers of images, ranging from the relatively concrete images embodied by morphemes conveying "objective content" (Langacker 1974) to the more abstract ones represented in "grammatical" morphemes and grammatical constructions. The grammatical structure of an expression is therefore a semantic object. It is a complex, multi-faceted prism through which speakers view conceptual content for purposes of linguistic expression, a prism constructed from the symbolic resources of a language in accordance with higher-order architectural principles that themselves serve purposes of image and perspective. Naturally I cannot explicate this conception of grammatical structure in any detail here, let alone justify it. All I can hope to do is sketch the outlines of the model in the broadest possible terms and then illustrate, in a suggestive and exploratory vein, the way it seeks to characterize representative grammatical phenomena.

The space grammar of a language does not consist of rules or process statements as these are normally understood. Rather it consists of a structured inventory of conventional units. By "units" I mean elements--structural complexes--that have achieved "unit status": they have been mastered to the point that the speaker manipulates them as fixed, established entities without having to focus his attention on their internal make-up in a constructive effort. A sound for example, requires a coordinated bundle of roughly simultaneous articulatory gestures, but once a speaker masters a sound--once it achieves unit status--he uses it freely and effortlessly without having to consciously guide his articulatory organs through their assigned trajectories. To take another example, the semantic representation of a morpheme is a complex assembly of conceptual specifications, and when mastered it constitutes a pre-packaged semantic unit that speakers can wield without settling their attention on any particular components or sub-units it might contain.

The space grammar of a language is a structured inventory of elements with unit status that are matters of linguistic convention. The examples cited are typical in that the conventional units of space grammar are always units of content or abstractions from such units. This content may

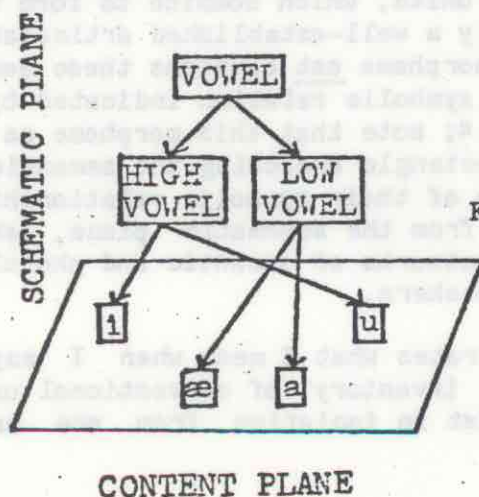


Figure 2

be semantic or phonological (taking each in a broad sense), or both, but there are no purely formal units devoid of both phonological and semantic substance. Conventional units do however differ in the degree to which their content is elaborated. In addition to a "content plane", containing fully specified units that actually appear in linguistic expressions, I will speak of a "schematic plane", the units of which represent abstractions from the units in the content plane, as illustrated in Figure 2. "Schemata" such as [HIGH VOWEL] or [VOWEL] are less fully specified than the corresponding units in the content plane, which elaborate their content in various directions. I use arrows for the relation of "immanence"; the schema [VOWEL] is thus shown to be immanent to the sub-schema [HIGH VOWEL], which in turn is immanent to [i] and [u]. An element A is said to be immanent to another element B when all the content of A is present in B (but not necessarily conversely). We must also recognize "partial immanence", in which the content A is found in B only partially or in distorted form; partial immanence, indicated by a broken arrow, is the basis for metaphor and many extensions in the use of lexical items.

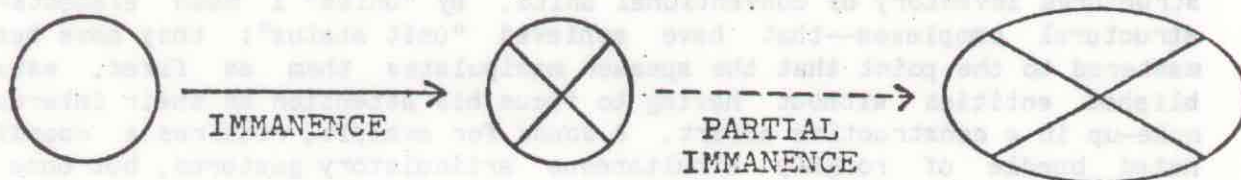


Figure 3

Conventional units can be simple or complex, can be elaborated or schematic, and can involve semantic content, phonological content, or both. Consider the morpheme cat. This unit is complex (as it is built out of smaller units), resides in the content plane (hence is elaborated rather than schematic), and combines semantic and phonological content in a symbolic relationship. I will use rectangles to enclose elements with unit status. The semantic content of cat is a unit, i.e. an established concept, so the abbreviation CAT is so enclosed. On the phonological side, [k], [æ], and [t] are all units, which combine to form the larger phonological unit [kæt], certainly a well-established articulatory routine for speakers of English. The morpheme cat combines these semantic and phonological representations in a symbolic relation indicated by the horizontal line between them in Figure 4; note that this morpheme as a whole has unit status, shown by the large rectangle enclosing the semantic and phonological units and the indication of their symbolic relationship. I have added to the figure selected units from the schematic plane, showing how this morpheme is embedded in the networks of semantic and phonological relationships possessed by English speakers.

This example also illustrates what I mean when I say that a space grammar is a "structured" inventory of conventional units. The myriad units of a grammar do not exist in isolation from one another. Instead

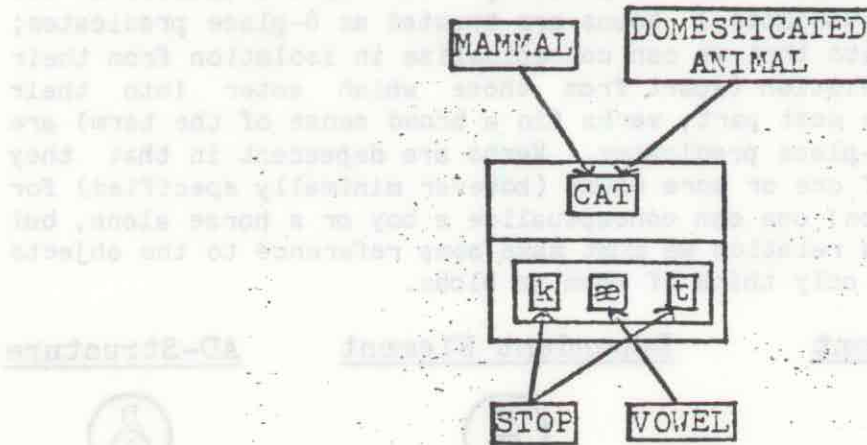


Figure 4

they are conceived as bearing relations of immanence to one another and combining with one another to form larger units. A given unit, [æ] for instance, may function simultaneously as a component of numerous larger units (cat, fan, act, etc.) to each of which it is immanent. This results in a vast network of overlapping units and hierarchies of units, of which Figure 5 is but a tiny illustrative fragment.

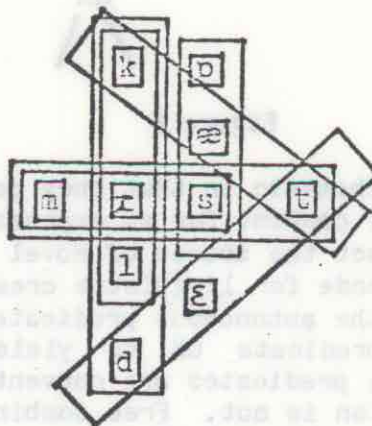


Figure 5

A fundamental distinction is made between "autonomous" units and "dependent" units. In the case of sound segments, vowels are autonomous, as they can be articulated in isolation, while consonants are dependent in that they require the support of a vowel for their full manifestation; vowels are therefore syllabic nuclei and the only obligatory element of a

syllable is a vocalic nucleus. Figure 6 draws a serious parallel between "AD-structure" for sound segments and that for basic semantic elements, or "predicates". (The "shell" and "dependency tree" representations in (c) and (d) are notational variants.) Nouns are treated as 0-place predicates; they are autonomous units that we can conceptualize in isolation from their participation in any relation (apart from those which enter into their definition). For the most part, verbs (in a broad sense of the term) are restricted to 1- and 2-place predicates. Verbs are dependent in that they require the support of one or more nouns (however minimally specified) for their full manifestation; one can conceptualize a boy or a horse alone, but to conceptualize the ON relation we must make some reference to the objects it relates, even if we only think of them as blobs.

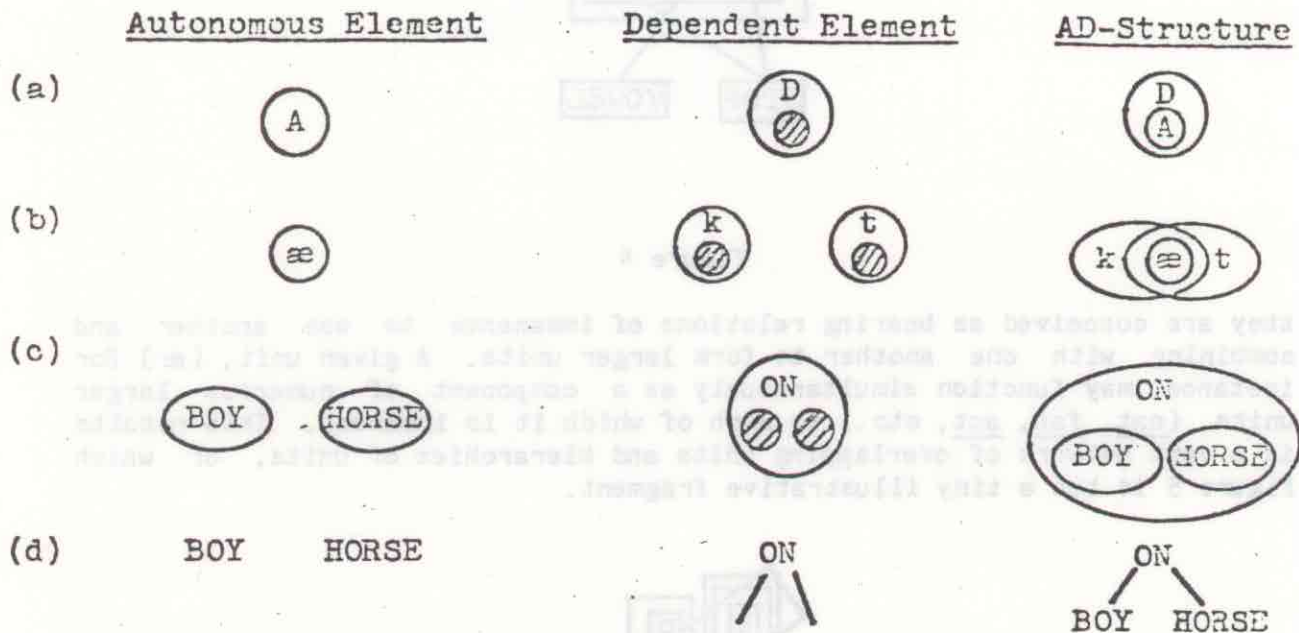


Figure 6

Dependent units are schematic in that they contain "holes" that must be elaborated by additional content for an expression containing them to be well-formed. This is in fact the source of novel expressions, the provision made in the language code for linguistic creativity. Figure 6(c), for example, shows the use of the autonomous predicates BOY and HORSE to elaborate the dependent predicate ON to yield the novel proposition ((BOY)ON(HORSE)); the three predicates are conventional units of English, but the composite proposition is not. Free combination of the conventional units of a language, by the extension of schematic units to novel composite structures not involved in their original formation, permits the construction of an unbounded set of permissible expressions that the speaker can use should he find the occasion.

This overview of the nature of a space grammar has probably been too succinct to be fully intelligible, but many of the concepts advanced will be exploited and further illustrated in what follows. We return now to the

theme of grammar as image and begin a somewhat more coherent examination of selected ranges of data from English. We will begin with simple units and work our way up to more complex structures.

I take morphemes to be the building blocks of semantic and hence grammatical structure. A morpheme, such as cat in Figure 4, is a minimal symbolic unit, one not further saliently analyzable in grammatical terms. This is not to say that a morpheme is minimal conceptually—it may have a highly complex conceptual structure, just as it normally has a complex phonological structure. It is unanalyzable in the sense that no particular phonological component bears a symbolic relationship to any particular semantic component; the semantic and phonological representations enter as units into the symbolic relationship. I refer to the semantic representations of morphemes as predicates, and the fact that predicates function in established lexical units is prima-facie evidence that their conceptual content has unit status.

To talk about morphemes and other conventional units, I must first introduce the notion of an "established functional assembly". This notion does not pertain to language per se, but rather to our body of conceptual experience. In addition to comparatively simple and self-contained concepts like TRIANGLE, JUMP, and so on, people acquire vast stores of higher-order conceptual complexes reflecting recurrent groupings of objects and relations in their physical, social, cultural, and intellectual experience. I have in mind such diverse higher-order complexes as the following: the "script" one follows when dining in a restaurant; the procedure for operating a mimeograph machine; networks of kinship relations; knowledge of the typical life cycle (birth, growth, maturity, aging, death); knowing the parts of a puzzle and how they fit together; the formulaic sequences of expressions used in greetings; typical cause-effect relations (e.g. knowing that dropping a dish to the floor can cause it to break); and so on virtually without limit. To the extent that such complexes can reasonably be attributed in some form to most any member of a given social group, I will call them established functional assemblies. Collectively they constitute the backdrop against which normal communication takes place. Of course we are also constantly exposed to functional assemblies of a more contingent, idiosyncratic sort—this is the flow of moment-to-moment experience; such assemblies typically provide the content for communication.

