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NOUNS AND VERBS

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The universal grammatical categories *NOUN* and *VERB* are held susceptible to notional characterization. The traditional objections to this claim are overcome by an appropriate view of linguistic semantics, one based on cognitive processing and the structuring of conceptual content. Reasonably precise semantic descriptions of the noun and verb categories are proposed in the context of the *COGNITIVE GRAMMAR* framework. The distinction between *COUNT* and *MASS* nouns is explicated, and is shown to be a direct analog of the fundamental aspectual distinction between verbs that designate *PERFECTIVE* and *IMPERFECTIVE* processes. The analysis permits the elucidation of subtle semantic contrasts and the explanation of various grammatical phenomena.

Are notional definitions possible for basic grammatical categories? In particular, can such fundamental categories as *NOUN* and *VERB* be attributed universally valid semantic characterizations? The judgment of contemporary linguistic doctrine on this matter is strongly and unequivocally negative. Text-book writers consequently feel obligated to demolish the naïve contrary view,¹ and to establish that such constructs must be defined on grammatical rather than notional grounds. Nevertheless, standard arguments against the possibility of a semantic definition are superficial, and are critically dependent on certain tacit but dubious assumptions. I will try to show that notional descriptions of basic grammatical categories are well within the realm of plausibility, granted an appropriate view of linguistic semantics.

1. ISSUES. Several points of clarification must preface the main discussion. First, I do not hold that all grammatical classes are strictly definable in notional terms: the claim is specifically made only for nouns, verbs, and their major subcategories (count vs. mass nouns, and the corresponding aspectual subclasses for verbs). The membership of many grammatical categories (e.g. the class of morphologically irregular verbs in English) is essentially arbitrary from a semantic standpoint; and in many other cases, meaning is only one of the factors involved, or is less than fully predictive.²

To be clear about the intended claim, we must briefly examine alternate models of categorization. Traditionally dominant has been the view that a category is defined by a set of *CRITERIAL ATTRIBUTES*, i.e. necessary and sufficient conditions for class membership. This model is assumed in truth-conditional

¹ To choose an example at random: '... no constant semantic effect is associated with the functioning of a morpheme as a noun, as a verb, or as any other part of speech' (Langacker 1973:87).

² It is commonly assumed that the absence of absolute semantic predictability for such classes establishes the autonomy of syntax or grammar (cf. Newmeyer 1983). This assumption is erroneous, for it confuses two distinct issues: what *KINDS* of structures there are, and the possibility of predicting how a set of elements might *BEHAVE*. I argue elsewhere (MSS a,b) the coherence of a theory in which all grammatical units are *SYMBOLIC* (having both semantic and phonological import), but where the set of symbolic elements learned as being conventionally employed in a particular construction might be semantically non-predictable.

semantics, which seeks an objective characterization of meaning independent of human conceptualization and cognitive processing. Despite its prevalence, the criterial attribute model has no a-priori claim to psychological validity. In fact, recent findings by cognitive psychologists strongly favor an alternative conception: categorization by *PROTOTYPES*, where membership in a category is determined by perceived resemblance to typical instances. Categorization is then a matter of human judgment, and no attributes need be shared by all class members.³ My own model is a synthesis of categorization by prototypes and by *SCHEMAS*. A schema is an abstract template representing the commonality of the structures it categorizes, which thus *ELABORATE* or *INstantiate* it; thus the concept [TOOL] bears a relationship of schematicity to such notions as [HAMMER] and [SAW]. A schema differs from a list of criterial attributes in being an integrated concept in its own right; it is simply characterized with lesser specificity and detail than its instantiations.

A semantic definition of the noun or verb class over-all is clearly unattainable if only objective, truth-conditional factors are considered. But the possibility of semantic characterizations limited to category prototypes is hardly controversial; a number of scholars have suggested that physical objects are prototypical for nouns, and overt physical actions for verbs (cf. Lyons 1968:318; Givón 1984, Ch. 3; Hopper & Thompson 1984, 1985; Bates & MacWhinney 1982). Though I accept this analysis, and the importance of prototypes in general, I claim that nouns and verbs also lend themselves to schematic semantic characterization; this is the novel (and surely controversial) aspect of the following proposals. More precisely, I maintain that *ALL* members of the noun class (not just central members) instantiate an abstract noun schema, while all verbs elaborate an abstract verb schema.

If the schematic characterizations to be proposed are essentially correct, they are no doubt universal rather than language-specific. It has, of course, been questioned whether the noun/verb distinction is valid for all languages; but this is really a non-issue. Even if a language has a single class of stems that function as either nouns or verbs, a stem nevertheless takes on the differentiating properties of one class or the other whenever it is employed in a particular construction. Nothing more is at stake than whether there are grounds for believing that one categorization is 'primary' for a given expression.⁴

Finally, there are methodological issues to address. In the orthodox view, basic grammatical categories are defined for a particular language according to their morphosyntactic behavior (e.g., the class of verbs in English might be identified by their ability to inflect for tense and for subject agreement). This is eminently reasonable as a matter of analysis and practical description, since it is the parallel grammatical behavior of a set of expressions that alerts us to

³ See Lakoff 1982, 1987 for comprehensive discussion of the prototype model (pioneered by Eleanor Rosch) and a devastating critique of the objectivist paradigm.

⁴ This is pointed out by Lyons (1977:440-41), and also by Jacobsen 1979, who argues persuasively that the noun/verb distinction is valid even for those languages commonly cited as lacking it.

their status as a category. However, the behavioral properties responsible for our initial DISCOVERY of a category must be distinguished from its ultimate CHARACTERIZATION. I maintain that the grammatical behavior of the noun or verb class is best regarded as SYMPTOMATIC of its semantic value, not the sole or final basis for a criterial definition.

A fair evaluation of the notions proposed below must consider the coherence and descriptive value of the over-all system in which they function. One cannot reasonably expect that the import and motivation of a particular point will be evident when it is examined in isolation, or require that independent psychological evidence must establish the cognitive reality of each individual construct (no linguistic theory satisfies such demands). The semantic contrasts dealt with here are subtle, and are explicated in terms of cognitive operations to which we have no direct or intuitive access. Thus when I claim that the adjective *like* designates a relation construed atemporally, while the verb *resemble* (or the phrase *be like*) scans this same relationship sequentially through conceived time, there is no way to prove this claim directly or autonomously. What I can and will argue is that this analysis is part and parcel of a comprehensive descriptive framework in which a substantial array of semantic and grammatical phenomena receive a natural, unified, and revelatory account.

2. BASIC CONCEPTS. In the framework of COGNITIVE GRAMMAR (a.k.a. SPACE GRAMMAR), all grammatical structures are claimed to be symbolic. Lexicon, morphology, and syntax form a continuum of symbolic units, each residing in the association of a semantic and a phonological structure. Generalizations are embodied by schematic symbolic structures which are characterized at varying levels of abstraction, and which coexist in the linguistic system with any specific structures mastered as familiar units. Schemas are extracted from more specific structures; they categorize such structures through relations of full or partial schematicity, and are used for the computation of novel instantiating expressions.⁵

The most relevant aspect of this framework is its view of linguistic semantics. Meaning is equated with conceptualization (in the broadest sense); semantic structures (i.e. the meanings of linguistic expressions) are thus conceptualizations shaped in accordance with linguistic convention. I follow Haiman 1980 in adopting an ENCYCLOPEDIA model of linguistic semantics: all facets of our general knowledge of a conceived entity contribute to the meaning of an expression which designates this entity. Though some facets are obviously more central and conventionally established than others, any sharp distinction between semantics and pragmatics is gratuitous. The semantics of a language is therefore not an autonomous cognitive entity, nor is the linguistic system over-all.

I refer to semantic structures (of any size) as PREDICATIONS; these are characterized relative to COGNITIVE DOMAINS. Some domains are BASIC in the sense of being cognitively irreducible—e.g. our experience of time and space, or

⁵ For extensive exposition and exemplification of this model, see Langacker 1981a,b, 1982a, 1984, 1985, 1987, MSS a,b; Casad & Langacker 1985; Hawkins 1984; Lindner 1981, 1982; Tuggy 1980, 1981; and Vandeloise 1984.

fields of perceptual potential such as the range of possible color sensations. However, most domains of linguistic relevance are non-primitive, and involve cognitive structures of indefinite complexity. Any cognitive structure—e.g. a novel conceptualization, an established concept, a perceptual experience, or an entire knowledge system—can function as the domain for a predication. Describing such structures is thus essential to a comprehensive program of linguistic semantics.

Meaning is therefore sought in the realm of cognitive processing. It does not reside in objective reality; nor is the problem of semantic description revealingly formulated in terms of truth conditions (see Jackendoff 1983 for a similar view). Even expressions describing an objective situation may differ in meaning, depending on how the situation is CONSTRUED. Thus a speaker who accurately observes the spatial distribution of certain stars can describe them in many distinct fashions: as a *constellation*, as a *cluster of stars*, as *specks of light in the sky* etc. Such expressions are semantically distinct; they reflect the speaker's alternate construals of the scene, each compatible with its objectively given properties. I will say that an expression imposes a particular IMAGE on its domain. The conventionalized images embodied by the symbolic units of a language (both lexical and grammatical) are crucial to their semantic value.

I thus use IMAGERY as a technical term (not in the sense of visual or sensory imagery—cf. Kosslyn 1980); it indicates our undeniable capacity to construe a cognitive domain in alternate ways. Various dimensions of imagery must be accommodated, the most significant being what I call the PROFILE/BASE distinction. The BASE for a linguistic predication is its domain, i.e. the cognitive structures it presupposes; its PROFILE is a substructure of the base that is elevated to a distinctive level of prominence as the entity which the expression DESIGNATES. Expressions often invoke the same domain, but contrast semantically by choosing alternate profiles within this common base. Thus the conception of a body of land completely surrounded by water can function as the base for a variety of expressions, simple and composite, which profile (i.e. designate) different aspects of it: *island* profiles the land mass; *the water near the island* designates a portion of the water; *shoreline* profiles the boundary between the two.

The SCOPE of a predication is that portion of relevant domains which it specifically invokes and requires for its characterization (cf. Casad & Langacker 1985; Langacker 1985, 1987). For example, the scope of predication for *peninsula* must be broad enough to make it evident that the designated finger of land is smaller than the land mass to which it is attached, though its identification as a peninsula does not depend on reference to the land mass in its entirety. Scope boundaries need not be sharply defined: the relevance of domain features may simply fall off gradually, the farther they lie from the profiled element. Often, however, their diminution in salience appears to be quantized, occurring in discrete steps. Thus the conception of a finger provides the IMMEDIATE scope of predication for *knuckle*, since the designatum of *knuckle* is identified in large measure by its position within a finger; the conception of a finger in turn evokes that of a hand (as its own immediate scope), which evokes

that of an arm; and so on. It would be incorrect to say that the conception of a hand, an arm, or the body as a whole is irrelevant to the meaning of *knuckle*; but there is a clear intuitive sense in which the conception of a finger comes into play more directly and prominently.

A predication typically invokes multiple domains, which characterize different aspects of the profiled entity. Semantic contrasts often hinge on the inventory of domains, as well as their ranking for relative prominence. For instance, the physical specifications of *bay* and *harbor* are quite comparable; but *harbor* evokes, more saliently than *bay*, their role as a haven for ships. *Roe* and *caviar* both designate a mass of fish eggs; and granted the encyclopedic view of meaning, part of the over-all sense of *roe* is that the profiled substance is sometimes processed to make caviar, while part of the meaning of *caviar* is that it is made from fish eggs. However, the two predications differ in the ranking of their shared domains: the knowledge system relating to fish reproduction is a PRIMARY domain for *roe*, while *caviar* gives higher rank to domains pertaining to food, consumption, and social status.

Other dimensions of imagery can be briefly noted. One is the level of specificity at which a predication characterizes a scene. The central parameter here is GRAIN OR RESOLUTION: a schema describes a structure with lower resolution (coarser grain) than its instantiations (e.g. *tree* vs. *eucalyptus*). Another dimension of imagery is the impact of explicit mention on the relative prominence of substructures; e.g., in *pig meat*, the overt occurrence of *pig* renders this notion more salient than it is in *pork* (though it is included in both). A third dimension is figure/ground organization, which I attribute to the subject/object distinction and other grammatical phenomena (cf. Talmy 1978, Wallace 1982). It is thus a primary factor in the contrast between pairs like *above* and *below*, or between an active and a passive clause (Langacker 1982a). Further dimensions of imagery include presumed vantage point (*come* vs. *go*); construal relative to different background assumptions and expectations (*half empty* vs. *half full*); and the subjective directionality manifested in contrasting sentences like *The roof slopes upward* vs. *The roof slopes downward*.