Morphemes (and larger lexical units) are based on established functional assemblies. They seldom designate objects or relations as fully self-contained entities; instead they designate objects or relations with reference to their role in established functional assemblies, which are crucial for appreciating their meaning. Lexical units therefore derive from our physical and cultural experience and represent the distillation of that experience as the foundation for the linguistic code. Different lexical units often designate different parts of the same functional assembly and therefore embody different images, different perspectives on the same conceptual scene.

Consider orphan, for instance. It tells a whole story in a single

word, a story based on a functional assembly of kin relations and the life cycle. Using ad hoc but I hope self-explanatory notations, I have sketched

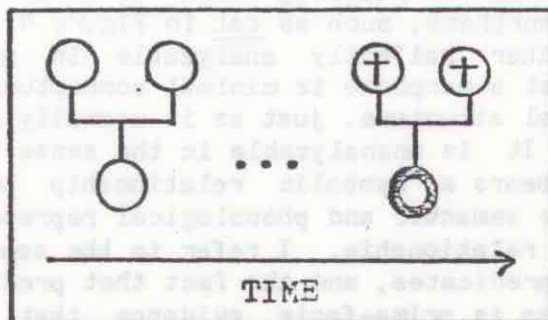


Figure 7

the essentials of this assembly in Figure 7. This is an established functional assembly because people know that death occurs and often reaches both parents while their offspring is still relatively young. The word orphan designates an entity that plays a particular role in this conceptual complex, the entity shown in boldface in Figure 7. Not only is its designation restricted to the person in the offspring role, but it is further restricted to that person in a particular time frame, subsequent to the death of the parents but prior (say) to maturity. If we go about defining orphan, we can hardly avoid telling the story of Figure 7 in some way and referring to the functional assembly it depicts.

What, now, do we identify as the meaning of orphan, i.e. as the semantic value of the predicate ORPHAN? We cannot identify its meaning with the designated object, in isolation from its role in the assembly, since the relationships depicted in the assembly are decisive in distinguishing orphan from child, person, and so on. Nor can we simply equate the meaning of orphan with the functional assembly as a whole, since orphan designates a person in a certain situation and not that situation per se. What we have to say is that the meaning of orphan involves two aspects, the entity it designates and the functional assembly relative to which it is identified. In describing the meaning of a linguistic symbol, I will use the term "base" for the functional assembly underlying it, and the term "profile" for the particular portions of the base that the symbol designates. From the complex conceptual situation represented in the base, the profile thus picks out certain facets for examination and discussion. Orphan therefore designates a particular kind of object (the profile) identified by the role it plays in a larger conceptual complex (the base); taken together, the profile and base constitute the meaning of orphan, which I view as a conventionalized conceptual structure.

The same form, orphan, can also be used as a verb in English:

- (2) He was orphaned at an early age.

Deriving the verb from the noun involves shifting (or expanding) the profile from an object in the second sub-situation in Figure 7 to focus instead on the transition between the two sub-situations. The same base, in other words, supports two different lexical units, which view it from different perspectives and therefore embody different images and present different profiles to the observer. For another example of this, consider parent and child, as seen in Figure 8. They have a common base, which is immanent to the base of orphan, and they differ semantically in their choice of profile. If we regard the base as being embedded in a prism, a lexical unit such as parent or child represents a particular facet of the prism; when the prism is so rotated that the language user views the base through that facet, this orientation offers him a particular profile of the base. This is a microcosmic illustration of the prismatic effect of grammar as a whole for more complex expressions.

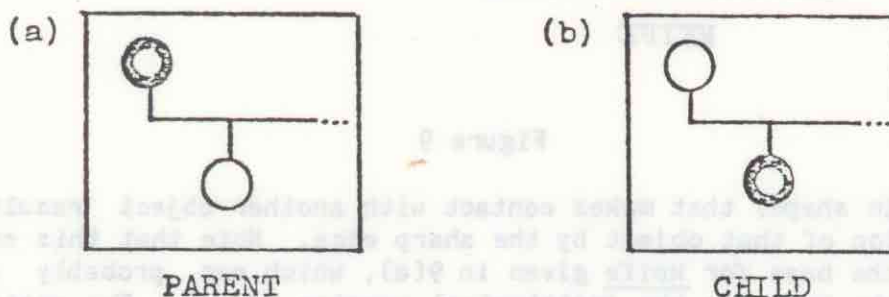


Figure 8

Knife provides another kind of example. Certainly a prototypical shape must be part of the semantic characterization of knife. So must a specification of its prototypical function; this latter lends itself more readily to a decompositional approach and linguistic paraphrase, e.g. instrument of cutting or ((CUT)INSTR), but I incline towards an indirect means of capturing the paraphrase relationship. It is not sufficient to specify a shape and the notion ((CUT)INSTR), because there is a particular relation between the two specifications that also figures in the meaning of knife, namely that a particular facet of the shape (the blade) functions in a canonical way in cutting. In fact, properly relating the shape specification to the functional specification requires no less than a relatively full characterization of a canonical episode of cutting, i.e. an established functional assembly as sketched in Figure 9(a). A knife is an object with a canonical shape that plays a particular role in a canonical cutting scenario; this scenario is the base for the morpheme knife, and the designated object is the profile. The schematic sense of cut is given in 9(b). It involves the motion of an object with a sharp edge (but otherwise

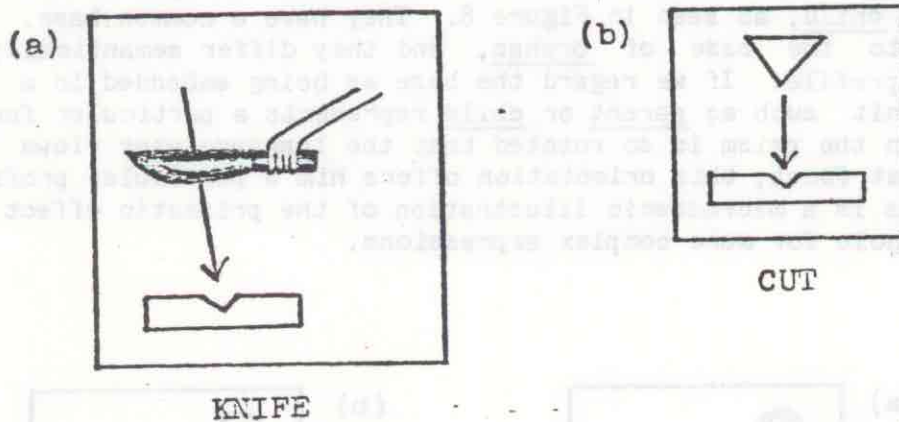


Figure 9

unspecified in shape) that makes contact with another object resulting in the penetration of that object by the sharp edge. Note that this schema is immanent to the base for knife given in 9(a), which can probably also be regarded as the base for the prototypical version of cut. The prototypical version of cut is an elaboration of the schema representing the minimal value of this morpheme; if we consider the cut prototype, the scene in 9(a) represents the base, and within that base the elements depicted in 9(b) constitute the profile. Knife and cut are therefore related in the grammar of English by virtue of their connection to a common base.

By examining nouns, I have arrived quite independently at a conception that is remarkably similar in spirit and even detail to that offered for verbs in Fillmore 1977. Fillmore's theme is that 'meanings are relativized to scenes', where by "scene" he has in mind what I have called a functional assembly or base. Fillmore also talks of orientation and perspective. The nuclear elements of a sentence—subject, verb, and object—select from the various participants and relations in a scene a particular subset to be placed in perspective and foregrounded. In my terms these constitute the profile, and I join with him in considering this to be one manifestation in language of the figure-ground relationship.

My conception however goes much further than the one Fillmore explicitly offers. It claims that the basic constructs of grammar should be defined for their semantic value or imagic function and nothing more, and that all aspects of the grammatical structure of a sentence are semantic or

imagic in character. Obviously this is a strong and far-reaching claim that I may ultimately want to qualify or weaken, and it is also a programmatic claim that needs considerable elaboration to become truly substantive. To begin the very limited elaboration that I can offer here let us turn to verbs and grammatical relations.

I take a distinction between objects and relations to be fundamental to human conceptualization. This is the basis for the grammatical distinction between nouns and verbs (broadly construed), which I have represented in my system as the contrast between predicates without valence (0-PRED) and predicates with valence (1- and 2-PRED) (Figure 6). Nouns are 0-PRED because they are conceptually autonomous, as previously discussed. In the prototypical case nouns are physical objects, continuous and clearly delineated from their surroundings, but our conceptual plasticity is such that we can view all manner of things—from pigs to parts to processes to propositions—as objects for purposes of thought and expression. Verbs have valence because they are conceptually dependent, requiring the support of one or more objects, however minimally specified. When I say, then, that boy and horse are nouns, the grammatical construct "noun" I invoke is represented in space grammar as a schema, whose content can perhaps be equated with the semantic value of thing in the broadest sense of the term. Boy and horse are shown to be nouns in the structured inventory of conventional units constituting a space grammar because their semantic representations, the 0-PRED BOY and HORSE, are given as elaborations of the noun schema in the network of relationships constituting this structured inventory. Figure 10 offers two equivalent notations for this relation of immanence.

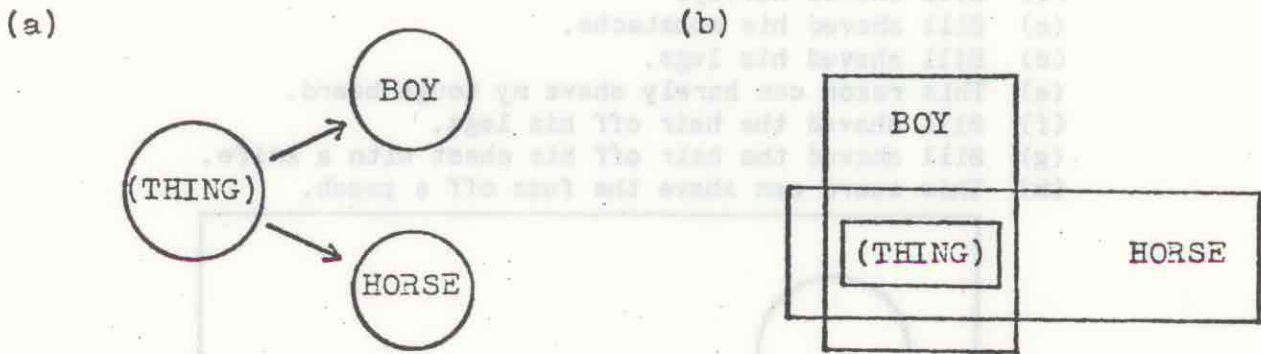


Figure 10

The profile for a noun, physical or metaphorical, is an object of some kind, as seen for knife in Figure 9(a). Because verbs are conceptually dependent, the profile for a verb must make reference to one or more objects, as seen for cut in 9(b). The objects that figure in a verb profile may be specified very minimally, having little more content than the noun schema (THING), or their specification may have more detail. In the profile for cut in 9(b), one object is specified to the degree that it is attributed a sharp edge, and the other to the degree that it is attributed a penetrable surface. These specifications are part of the meaning of the

verb and constitute what have been called "selectional restrictions". I claim that a selectional restriction always holds between a dependent predicate and the structure on which it depends, and moreover that it is always properly regarded as a partial specification of this more autonomous structure. A verbal predicate, in other words, makes reference in its profile to one or two partially specified objects that permit or require further elaboration by means of nominal elements compatible with the partial specification intrinsic to the verb. The partial nominal specification defines an "elaboration site", the valence of the verbal predicate. If the site is elaborated by a nominal element incompatible with the partial specification (selectional restriction), the outcome is semantic anomaly due to an inconsistency in the composite conceptual picture, as in (3)(a).

- (3)(a) The marshmallow cut this rock.
- (b) Something cut this rock.

Should the nominal chosen to fill the valence be uninformative, or neutral in relevant regards, the partial specification is automatically imposed by the verb. In (3)(b), then, the subject is attributed a sharp edge of some kind, though the form something is neutral as to shape.

To approach the question of grammatical relations, let us consider the verb shave as illustrated in (4).

- (4)(a) Bill shaved.
- (b) Bill shaved Harvey.
- (c) Bill shaved his moustache.
- (d) Bill shaved his legs.
- (e) This razor can barely shave my tough beard.
- (f) Bill shaved the hair off his legs.
- (g) Bill shaved the hair off his chest with a knife.
- (h) This sword can shave the fuzz off a peach.

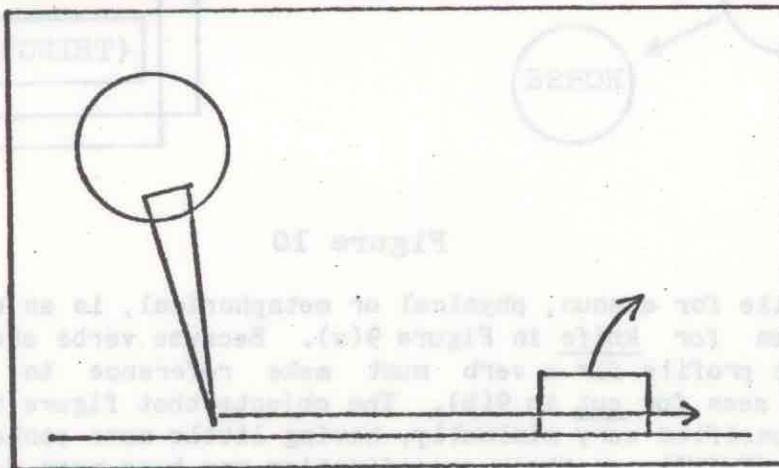


Figure 11

There are numerous versions of the verb shave, as these examples show, but something akin to Figure 11 can be offered as a schema, a conceptual complex immanent to the base for all the versions considered here. Shaving involves a sharp instrument of some kind guided by an agent or force rendered abstractly here by a circle. This instrument moves along a surface in a smooth, extended path that carries it through an adhesion to the surface which is thereby detached from the surface wholly or in part. In accordance with Fillmore's characterization of verbs, different combinations of elements from this scene can be selected and placed in perspective by the nuclear elements of a sentence. Or as I would put it, different versions of shave select different profiles from this common base. The central component of this profile, the one always included, is the motion of the instrument, shown in Figure 11 as the horizontal arrow. The subject valence (elaboration site) in the profile can be either the instrument or the agent directing it, and the object valence can be either the surface or the adhesion.

One could talk about shaving in English at great length, but here just two things are really pertinent: the importance of established functional assemblies and the implications of this data for grammatical relations. In regard to the former observe the incomplete, even fragmentary nature of the explicit propositional content in (4)(a)-(d). Yet these sentences are understood, even out of context, in highly specific ways. Thus (4)(a) and (b) both rely on the knowledge that in our culture canonical shaving pertains to the hair on certain portions of the face and neck of males. Out of context it would therefore be misleading to use (4)(b) alone to indicate that Bill shaved Harvey's chest, or to use (4)(a) in any situation other than one in which Bill removed his own hair from the canonical face-neck region with some kind of razor, i.e. an instrument designed precisely for this canonical activity. This brings us to an important point: the more closely the reported situation conforms to the established canon, the simpler the linguistic coding of the situation can be. Thus (4)(a) is the simplest expression because it reports fully canonical shaving given our cultural expectations, while (b)-(h) all require elaboration in one or more respects because the situation reported is either different from or more detailed than the canon. In purely objective (or logical) terms the kinds of shaving represented in (4) are all comparable in complexity, but given our inventory of established functional complexes they differ greatly in psychological and linguistic complexity, which must be measured in terms of departure from the norm.

The importance for grammatical relations of data like (4), and as much other data as one cares to assemble, is that it illustrates an overwhelming tendency in human language for a given verbal element to be associated overtly with a maximum of two nominal elements; regardless of how many objects may participate in the verbal base, normally only one or two objects figure in the verbal profile. Although it flies in the face of current trends in linguistic theory, I would claim that basically there are only two grammatical relations, which we can conveniently call "subject" and "(direct) object". To be fully intelligible this claim requires a good deal of clarification, elaboration, and qualification; here I can only give

the briefest indication of the direction of my thinking.

As (4)(f)-(h) show, it is not uncommon for a complex verbal expression to contain three, four, or even more nominal elements. The key word here is "complex". When the number of nominal elements goes above two, the verb is almost invariably accompanied by additional markings that I consider to be themselves verbal predicates, so that we are dealing not with a single verb but with a verb group, each member of which is limited to two arguments. The additional markings I allude to include things commonly referred to as prepositions, postpositions, oblique case inflections, particles, and verbal affixes. Besides SHAVE, (4)(f)-(h) include the verbal predicates OFF and WITH in the verb group; all three are 2-place predicates (2-PRED). While the details are not our present concern, Figure 12 sketches how individual 0- and 2-PRED combine to form a "propositional structure" representing the central objective content of (4)(g).

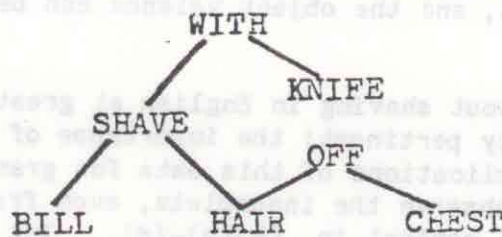


Figure 12

I can only note in passing some of the qualifications to the claim that verbal predicates are limited to a valence of two and that only two basic grammatical relations need be recognized. First, this claim relates most directly to the predicate ("micro") level of organization; there are in addition higher order levels of organization, and for these a more flexible approach may prove necessary. Second, I would like to reserve final judgment about indirect objects; in many languages some verbs (usually a relative handful) allow three nominals without any supplementary verbal marking, as in (5), and while I think these can be explained in other terms (under the first point above), I am not yet prepared to offer a fully convincing account.

(5) Your mother gave Harvey a new flyswatter.

Third, I would recognize conjunctions such as and and or as verbal predicates, and these clearly are not restricted to just two arguments; significantly, though, neither do we distinguish the arguments (conjuncts) of such conjunctions in terms of grammatical relations.

One of the reasons for seeking to limit predicates to a valence of two is that this limitation affords a simpler and more natural conceptual characterization of the grammatical relations "subject" and "(direct) object", which--as grammatical constructs--should have semantic content or imagic

functions given the central claims of space grammar. I should like to suggest that the subject of a verbal predicate can be defined as a "trajector", while the object (when there is one) provides a point of reference in characterizing the trajectory for the subject. Justifying this claim is such a long story that I can only illustrate it here, not argue for it. It should be noted that the characterization is most straightforward for prototypical verbs, namely those of physical action; in other cases the notions trajector and trajectory must be understood relative to the conceptual dimensions occupied by the verb—there are metaphorical trajectors in language just as there are metaphorical objects (as in reification).

Consider a prototypical action verb like hit, as illustrated in (6) (I think Wallace Chafe first discussed such sentences).

- (6)(a) The car hit a lamppost.
- (b) A lamppost hit the car.
- (c) The car and a lamppost hit each other.
- (d) The car hit the truck.

Hit pertains to the motion of two objects through space, i.e. a sequence of locations of these objects through time, resulting in their ultimate and forceful physical contact. In the absence of an external frame of reference, motion is relative—given two objects X and Y in relative motion we can view X as being in motion relative to Y or Y relative to X. An action verb like hit is not neutral, however; in an expression of the form X hit Y, X is portrayed as moving relative to Y. Given what we know about the normal mobility of cars and lampposts, therefore, (6)(a) is unproblematic, even canonical for some drivers, while (b) and (c) are odd because they suggest the non-canonical picture of a lamppost flying through the air and striking the car. It is not that the object of hit is portrayed as being stationary. (6)(d) could perfectly well be used if the car and truck were going down parallel lanes on a freeway, but it suggests that the car swerved out of its lane into the truck rather than the converse. (Notice also how each party to an accident is likely to say He hit me.) The object of hit may or may not move, but in either case it is taken as the point of reference for calculating the trajectory of the subject. The subject-object dichotomy thus imposes a certain perspective on the scene it describes, as indicated in Figure 13. The object Y provides a point of reference in space, and the subject X is viewed as moving against this backdrop, following a trajectory defined in terms of it. This I take to be one of the numerous instantiations in language of the figure-ground relationship. Just as the profile in the semantic structure of a morpheme stands in a figure-ground relation to the base, so it is on another level that within the profile of a verb the subject stands in a figure-ground relation to the trajectory defined by the verb and object.

Let me take just one example of how this conception can be extended to a non-prototypical case. Consider expressions of the form X on Y, which would appear to pose the most severe problems for the notion that the subject is a trajector, since ON is a stative predicate, one that implies no

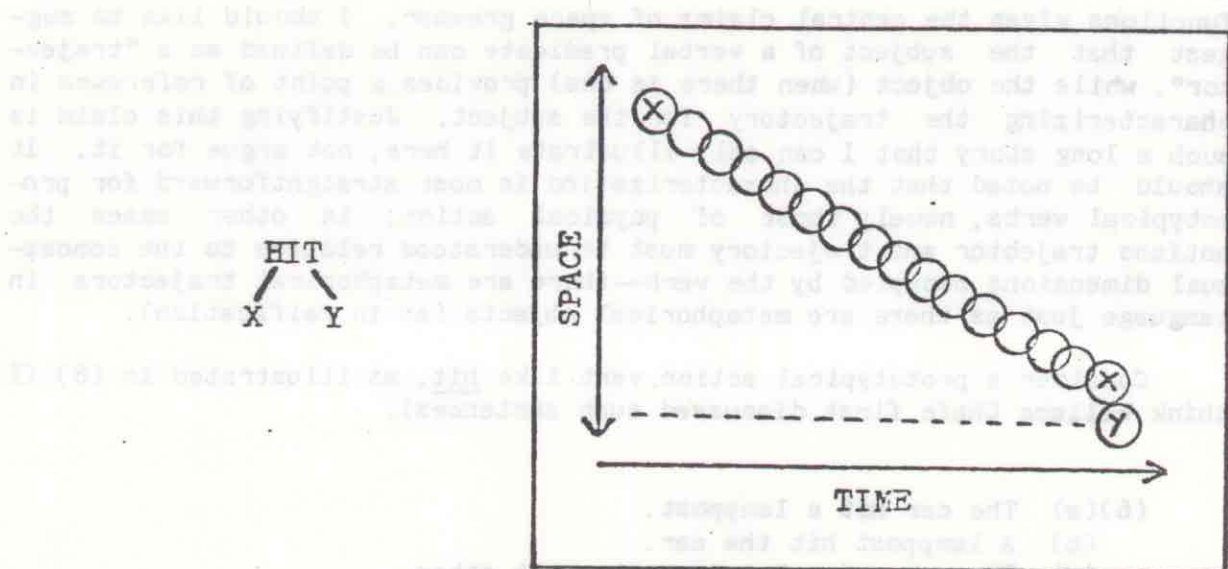


Figure 13

movement at all but instead describes a configuration definable at a single point in time. Yet this characterization provides the solution. I indicated above that the notions *trajector* and *trajectory* must be understood relative to the conceptual dimensions occupied by the verb. *ON* does not occupy the temporal dimension, or rather it represents the limiting or degenerate case of a temporal profile, namely the case where the temporal profile consists of a single point, as shown in Figure 14. *X* is still a *trajector* in the sense that it is located relative to *Y*, which provides a point of reference for this purpose; location, in other words, is the stative (or degenerate) version of motion, but granted the limitations imposed by stativity, the characterizations of subject and object remain valid.

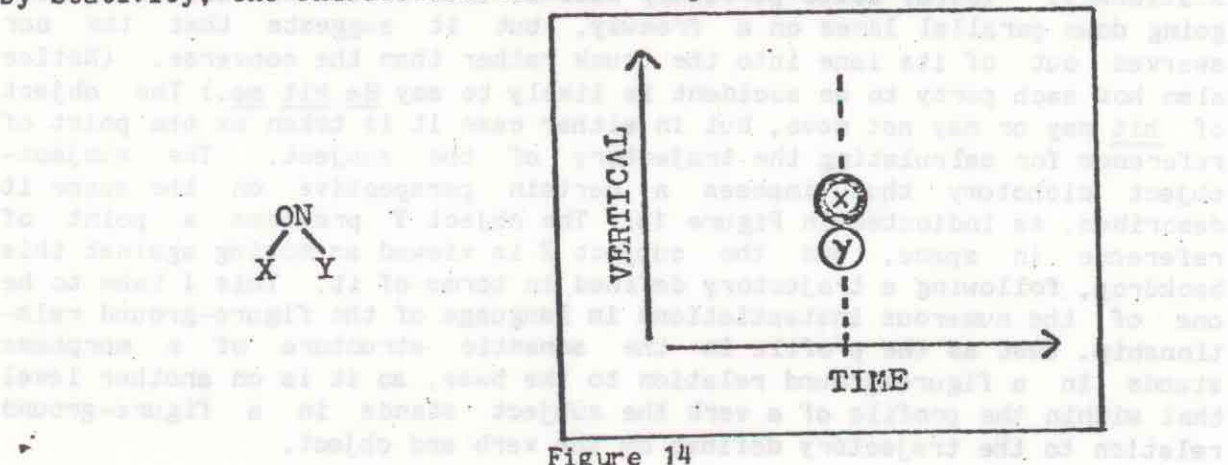


Figure 14

I claim, then, that in the structure *X ON Y* the subject *X* is the figure (degenerate *trajector*) and is located with reference to *Y*, rather than the converse (cf. Miller and Johnson-Laird 1976, p. 379). (I have put *X* in

boldface to emphasize its role as figure; the relation among the notions figure, head, and profile is discussed below.) To see this, consider a scene in which there are three boys and three horses, with one boy only seated on a horse.

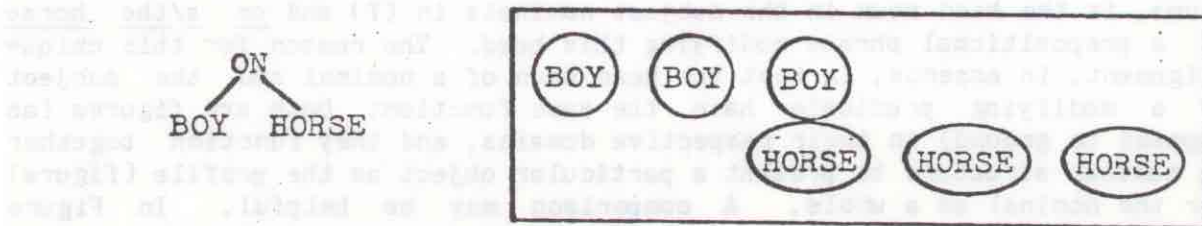


Figure 15

The situation in Figure 15 is symmetrical, but a curious asymmetry shows up when we examine the sentences in (7) relative to this scene.

- (7)(a) A boy on a horse is looking this way.
- (b) The boy on a horse is looking this way.
- (c) A boy on the horse is looking this way.
- (d) The boy on the horse is looking this way.