In the context of a conceptualist semantics which accommodates conventional imagery, standard arguments against the semantic basis of fundamental grammatical classes lose most of their force. One such argument is that either a noun or a verb can be used to describe the same event (e.g. *explode* and *explosion*). Tacitly but crucially assumed is the objectivist view that the meaning of an expression is independent of human conception, being fully determined by the situation it describes. Rejecting this view, one can argue that the noun and verb construe the event with contrasting images, and are therefore semantically distinct (i.e., nominalization involves some type of conceptual 'reification'). I will later give this claim some substance with reference to plausible assumptions about cognitive processing.

Another standard argument runs as follows: 'If the class of nouns is semantically defined, what might the definition be? The only obvious possibility is that nouns are the names of physical objects (alternatively: people, places, and things). However, many nouns do not name physical objects, or anything

remotely resembling them. A notional definition is therefore unworkable.⁷ The difficulty with this line of argument is that it confuses different models of categorization. Physical objects represent the noun category prototype; and a description based on the prototype cannot be expected to apply without modification to both central and peripheral members. A characterization directly applicable to all class members will necessarily be highly schematic, accommodating physical objects as a special (though privileged) case. Proposing such a characterization will be the first order of business.

3. BOUNDING. As a first approximation, I offer these schematic characterizations:

- (1) a. A NOUN designates a REGION in some domain.
- b. A COUNT NOUN designates a BOUNDED REGION in some domain.

Observe that these descriptions make no reference to physical objects. Such objects are bounded in space, and hence qualify as count nouns under 1b; but there are indefinitely many other domains in which bounding can occur. The basic plausibility of defining count nouns in this fashion can be established by considering some representative examples (for mass nouns, see §5).

Some count nouns are defined relative to basic domains. *Moment*, *instant*, and *period* are reasonably described as designating bounded regions in time. Among the many nouns that profile bounded regions in two-dimensional space are *point*, *line*, *circle*, *triangle*, *rectangle*, and the more schematic *polygon*; comparable terms for three-dimensional space include *sphere*, *cube*, *cylinder*, *cone*, *pyramid* etc.⁶ In certain nominal uses (e.g. *Blue is my favorite color*), color expressions designate bounded regions in color space. *Streak*, *spot*, *splotch*, and *blur* refer to visual configurations of limited expanse; their primary domain is the extensionality of the visual field.

A noun like *beep*, *blip*, or *flash* requires a combination of basic domains. A *beep* involves both time and pitch, and is bounded in both domains: it must be quite short, and it must to some degree approximate a pure tone (white noise would not qualify). Time, color space, and the visual field all figure in *blip* and *flash*, which contrast in regard to their bounding in these domains. A *blip* is rather sharply bounded in the visual field, but its temporal limits are less precise; while certainly judged to be a transient event, for some speakers it may endure for a considerable length of time. A *flash*, by contrast, must be virtually instantaneous, hence sharply bounded in time. However, it need not be bounded in the visual field: a brief light sensation which totally suffuses the visual field—so that no boundaries at all are perceived in this domain—can nevertheless be recognized as a flash.

We learn from this contrast that a count noun need not specify bounding in every prominent domain. If the bounding required for count-noun status is an index of primacy, then time ranks above the visual field for *flash*, while the

⁶ These terms are considered abstractly, as names for geometrical figures. When used for physical objects, they further invoke a notion of material substance, which introduces other (non-basic) domains.

visual field is primary for *blip*. Nor do count nouns necessarily specify bounding in every dimension of their primary domain. Thus a *line* is severely bounded along one axis of two-dimensional space, but along the other axis it extends indefinitely. Similarly, a *stripe*, *horizon*, *road*, *river*, *edge*, *boundary*, or *shore* is unproblematically identified as such even when no endpoints are apparent—i.e. when it extends beyond the scope of predication in both directions of its long axis. This is quite analogous to the light sensation of a flash totally suffusing the visual field.

Instructive in another way are terms like *arc* and *hypotenuse*. What is their domain? We cannot describe them directly with respect to undifferentiated two-dimensional space: an arc cannot be identified as such except with reference to a circle, and a line segment must be construed in relation to a right triangle before it constitutes a hypotenuse. The respective domains for *arc* and *hypotenuse* are consequently the concept of a circle and of a right triangle; each expression profiles a bounded region within this conceived entity. Because the presupposed entities are themselves two-dimensional configurations, there is a sense in which an arc or hypotenuse also inhabits the spatial domain—but this relationship is mediated by the conception of a circle or right triangle, which constitutes the primary domain and immediate scope of predication.

Analogous cases abound. Nouns like *January*, *Tuesday*, *hour*, *month*, and *year* are not characterized directly with respect to the basic domain of time; instead, they designate bounded regions in non-basic domains consisting of abstract constructs (e.g. the calendrical cycle) which are devised to track and measure its passage. Similarly, the domain for terms like *C-sharp*, *B-flat*, or *F* is not to be equated with the basic pitch domain per se, but rather with a musical scale constructed with reference to this basic domain.⁷ We have already seen that *knuckle*, *finger*, *hand*, *arm* etc. receive their primary value by virtue of their position within a more inclusive portion of the body (or the body as a whole); they constitute bounded regions in three-dimensional space only derivatively, via the status of the body as a physical object.

A few more examples from non-basic domains will suffice. The performance of a play provides the domain for count nouns like *act*, *scene*, *line*, *prolog*, and *intermission*. Terms like *chapter*, *page*, *paragraph*, and *sentence* designate bounded regions within a written work. For restricted portions of athletic events, we have the expressions *period*, *quarter*, *half*, *inning*, *round*, *frame*, and *down*. Nouns like these could be proliferated indefinitely; they refer not to physical objects, but rather to more abstract entities that are nevertheless bounded regions in an intuitively obvious sense.

Several points must be made concerning bounding. For one thing, the bounding that defines a count noun cannot be merely the default-case limitation resulting from a restricted scope of predication. To illustrate this, let us assume that the frame *I see NP* imposes on the direct-object nominal a local scope of

⁷ Observe the contrast between the more schematic expressions *note* and *tone*. Both designate a type of sound; but *note* specifically identifies it as being situated on a musical scale, while *tone* presupposes only the basic domain of pitch.

predication that coincides with the extension of the visual field. Suppose, first, that I am looking at a white wall some 30 feet away, and that painted on this wall is a solid-red circle about 5 feet in diameter. In this context I can felicitously say *I see a red spot*: I see not only the region painted red, but also the background of white that defines its boundaries. The fact that these boundaries are included within the scope of predication (i.e. the visual field) is responsible for my construing the red sensation as a BOUNDED region; the count noun *spot* is thus appropriate. But suppose that I stand right up against the wall and stare at the middle of the red-painted region, so that I can see no white at all; the red sensation totally fills my visual field. In this situation, I cannot felicitously say *I see a red spot*;⁸ instead, I would say *I see (nothing but) red*, where *red* functions as a mass noun. The color sensation is limited by the extent of my visual field, but this is not itself sufficient to qualify it as a bounded region. Bounding WITHIN, not just BY, the scope of predication therefore appears to be pivotal for the count/mass distinction.

A second point is that the bounding implied by a count noun need not be precise or sharply defined. *January* is more precisely bounded than *season*, and *navel* more precisely than *midsection*; but all these impute boundaries of at least a fuzzy sort to their profiled regions. This type of imprecision in bounding must be distinguished from another, which results from schematicity; e.g., *note* is schematic and *F-sharp* is specific, but both are construed as points on a musical scale and thus have precise boundaries. The difference is that only those of *F-sharp* are IDENTIFIED (i.e., a particular point on the scale is singled out). Compare this contrast with the one between *center (of the room)* and *place (within the room)*. Here both predications have fuzzy boundaries—in fact the designated region is quite variable in extent, ranging from a point to an area including well over half the reference object (room)—but this region is limited nonetheless. Despite this flexibility, *center* is fairly specific (only a particular class of regions qualify), while *place* is schematic (any location is permitted).

Finally, I must emphasize that bounding is a function of how we construe the conceived entity, and is not invariably motivated by objective considerations. A *spot on the rug* may be delimited perceptually as a region of discoloration; but when *spot* simply means 'location', the same expression designates an area whose bounding need have no objective basis whatever. The boundary implied by a count noun may therefore, at the extreme, be VIRTUAL in its entirety: it is imputed rather than observed. Less drastically, the CLOSURE phenomenon is often responsible for completing a boundary that is only partially suggested by objective factors. In Figure 1a, for example, we see that virtual bounding (indicated by the dashed line) defines one side of the region designated by *bump* (cf. *bulge*, *protrusion*, *welt*, *hump*, *mound* etc.). The same is true for *dent*, sketched in Fig. 1b (also for terms like *hole*, *depression*, *pit*, *cavity*, *cave*, and many others). Nouns for containers (*jar*, *pot*, *tub*, *vat*, *box* etc.) are fre-

⁸ I CAN say this on the basis of previous knowledge—in which case, the scope of predication includes more than the present extension of my visual field—but not on the basis of my immediate perceptual experience.

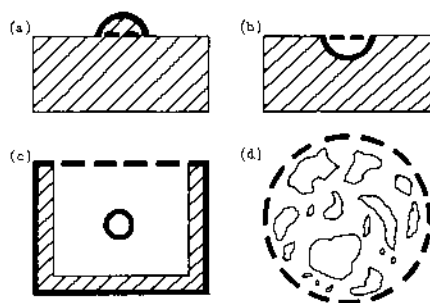


FIGURE 1.

quently construed with a virtual boundary in a way that permits the use of *in* for the configuration of Fig. 1c (cf. Herskovits 1982, 1985, Vandeloise 1984). Finally, the closure indicated in Fig. 1d effects the bounding that figures in *archipelago* and similar expressions (e.g. *forest*, *orchard*, *swarm*).

4. INTERCONNECTION. While the proposed definition straightforwardly accommodates a vast array of count nouns, there are others to which its application seems problematic. For example, in what sense does a *team* constitute a bounded region? A team can be recognized as such even if its members are scattered about the playing field and intermingled with the opposition. Similarly, a *constellation* need not consist of stars that are spatially contiguous: they can be distributed over a substantial reach of the nighttime sky and interspersed with extraneous stars. If an *alphabet* is construed as a bounded region, what is it bounded from?

The term BOUNDED REGION has a spatial origin, which naturally colors our intuitive understanding of the notion. What examples like *team*, *constellation*, and *alphabet* show is that a quasi-spatial construal will not generally prove adequate for count nouns. We must therefore define the term explicitly in a way that transcends the limitations suggested by its provenience. At the requisite level of abstraction, a region need not have the continuous extensionality of space, nor does bounding necessarily imply anything like a shape.

To achieve a workable definition, we must consider not only conceptualization per se, but also the cognitive processing responsible for it. I assume that any mental experience is constituted by the occurrence of some COGNITIVE EVENT—i.e. some pattern of neural activation—which may be novel, or may represent the activation of an established cognitive routine. I further assume that cognitive events can be coördinated to form higher-order events, and that events of arbitrary complexity can be progressively assembled in this fashion. Thus, when I conceive of a star in the sky (whether through perception, recall, or imagination), some kind of cognitive event occurs that constitutes this mental experience. When I conceive of two stars in spatial proximity to one another, the responsible event is more complex: two events of the first type occur, together with a coördinating operation that registers their spatial divergence and assesses its magnitude.

I will speak of conceived entities being INTERCONNECTED when the cognitive events that constitute them are coördinated as components of a higher-order

event. The stars in a constellation are therefore interconnected, not by virtue of any objective relationship, but rather because some observer executes a cognitive routine that construes them as points in the outline of a fancied schematic image. The letters in an alphabet are similarly interconnected: both locally, via our knowledge of successor relations—e.g., one's ability to give B as the successor of A resides in a cognitive routine incorporating the conceptions of A and B as subroutines—and more globally, through our well-rehearsed ability to recite various hierarchically organized strings of letters, including the alphabet as a whole.

We may now define a REGION as a set of interconnected entities. A region is BOUNDED (along a certain dimension) when there is a limit to the set of participating entities (i.e., it does not extend indefinitely). A constellation is thus a region because its component stars are interconnected through a cognitive routine effecting their coördination as points in a schematic image. It is a bounded region because only a particular, limited set of stars is incorporated in the figure: spatial contiguity is incidental, and other stars in the same area of the sky are excluded. The members of a team are interconnected by virtue of their role as participants in the conceived relationship of coöperative effort toward a common goal. Though lacking a shape in the spatial sense, a team is bounded because its members are specifically conceived only as coöperating with one another (not necessarily with other individuals). An alphabet is bounded because particular letters are designated as the initial and final elements of the sequence; reference to external entities is not essential.

There are many other count nouns of this sort: *orchestra, trio, family, place setting, jigsaw puzzle, corporation, deck (of cards), set (of tools), litter (of kittens), fleet (of ships), audience, (professional) society* etc. Each profiles a limited collection of discrete elements that cohere as a region because they are conceived as interacting parts of a larger entity, deriving its unitary character through functional rather than structural considerations.