What is relevant here is the definite article, which implies contextual uniqueness, and in particular the contrast between (b) and (c). (7)(a) is appropriate to the situation at hand because neither the boy nor the horse is unique—there are several of each—though given the information that the boy is on the horse it is possible to narrow down the reference to a particular boy and a particular horse, as is done in (d). (7)(a) and (d) thus reflect different ways of construing the situation for referential purposes; in (a), the speaker suggests that he is viewing the scene while the hearer is not, while in (d) the speaker presupposes that the hearer also views it and is therefore able himself to uniquely identify the horse and rider. (7)(b) takes still another perspective, one that brings out the role of the object as providing a point of reference for locating the subject. Since there are several horses, the indefinite article is appropriate for horse. Starting from a horse as a point of reference, however, the expression on a horse defines a (type of) location, and within that location there is only one boy, hence the use of the definite article: the boy on a horse. But we cannot proceed in the opposite direction. (7)(c) is inappropriate to describe the scene in Figure 15 (though—irrelevantly—it would be appropriate to other scenes). We might expect to be able to start with a boy as a point of reference, with a boy on defining a location in terms of which horse is unique, yielding a boy on the horse, but in fact we

cannot. This asymmetry is explained if we take the subject of on to be a trajector located in reference to its object.

This conception has the further virtue of allowing us to explain what I believe to be a fully universal phenomenon of grammatical structure: whenever a prepositional phrase (or its equivalent) is used as a noun (or verb) modifier, it is always the subject of the preposition that functions as the head of the overall expression, never the object (i.e. prepositional phrases always modify through their subject). Thus boy, in traditional terms, is the head noun in the subject nominals in (7) and on a/the horse is a prepositional phrase modifying this head. The reason for this unique alignment, in essence, is that the head noun of a nominal and the subject of a modifying predicate have the same function: both are figures (as opposed to ground) in their respective domains, and they function together in nominal structure to present a particular object as the profile (figure) for the nominal as a whole. A comparison may be helpful. In Figure (9)(a), depicting the base (ground) for the morpheme knife, the profile within that base is a particular physical object; the profile is that portion of the base that the morpheme designates and which the remainder of the base helps to define. When we consider nominal structure, we find that the head noun is analogous to the profile if we take the nominal as a whole to be a base. Observe that the boy on a horse designates the boy, not the horse or the overall situation; boy is the profile the nominal presents for interaction with larger structures (e.g. boy is the trajector for look in (7)), and the remainder of the nominal serves as a context to define this profile.

Our examples have now led us from individual morphemes to larger grammatical constructions. The pattern that starts to emerge is one of the same basic notions cropping up at different levels of linguistic structure, offering prospects for a unified account of seemingly disparate phenomena. In the remainder of this paper I will try to give an overview of the essential functional components of a finite clause, elaborating on the concepts presented so far to show in fuller (though still sketchy) detail what kind of structure space grammar attributes to simple sentences. As a preliminary step, it is necessary to consider the idea of higher-order levels of organization, i.e. the notion of structural hierarchies as they appear in this model. It will be convenient and hopefully enlightening to begin with phonology.

Explorations in space grammar have led me to observe many surprisingly detailed parallels between phonological structure and grammatical structure. One of these, shown in Figure 6, is the appropriateness to both of "AD-structure", the division of basic units into autonomous units and dependent ones. I will speak of "incremental" structures when, starting from an autonomous element (A-unit), dependent elements (D-units) are added one by one, each addition forming a larger A-unit to which the next D-unit is appended. In phonology, the syllable is an incremental structure, an AD-structure formed by elaborating the vocalic nucleus in either or both directions through successive consonantal increments that form consonant clusters rhythmically associated with the nucleus, as seen in Figure 16.

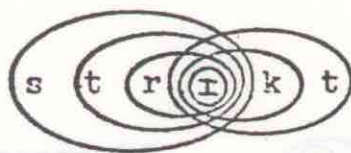
strict

Figure 16

It is well known that syllabic organization is only the lowest in a hierarchy of levels of phonological structure. I will speak of "higher-order" structure when the AD-units from one level participate as basic units in another layer of AD-organization, some autonomous and others dependent (though all are autonomous at the first level). Two levels of structure are represented in the English words Canada and guitar, as seen in Figure 17, the syllabic level of AD-structure and a second level taking syllables as basic units and organizing them into "feet"; each foot contains one syllable with maximal stress, making it the A-unit at the foot level, and others with lesser stress, making them D-units. Otherwise put, D-syllables are rhythmically dependent on A-syllables just as consonants are rhythmically dependent on the vocalic nucleus within a syllable.

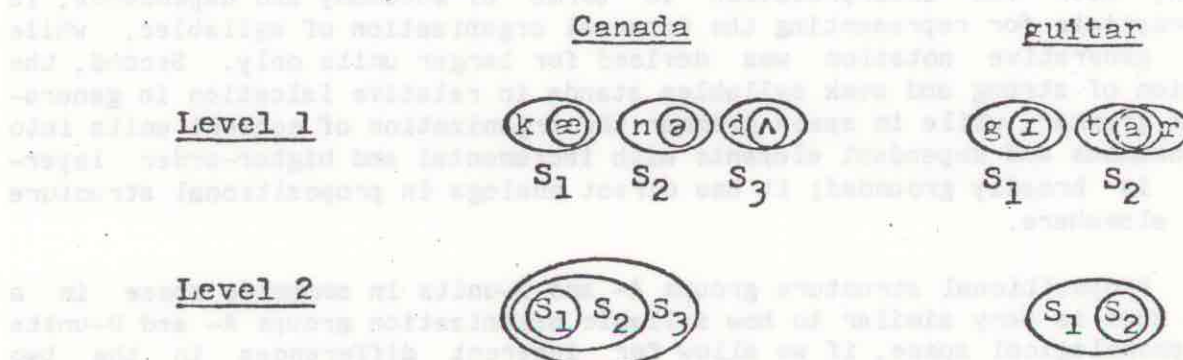


Figure 17

A word like macaroni involves three levels of organization, with one foot from level 2 serving as A-unit on level 3 and the other foot rhythmically subordinated to it, as illustrated in Figure 18(a). Figure 18(b) is equivalent; it emphasizes that these levels of structure are simultaneous and superimposed on one another.

It will be noted that this notation for AD-structure in phonology is formally very similar to the recently proposed hierarchies of strong and weak syllables in generative phonology (see Liberman and Prince 1977), but

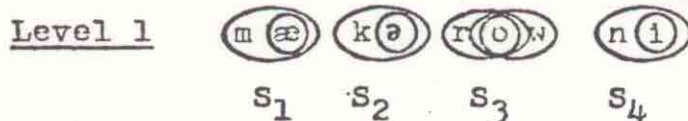
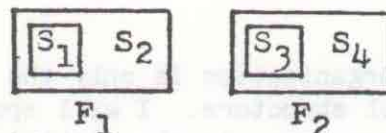
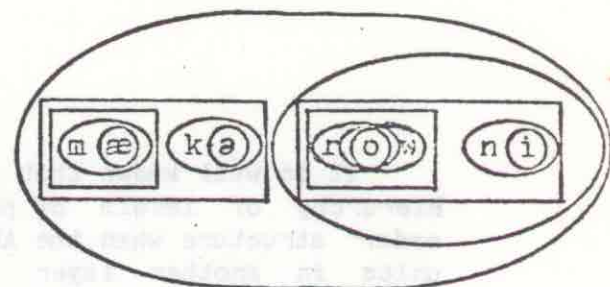
(a) macaroniLevel 2Level 3(b) macaroni

Figure 18

two observations might be made in this regard. First, the present notation, with its interpretation in terms of autonomy and dependence, is appropriate for representing the internal organization of syllables, while the generative notation was devised for larger units only. Second, the notion of strong and weak syllables stands in relative isolation in generative grammar, while in space grammar the organization of content units into autonomous and dependent elements with incremental and higher-order layering is broadly grounded; it has direct analogs in propositional structure and elsewhere.

Propositional structure groups A- and D-units in semantic space in a way that is very similar to how syllabic organization groups A- and D-units in phonological space, if we allow for inherent differences in the two domains. To the extent that semantic structure is propositional in nature, it reflects at least three superimposed levels of organization, as in Figure 18. The lowest level consists of individual predicates, where a predicate is understood as the semantic representation of a morpheme. O-PRED (nouns) and predicates with positive valence (verbs) correspond to vowels and consonants respectively as basic content units. Just as vowels are elaborated by consonants to form incremental structures called syllables, so A-PRED are elaborated by D-PRED to form incremental semantic structures called "predication strips". At the lowest level of organization, which I will call "micro structure", the semantic structure of a sentence consists of an assembly of predication strips, much like an expression consists phonologically of chains of syllables. Figure 19 sketches the micro structure of (8); note that within this structure the A-PRED BOY is elaborated by successive D-PRED to form the predication strip DIST(BE(ING(EAT(BOY)(-))))), which partially coincides with the strip

DIST(BE(ING(EAT(-)(APPLE))))), which in turn overlaps with the strip VERY(BIG(APPLE)), etc.

- (8) The boy on that horse near the runners was eating a very big apple.

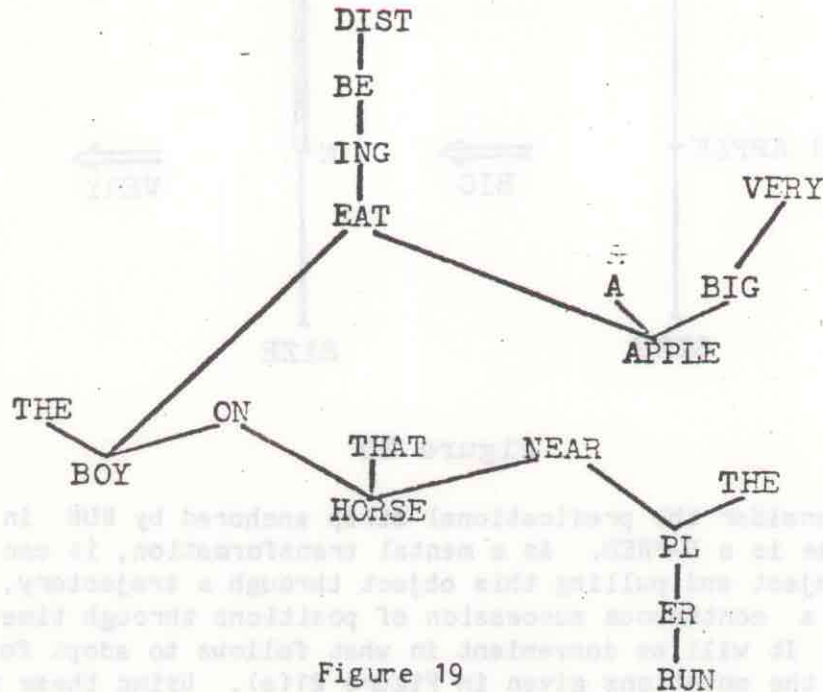


Figure 19

Our task now is to see in a little more detail how (micro) propositional structures like Figure 19 are put together, and then to follow this example through higher levels of organization to get an idea of the layers of image and perspective involved in the overall structure of a simple sentence.

It is helpful to regard a dependent predicate as effecting a mental transformation on the structure that supports it (obviously this has nothing to do with the transformations of generative grammar). A predication strip, based on an A-PRED that is successively elaborated by D-PRED in an incremental structure, therefore constitutes a record of how, step by step, an autonomous conceptualization is built up, modified, or altered in perspective. BIG, for example, elaborates APPLE along the size dimension, transforming a conceptualization unspecified in size (apart from what we know about the normal range for apples) to one in which the object is located beyond the norm in the positive direction. VERY intensifies this shift toward the positive pole and thus specifies the size in still more detail. In this case the mental transformations merely elaborate, give finer specifications of the value along a parameter introduced by the A-PRED, as seen in Figure 20.

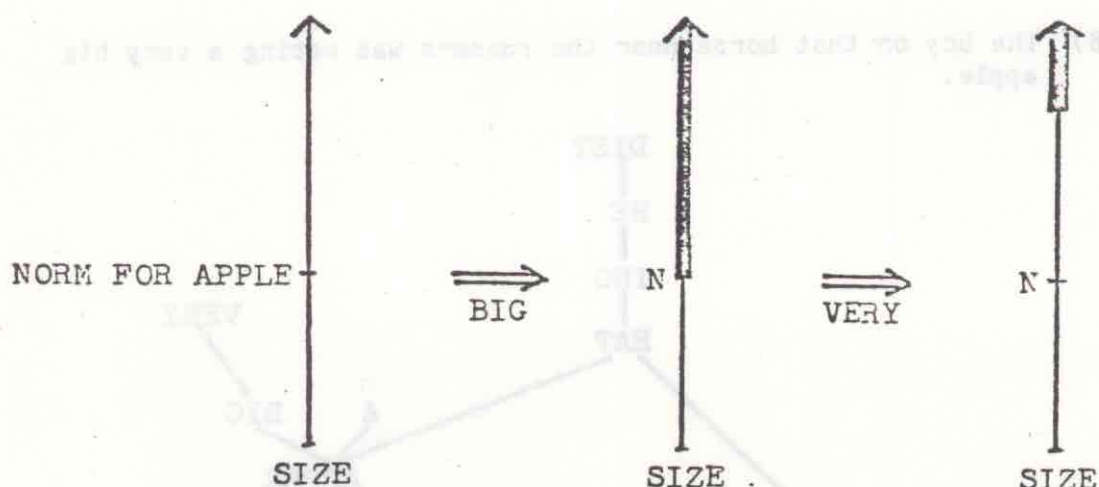


Figure 20

Next consider the predication strip anchored by RUN in Figure 19. RUN of course is a D-PRED. As a mental transformation, it can be viewed as taking an object and pulling this object through a trajectory, i.e. making it assume a continuous succession of positions through time (as for X in Figure 13). It will be convenient in what follows to adopt for conceptual structures the notations given in Figure 21(a). Using these notations the transformation effected by RUN can be schematized as in 21(b). The object is made into a trajector that follows (through time) the trajectory indicated by the arrow.