One might object that the proposed characterization is impermissibly broad. After all, a set of entities need only co-occur in some conceptualization to be interconnected, and thus established as a region; virtually anything has the potential to be so construed. This abstract definition of a region, however, is not per se intended to be either restrictive or predictive for the class of nouns. While every noun is claimed to profile a region in some domain, not every potential region is specifically recognized as such, or achieves any substantial cognitive salience. The likelihood of a given region's being singled out for special prominence as the profile of a noun is presumably determined by a variety of additional factors—e.g., optimality as a region (based on density and minimal distance of interconnections),⁹ communicative utility, or approximation to the category prototype.

How does this abstract definition of a region apply to the examples considered above? Two points are essential. First, the term ENTITY is used in a max-

⁹ Cf. Langacker 1987. Gentner 1981 explains certain psychological findings by suggesting that 'noun referents' are very cohesive; they show a greater density of internal 'links' or relationships than 'verb referents', whose relations are more sparsely distributed through a domain.

imally general way, as a cover term for anything we might conceive of or have occasion to refer to for analytical purposes: things, relations, sensations, interconnections, points on a scale, locations in the visual field etc. Crucially, when I describe something as an entity, I do not thereby imply that it is discrete, that it is separately recognized, or that it achieves any substantial cognitive salience. Consider again a red spot painted on a white wall: the entities that constitute the spot are color sensations associated with various locations in the visual field, but it is not suggested that the viewer perceives an array of individual red dots at any stage or level of processing.¹⁰ I merely claim that input from throughout the visual field is coördinated in some fashion to yield the spatially-extended color sensation.

Second, I assume that any concept which involves continuous extension along some parameter intrinsically requires a train of cognitive events whose sequenced occurrence constitutes the conception of this extensionality. Thus the conception of a line is said to incorporate, at some level of processing, a sequence of events which represent its continuous one-dimensional extensionality; and the perception of a red spot includes chains of events establishing the omnidirectional continuity of the red sensation throughout a region of the visual field. Though I refer to these event chains as SCANNING operations, they do not necessarily define the focus of conscious attention. I regard them instead as relatively low-level operations, essentially automatic and ubiquitous in active domains.

Granted these notions, we can readily describe the count nouns of §3 as designating sets of interconnected entities; e.g., the entities comprising a *beep* are sound sensations distributed through a limited period of time. They are interconnected by virtue of the perceptual operations that render them a unified auditory experience, i.e. a continuous sound episode (as opposed to unrelated sound fragments). The conceptualization of a physical object involves some reference to the continuous spatial extension of its material substance. By assumption, such reference is provided by scanning chains: they trace the spatial expanse of the object's substance, and in fact their very occurrence constitutes the conception of its continuity and extensionality. When one conceives the spatial expanse of a *dent*, *cavity*, or *pit*, or the temporal expanse of an *intermission*, scanning chains trace the extensionality of a more abstract entity, namely the absence of a certain substance or activity.

5. COUNT VS. MASS NOUNS. We have seen that the bounding which establishes a given predication as a count noun may be limited to a particular domain (or even a particular dimension in a domain); and further, that the relevant boundary must fall within the scope of predication. Definition 1b can therefore be revised as 2a, and 2b can be suggested for mass nouns:

- (2) a. A COUNT NOUN designates a region that is bounded within the scope of predication in its primary domain.
- b. A MASS NOUN designates a region that is NOT specifically bounded within the scope of predication in its primary domain.

¹⁰ The individuation of a color sensation at some location presumably requires cognitive events (involving perception of contrast etc.) above and beyond those that constitute the sensation itself.

This concept of mass nouns is, I believe, valid. Recall the situation where a large red spot is seen from up close (so that red totally fills the visual field); 2b correctly predicts the appropriateness of expressions like the following, with a mass noun as direct object: *I see (nothing but) / (a lot of) red*. The designated color sensation is unbounded within the visual field, which is both the primary domain and the scope of predication.

For purposes of count/mass categorization, the primary domain is that in which different instantiations of the category can occur and be identified; it is also the domain of quantification. For physical substances (my immediate focus of attention), the primary domain is space. It is important to observe, moreover, that the definitions in 2 apply at the level of the lexical head, not that of the NP as a whole. Spatial bounding is therefore not precluded for the substance designated by a mass noun: 2b implies only that the noun itself does not impose it. Thus the noun *water* profiles a substance of indefinite spatial expanse, but whether this absence of bounding survives at the NP level depends on other factors. When nothing in the linguistic or situational context suggests any limitations on the extent of the designated mass, the result is a generic construal, as in 3a (cf. Smith 1964):

- (3) a. Water is the topic of her term paper.
- b. I drank water with lunch yesterday.

More commonly, though, the NP designates a limited volume of the substance. This interpretation can be imposed by quantifiers (*some water, a lot of water, two gallons of water*); by definite determiners and modifiers (*this water, the water in that pond*); or by pragmatic considerations, as in 3b.

Thus count nouns specify bounding in their primary domain, while mass nouns lack this stipulation. Bounding, however, is only one of several factors that distinguish count and mass nouns: others include HOMOGENEITY, EXPANSIBILITY/CONTRACTIBILITY, and REPLICABILITY. These factors are interdependent, and can in fact be regarded as different manifestations of the same fundamental contrast. I will begin by arguing that the substance designated by a mass noun is construed as being internally homogeneous.

The bounded region profiled by a count noun is, by contrast, typically heterogeneous. This is not, however, an invariant feature of the class: in cases like *spot, beep, pond, bump, intermission* etc., the designated region may well display internal uniformity out to its boundaries. The differences among count nouns in this regard correlate with different ways in which their bounding is achieved. For expressions like *bicycle, cat, pencil, piano, and constellation*, internal configuration alone imposes limitations on the constitutive set of interconnected entities; e.g., a bicycle has distinct parts arranged in a specific fashion, and its identification is crucially dependent on the satisfaction of these specifications. The same cannot be true when the designated region is homogeneous. In the absence of distinguishing internal features, the major burden of delimitation necessarily falls on contrast with surroundings (e.g. silence in the case of *beep*).

The homogeneity of mass-noun referents is not self-evident, since even collections of heterogeneous objects are tolerated as class members (e.g. *livestock*,

furniture). At issue, though, is CONCEIVED rather than objective homogeneity. Speakers aware of the internal diversity of a substance are nevertheless capable of construing it as homogeneous; and the resulting image can be conventionalized as the semantic value of a predication. Two dimensions of imagery are especially relevant: scope of predication, and level of schematicity.

The substances designated by mass nouns vary with respect to the individuation and salience of their constitutive entities. At one extreme are essentially continuous substances, where any individuation is purely extrinsic: *water*, *glue*, *aluminum*, *glass*, *air* etc. Other substances are composed of many individual particles, all of which are basically identical. The salience of these constitutive particles increases with size: *dust*, *sand*, *buckshot*, *corn*, *grass*, *gravel*, *asparagus*, *tile*, *cattle*, *timber*. The individuation is greatest in cases like *equipment*, *livestock*, and *furniture*—where the component elements are not only quite large, but also of diverse character.

Objectively, no two constituents of a substance are ever identical down to the smallest detail. Sufficiently close examination will always reveal some point of difference between any two drops of water, grains of sand, kernels of corn, blades of grass, head of cattle, or pieces of furniture. Often, though, we remain unaware of such differences; or else we ignore them for linguistic purposes. We generally conceive of such entities schematically, i.e. at a level of abstraction that neutralizes their distinguishing properties. A schematic characterization of this sort is possible even for examples like *furniture*: the component elements fall within a certain size range (e.g. a typical ashtray is too small to qualify); they are permanent artifacts in a dwelling; they are potentially movable, rather than intrinsic parts of the dwelling itself (a bookcase is a piece of furniture, but built-in shelves are not); there is a certain commonality in their function (e.g., tools are excluded); and so on.

The constitutive elements of a mass are therefore equivalent when construed at an appropriate level of schematicity, and a mass noun characterizes them at such a level. Observe, however, that the identity of component elements does not guarantee strict homogeneity: this requires continuity, which is precluded by any notable degree of individuation. In a patch of *grass*, for example, there are spaces between the individual blades, so that random sampling at different locations does not yield uniform results. We can resolve this apparent problem by attributing to the noun a scope of predication sufficiently large in relation to individual members of the mass. *Grass* evokes the conception of an extremely large number of blades distributed quite densely and more or less evenly over an extended area. This mass is homogeneous in the sense that any reasonably sized sub-region selected for examination will itself be filled with many blades distributed in comparable fashion. The categorization of *grass* as a mass noun derives from this canonical conception, which emphasizes the uniformity that emerges when the mass is examined on a particular scale.

Because of its conceived homogeneity, the substance designated by a mass noun can be expanded or contracted indefinitely without affecting its class membership. Down to some lower limit (beyond which the integrity of the substance is not preserved), any portion of a mass qualifies as a valid instance

of the category; cf. Carlson 1981. The substance that fills a bay is *water*, but so is any subpart I select for examination (e.g. a bucketful scooped out at random)—and so is a more inclusive mass, like the ocean as a whole. By contrast, it is not generally true that any subpart of a count-noun referent is itself an instance of the nominal category. The tail of a cat is not a cat; a piece of pencil lead is not a pencil; and the sequence MNOPQ is not the alphabet.

For the instantiation of a count-noun category, incrementation is achieved by the addition of discrete instances. I refer to this property as REPLICABILITY; its linguistic reflexes include countability and pluralization.¹¹ The bounding of count nouns, whether achieved through internal configuration or contrast with surroundings, is responsible for their replicability: because there is some limit to the set of interconnected entities constituting the designated region, there is a point at which one instance of the category is exhausted, so that further incrementation results in the initiation of another instance. Mass nouns are non-replicable (do not pluralize) because there is no such limit; i.e., they are indefinitely expansible. Incrementing a valid instance of a mass-noun category does not initiate a second, distinct instance, but simply makes the first instance larger. Thus we speak of *more sand*, but *another hammer*; note also *the water in those two lakes*, where *water* remains singular when *lake* undergoes replication.

The relatedness of the four distinguishing properties should now be apparent. Bounding prevents indefinite expansion and also contraction (since the boundary itself is necessary to an instance of a count-noun category). Heterogeneity forecloses the possibility of any subpart being equivalent to any other, and thus rules out expansibility/contractibility. Heterogeneity can itself be crucial to bounding; even in cases like *spot*, which show internal homogeneity, the line of contrast that delimits the boundary can be regarded as introducing a measure of heterogeneity. Finally, replicability depends on bounding, and is incompatible with indefinite expansibility.

Supporting the definitions in 2 are nouns of dual categorization which differ in semantic value according to their count- or mass-noun status. Thus the mass noun *rock* names a substance of indefinite expanse, while *a rock* designates a discrete, bounded object composed of this substance. Other examples of this type include *brick*, *stone*, *fur*, *hide*, *glass*, *cloth*, *rope*, *wire*, *diamond*, *cake*, *meat loaf*, *steak* etc. *Tile* is particularly instructive, since it has three common values: (a) as the name of an undifferentiated substance, it functions as a mass noun; (b) as a count noun, it designates a relatively small, discrete object composed of that substance; and (c) by putting together a large number of such objects, we obtain a material of indefinite expanse that is also called *tile* in a

¹¹ Pluralization is one of the grammatical behaviors that identify count nouns; but its result is a type of mass noun. Plurals act like other mass nouns in many respects; e.g., they occur without determiners as full NP's (*She bought fruit/peaches*), and they take certain quantifiers that cannot combine with count nouns (*I ran into a lot of trouble/problems/*problem*). However, their behaviors contrast in regard to such factors as verb agreement and the selection of demonstratives (*These peaches are rotten* vs. *This fruit is rotten*). Wierzbicka 1985 provides extremely insightful discussion of the semantic factors which distinguish the mass-noun subclasses.

mass-noun use. Since each sense presupposes and incorporates the one that precedes, I will say that they represent different LEVELS OF CONCEPTUAL ORGANIZATION. Our capacity for entertaining conceptions involving multiple levels of organization will be crucial in later discussion.

Given proper circumstances, almost any count noun can be construed as designating a homogeneous, unbounded mass; it may thereby come to function as a mass noun grammatically. Consider these examples:

- (4) a. After I ran over the cat with our car, there was cat all over the driveway.
- b. I don't like shelf—I'd rather eat table.
- c. When he finished using his knife to tunnel through the stone wall, it had very little blade left.

In 4a, the unfortunate cat loses its structural integrity through the accident, being converted into an effectively homogeneous substance. (Though a single cat will yield only a limited quantity of this substance, the internal properties of the mass do not impose any inherent limit on its potential expanse.) Ex. 4b, it has been noted, would be conceivable if uttered by one intelligent termite to another: here the mass-noun status of *shelf* and *table* reflects both function and scope of predication. For purposes of consumption, the over-all configuration of a shelf or a table is less important than the qualitative properties of the substance comprising it. Moreover, a termite is so small, relative to such objects, that their boundaries can be expected to fall outside the scope of predication, if this latter is adjusted to the typical scale of termite experience. Finally, 4c is less concerned with the blade as an integral, functional whole than with its diminishing size. In effect, its spatial expanse is construed as a quantifiable substance.

Also compatible with 2 is a familiar pattern whereby the mass-noun term for a beverage is employed as a count noun designating a limited quantity (single serving) of that beverage: *I'll have a {beer / whisky / ginger ale / gin and tonic}*. Another familiar pattern of extension permits the term for a substance to function as a count noun indicating a particular type or brand of that substance: *a fine wine, a hard steel, a good glue, a tasty beer*. This second pattern merits closer scrutiny, since the count-noun status of such examples does not reflect the imposition of any quantitative limits or spatial bounding. The present framework nevertheless affords a natural and revealing analysis.

A term like *wine*, which designates a physical substance, obviously requires numerous domains for its semantic characterization. Its primary domain is space; note that quantifying expressions (*some, a lot of, more* etc.) pertain to its physical volume. *Wine* is categorized as a mass noun, then, because the designated substance is indefinitely expansible (hence unbounded) in this domain. To be sure, a substance like *wine* is bounded in the sense of being distinguished from other kinds of substances. It is convenient in this regard to speak of QUALITY SPACE, defined as those domains responsible for the qualitative differentiation of one substance from another. In the case of liquids, for example, the domains of quality space include such parameters as viscosity, color, degree of transparency, dimensions pertaining to taste and smell etc.

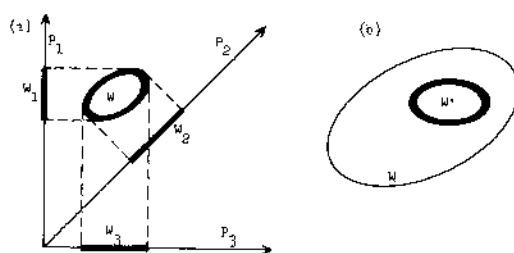


FIGURE 2.

The notion of quality space is schematized in Figure 2a. Only three parameters are explicitly indicated, labeled P_1 , P_2 , and P_3 . A particular type of substance, such as wine, is limited to a certain range of values along each parameter, given here as W_1 , W_2 , and W_3 . Collectively, these values define a bounded region W in quality space; this characterizes the permissible range of variation for the category, and sets it apart from other substances.

A substance term like *wine*, in its basic mass-noun sense, therefore manifests a disparity between its primary domain (physical space) and the set of domains for which intrinsic bounding can be posited (quality space). Given this description, how can we characterize the semantic extension which gives rise to the count-noun sense wherein *wine* means something akin to 'brand/type of wine'? Two factors figure in this extension. First, there is a re-ranking of domains; because the extended sense focuses on qualitative concerns, it is reasonably described as elevating quality space to the status of primary domain.¹² Second, there is a shift in profiling and scope of predication, as sketched in Fig. 2b. The region W profiled by *wine* in its basic sense is adopted as the immediate scope of predication for its extended value. The profile is an arbitrary bounded region W' which is properly included within this immediate scope W . The resulting sense of *wine* designates a bounded region within the scope of predication in the primary domain, making it a count noun in accordance with 2a. Moreover, since W' is arbitrarily chosen, there are many sub-regions of W that might be intended as the designatum on a given occasion (i.e., there are many possible types or brands of wine). Since W' is not unique, *wine* in this count-noun sense is a common rather than a proper noun; and it behaves accordingly (e.g., it pluralizes and occurs with determiners).

6. RELATIONS. Most broadly, the meanings of linguistic expressions divide themselves into NOMINAL VS. RELATIONAL predications. These two types do not necessarily differ in the nature of their intrinsic content (consider *circle* and *round*, or *explode* and *explosion*), but rather in how this content is construed and profiled. A nominal predication presupposes the interconnections among a set of conceived entities, and profiles the region thus established. By contrast, a relational predication presupposes a set of entities, and it PROFILES the INTERCONNECTIONS among these entities.

¹² Confirming this re-ranking is the predicted change in domain of quantification: *three (good) wines* indicates three types, not three spatially-distinct instantiations.

For illustration, consider the contrast between the relational predication *together* and the nominal predication *group*. Let us assume that both are construed as involving precisely three individuals, whose togetherness or status as a group is based on spatial proximity. By assumption, then, the conceptual content of *together* and *group* is essentially the same; the semantic distinction between them (and hence their membership in different grammatical categories) depends on the contrasting images they impose on this content, notably with respect to profiling.

Let $[e_1]$, $[e_2]$, and $[e_3]$ stand for those cognitive events whose occurrence constitutes the conception of the three participating individuals (taken separately). Further, let $[e_4]$, $[e_5]$, and $[e_6]$ stand for the coordinating operations responsible for establishing interconnections between each pair of participating individuals; in the present case, these operations amount to assessments of spatial proximity—e.g., $[e_4]$ is the cognitive operation that registers the spatial proximity of the individuals whose conception resides in the occurrence of $[e_1]$ and $[e_2]$. Figure 3a then diagrams the essential conceptual content shared by

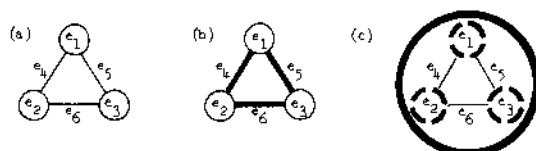


FIGURE 3.

together and *group*, expressed in terms of the requisite cognitive events. This entire complex of events figures in the conceptualization of either notion.

As a relational predication, *together* presupposes the entities corresponding to $[e_1]$, $[e_2]$, and $[e_3]$, and profiles the interconnections among them. The special prominence characteristic of profiling—indicated by heavy lines—is accorded in Fig. 3b to the coordinating operations $[e_4]$, $[e_5]$, and $[e_6]$, which represent the pairwise assessments of spatial proximity. By definition, these interconnections establish a region comprising $[e_1]$, $[e_2]$, and $[e_3]$. It is precisely this region that the nominal predication *group* puts in profile, as shown in Fig. 3c: the interconnecting operations are incorporated as unprofiled facets of the base, while $[e_1]$, $[e_2]$, and $[e_3]$ receive the heightened prominence of profiling. However, they achieve this salience collectively, not individually; the broken-line circles indicate that they are profiled only as facets of region $[[e_1][e_2][e_3]]$, which is depicted by the solid-line circle and constitutes a higher level of conceptual organization.

Relational predications are therefore not distinguished by their inherent conceptual content, but rather by their profiling of interconnections. We can think of interconnections as cognitive operations that assess the relative magnitude and position of conceived entities within a domain. Consider the adjective *parallel* (as in *A is parallel to B*). Our conception of the profiled relationship must incorporate cognitive events that register the spatial discrepancy between two lines. We may speculate that the requisite events include at least two

processes: scanning operations, which assess the distance between pairs of directly opposite points on the two lines; and comparison of these scanning operations with respect to their magnitude, which proves the same for every sampled pair. But whatever its actual character, this complex of events is virtually instantaneous, and we experience our conception as a single gestalt.

Every relational predication shows an asymmetry in the prominence accorded the entities that participate in the profiled interconnections: some participant is singled out, and is construed as the one whose nature or location is being assessed. I refer to this participant as the *TRAJECTOR* (tr), and analyse it as the *FIGURE* within the relational profile.¹³ The term *LANDMARK* (lm) is applied to other salient participants, with respect to which the trajector is situated. The choice of trajector is not mechanically determined by a predication's content, but is rather one dimension of conventional imagery. Indeed, the asymmetry is observable even for expressions that designate a symmetrical relationship; e.g., *X resembles Y* and *Y resembles X* are not semantically equivalent. In the former, *Y* (the landmark) is taken as a standard of reference for evaluating *X* (the trajector); in the latter, these roles are reversed.

Participants which represent different levels of conceptual organization are capable of functioning as trajectors. In *A is parallel to B*, scanning operations presumably associate particular points along the two lines; but one of the lines as a whole, namely *A*, achieves the status of relational figure. Now by definition, the profiled interconnections establish *A* and *B* as a higher-level region [AB], with the potential to be recognized as such for linguistic purposes. This happens in sentences of the form *A and B are parallel*: region [AB] is not only the profile of the subject nominal *A and B*, but also the trajector of *(are) parallel*. As a consequence, the interconnections profiled by the latter do not hold between the trajector [AB] and some external landmark; instead, they associate subparts of the trajector. The same is true of many relational predications, most obviously shape expressions; thus the adjective *square* invokes the conception of four line segments (*A*, *B*, *C*, and *D*) joined pairwise at their endpoints, and it profiles the interconnecting operations that register their parallelism, perpendicularity, and equal length. The adjectival trajector is the higher-level region [ABCD] established by these operations, which therefore relate various subparts of the trajector to one another. The noun *square* has the same conceptual content as the adjective; but instead of the interconnections, it profiles region [ABCD].

The trajector and landmark of a relational predication can be of various sorts. Consider the italicized expressions below:

- (5) a. The chandelier is *above* the buffet table.
- b. Some guests left *before* the dancing started.
- c. Timothy really works *fast*.

In 5a, the trajector and landmark of *above* are both regions, and are thus in-

¹³ Evidence for this analysis is adduced in Langacker 1987 (Ch. 6). Note that the trajector need not be construed as moving: the definition (relational figure) is abstract, and thus broadly applicable. The notions *SUBJECT* and *OBJECT* are special cases of trajector and landmark, respectively.

stantiated by nominal expressions (*the chandelier* and *the buffet table*, respectively). The profiled interconnections specify that the trajector is displaced farther from the vertical origin than is the landmark, while their horizontal projections roughly coincide.¹⁴ In 5b, *before* designates a relationship of precedence in the temporal domain between two events, which are represented by finite clauses. Hence its trajector (*some guests left*) and landmark (*the dancing started*) are themselves both relational. The domain for *fast* in 5c is the conception that activities vary along the parameter of rate. Its trajector (*works*) profiles an activity, and is therefore relational. This trajector is situated within a landmark that is not specifically named, but is identifiable as that portion of the rate scale which lies beyond an implicit norm.

Relations are either SIMPLE or COMPLEX, depending on whether their profile reduces to a single, consistent configuration. Such a configuration is reasonably called a STATE, so a simple relation can also be termed STATIVE. The italicized words in 5 all profile stative relations, as does *across* in 6a; by contrast, the same preposition is complex in 6b:

- (6) a. There is a bridge *across* the river.
b. The hiker waded *across* the river.

These two senses of *across* are diagrammed in Figures 4a and 4b, respectively.

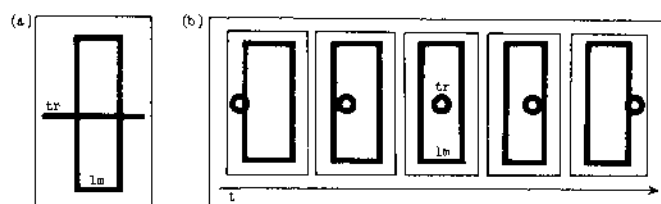


FIGURE 4.

Both senses specify that the trajector occupies a path leading from one side of the landmark to the other. The relation diagrammed in Fig. 4a is stative: since the trajector is an elongated object that simultaneously occupies the entire path, the profiled interconnections amount to a single configuration. In 4b, however, the trajector is small compared to the path, and thus occupies the points along it successively rather than simultaneously. This implies a continuous sequence of distinct configurations (only a few of which are represented in the diagram), each of which finds the trajector in a slightly different position vis-à-vis the landmark. The relation is therefore complex. It is internally coherent because the component states are conceived as being distributed along the temporal axis, indicated by the arrow.

7. PROCESSES. Relational predications are divided into those which profile PROCESSES vs. those which designate ATEMPORAL RELATIONS. The set of pro-

¹⁴ *Above* and *below* invoke the same domain (oriented space), and profile the same interconnections; hence the choice of trajector (figure) is solely responsible for their semantic contrast. The same is true for *before* and *after*.

cessual predications is co-extensive with the class of verbs; by contrast, atemporal relations correspond to such traditional categories as prepositions, adjectives, adverbs, infinitives, and participles. The nature of the intended distinction requires explicit characterization, since it is not at all self-evident. What do I take to be a process? In what sense do I say that a verb is temporal, while other relations are atemporal?