The predicate ER is a nominalizer. In terms of the concepts presented here, it effects a shift in profile, orienting the trajector-trajectory profile of RUN in such a way that the trajector becomes the profile and the trajectory a base in terms of which this profile is defined, as seen in Figure 22(a). 22(b) and (c) present the same relation using other notations. 22(b), like (a), attempts to depict schematically the conceptual configurations in question. We can interpret (b) as indicating that the profile for RUN is rotated in such a way that the language user focuses his attention on the object or trajector involved, and sees the running process only as a means of characterizing that object; the trajectory is internalized, as it were, and it is as an object rather than a process that RUNNER interacts with other predicates in the sentence. 22(c) is not a conceptual representation but a linguistic representation, showing the arrangement of predicates—the semantic representations of morphemes—in a propositional structure. RUN, as a D-PRED, would not normally be suitable to anchor a predication strip, but this becomes possible in combination with ER precisely because of the nominalizing function of the latter. Since the object brought into focus by ER is precisely the one presupposed by RUN,

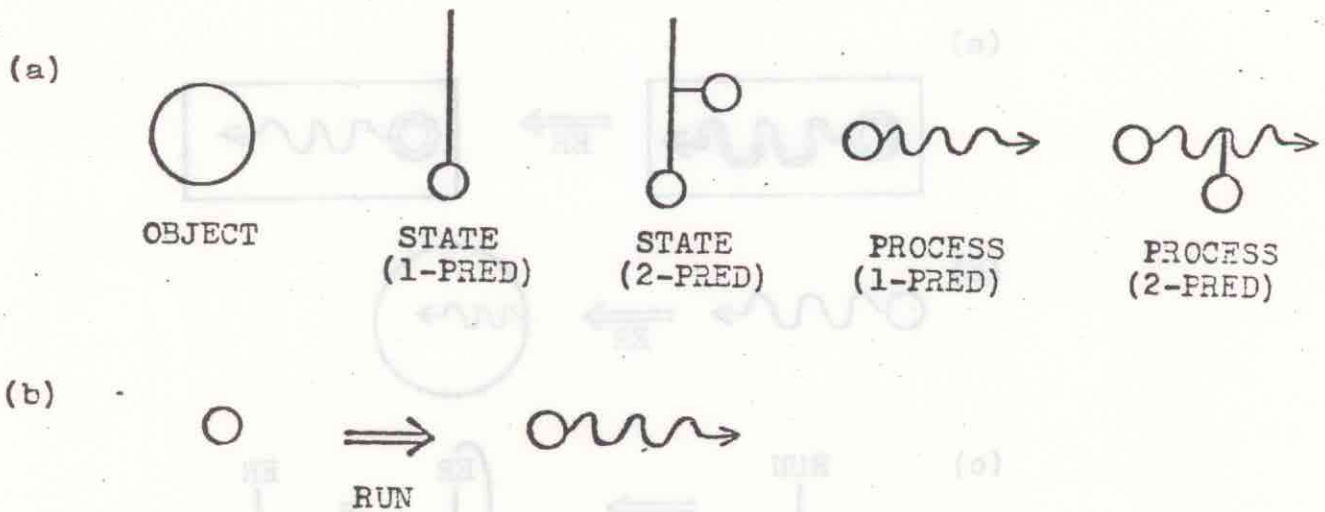


Figure 21

and since the construction with ER allows the participation in a process to be the sole explicit factor in defining an object, the ER(RUN) structure as a whole is autonomous and can anchor the predication strip. As seen in 22(c), the object characterized by ER satisfies the valence of RUN, which presupposes the object; it is like a snake swallowing its tail, giving the loop in 22(c), which we can suppress to simplify the notation.

The plural predicate performs the transformation of replication. It takes a discrete object and replicates it to form a type of mass, a more abstract object of indefinite size and shape. Though some phenomena (e.g. the choice between much and many) are sensitive to the difference between true masses and replicate masses, plural nouns do in fact function as mass nouns in various ways:

- (9)(a) He likes milk.
 (b) He likes runners.
 (c) *He likes runner.

The predication strip ((RUN)ER)PL in Figure 19 can thus be regarded as a record in the linguistic code of the sequence of conceptual transformations given in Figure 23; these transformations, based on the notion of running, derive a conceptualization that functions as a (replicate) mass object for purposes of interaction with other elements. Running does not figure in the profile of the expression runners, but it does provide the base for characterizing the individual objects that constitute the replicate mass.

I can mention only in passing here the integral relation posited in space grammar between morphological structure and semantic or propositional structure. While many factors intersect and intervene to produce a total picture that is complex and in many respects irregular, the canonical

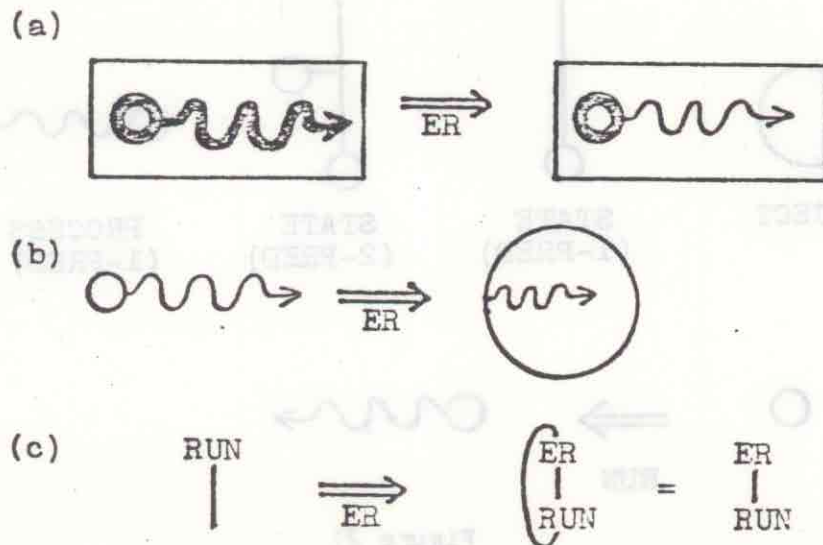


Figure 22

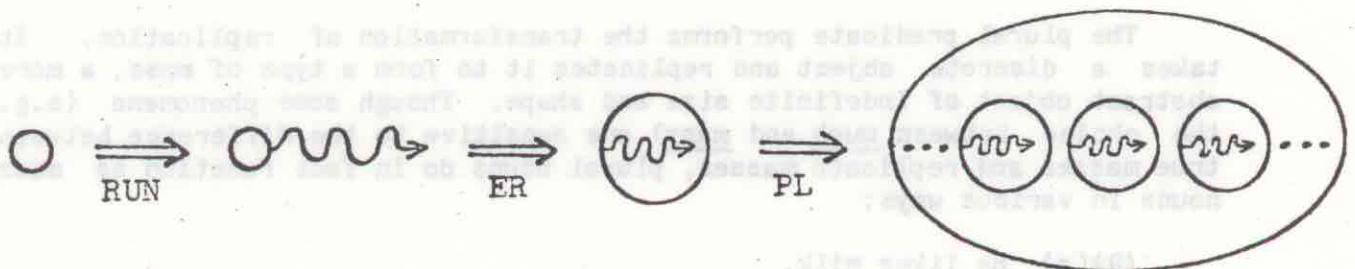


Figure 23

situation in morphology—the central relationship in terms of which the actual complexity and irregularity must be measured—is that in which morphological layering directly reflects the incremental AD-layering of propositional structure. In canonical cases, the root is a relatively full unit of semantic content and also phonological content, and the successive modification of the semantic content by increments of propositional structure is mirrored by the successive modification of the phonological content by increments of morphological structure. Figure 24 shows how morphological layering mirrors conceptual layering in the case of runners. Just as there are numerous kinds of transformations a D-PRED can perform on an A-structure (e.g. elaboration, profile shift, replication), so there are

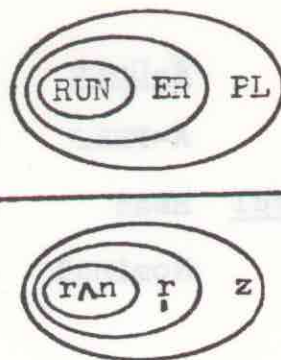


Figure 24

numerous kinds of transformations that can be performed on the phonological manifestation of the A-structure to symbolize the D-PRED (e.g. ablaut, stress shift, reduplication, suppletion), of which affixation is only a special case. To the extent that affixation prevails and a word can be segmented into discrete morphemes, morphological layering of the sort shown in Figure 24 can be regarded as the shadow cast on phonological substance by semantic structure. (This is a mode of phonological organization simultaneous with and intersecting the purely phonological structuring of Figures 17 and 18.) A fuller account of morphology must of course allow for the full range of regularity, productivity, transparency, and deviation from the canonical form-meaning alignment, but I must ignore these matters here.

Now that I have given a rough description of micro structure, we can turn our attention to the higher-order levels of structure superimposed on it. If we confine our attention to simple sentences, i.e. single finite clauses, there are two such additional levels. In the first of these, the intermediate level of organization directly above micro structure, contiguous sequences of predicates on predication strips are organized into "heads", which function as A-units at this intermediate level, and "modifiers" of various kinds, which are D-units associated with the heads. A head and its modifiers combine to form a "macro unit"; macro units are analogous to feet in Figure 18 and are the basic elements for the third layer of organization, which we can call "macro structure". Depending on the overall valence of the head at the intermediate level, a macro unit can be either autonomous or dependent. An autonomous macro unit will be called a "nominal" and is roughly equivalent to the "noun phrase" of transformational grammar. A dependent macro unit will be called a "verbal", and there is just one verbal in a finite clause. We therefore have three levels of AD-organization, quite analogous to the phonological structure in Figure 18. The terminology is summarized in Figure 25.

The notion "head" is crucial to the intermediate level of organization. I have already observed that the head within a macro unit is

	<u>A-Unit</u>	<u>D-Unit</u>	<u>AD-Structure</u>
<u>Micro Level</u>	A-PRED	D-PRED	Predicational Strip
<u>Intermediate Level</u>	Head	Modifier	Macro Unit
<u>Macro Level</u>	Nominal	Verbal	Finite Clause

Figure 25

precisely analogous to the profile within the base serving to define a morpheme. The head within a nominal is the object that the nominal as a whole designates; thus horse is the head within the nominal that horse near the runners, so that the "shape" of the nominal as a whole, the profile it offers for other, external relationships, is that of a horse. The head within a verbal, similarly, is the relationship that the verbal as a whole designates; thus run rather than in the park defines the verbal profile of The boy ran in the park, and hence the clause as a whole describes a process rather than a state (location). The head-modifier distinction therefore involves image and perspective. In fact it is a central device for effecting the desired orientation.

The head of a macro unit is in a very real sense its hub, as it serves as point of attachment for possibly numerous separate predicational strips that are not related to one another in any other way. This can be shown by the intermediate-level organization of the nominal in (10), given in Figure 26 with heads circled and modifiers enclosed in rectangles.

(10) that very bright red apple with a long stem in the bowl

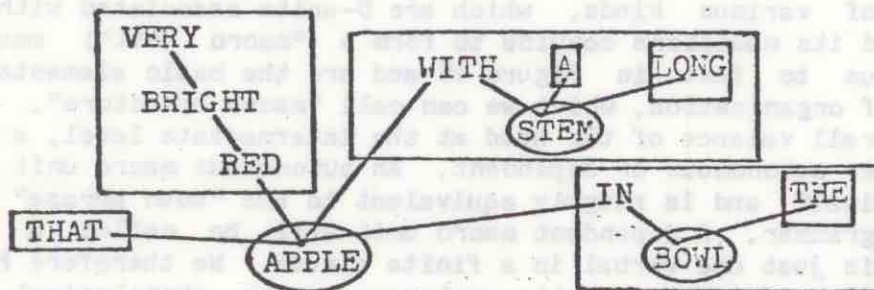


Figure 26

Several things can be noted in connection with this example. First, this intermediate-level organization is superimposed on the micro structure; micro structure provides the raw material out of which intermediate-level structure is shaped, just as chains of syllables provide the raw material for foot-level phonological organization. Second, heads and modifiers are natural semantic units in terms of the underlying predication assemblies; each modifier represents a separate branch from the head, and contains all the predication material located on that branch and no other. Third, the head-modifier organization, defined in semantic and functional terms, can readily be seen to have structural significance as well, in particular for statements of linear order; note that the modifiers function as units in regard to linear ordering, so that VERY, BRIGHT, and RED, for instance, are contiguous to one another linearly and not intermingled with elements from other modifiers. Fourth, modifiers are the dependent units at this level of structure and the head is autonomous; observe that each modifier as a whole has one open valence, which is satisfied by the head, while the head need not have any (the verbal head has valence by definition, but that valence is satisfied by its arguments, not its modifiers). Finally, a modifier can itself contain a head with its own modifiers, an important point in establishing hierarchies of prominence among the objects and relations in a scene.

We come back now to sentence(8); Figure 27 gives its intermediate-level structure superimposed on the substrate of micro structure. The micro structure in Figure 27 depicts a scene in propositional form, but by no means does it do so in neutral fashion, for some objects and relations are foregrounded at the expense of others, and head-modifier organization is chiefly responsible for this. Sentence (8) portrays the scene in terms of an act of eating involving a boy and an apple, and all the other objects and relations are subservient to this purpose. Big, for instance, can function as part of a verbal head (It is big) but here it merely gives a subsidiary characterization in the role of modifier to apple and is not foregrounded as the property (relationship) serving to organize the whole scene. The overall subject nominal of (8), the boy on that horse near the runners, is highly complex in terms of image and perspective. The replicate mass object specified by runners, which is itself a head (and thus offers a profile) in purely local terms, is downgraded as part of a modifier to the head horse, providing a point of reference for specifying its location. The horse so located serves in turn as point of reference for specifying the location of boy, which is head and profile for the nominal as a whole. This nominal therefore has the semantic effect of orienting the scene so that the boy figures in its profile, while the horse is brought into the picture only as a subsidiary predication to provide a backdrop to the boy, and the runners are brought into the picture only to provide a backdrop to the horse.