If a verb is characterized semantically by the profiling of a process, we cannot simply define this notion as a relationship involving time: even a stative relation (e.g. *before*) can profile a configuration in the temporal domain. Nor is a process just a sequence of relational configurations, since that does not distinguish it from a complex atemporal relation. It does not even suffice to combine the two specifications, and describe a process as profiling a sequence of relationships distributed through time—since this latter definition is perfectly compatible with one sense of *across* (cf. ex. 6b and Fig. 4b), which is not a verb but a preposition. What, then, can we single out as a possible conceptual basis for the semantic contrast of a complex atemporal relation like *across* vs. an obviously related verb like *cross*? The difference must be quite subtle. I suggest that it does not pertain primarily to the content of the predications, but rather to how this content is construed through cognitive processing.

Two preliminary distinctions are necessary. The first is between CONCEIVED TIME (t) and PROCESSING TIME (T), i.e. between time as an OBJECT of conceptualization and time as the MEDIUM of conceptualization. Any conception whatever requires a certain span of processing time for the requisite cognitive operations. A-fortiori, processing time is needed to conceptualize the passage of time, or to mentally follow the temporal evolution of a situation. Except in cases of immediate experience, there is no restriction that a span of conceived time must coincide in length with the span of processing time required for its conception; we have the mental capacity, in recalling or imagining a sequence of events, to either 'speed it up' or 'slow it down'. For example, I can mentally run through the steps involved in changing a tire, reviewing them all in a matter of seconds, but the physical implementation of these procedures takes considerably longer.

I further distinguish two modes of cognitive processing: SUMMARY vs. SEQUENTIAL scanning. In the former, the various facets of a situation are examined in cumulative fashion, so that a more and more complex conceptualization is progressively built up; once the entire scene has been scanned, all facets of it are simultaneously available, and cohere as a single gestalt. With respect to the cognitive events which constitute this experience, we can suppose that, once activated, events that represent a given facet of the scene will remain active throughout. By contrast, sequential scanning involves the successive transformation of one scene into another. The various phases of an evolving situation are examined serially, in non-cumulative fashion; hence the conceptualization is dynamic, in the sense that its contents change from one instant to the next. At the level of cognitive events, we can suppose that events which represent a given scene will remain active only momentarily, and will begin to decay as the following scene is initiated.

These respective modes of scanning can be illustrated by our abilities to study a photograph and to watch a motion picture. Summary scanning is suited by nature to the conception of static situations; sequential scanning lends itself to the conception of changes and events. We nevertheless have the conceptual agility to construe an event by means of summary scanning; thus we can watch the flight of a ball and then mentally reconstruct its trajectory, which we can even visualize as a line with a definite curvature. In terms of the photographic analogy, employing summary scanning for an event is like forming a still photograph through multiple exposures.

To make these notions explicit, I define the CONSTRUAL RELATION as the relationship between a conceptualizer and his conceptualization. In speech, the relevant conceptualizers are the speaker and addressee, and the relevant conceptualization is the meaning of a particular linguistic expression. The formulaic representation of 7a indicates that conceptualizer *C* carries out conceptualization *Q* at point T_i of processing time:

$$\begin{array}{l}
 (7) \text{ a. } \begin{bmatrix} Q \\ C \end{bmatrix}_{T_i} \\
 \text{b. } \begin{bmatrix} a \\ C \end{bmatrix}_{T_1} > \begin{bmatrix} b \\ C \end{bmatrix}_{T_2} > \begin{bmatrix} c \\ C \end{bmatrix}_{T_3} > \begin{bmatrix} d \\ C \end{bmatrix}_{T_4} \\
 \text{c. } \begin{bmatrix} a \\ C \end{bmatrix}_{T_1} > \begin{bmatrix} a \\ b \\ C \end{bmatrix}_{T_2} > \begin{bmatrix} a \\ b \\ c \\ C \end{bmatrix}_{T_3} > \begin{bmatrix} a \\ b \\ c \\ d \\ C \end{bmatrix}_{T_4}
 \end{array}$$

Formulas 7b–c then represent the construal of an event by means of sequential and summary scanning, respectively. Consider the conception of an object falling to the ground, as sketched in Figure 5a, where *a–d* label component

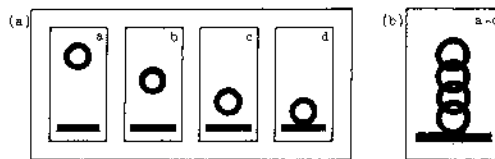


FIGURE 5.

states.¹⁵ Formula 7b indicates that these states are accessed serially through processing time: *C* activates *a* at T_1 , *b* at T_2 , etc. When summary scanning is employed for the same event, as in 7c, the active conceptualization grows

¹⁵ Discreteness in the diagrams and formulas is simply for expository convenience. The mental experience is obviously continuous; I make no claim that individual states are necessarily recognized as separate entities at any level of processing.

progressively more elaborate: *a* is activated at T_1 and remains active throughout; the activation of *b* is added at T_2 ; and so on. Summary scanning thus involves a BUILD-UP PHASE, which continues until all the component states are simultaneously active and manipulable as a single gestalt. In the present example, the build-up phase results, at T_4 , in the composite conception depicted in Fig. 5b: in effect, all the component states are superimposed in a single image. The directionality of the conception—i.e. its construal as an object falling to the ground, rather than rising from it—is attributable to how it is built up, state by state.

The distinction between sequential and summary scanning provides a natural basis for the contrast between processes and complex atemporal relations. Under this analysis, for instance, the verb *cross* and the preposition *across* may share the conceptual content of Fig. 4b, but differ in how the component states of this complex relationship are accessed. A verb is thus a 'temporal' predication in the sense of following a situation, state by state, as it evolves through conceived time; its 'dynamic' character reflects the successive transformations which derive each component state from its predecessor. The corresponding atemporal relation employs summary scanning for the same series of states. Though it accesses these states in sequence during the build-up phase (which accounts for its directionality), the cumulative result is a complex conception in which all the component configurations are superimposed and simultaneously active.

We can now attempt an explicit description of the schema for processual predications. Let r_i stand for a stative relation, t_i for a point in conceived time, and r_i/t_i for their coincidence. Formula 8a thus indicates that *C* activates, at point T_i of processing time, the conception of r_i , and further situates this relation at point t_i :

$$(8) \text{ a. } \begin{bmatrix} r_i/t_i \\ C \end{bmatrix}_{T_i}$$

$$\text{ b. } \begin{bmatrix} r_1/t_1 \\ C \end{bmatrix}_{T_1} > \begin{bmatrix} r_2/t_2 \\ C \end{bmatrix}_{T_2} > \begin{bmatrix} r_3/t_3 \\ C \end{bmatrix}_{T_3} > \dots > \begin{bmatrix} r_n/t_n \\ C \end{bmatrix}_{T_n}$$

A process is then characterized by formula 8b. A processual predication involves a continuous series of states $r_1, r_2, r_3, \dots, r_n$, each of which profiles a relation; it distributes these states through a continuous span $t_1, t_2, t_3, \dots, t_n$ of conceived time; and it employs sequential scanning for accessing this complex structure. A process contrasts with the corresponding atemporal relation by having a TEMPORAL PROFILE, defined as the span of conceived time through which the profiled relationship is scanned sequentially.

Let me summarize these ideas by introducing the notational abbreviations of Figure 6. Every predication profiles some entity (recall that this notion is maximally inclusive, subsuming both regions and relations as special cases). A simple atemporal (or stative) relation profiles the interconnections between two or more entities, and reduces to a single, consistent configuration (state); dashed lines represent these interconnections, and by convention the uppermost of the interconnected entities will be taken as the trajector (unless other-

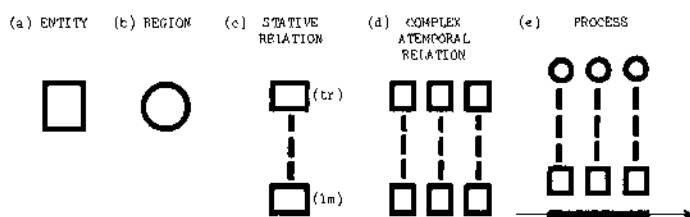


FIGURE 6.

wise indicated). A complex atemporal relation profiles a series of relational configurations, and scans them in summary fashion; so, by definition, it has no temporal profile (even if the states are distributed through conceived time). A process involves a series of relational configurations that necessarily extend through conceived time, and are scanned sequentially; the heavy-line portion of the time arrow represents the temporal profile, and is thus indicative of sequential scanning. I suspect that the trajectory of a process is always nominal, as shown in Fig. 6e.

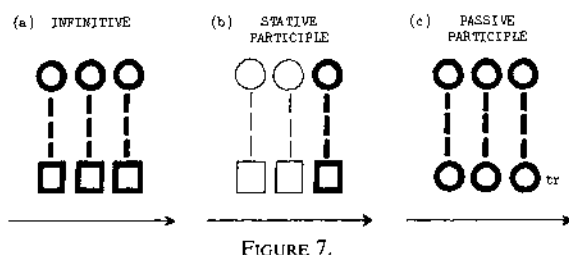
8. MOTIVATION. I have no direct proof that formula 8b is correct as the semantic characterization of verbs; however, several considerations suggest its potential viability. First, it satisfies certain intuitions, accounting for both the 'dynamic' character of verbs and their obvious association with time. Second, it relies only on constructs established independently (notably profiling, conceived time, and sequential scanning). Third, I have shown that a semantic definition of the verb class—if possible at all—must resemble 8b in abstractness, and also in referring to cognitive processing; conceptual content is less important than how this content is construed and accessed. Finally, a strong claim of descriptive adequacy can be made for the over-all analysis: it revealingly distinguishes the various types of relational predications, captures important grammatical generalizations, and explains certain peculiarities of verbal expressions in English.

Relational predications as a class are distinguished from nominal predications by their profiling of interconnections. Within this class, sequential scanning accounts for the fundamental distinction between processes and atemporal relations, some of which are verb-like in content (i.e., they profile a sequence of relational configurations extending through conceived time). How do infinitives and participles fit into this scheme? Though sometimes called 'non-finite verb forms', they are not verbs by my definition; rather, they designate atemporal relations.¹⁶ They nevertheless derive from verbs, so the profiled relation is characterized with reference to a process; this sets infinitives and participles apart from other atemporal relations. More specifically, the process designated by the verb stem functions as the base for the infinitival or participial predication over-all. The semantic value of the derivational morphology (*to*, *-ing*,

¹⁶ Infinitives and participles also have nominal variants (cf. §11). For the details of their composition, see Langacker 1981a, 1982a, 1987 (Ch. 8).

-ed) resides in the effect it has on the process introduced by the stem: each derivational morpheme profiles a schematically-characterized atemporal relation, and imposes its atemporal profile on the processual base provided by the stem.

In brief, the morphemes deriving infinitives and participles have the semantic effect of suspending the sequential scanning of the verb stem, thereby converting the processual predication of the stem into an atemporal relation. Where these morphemes differ is in the additional effect they have on the processual notion which functions as their base. I analyse the infinitival *to* as having no additional effect whatever: in *the first person to leave* or *Jack wants to leave*, the infinitive *to leave* profiles the same sequence of relational configurations as the verb stem *leave*, but construes them by means of summary scanning as a single gestalt. Observe that the diagram for an infinitival predication, Figure 7a, is the same as that for a process (Fig. 6e), except for the absence on its



time arrow of the heavy-line marking which indicates sequential scanning. The morpheme deriving past participles has several semantic variants, only two of which are noted here (cf. Langacker 1982a). One variant, diagrammed in Fig. 7b, profiles only the final state of the base process; the resulting predication (e.g. *broken* in *broken leg*) is stative, because it profiles only a single relational configuration. Another variant derives the participles which appear in passives; as seen in Fig. 7c, it profiles all the component states of the base process, but imposes on the composite predication a different choice of trajector (relational figure). Finally, the *-ing* predication has several effects that are discussed in §10: besides the suspension of sequential scanning, it imposes on the base process a restricted immediate scope of predication; it confines the profile to the component states within this immediate scope; and it construes these states as homogeneous.

Without attempting any detailed justification of these analyses, I note that the constructs of cognitive grammar enable us to distinguish infinitives and participles from both verbs and other atemporal relations, and to elucidate their subtle semantic contrasts. Moreover, the proposed taxonomy of relational predications has considerable descriptive import. I believe the following generalizations to be valid for English (and perhaps universally):

- (9) a. A finite clause always profiles a process.
- b. A noun modifier is always atemporal.¹⁷

¹⁷ Specifically excluded from 9b are finite-clause relatives. The special status of finite clauses makes this a principled exception (cf. Langacker 1985).