The notions head and modifier are of course very traditional ones. The present account does not conflict with traditional descriptions in any essential way, but rather seeks to make somewhat more explicit the imagic function of these constructs in relation to a more general characterization of the perspective and imagery embodied by grammar. One way of bringing

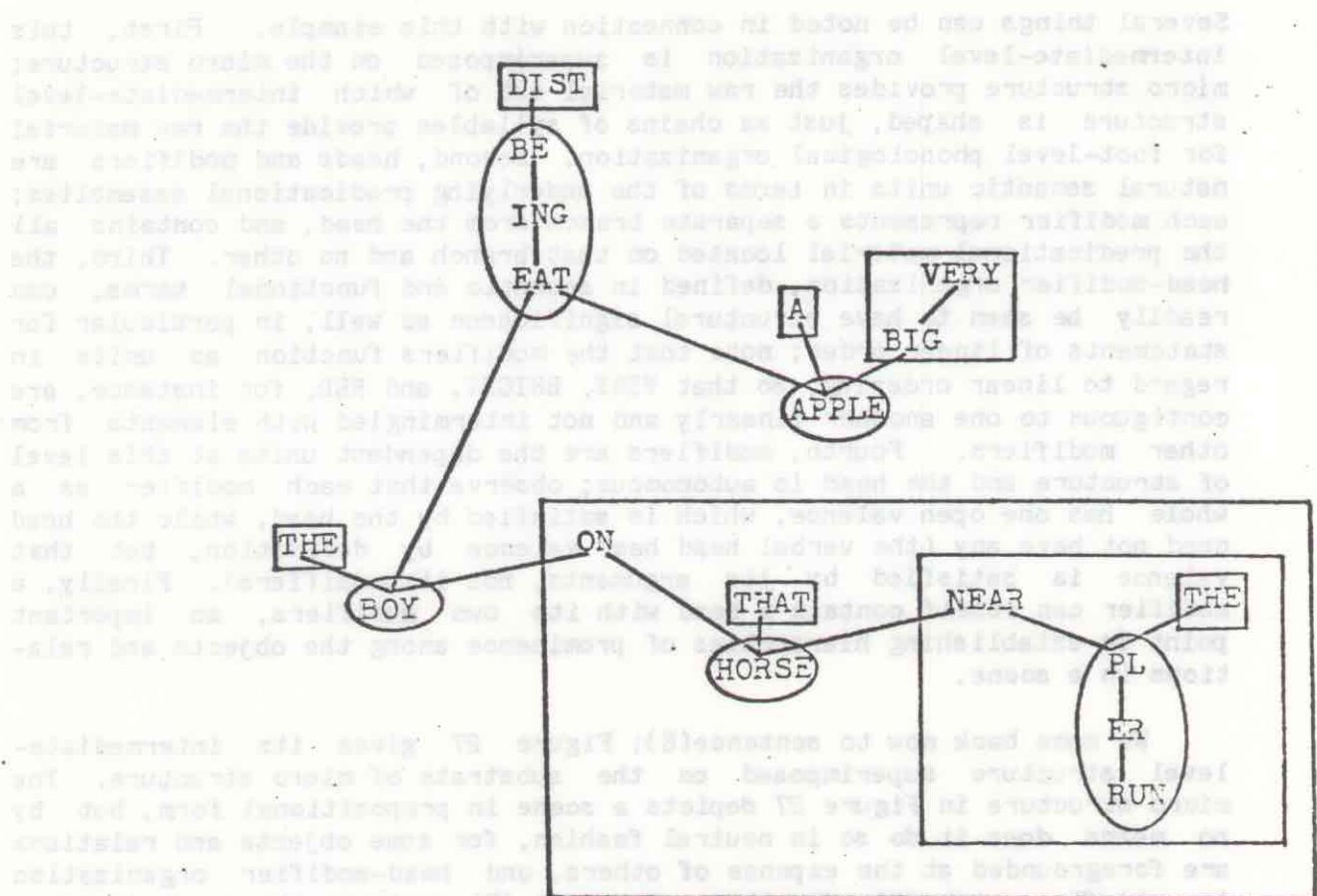


Figure 27

the imagic function of head-modifier relations to the fore is by comparing alternative arrangements of the same propositional content relative to the same scene. The sentences in (11) are but some of the additional ways of portraying the scene depicted in (8) using roughly the same propositional content.

- (8) The boy on that horse near the runners was eating a very big apple.
- (11)(a) The apple the boy on that horse near the runners was eating was very big.
- (b) The runners were near a horse on which there was a boy eating a very big apple.
- (c) The horse on which the boy was eating a very big apple was near the runners.
- (d) The boy eating a very big apple was on that horse near the runners.

These sentences differ in their overall image in a way quite analogous to that in which PARENT and CHILD differ in profile relative to the same base.

Just as PARENT designates one object and brings another object (CHILD) into the picture only as a means of identification through their mutual relationship, so sentence (8) designates the relation ((BOY)EAT(APPLE)) and refers to other objects and relations only by way of indicating the total scene that forms the backdrop against which this profile is viewed.

I have compared the head of a macro unit to a hub, from which radiate valence connections to other elements. Each "spoke" radiating from the hub represents the elaboration of the head along a separate conceptual dimension. In Figure 26, for example, one modifier elaborates apple in the color dimension (very bright red), another in the shape dimension (with a long stem), a third in regard to its physical location (in the bowl), and a fourth in regard to its "epistemic status" in relation to the speech act participants (that). This last dimension is especially important for understanding further aspects of sentence perspective.

A sentence describes an "objective situation" of some kind and further indicates the epistemic status of that situation from the viewpoint of the speaker and the context of the speech act. (The objective situation is of course objective only in relative terms, because we can talk about abstract situations as well as concrete, even mental ones (as when we discuss thoughts and beliefs), and can even talk about the speech act itself and its participants.) This means that the relationships expressed in a sentence pertain to two separate planes: the plane of relationships among the objects in the objective situation under discussion, and the plane of relationships between the speech situation and elements in the objective situation. There is thus a basic functional dichotomy among the predications making up the propositional structure of a sentence, a dichotomy between "epistemic" and "objective" units. In the case of nominals, epistemic predicates basically pertain to the identification of objects participating in the objective situation. Demonstratives and the definite article, for example, indicate that the identity of an object is known to both speaker and hearer (contextual uniqueness), while the indefinite article indicates a less secure epistemic status. In the case of verbals, epistemic predicates basically pertain to the assessment of reality; they include modals, for instance, as well as the "past tense" or "distal" predicate (DIST), which dissociates the structure embedded to it from speaker viewpoint (see Langacker 1978).

The functional dichotomy between objective situation and epistemic status entails that speaker-hearer perspective on a scene is organized into two distinct, essentially orthogonal components, as I have tried to indicate in Figure 28. S in Figure 28 symbolizes the speaker and the speech situation in general. It may be helpful to conceptualize the dotted lines as projecting out of the paper and converging at point S, located above the rest of the figure. In any case, the perspectives in the two planes are basically independent of one another and quite different in character. The head-modifier (figure-ground) relationships in the objective plane serve to structure the elements of the scene relative to each other, e.g. making eating the focus of attention as well as foregrounding boy relative to horse and horse relative to runners. In the epistemic plane, on the other

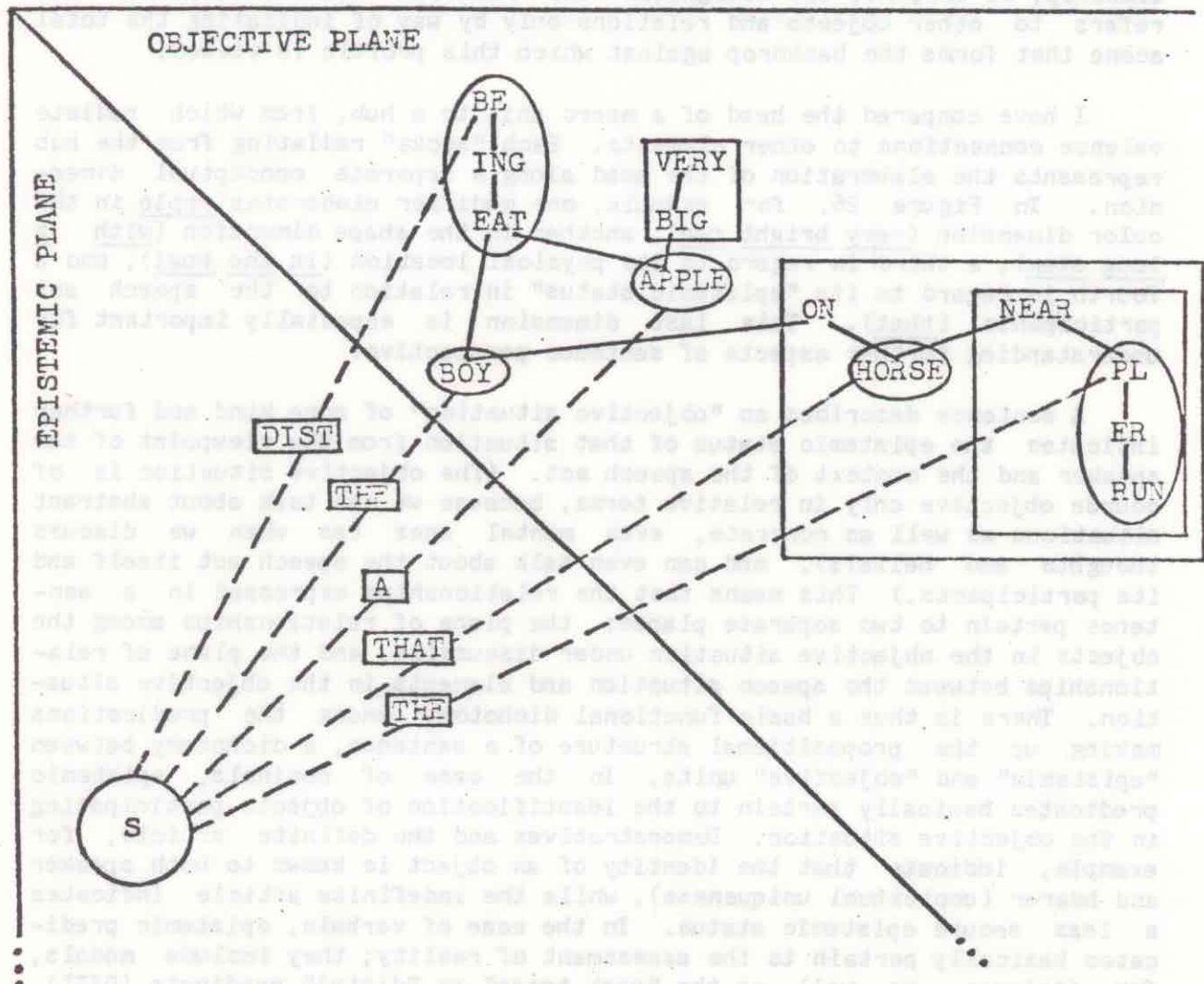


Figure 28

hand, the objective heads are all treated individually, in comparative isolation from one another. (We saw earlier, however, in connection with (7), how the epistemic predications can interact through the mediation of the structure in the objective plane.) Each epistemic predicate clarifies the epistemic status, with respect to S, of the entity designated by a single head. Structure in the objective plane orients the conceptual scene under discussion so that we are looking at certain objects and relations against the backdrop of others. The predications of the epistemic plane do not affect this objective orientation, but pertain instead to the epistemic (not physical) distance of the entities so oriented. For verbs this epistemic distance is a matter of time and reality (see Langacker 1978), and for nouns it is a matter of whether the objects involved are identified to the speaker and hearer.

One central aspect of this conception is that heads are linked to one another solely in the objective plane, as Figure 28 in fact shows. This has the empirical consequence that an objective D-PRED should be blind to epistemic elements in its selectional restrictions, and certainly this is generally if not always true. A verb may select for animate subjects or concrete objects, but not for whether its subject or object is definite.

Now we are ready to shift our attention to the third level of organization, that of macro structure. Macro structure takes as its basic units two kinds of macro units, nominals and verbals, which are autonomous and dependent respectively. A macro unit requires, by definition, enough salience in the objective situation to have separate epistemic status. Several objects may participate in a scene with sufficient separate identity (referentiality) to receive an epistemic predication, but only one verbal does, and it imposes through its profile the primary organization of the central objects in the scene. (An epistemically qualified verbal head is the defining element of a finite clause, and if an expression contains more than one, it thereby contains more than one clause.) Verbs that are not epistemically qualified, for instance big and on in (8), are not considered as forming heads or defining verbals or clauses; their status in time and reality is limited to what can be deduced from their relationship to elements that do have explicit epistemic status. Similarly, nouns that are not epistemically qualified are not considered as forming heads or defining nominals. Runner in (8) has no direct epistemic status, though it is given an epistemic status indirectly through runners. In (12), baby has no epistemic status other than what can be deduced from that of the verbal as a whole, hence baby does not so much designate an actual object as identify the type of object to which the sitting pertains (this is generally true of incorporated objects); it is part of the verbal head.

(12) Margo babysat last night.

A macro unit comprises an epistemic predication, a head, and modifiers to that head. Using double lines to delineate macro units, I depict all three levels of structure for (8) simultaneously in Figure 29. The two highest-ranking nominals in (8), the boy on that horse near the runners and a very big apple, are autonomous units in that their heads, boy and apple, have zero valence. The verbal, was eating, is dependent, for its head be eating (and eat in particular) has a valence of two, satisfied by boy and apple. Note that while these three macro units function as wholes (in terms of linear ordering, for instance) and constitute as units the basic elements of the sentence (subject-verb-object), what binds them together is valence relations between the content predicates of their heads. If we were to report the scene described by (8) in telegraphic or newspaper-headline style, we would probably use exactly these content units: BOY EATS APPLE.