As implemented in English, 9a requires that every finite clause contain a verb to function as clausal head, in the sense that its processual profile is inherited by the clause as a whole. Interpreted as full sentences, the expressions in 10 are consequently deviant, since they contain no verbs to furnish the requisite profiles:

- (10) a. *The boy *tall(s)*.
- b. *The lamp *above(s)* the table.
- c. *A man *strolling* along the beach.
- d. *The rock star *pursued* by wild teenagers.
- e. *It already *broken* when I found it.
- f. *They *to leave* tomorrow.

Observe that participles and infinitives behave the same as adjectives and prepositions in this regard—just as we expect, given their categorization as atemporal relations. It is possible, of course, to render these sentences grammatical simply by adding *be*:

- (11) a. The boy *is tall*.
- b. The lamp *is above* the table.
- c. A man *is strolling* along the beach.
- d. The rock star *was pursued* by wild teenagers.
- e. It *was already broken* when I found it.
- f. They *are to leave* tomorrow.

This phenomenon is explained by generalization 9a, together with the semantic properties of *be*.

In numerous previous publications (e.g. 1981b, 1982a,b), I have argued that the auxiliary verbs *be*, *have*, and *do* designate highly schematic processes; i.e., they have little content beyond that which characterizes verbs as a class, as formulated in 8b. The semantic contrasts which distinguish *be*, *have*, and *do* are not essential here—we need only consider their common status as schematic processual predications. This special semantic value suits them for particular grammatical roles—one of which, illustrated in 10–11, is to furnish the temporal profile required for a finite clause whose major content is supplied by an atemporal predication. *Be* is processual, and hence eligible to serve as clausal head; but it is only a 'skeletal' process, since its component states are not identified (apart from being relational). An adjective, preposition, participle, or infinitive puts 'flesh' on the skeleton, designating one or a sequence of relational configurations which are specified in substantial detail; and when it combines with *be*, these relations are equated with the component states of the latter. The resulting composite expression (*be tall*, *be above*, *be pursued*) inherits the processual profile of *be*, and therefore designates a specified process. The atemporal predication thus elaborates the schematic content of *be*—which itself extends the atemporal relation through conceived time, and imposes on it the sequential scanning necessary for a finite clause.

More generally, this analysis offers a principled explanation for a striking organizational feature of the English auxiliary—namely the dependency between *have* or *be*, on the one hand, and the participial morphemes, on the other (cf. Chomsky 1957). In a full finite clause, *-ing* demands the co-occurrence of

be, while the past-participial morpheme requires either *be* or *have* (for its passive and perfect variants, respectively). These dependencies reflect the interaction of generalization 9a with the semantic value of the participial inflections. These inflections suspend the sequential scanning of the verb stem, thus deriving an atemporal predication; hence *be* or *have* must be added to 'retemporalize' the expression before it can function as clausal head. In a complex verb group, several cycles of suspension and re-imposition of sequential scanning can be observed, e.g. *criticize* (processual) > *criticized* (atemporal) > *be criticized* (proc.) > *being criticized* (atemp.) > *be being criticized* (proc.) > *been being criticized* (atemp.) > *have been being criticized* (proc.) Tense and agreement are manifested on the verb which supplies the processual profile at the highest level of organization.

The auxiliary verbs can also stand alone as clausal heads, in which case they are commonly regarded as pro-forms, and the resulting sentences as elliptical:

- (12) a. Sally is. b. Joe has. c. Larry did.

I would simply say that these expressions are highly schematic—to the extent of being uninformative, except in referring back to some previously identified process. *Be*, *have*, and *do* are true verbs; they can therefore function as clausal heads, despite their 'skeletal' character. Moreover, being processual predications, they have a trajector (see Fig. 6e) which can be instantiated by a subject NP. Hence *Sally* is the actual semantic and grammatical subject of *be* in 12a, just as it is in *Sally is happy* or *Sally is running*.

Generalization 9b specifies the atemporality of noun modifiers. This is a natural restriction: nouns themselves employ summary scanning, and are thus atemporal. Adjectives, prepositions, participles, and infinitives can all be used to modify nouns:

- (13) a. the *tall* boy
 b. the lamp *above* the table
 c. a man *strolling* along the beach
 d. a rock star *pursued* by wild teenagers
 e. a *broken* vase
 f. the first person *to leave*

What 9b specifically rules out is the use of simple verbs in this capacity. The NP's in 14 are thus ill-formed:

- (14) a. *a man *stroll* along the beach
 b. *a *break* vase
 c. *the first person *leave*

The analysis further explains why atemporal predications do not tolerate *be* when functioning as noun modifiers, as in 15, though they require it in the verb group of a finite clause:

- (15) a. *the *be tall* boy
 b. *the lamp *be above* the table
 c. *a rock star *be pursued* by wild teenagers

9. PERFECTIVE VS. IMPERFECTIVE PROCESSES. The most fundamental aspectual distinction for English verbs is between what I call PERFECTIVE VS. IMPER-

PECTIVE processes.¹⁸ Perfectives and imperfectives can be identified by well-known grammatical criteria—e.g., imperfectives occur in the simple present tense, but not in the progressive:

- (16) a. Harry resembles his father. a'. *Harry is resembling his father.
 b. Paul knows the answer. b'. *Paul is knowing the answer.

By contrast, perfectives do occur in the progressive, but not in the simple present:

- (17) a. *Tom builds a canoe. a'. Tom is building a canoe.
 b. *Tom learns the answer. b'. Tom is learning the answer.

Sentences like 17a–b are of course acceptable with a special interpretation (e.g. habitual or historical present), but not when they indicate one instance of the designated process situated at the time of speaking.

Though such differences alert us to the existence of an aspectual contrast, I do not regard them as definitions for the perfective and imperfective classes, but rather as SYMPTOMATIC of an underlying semantic distinction. The classification does not, in any case, amount to a rigid partitioning of the verbal lexicon. Some verbs function comfortably in either class; and verbs that normally belong to one are often shifted to the other by a complement or adverb. Moreover, there are patterns of semantic extension which effect a change in category without marking it overtly—e.g., a perfective can be construed as habitual, and hence imperfective.

I have argued previously (e.g. 1982b) that a perfective process portrays a situation as changing through time, while an imperfective process describes the extension through time of a stable situation.¹⁹ My definition of a process (8b) does not specify change; it requires only that a series of profiled relations must be distributed through conceived time, and must be scanned sequentially. The analysis therefore predicts the existence of imperfective processes: they constitute a limiting case, where all the component states happen to be identical. The presence vs. absence of change is, nevertheless, a significant qualitative distinction; it proves responsible for the contrasting behavior of perfectives and imperfectives.

An examination of typical instances provides initial support for the characterization. Canonical perfectives (e.g. *jump, kick, learn, explode, arrive, cook, ask*) clearly involve some change through time; by contrast, imperfectives (e.g. *resemble, have, know, want, like*) are plausibly interpreted as describing the perpetuation through time of a static configuration. More instructive, perhaps, are cases where the same verb instantiates both categories. For example, the verbs in 18 are imperfective (as shown by their occurrence in the simple present), while the same verbs in 19 are used perfectly (as

¹⁸ The terms 'active' and 'stative' are more commonly employed; I resist them because 'active' verbs often involve neither an action nor an agent, while 'stative' is best reserved for single states (rather than the sequence of states that constitute a process). My imperfective class is equivalent to what Vendler 1967 calls 'states'; his other three categories ('achievements', 'activities', and 'accomplishments') are subclasses of perfectives. (The contrast called 'perfective'/'imperfective' in Slavic studies is not equivalent.)

¹⁹ Smith 1983 has drawn a similar conclusion; our analyses are basically compatible.

witnessed by their occurrence in the progressive):

- (18) a. An empty moat surrounds the old castle.
- b. His parents have a lovely home in the country.
- c. Roger likes his new teacher.
- (19) a. The soldiers are surrounding the old castle.
- b. His parents are having a violent argument.
- c. Roger is liking his new teacher more and more every day.

The situations described in 18 are potentially quite stable; certainly, these sentences do not portray them as changing in any way. By contrast, the sentences in 19 are specifically concerned with changing configurations: the soldiers move into position around the castle, the parents carry out an activity, and Roger's opinion of his teacher becomes more favorable.²⁰

Various scholars (e.g. Mourelatos 1981) have noted a similarity between the perfective/imperfective (or active/stative) contrast for verbs and the count/mass distinction for nouns. I will go a step further, and claim that the perfective/imperfective and count/mass distinctions are precisely IDENTICAL, when due allowances are made for the intrinsic difference between verbs and nouns. The basis for comparing the two distinctions is spelled out here:

- (20) a. The component states of a process (each profiling a relation) are analogous to the component entities constituting the region profiled by a noun.
- b. For a process, time is the primary domain with respect to which the presence vs. the absence of bounding is determined.

Once these identifications are made, it is readily seen that the various properties which distinguish count and mass nouns, reviewed in 21, are mirrored in full detail by the respective properties in 22, which I claim to be valid for the contrast between perfective and imperfective processes:

- (21) a. The region profiled by a mass noun is construed as being internally homogeneous.
- b. A mass is indefinitely expandable/contractible (any subpart is itself a valid instance of the category).
- c. The region profiled by a count noun is specifically bounded within the scope of predication in its primary domain.
- d. Replicability (pluralizability) is possible for count nouns.
- (22) a. The component states of an imperfective process are construed as all being effectively identical.
- b. An imperfective process is indefinitely expandable/contractible (any series of component states is itself a valid instance of the category).
- c. A perfective process is specifically bounded in time within the scope of predication.
- d. Replicability (repetitive aspect) is possible for perfective processes.

²⁰ In saying that these sentences describe changes, I abstract away from the semantic contribution of the progressive construction, which serves to convert a perfective process into a type of imperfective.

For verbs as well as nouns, the properties of homogeneity, expansibility, bounding, and replicability are intimately related. Expansion or contraction does not affect the identity of a process if all its component states are identical (since any series of states is then qualitatively the same as any other). Internal homogeneity precludes distinctive initial and final states; it thus removes the most obvious basis for bounding, which is necessary for replicability. Moreover, indefinite expansibility/contractibility is incompatible with both bounding and replicability.

The contrast between perfective and imperfective processes is sketched in Figure 8. Each process profiles a sequence of relational configurations dis-

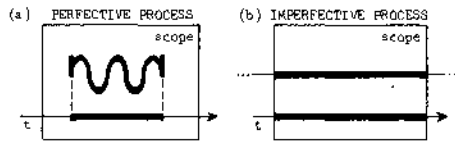


FIGURE 8.

tributed through conceived time. These component states are represented by a wavy line for the perfective process, to indicate change through time, and by a straight line for the imperfective, to indicate constancy through time. A perfective process is so called because it is bounded; i.e., its endpoints are included within the scope of predication in the temporal domain. No such specification of bounding is made for an imperfective process; it profiles a stable situation that may extend indefinitely far beyond the scope of predication in either direction—although, by definition, the profile is confined to those component states that fall within this scope.²¹ For each process, the heavy-line segment of the time arrow marks the temporal profile, characterized by sequential scanning through the profiled states.

This characterization of perfective and imperfective processes accounts straightforwardly for their contrastive grammatical behavior. One such difference is alluded to in 22d, namely the occurrence of perfectives (but not imperfectives) with repetitive aspect. We can force a repetitive construal by means of the adverbial *again and again*:

- (23) a. Harry played the tune again and again.
 b. *Harry resembled his father again and again.

Of course, contexts exist where 23b might be acceptable—e.g., the speaker may mean that Harry went through several distinct stages where he resembled his father, though he failed to resemble him at other times. Observe, however, that this interpretation implies a non-conventional construal of *resemble*—whereby it designates a LIMITED EPISODE of resemblance, including both the initiation and the termination of this relationship. This bounding renders it perfective, hence replicable.

Perfectives and imperfectives also behave differently in sentences like the following, where the first clause is in the past tense, while the second clause

²¹ The profile serves as the 'focal point' within the (immediate) scope of predication.

specifies the continuation of the designated process through the present:

- (24) a. *Paul learned the answer—in fact he still does.
b. Paul knew the answer—in fact he still does.

The imperfective *know* is acceptable in such sentences, but the perfective *learn* is precluded (barring some special interpretation, e.g. habitual). An explanation requires an explicit description of the present and past tenses in English. The one I propose could hardly be more straightforward:

- (25) a. PRESENT: a full instantiation of the profiled process occurs and precisely coincides with the time of speaking.
b. PAST: a full instantiation of the profiled process occurs prior to the time of speaking.

Though these definitions may appear naïve, they are sufficient for the purpose at hand. I believe, in fact, that they are perfectly valid for English.²²

Given the definition of a perfective process, the deviance of 24a can now be explained. A perfective is bounded, so a full instantiation includes its endpoints. The past-tense marking on *learn* thus implies that the entire bounded process—including its endpoints—is situated prior to the time of speaking; this situation is diagrammed in Figure 9a, where the box with zigzag lines indicates the speech

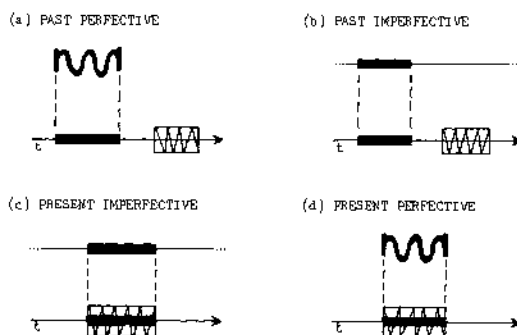


FIGURE 9.

event. It is immediately apparent that this configuration is incompatible with continuation of the profiled process through the time of speaking; but that is precisely what the second clause specifies, so 24a is anomalous. By contrast, 24b is acceptable by virtue of the expansibility/contractibility of imperfectives. Suppose that Paul's knowledge of the answer continues through the present, as indicated by the upper line in Fig. 9b; the specifications of the second clause are thus satisfied. What about the first clause? The past-tense marking on *know* demands a full instantiation of this process prior to the time of speaking. The demand is satisfied by the profiling indicated in Fig. 9b: for imperfectives, any sequence of component states constitutes a valid instance of the category, so the profiled segment of the over-all process is itself a full instantiation of *know*.

²² I am concerned here only with the temporal use of the past tense inflection; Langacker 1978 explains how this is related to its modal uses.

This same property of imperfectives explains their occurrence in the simple present, as defined in 25a. Whenever an imperfective process includes the time of speaking within its temporal extension, as diagrammed in Fig. 9c, we can confine the profile to that segment of the over-all process which precisely coincides with the speech event, and we will still have a valid instance of the process in question. I assume that the present-tense predication achieves this effect by imposing, on the process designated by the verb stem, an immediate scope of predication that is temporally co-extensive with the time of speaking. But though the profile is necessarily limited to the immediate scope of predication, the over-all process referred to by the stem is still evoked as the base (and maximal scope of predication) for a present-tense verb.

Why do perfectives not occur in the present without a special interpretation? There is nothing intrinsically anomalous about the configuration which this implies; it is sketched in Fig. 9d. The difficulty is rather that circumstances normally prevent this situation from arising. For one thing, the span of time required for a bounded process to occur has no inherent connection with the time required for a speech event describing it. Even if the profiled process were the right length, the speaker could hardly describe it with a precisely coincident speech event: to do so, he would have to begin his description at exactly the instant when the process was initiated, before he had a chance to observe its occurrence and identify it. Once he observes a full instantiation of the process (including its endpoint), it is too late to initiate a temporally coincident description. Striking confirmation of this explanation is provided by the one notable exception to the generalization that perfectives do not occur in the simple present, namely that of explicit performatives:

- (26) a. I order you to put that rifle down!
b. I promise that I will behave.

Performative verbs are perfective; by definition, they occur in the simple present as characterized in 25a. Obviously, ex. 26 represents a motivated exception: in a performative sentence, the profiled process is identified with the speech event itself, so it is not only possible but actually necessary for the two to coincide.

When a perfective other than a performative occurs with present-tense form, it receives some 'special' interpretation that avoids the problems cited above. In some languages, the corresponding morphology is polysemous—indicating present tense with imperfectives, but recent past with perfectives. For English, a sentence like 27a will most likely be construed as habitual, and hence imperfective—the act of drinking two martinis for lunch is portrayed as a regular practice, whose institutionalization is stable through conceived time:

- (27) a. Ralph drinks two martinis for lunch.
b. The expedition leaves tomorrow at noon.
c. This sleazy character walks up to me on the street yesterday and offers to make me rich.
d. Bird passes to McHale. McHale shoots. He scores!

The 'imminent future' interpretation of 27b is perhaps to be analysed in parallel

fashion; i.e., the stable situation extending through the present is not the act of leaving, but rather that of the leaving being SCHEDULED for tomorrow at noon. The historical present, illustrated in 27c, involves a type of mental transfer, whereby a past event is described as if it were unfolding at the moment of speech. The temporal extension of the transferred event is made to coincide with that of the speech event by means of an ability noted above (§7): our capacity, in recalling or imagining an event, to 'speed it up' or 'slow it down' as desired. Finally, present-tense perfectives are used in the 'play by play' mode of speech—as in 27d, which can be regarded as a special adaptation of the historical present. The time lag between the reported event and the speech event is as short as the announcer can make it, and the audience accepts their coincidence as a convenient fiction (cf. Langacker 1982b).

10. PROGRESSIVES. One last grammatical difference is the occurrence of perfectives, but not of imperfectives, in the *be ... -ing* progressive construction. The basic reason is simply that the progressive is imperfectivizing; hence its occurrence with imperfectives would be superfluous. To be sure, the restriction does not follow as an inevitable consequence—languages do sometimes evolve redundant constructions—but it is nonetheless natural in functional terms.

The progressive construction is semantically quite regular, given independently established values of *be* and *-ing*. The semantic effect of adding *-ing* to a verb stem is to convert a process into an atemporal relation; by the generalizations in 9, the participle so derived can serve as a noun modifier, but not as the head of a finite clause. The function of *be* is to retemporalize the participial predication, deriving a higher-order verb (e.g. *be learning*) which is capable of occurring as clausal head. *Be* does so by imposing its own processual profile (including sequential scanning) on the composite expression.²³

Constructs already at hand permit a precise semantic description of *-ing* and the progressive construction over-all. From a perfective verb stem, as diagrammed in Fig. 8a, *-ing* derives an atemporal relation with the properties indicated in Figure 10a. The process designated by the stem constitutes the

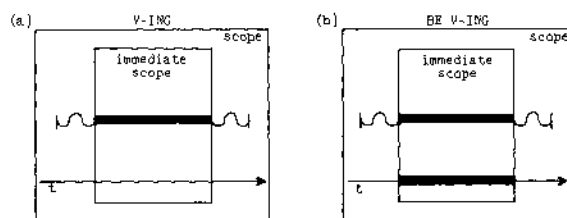


FIGURE 10.

²³ The progressive *-ing* and the *-ing* on noun modifiers are the same, though only the latter occurs on imperfectives (e.g. *anyone knowing his whereabouts*). The analysis explains this distributional contrast: the imperfectivizing function of *be ... -ing* is non-vacuous only for perfectives, but either type of process requires the atemporalization effected by *-ing* in order to produce a suitable modifier (generalization 9b).

base and scope of predication for the participle. Within this base, *-ing* imposes a restricted immediate scope of predication, comprising an arbitrary sequence of internal states; i.e., the initial and final states are excluded. By definition, the profile is confined to this immediate scope—hence the commonplace intuition that the progressive takes an ‘internal perspective’ on the action described by the verb stem. The profiled series of states is represented by a straight (rather than wavy) line, to indicate that it is construed as homogeneous. The component states are not identical in any strict sense, but their degree of divergence depends on the level of schematicity at which they are viewed. I propose that the participle focuses on the commonality of the profiled states as component members of the same base process, and portrays them as a homogeneous set on the basis of this abstract similarity.²⁴

In addition, *-ing* atemporalizes the base process by suspending sequential scanning, so the temporal profile of Fig. 8a is absent in 10a. The semantic contribution of *be* is to re-institute sequential scanning of the profiled relationship, and thus to restore its processual character at a higher level of organization. The composite expression *be V-ing* is therefore processual, as shown in Fig. 10b; but the process it designates is not precisely the same as that profiled by the verb stem. With respect to the perfective process *V*, the composite expression *be V-ing* defines a higher-order process that is limited to some internal portion of *V*, and construes the profiled states at a level of schematicity which renders them effectively identical. This process is imperfective because the profiled relationship is portrayed as stable through time (within the limits implied by its base).

We must now consider sentences like those in 28, which appear to be counterexamples to the claim that the progressive occurs only with perfectives:

- (28) a. He is sleeping.
 b. He is wearing a sweater.
 c. He is walking.

Sleep and *wear a sweater* do not suggest any substantial change through time; and there is an obvious sense in which *walk* is internally homogeneous, even though physical activity is involved.²⁵ If we classify these processes as imperfective because of their homogeneous character, then their occurrence in the progressive is exceptional. I will argue, however, that the verbs in question are in fact perfective.

The comparison of count and mass nouns proves instructive. The region designated by a mass noun is internally homogeneous and unbounded within the immediate scope of predication; that profiled by a count noun is necessarily bounded, and typically heterogeneous. However, internal diversity is neither

²⁴ A comparable degree of abstraction is witnessed in mass nouns like *furniture*, and in terms for superordinate categories (e.g. *animal*).

²⁵ Recall mass nouns like *grass*—whose homogeneity resides in the basically uniform distribution of easily discernible, but more or less identical, particles. My proposal treats *walk* as analogous to the count noun *lawn* (a bounded expanse of grass).

a prerequisite for bounding nor an obligatory feature of count nouns: a count noun like *spot* is bounded by contrast with surroundings, not by internal configuration, and the profiled region is homogeneous out to its boundary. I am claiming that the count/mass and perfective/imperfective distinctions are precisely identical, given the correspondences spelled out in 20. The over-all analysis therefore predicts the existence of perfective processes analogous to *spot*—which are internally homogeneous, but nevertheless construed as being bounded. This is what I propose for verbs like *sleep*, *wear* (a sweater), *walk*, *swim*, *dream*, *perspire* etc.

Processes like these typically occur in BOUNDED EPISODES, rather than continuing indefinitely. Their episodic nature is evidently incorporated as part of the conventional value of these verbs, and is responsible for their categorization as perfectives.²⁶ We thus find the distinctions diagrammed in Figure 11, where

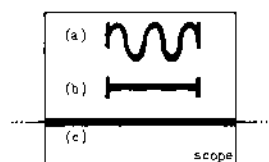


FIGURE 11.

(a) represents a canonical perfective like *jump*, (c) a canonical imperfective like *resemble*, and (b) a verb like *sleep*. Within the class of perfectives, verbs of type (b) are a limiting case, in which the degree of internal variation approximates zero. These processes are nevertheless bounded, since some limit is imputed to the set of component states which constitute the processual profile. From another perspective, we can say that the change implied by type (b) perfectives is confined to the initiation and the termination of the process.

Strongly corroborating this analysis are instances where the same lexeme has variants of types (b) and (c):

- (29) a. A statue of George Lakoff stands in the plaza.
- b. This machine lacks a control lever.
- (30) a. A statue of George Lakoff is standing in the plaza.
- b. This machine is lacking a control lever.

Since they occur in the simple present, the verbs in 29 are imperfective; but those in 30, with the progressive, must be type (b) perfectives. My analysis claims that each verb stem in 29 construes the designated situation as extending indefinitely through time; but in 30, it portrays the same situation as constituting a bounded episode. This is evidently so: 29a suggests that the plaza is the permanent home for Lakoff's statue, while 30a either indicates that the statue is there only temporarily, or else reports on someone's immediate (hence tem-

²⁶ Since the imagery embodied by lexical and grammatical structures is to some degree conventional, another language might treat such processes as imperfective by focusing on their internal homogeneity. This would account for the corresponding verbs occurring in the simple present (e.g. French *Il dort* vs. English *He is sleeping*).

porary) perception of its location. Similarly, 29b suggests that the absence of a control lever is part of the machine's design, whereas 30b intimates a contingent situation, finding the machine in need of repair. The analysis further predicts such judgments as the following:

- (31) a. Belgium lies between Holland and France.
- b. *Belgium is lying between Holland and France.
- (32) a. *Peter lies on the beach right now.
- b. Peter is lying on the beach right now.

Belgium's position vis-à-vis Holland and France is permanent for all intents and purposes; but a person generally lies on the beach only in bounded episodes.

Properly interpreted, I believe this analysis to be compatible with the seemingly very different one proposed by Goldsmith & Woisetschlaeger 1982, which explicates the contrast between the simple present and the present progressive in terms of a distinction between 'structural' and 'phenomenal' knowledge. In judging a property to be structural (i.e. a matter of 'how the world is made'), we portray it as something that will endure until the world itself changes; we thereby lend it an intrinsic permanence that precludes its occurring in bounded episodes. Of course, what constitutes the 'world' is subject to variable construal (cf. Fauconnier 1985); a process is imperfective only with respect to a given scope of predication. At one extreme, the world can be equated with the physical or mathematical universe. If we define the relevant scope of predication as the full temporal expanse of human experience, the situations described in 33 are stable throughout, and unbounded within this scope:

- (33) a. Water consists of hydrogen and oxygen.
- b. Two plus two equals four.
- (34) a. Thelma dyes her hair.
- b. Thelma is dyeing her hair (these days).