I believe we can validly compare BOY, EAT, and APPLE in Figure 29 to "basic level categories" in taxonomic hierarchies (these are represented in the schematic plane in a space grammar). This is the level at which lexical units display 'maximal clusters of humanly-relevant properties' (as

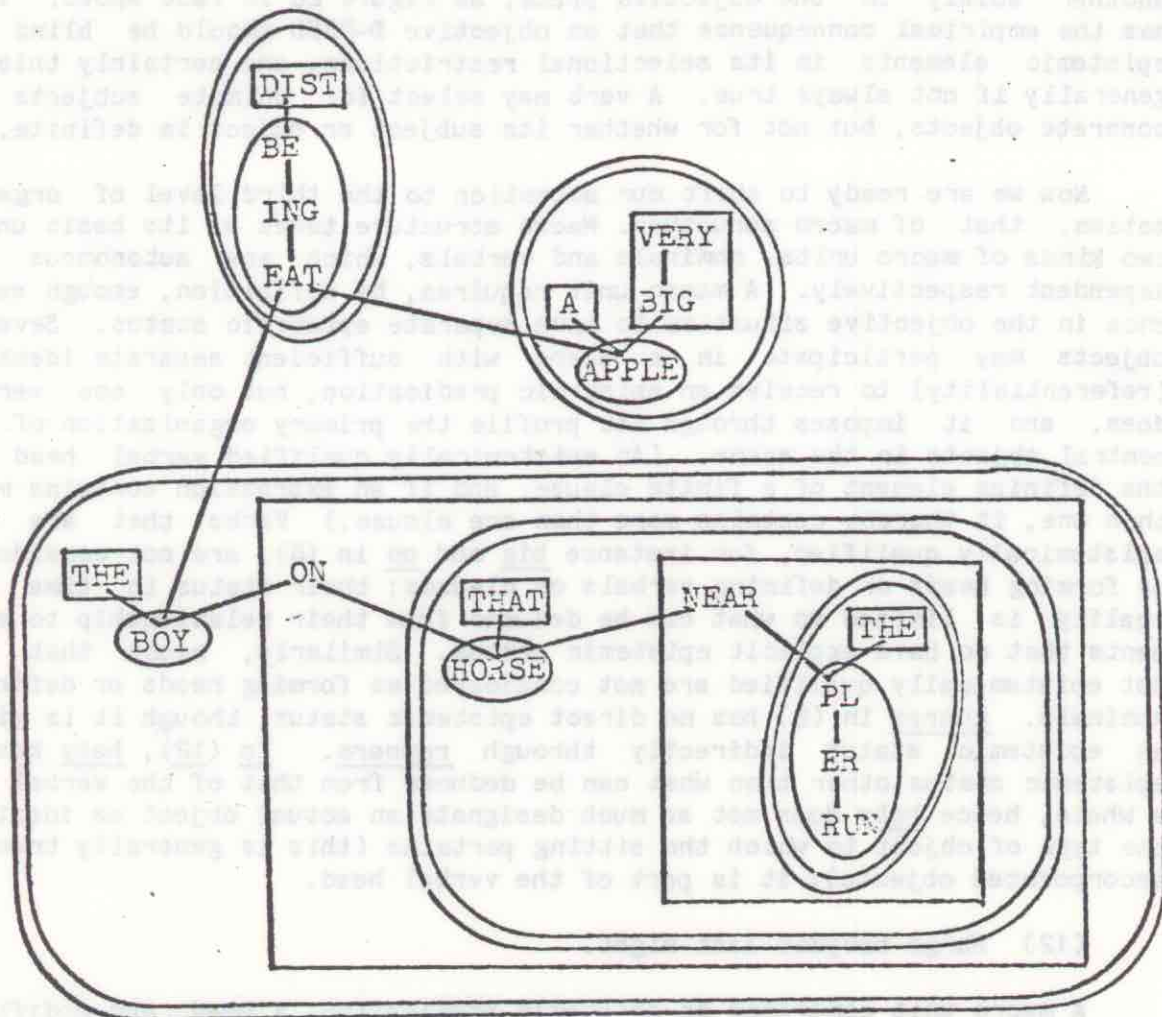


Figure 29

Lakoff 1977 summarizes Rosch, e.g. Rosch 1975). One specific point of similarity is the importance of both for "objective shape" (as opposed to temporal or aspectual shape, discussed below). Having a prototypical shape is important in defining basic level lexical categories, e.g. the basic level unit HAMMER has a prototypical shape, but the superordinate category TOOL does not. In the more transient world of finite clauses, which are usually novel creations rather than established units, basic level elements are the primary objects in terms of which the speaker conceptualizes an objective situation and the primary relation connecting them, with all other objects and relations being oriented away from the speaker to form a backdrop (or series of backdrops); basic level elements are thus the content units that give the objective conceptual situation its fundamental shape. Heads, as profiles, are the primary determinants of shape for their macro units, and

within the head content predicates like BOY, EAT, and APPLE are the primary determinants.

This brings us to the question of the internal structure of heads. As I have defined the terms, a head is not limited to a single predicate or a single word; it may involve a predication sub-strip, such as BE(ING(EAT)) or PL(ER(RUN)) in Figure 29, or even a more elaborate predication assembly. Here it is possible only to comment briefly on the examples at hand.

What is traditionally called a "head" I will call a "lexical head"; the lexical heads in Figure 29 are EAT, BOY, APPLE, HORSE, and ER(RUN). A lexical head provides substantial objective content. It may be exhaustive of the head (as are BOY, APPLE, and HORSE), but both nominals and verbals permit additional predications that tailor the profile offered by the lexical head in certain ways. This tailoring, as the term suggests, does not introduce substantial new objective content (as a modifier may do), but rather effects profile adjustments of a basically aspectual character. In the case of English nouns, only the plural predicate falls in this category, and it has the effect of replicating the content of the lexical head to give the nominal as a whole the profile of a type of mass, as illustrated previously in Figure 23.

Verbals permit a much wider array of aspectual predications adjusting the profile provided by the lexical head. For the most part these are limited to modifying the temporal profile of the head, its distribution along the time dimension. The perfect participial predicate, for instance, has the effect of changing the temporal profile of fall, which may be short but nevertheless has positive value, into the degenerate stative profile of fallen (cf. Figures 14 and 21(a)), with no intrinsic temporal extension. BE predicates the existence of a state (Langacker 1975, 1978). In present terms, the existence of a state can be regarded as the temporal extension of the configuration it embodies, i.e. BE has the effect of transforming a state into an imperfective process of indefinite duration (the projection of the state through time). Using several different notations, propositional in (a) and conceptual in (b) and (c), Figure 30 sketches these mental transformations for the expression X is fallen. FALL, inherently bounded in time, is transformed by PERF into a state, occupying only a point in time, and that in turn is transformed by BE into a stable situation with indefinite duration. The topmost predicate within the verbal head defines the temporal profile of the verbal (hence of the clause) as a whole, so X is fallen describes the perpetuation through time of a state defined in terms of the completion of a perfective process. Because the verbal profile establishes the orientation of a scene in terms of speaker viewpoint, relative to the speech context S, the time through which the stable situation is perpetuated will include the time of speaking unless some specific predication indicates otherwise. The egocentricity of semantic structure therefore makes X is fallen a statement about the "present", i.e. the situation described is immediate to S with respect to time (and reality) (cf. Langacker 1978).

We are now ready to complete our examination of the image and

(a)
$$\text{FALL}(X) \xRightarrow{\text{PERF}} \text{PERF}(\text{FALL}(X)) \xRightarrow{\text{BE}} \text{BE}(\text{PERF}(\text{FALL}(X)))$$

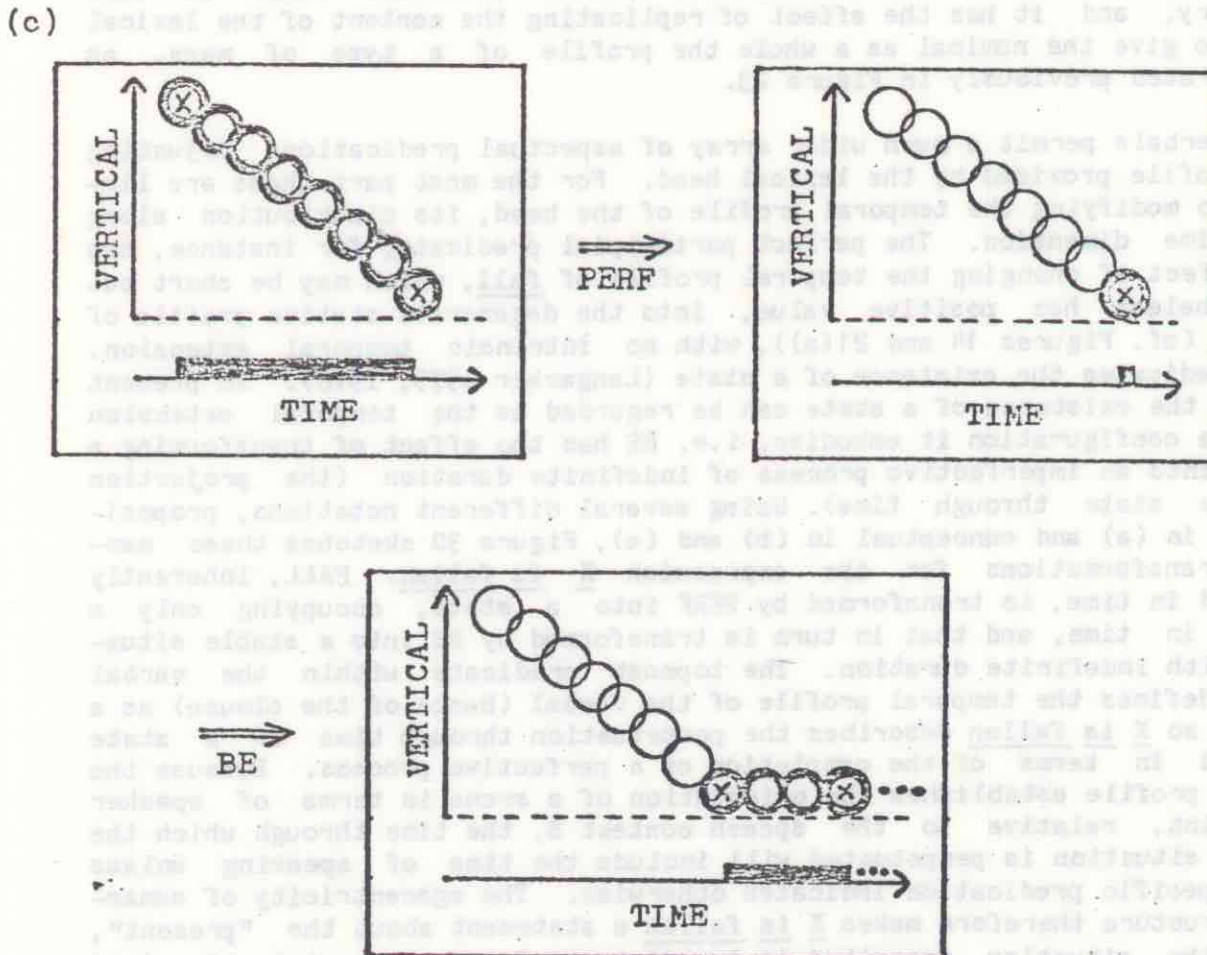
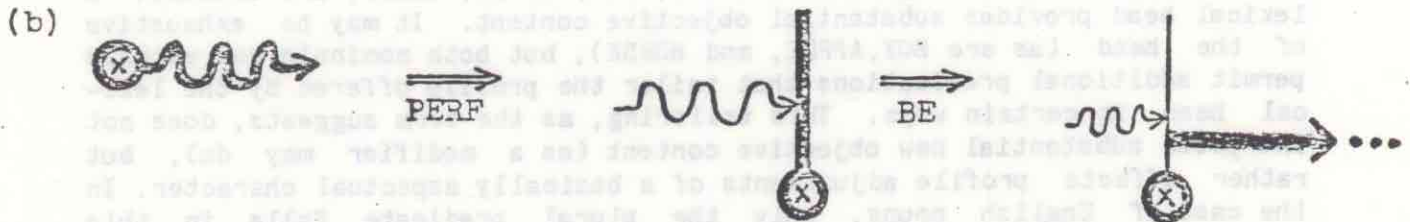


Figure 30

perspective embodied by the grammatical structure of (8). The profile of the sentence as a whole is established by the heads of the three most inclusive macro units; I have schematized Figure 29 as Figure 31, spelling out only relevant features.

- (8) The boy on that horse near the runners was eating a very big apple.