However, to explicate the contrast in 34, we must narrow our horizons considerably. The 'world' is essentially limited to Thelma and her activities; the scope of predication is a vaguely delimited portion of her lifespan, sufficiently long for behavioral patterns to be established and identified. In 34a, the practice of hair-dyeing is portrayed as a stable part of Thelma's behavioral repertoire throughout this span of time. In contrast, 34b depicts this practice as being only temporary: Thelma regularly dyes her hair at present, but this has not always been her practice, nor is it expected to continue indefinitely. Regular recourse to hair-dyeing constitutes only a bounded episode within the over-all period of Thelma's life that concerns us.

The interaction between aspect and scope of predication is further illustrated here:

- (35) a. A truly great linguist is sitting there.
- b. There sits a truly great linguist!

Sit is normally perfective; though internally homogeneous, the process it designates is construed as occurring in bounded episodes. The progressive is therefore required to describe a single instance of this process that temporally

includes the speech event, as in 35a. The simple present nevertheless appears in 35b, suggesting an imperfective construal that allows the profiled process to coincide precisely with the time of speaking. This special construal arises because 35b represents a marked grammatical construction with inherent semantic import. The construction is strongly deictic, as witnessed by the preposing of *there*. Its effect, intuitively, is to spotlight a particular facet of immediate experience: it directs all attention to whatever is presently occurring in the region indicated by *there*. With respect to the temporal domain, the effect of this focusing operation is diagrammed in Figure 12. The full episode of sitting

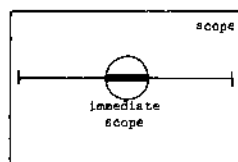


FIGURE 12.

constitutes the base, so the boundaries of this episode are included in the over-all scope of predication. However, the focusing operation imposes on this base a restricted immediate scope of predication—the temporal extension of which is centered on the speech event, and which does not include the boundaries of the full sitting episode. Since the profile is necessarily confined to the immediate scope, where bounding does not occur, the designated process is imperfective.

We can observe an interesting variation on this theme:

- (36) a. This road winds through the mountains.
- b. This road is winding through the mountains.

Speakers agree that the sentences are appropriate in different contexts: 36a might be used in planning a trip or examining a road map, while 36b reports on what one actually experiences while driving along the road. I therefore analyse these sentences as differing in their scope of predication, particularly as it applies to *road*. We can once more employ Fig. 12 to diagram this essential contrast: we need only apply it to space (not time), and interpret the bounded line segment as the road (not the process). In 36a, the spatial scope of predication affords an overview of the entire complex configuration; a long expanse of road is presented in a single gestalt, in relation to the contours of the mountains. The subject nominal thus profiles the entire road, which corresponds to the full line segment in Fig. 12. Ex. 36b takes this over-all configuration as its base, but imposes on it an immediate scope of predication which encompasses only what the passengers can see at one time. The immediate scope delimits the profile; so what counts as the road in 36b is that segment of road which is visible at a given moment. How *road* is construed determines the aspectual value of *wind* (as reflected in the choice of simple present vs. progressive). The holistic construal in 36a renders *wind* imperfective: viewed as a whole, the road does not change position vis-à-vis the mountains. The over-all configuration is constant as it is scanned sequentially through conceived time. But when *road* is construed restrictively, to include only what is immediately vis-

ible, then *wind* becomes perfective: the road (so identified) no longer occupies a constant position in relation to the mountains. *Wind* thus designates a change through time rather than a stable situation.

We saw earlier that the difference between a simple and a complex atemporal relation may hinge on the size of an object relative to a path which it occupies (cf. Fig. 4). The perfective/imperfective contrast in 36 is similarly dependent on the relative sizes of the trajector—as determined by the immediate scope of predication—and of the full trajectory which it follows. Shifts in the scope of predication are not always responsible for contrasts involving this size factor; e.g.,

- (37) a. Tom is going from Dallas to Houston.
b. This road goes from Dallas to Houston.

Even under their normal construal, Tom is small in relation to the distance between Dallas and Houston; but a road is potentially long enough to occupy the full path simultaneously. *Go* is thus perfective in 37a because it describes a change, but imperfective in 37b because it describes a stable situation with indefinite temporal extension. These two senses of *go* make precisely the same locative specifications (the trajector occupies all the points along a path); but they differ in their distribution through conceived time. In the perfective variant, the trajector occupies just one point in the path for each component state. The imperfective variant essentially telescopes the component states of the perfective into a single, more elaborate configuration—which is then followed holistically, through conceived time, as a stable situation.

The aspectual properties of a verb can also be influenced by the temporal extension of its object. *See* is normally imperfective and hence occurs in the simple present, as in 38a:

- (38) a. I see a rhinoceros.
b. *I see a flash.
c. *I am seeing a flash.

A typical rhino has sufficient object permanence to support an imperfective predication; i.e., the circumstance of someone seeing it is potentially stable for a period at least long enough to include the entire time of speaking, as the simple present requires (cf. Fig. 9c). A flash, however, is instantaneous. Its temporal duration is simply not long enough for seeing it to be construed as a stable situation extending through time. *See a flash* is therefore perfective, and 38b is ill-formed when given a simple-present interpretation. We normally resort to the progressive in describing one present-time instance of a perfective process; but 38c shows that this too is precluded with *see a flash*. My characterization of *-ing* and the progressive construction (Fig. 10) affords a ready explanation: *-ing* imposes on a process a restricted immediate scope of predication, consisting of an arbitrary sequence of internal states, and it portrays as homogeneous the profiled situation thus selected. This is hardly possible with a punctual process like *see a flash*, which basically consists of just the onset and offset of a visual sensation—there is nothing in between to be construed as an on-going situation.

11. ABSTRACT NOUNS. Abstract nouns and nominalizations have always been considered problematic for a notional account of basic grammatical categories. In large measure, the difficulties stem from an objectivist view of linguistic semantics; they seem far less formidable when meaning is equated with cognitive processing, with conventional imagery properly accommodated. The following remarks are brief and selective, but may at least indicate that abstract nominals are amenable to this type of analysis.

The verb *explode* and its nominalization *explosion* can both be used to describe the same event (*Something exploded!*; *There was an explosion!*) An objectivist might conclude that the verb and noun are semantically identical—with the consequence that the grammatical category of an expression cannot be predicted from its meaning. My own claim is that *explode* and *explosion* contrast semantically because they employ different images to structure the same conceptual content: *explode* imposes a processual construal on the profiled event, while *explosion* portrays it as an abstract region. Nominalizing a verb necessarily endows it with the conceptual properties characteristic of nouns.

My analysis straightforwardly accommodates the reification implied by deverbal nouns like *explosion*. The verb stem designates a process, comprising a series of component states scanned sequentially through conceived time. Each component state can be regarded as an entity (recall that this notion is maximally inclusive). Moreover, the very fact that these states are coordinated as facets of an integrated, higher-order conception (through sequential scanning) is sufficient to establish them as a set of interconnected entities, and hence as a region. Every process therefore defines an implicit region consisting of its component states. A nominalization like *explosion* simply raises this region to the level of explicit concern as the profile of the composite predication.

The semantic contrast between a verb and its nominalization is schematized in Figure 13. Part (a) is simply the abbreviatory notation adopted earlier for

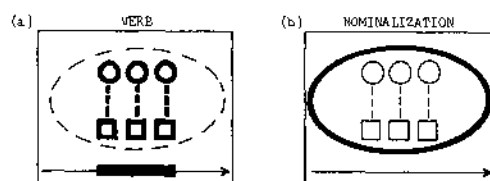


FIGURE 13.

processes (Fig. 6c), except that I have added a broken-line ellipse to indicate the implicit region defined by the interconnection of its component states. Within the verb itself, this latent region has no particular salience; standing in profile are the relational configurations of the individual states—not the region per se, which pertains to a higher level of conceptual organization. The effect of the nominalization is to shift the profile to this higher level: it takes the process designated by the verb stem as its base, and within this base it selects

for profiling the higher-order region comprising the component states. These states are profiled only collectively, as facets of the abstract region; so despite their individual status as relations, the over-all predication is nominal (cf. Fig. 3c).

Explosion is one of many deverbal nominalizations that designate a single instance of the perfective process indicated by the verb stem: *an explosion, a jump, a throw, a yell, a kick, a walk* etc. That the derived form is in each case a count noun follows directly from the proposed analysis: a perfective process is bounded; i.e., there is some limit to the set of component states. The region profiled by the nominalization takes these states for its constitutive entities, so it is bounded as well (cf. ex. 20a). With imperfective processes, the set of component states is not inherently limited. A parallel type of nominalization—namely one which simply profiles the component states as an abstract region—therefore yields a mass noun; examples include *hope, fear, love, desire, belief, and admiration*. There are of course other patterns of nominalization (e.g., count-noun variants of *hope, fear, and belief* designate the object of the imperfective process, not the reified process itself); and there are abstract nouns with comparable value that are not derived from verbs (e.g. *wit, chastity, woe, faith*).

Perfective processes also give rise to nominalizations which function as mass nouns: *jumping, yelling, walking, procrastination, sleep* etc. Several considerations suggest that the difference between the corresponding count and mass nouns, e.g. between *jump* and *jumping*, is analogous to that between *lake* and *water*: just as a lake is a circumscribed body of water, so can a *jump* be regarded as a bounded instance of the abstract 'substance' *jumping*. For one thing, a noun like *jumping* does not describe a single episode of the base process, but instead refers to it in a generalized, even generic fashion (e.g. *Jumping is hard on the knees*); similarly, a mass noun like *water* receives a generic interpretation unless there is some reason to construe it more narrowly. Moreover, a *jump* is one specific event bounded in time (the primary domain for processes), and a *lake* is one body of water bounded in space (the primary domain for physical substances). By contrast, neither *jumping* nor *water* is continuous or bounded in its primary domain, though each inhabits this domain. *Jumping* shows discontinuous distribution through time (as well as space), being instantiated whenever some instance of the process *jump* occurs. In similar fashion, *water* lies scattered about in lakes, rivers, puddles, drops, and oceans; the category is instantiated wherever there occurs some quantity of a substance with the requisite properties. Finally, neither *jumping* nor *water* qualifies as a region on the basis of distribution in its primary domain, but rather by virtue of qualitative homogeneity. The qualitative unity of *water's* scattered instantiations derives from their common location in quality space (§5). *Jumping* is homogeneous in the sense that all instantiations reside in the occurrence of a single type of process.

Though abstract nominals pose many subtle problems that have barely been explored, I feel the present approach provides important tools for the eventual resolution of these problems. I further expect the schematic characterizations

proposed for count and mass nouns to prove adequate for all members of these classes, both concrete and abstract.

12. CONCLUSION. The noun and verb categories are universal and fundamental to grammatical structure. That such a distinction should have a conceptual basis is, on the face of it, hardly surprising: why, in fact, would anybody believe (or want to believe) otherwise? Nonetheless, informed opinion and theoretical orthodoxy overwhelmingly support the contrary position—indeed, the presumed impossibility of a notional characterization is critical to sustaining the autonomy of grammatical structure. I have tried to show that the usual arguments for this position are crucially dependent on certain assumptions about the nature of meaning and linguistic semantics.²⁷ The validity of these assumptions cannot be accepted a-priori. Even the staunchest advocate of objectivist semantics would not pretend that it offers a convincing account of linguistic meaning in all its varied aspects.

Cognitive grammar makes radically different assumptions, and arrives at very different conclusions. By adopting a conceptualist, imagist view of linguistic semantics, it is possible (at least in principle) to achieve a notional characterization of the noun and verb classes, as well as their major subclasses. Why, though, should these characterizations—couched as they are in terms of such mysterious entities as 'cognitive events'—be given any credence? There are two basic reasons. First, this approach has led to a highly coherent and (I hope) revealing analysis. It accounts in unified fashion for an extremely broad array of data, and affords a natural explanation for many puzzling phenomena. Second, it invokes only constructs that are either well-attested independently or have prima-facie cognitive plausibility: processing time, event coördination, relative prominence, figure/ground alignment, levels of organization, sequential scanning, bounding, degrees of schematicity, scope of predication, effective homogeneity etc. Though linguistic theorists seldom deal with such notions, I see little reason to doubt their psychological validity, or their potential relevance to linguistic semantics.

At the very least, I have indicated what a notional characterization of basic grammatical categories must look like, if any is possible at all. There is no real hope of finding universally valid definitions based on objective factors, or even on conceptual content alone; the critical factor—to be addressed at the level of cognitive processing—is how this content is accessed and construed. As linguists, we can hardly concern ourselves with specific neural circuits or the firing of individual neurons. We can, however, make plausible assumptions about the functional architecture of the complex cognitive events which are responsible for particular types of mental experience. Such attempts are surely speculative, and possibly premature; but they are hardly avoidable in the long run, if one is serious about treating language as a psychological phenomenon.

²⁷ Equally important are standard assumptions about the proper role and level of predictability in linguistic analysis. Langacker 1987 (Part I) argues for an alternative view.

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