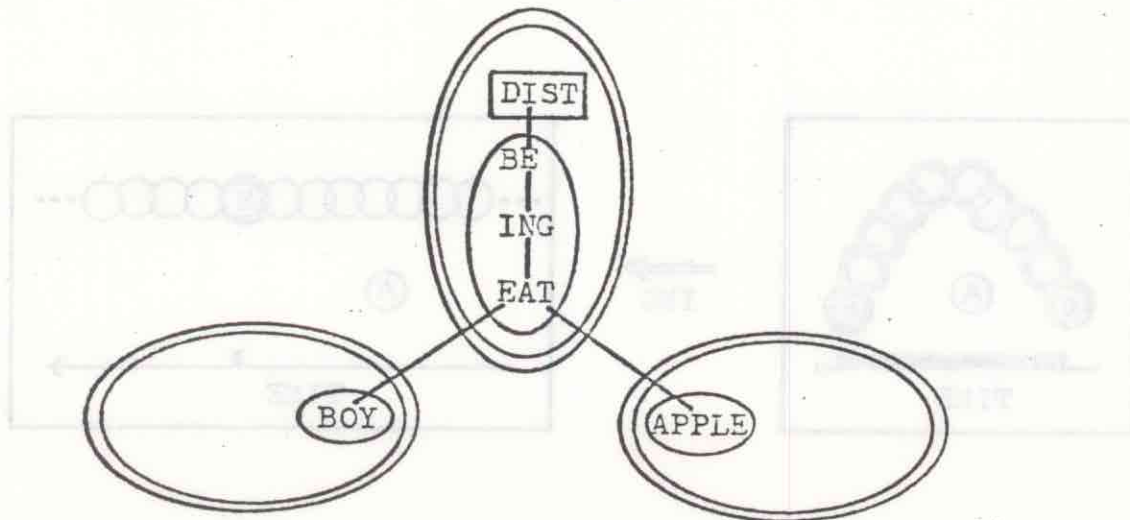


Figure 31

The aspectual ING and BE effect transformations on the temporal profile of ((BOY)EAT(APPLE)) not unlike the one shown in Figure 30, but the details are different and the trajectory involved in eating is harder to depict in a simple diagram. The actual shape I have given to the eating trajectory in Figure 32(c) is therefore somewhat arbitrary; it is only meant to indicate that BOY executes a bounded trajectory for which APPLE serves as point of reference. Recall also that within the verbal profile the subject is figure and the object is ground; I have incorporated this additional layer of foregrounding in 32(b) and (c) by putting only the appropriate positions of BOY in boldface.

In Langacker 1978 I described ING as a stativizing predicate. That I take to be true, but the characterization needs a bit of elaboration. ING reduces the temporal profile of a process predicate to one arbitrarily selected point in the overall trajectory. For that point to be arbitrarily selected, it must be presumed that any point (or sub-sequence) within the overall trajectory is functionally equivalent to any other, i.e. the internal structure of the trajectory must be construed as homogeneous and mass-like, and hence indefinitely extendable in either direction. There might at first blush seem to be a contradiction in attributing to ING stative, point-like properties and also mass-like properties with indefinite temporal extension, but in actuality these are two sides of the same coin.

(a) $EAT(BOY)(APPLE) \xRightarrow{ING} ING(EAT(BOY)(APPLE)) \xRightarrow{BE} BE(ING(EAT(BOY)(APPLE)))$

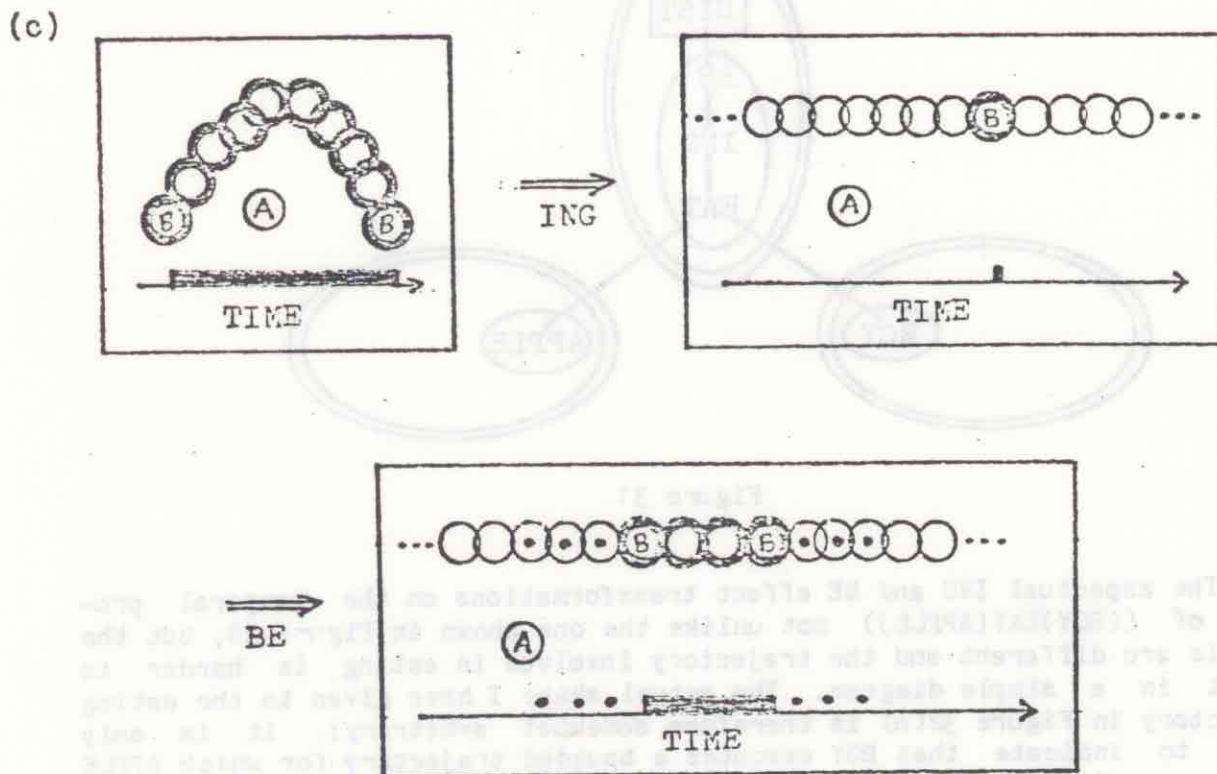
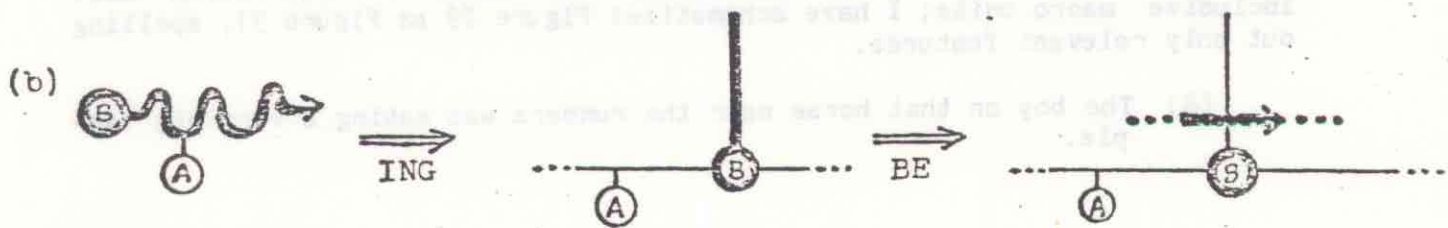


Figure 32

The key to understanding this is by thinking of it in terms of speaker perspective. If the speaker "stands back" and focuses his attention on a broad stretch of time, he can see unfolding within this broad time span the entire trajectory of a perfective process; because of his "distance", the speaker can see more, including all the contours of the process and their relation to one another. (This is analogous to seeing a whole cell under a microscope at low magnification). *ING* narrows the focus of attention to a single point in time, bringing the speaker inside the boundaries of the perfective process and moving him so close that he can see only a very narrow portion of it. (This is equivalent to increasing the power of magnification in a microscope to the point where only a tiny portion of the internal structure of a cell falls within its focal area.) The overall contours

of the trajectory therefore fade from his vision, and as his field of vision narrows to a single point, or a temporal profile of zero, from his perspective the trajectory extends to infinity in either direction, stretching the contoured perfective process out into a homogeneous mass with indefinite extension.

ING therefore reconciles point-like and mass properties by converting a bounded, contoured entity externally viewed into a homogeneous, unbounded mass as a concomitant of the shift in profile that focuses attention on a single internal point. This allows us to explain certain facts about other uses of ING. As a nominalizer, ING typically produces abstract nouns that share many properties with mass nouns, in effect treating a process as a metaphorical kind of substance (e.g. running, swimming, fighting). This use of ING is now seen to be related to the one involved in the progressive BE-ING construction. A hallmark of mass nouns is that any arbitrarily selected sub-part, ranging from the whole down to an infinitesimal portion, is considered linguistically to be a valid instantiation of the category. The progressive construction (due to a selectional restriction imposed by BE) takes the special limiting case where only the smallest possible portion is involved, but the transformation of a process to a mass as achieved by the nominalizer ING is implicit to the progressive ING as seen above, and is a natural extension of it. Our characterization of the progressive ING also explains why it can be used--without BE--in titles of paintings, e.g. Nude Descending a Staircase. The stativizing ING focuses attention on one arbitrary point in the overall process, much as a painting or photograph arrests and freezes the action of its subject. Thus the conceptual situation portrayed by the middle diagram in Figure 32(c), were it to be externalized as a painting, could perfectly well be titled Boy Eating Apple (or Boy on Horse Eating Apple if another tier in the perspective of the scene is included in the title).

The ING predication on EAT in (8) therefore compresses the temporal profile of the overall expression into a single, arbitrarily selected point. BE, as it does in Figure 30, then gives the stative configuration derived by ING a positive temporal profile of indefinite duration, though one necessarily restricted by the boundaries of the underlying perfective process (EAT). (BE(ING(EAT(BOY)(APPLE)))) thus describes a continuing, conceptually stable situation within the confines of an overall perfective event. This example differs from X is fallen, however, due to the presence of the distal predicate (DIST) above BE in the verbal. The effect of this epistemic predicate is to remove the profile of the verbal head from immediacy to speaker viewpoint. Because no modal is present, the objective situation is taken to be real rather than potential or hypothetical, but because of the distal predication it is divorced from S, and in particular from the time of speaking. Distance within reality from the time of speaking translates into past time, as discussed in Langacker 1978. Sentence (8) therefore describes a continuing situation of indefinite duration located in the past and defined relative (and internally) to a perfective event.

Two more things can be noted in conclusion, both pertaining to the

status of BOY. BOY is the figure with respect to all levels of structure considered: at the morphemic level it will be a profile relative to a base; it is the head and profile within the subject nominal; and within the overall verbal profile, in which EAT specifies a relation between the objects elaborated as BOY and APPLE, BOY is the subject, trajector, and figure. This makes BOY in the grammatical structure of (8) the figure of the entire expression in a way quite analogous to that in which the vowel of the penultimate syllable of măcaróni is the figure—in phonological space—of the entire word (cf. Figure 18). This goes some way towards explicating the sense in which the subject is a weak topic in a sentence that lacks special markings with explicit topicalizing force.

It also helps us explain some of the apparent peculiarities of verb agreement in English. The facts, briefly, are these. Only the first auxiliary verb agrees with the subject, and the "main verb" agrees only if there is no auxiliary. The agreement of modals is not reflected by any change in form. Agreement is also restricted to the "present tense", except for be, which also agrees in the past tense (or distal) forms, as seen in (8).

Apart from the agreement of be in the past tense, all these facts are susceptible to uniform characterization. English verb agreement is a profile phenomenon. It unites the two major profile elements in a finite clause: the head of the overall subject nominal (BOY in (8)) and the topmost predicate within the verbal head (BE in (8)), which dictates the final temporal profile for the entire clause. Otherwise put, agreement outlines the clause trajector as it passes through that portion of its trajectory brought into focus as the temporal profile of the clause.

Given this characterization of agreement, the peculiarities above receive natural explanation. If only the main verb (lexical head) is present, it agrees because it alone defines the temporal profile of the clause. If auxiliaries are present (without modals), the first one agrees because it always represents the topmost predicate in the verbal head and therefore defines the overall temporal profile. Modals do not change form when they agree because they do not agree at all: they belong to the epistemic rather than the objective plane and are transparent with respect to the objective temporal profile. (Thus Harvey must jump--if must is taken in its epistemic rather than its root sense and jump is not construed as habitual or repetitive--has the same aspectual conflict as Harvey jumps; see Langacker 1978 for discussion.) Modals do however preclude agreement of other elements with the verbal head, for exactly the same reason that the distal predicate does; agreement in English is restricted to cases where the temporal profile is immediate to S, and both modals and DIST remove it from S, either epistemically or temporally. Only in non-modal, non-distal expressions is the objective situation immediate to the speaker and the speech act context, and the restriction of agreement to such cases of immediacy can be readily understood when it is recognized that agreement serves to outline and bracket the major profile elements in a clause, those defining the speaker's perspective on the scene.

It has been traditional, in one school of linguistic thought, to posit a rule of subject raising that would repeatedly promote the subject nominal of the main verb of a clause, making it the derived subject of each successive auxiliary verb; the boy on that horse near the runners, for instance, would wind up as the derived subject of be in (8). The main reason (though not the only one—e.g. see Keyser and Postal 1976) for positing subject raising with auxiliaries is to account for verb agreement; on the assumption that a verb mechanically agrees with its subject in English, the fact that be agrees with the boy on that horse near the runners in (8) entails that this nominal must be the subject of be at some level.

But in the account I have presented the necessity for subject raising (at least as it pertains to agreement) vanishes. It is an oversimplification to say that verbs agree with their subjects. Rather, agreement takes place between the highest-ranking nominal and temporal profile elements in a finite clause. If one examines the third diagram in Figure 32(b) or (c), it will be seen that the two elements in boldface correspond exactly to the two elements showing agreement: the object corresponding to BOY, and the temporal profile corresponding to BE. Their status as highest-ranking profile elements was not achieved by invoking a movement or relation-changing rule or by any other sleight-of-hand—it was automatic given the concepts and notations introduced for other purposes, not magic but imagic. I take this as a natural and organic partial solution to the problem of subject-verb agreement in English, and I take the fact that such a solution emerges from the general conception of grammar as image to be some corroboration that this basic approach is not totally misguided.

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