

From Discrete Signs To Dynamic Semantic Continuum

We shall begin by arguing against the tendency (as in structural linguistics) to study meaning from the point of view of discrete sign units, and then identify approaches where a continuous plane of content is characterized by spatial and actantial relations between entities. Subsequently, we shall go on to examine two theories that view sentence-meaning in terms of a) holistic structures and b) constraints imposed on the structure of language by the essentially dynamic and constantly transforming nature of the world. These two approaches are: 1. Catastrophe theoretic semantics proposed by mathematician Rene Thom based on the concept of morphogenesis, and 2. *Karaka* theory of the Sanskrit grammarians, particularly the version elaborated by the 7th century philosopher of language, Bhartrhari. By highlighting these theories we are suggesting that the relation between language and 'reality' can be seen as a matter of reflection/revelation of the infinite dynamism of the world by means of a finite variety of basic sentence structures. We shall also emphasize the importance of the gestalt conceptions present in the two theories.

Discrete Signs?

We know that in the structural linguistics founded by Ferdinand de Saussure, the linguistic sign is understood as an inseparable bipartite entity constituted of a signifier and a signified. Saussure saw the *langue* (language system) as made up of discrete signifying units or signs defined in terms of their relations and mutual differences, and which

enter into acceptable combinations in language use (*parole*). While the sound-form and thought, mediated by language, are continuous and 'nebulous' in nature, language itself is constituted of discrete, discontinuous signs. Saussure excludes from the realm of language the undivided streams of both thought and of sound-form. Important to this conception of language is the simultaneous and parallel discretization of both signifiers and signifieds, and the modes of reconstitution of the formal and semantic unity by means of syntagmatic combinations. Syntagmatic and associative/paradigmatic relations "are two forms of our mental activity, both (of which) are indispensable to the life of our languages" (Course, 123).

We notice that Saussure is upholding the widely held belief that language is a rule based system of discrete symbolic units and their combinatorial behaviour. (This idea has been further reinforced by N. Chomsky who while centring his linguistics on syntax stresses on the computational and arbitrary character of human language.) Thus, even while insisting on the complete autonomy of language, Saussure readily accepts the view that "language, in a manner of speaking, is a type of algebra consisting solely of complex terms" (ibid., 122).

As regards the nature of the combinations of signs, Saussure appears to be far less committed. The temporal order of the spoken language imposes on it a character of linearity, and this necessitates the sign units to be "linked together." Syntagms are "combinations supported by linearity." (ibid., 123) Here, indeed there is a paradox that Saussure himself reveals to us: while syntagms are combinatorial constructs defined by reciprocal occurrence, "the sentence is the ideal type of syntagm." (ibid., 124) However, the latter belongs to speaking (i.e., *parole*) and not to the language system. Thus, at the level of combinatorics, Saussure perceives a continuum of more or less constructional rigidity, the least rigid

syntagmatic unit being the sentence, which indeed is not a unit of the language system, but of speaking. Saussure's solution is as follows:

"...in the syntagm there is no clear-cut boundary between the language fact, which is sign of the collective usage, and the fact that belongs to speaking and depends on individual freedom. In a number of instances it is hard to class a combination of units because both forces have combined in producing it, and have combined in indeterminable proportions." (ibid., 124)

Just as he has an excellent sense of the sign as the basic, independent unit of language, Saussure is also conscious of the coexistence of signs in a totality: "Language is a system of interdependent terms in which the value of each term results solely from the simultaneous presence of the others ..." (ibid., 114). A language-totality is thus the sum of all its sign-units, and their relations, both syntagmatic and paradigmatic.

Perhaps, by overstating the autonomy of language structure, Saussure remains insensitive to the specific structuring of the sentence, both at the syntactic and semantic levels. While concentrating on a description of the individual signs as well as on the language-totality, Saussure seems to have paid very little attention to the syntactico-semantic constitution of the sentence. Indeed, true to the positivist tradition that he had inherited from the 'neo-grammarians', Saussure was seeking to constitute the 'objectivity' of language. Thus, the language system had to be 'out there', and in the ultimate analysis, in the human mind, organized in terms of the syntagmatic (*in praesentia*) and associative (*in absentia*) relations.

What is missing in the Saussurean perspective, from our point of view, is an 'ecological' perspective on language. Language is not an entirely objective system, determinable either externally or internally. *It is made to the measure of man*, enabling him to situate himself in the world, and

communicate with other human beings that forms part of his environment. From this perspective, the linguistic structure is ideally capable of representing the dynamic nature of the world — physical and social —, and perception is the biologically-given cognitive means to mediate between the dynamic structure of the world and the linguistic structure. This isomorphism between the language and the world, mediated by holistic perceptual structures, can be represented only by the sentence, and not by isolated signs, be it words, morphemes, or phonemes.

The grammatical notion of sentence, we know, has been central for linguistics of the classical periods, both in the European and the Indian traditions. In Europe — for those who insisted on its centrality — the sentence was seen as the *minimal unit of expression of a complete thought*, containing a subject and a predicate component. As per this view, prevalent from, Aristotle to Port-Royal, only the sentence can have a truth-value. After listing his famous ten Categories of expression, Aristotle says:

“Not one of these terms in itself will involve any positive statement. Affirmations and also denials, can only arise when such terms are combined or united together. Each positive or negative statement must either be true or false — that at least, is allowed on all hands — but an uncombined word or expression (for instance, ‘man’, ‘white’, ‘runs’ or ‘conquers’) can neither be true nor be false.” (quoted in Harris and Taylor, 1989: 26-27).

In India too, there were profound and meaningful debates between scholars who held that the sentence conveyed undivided meaning (*akhanda-pakshavada*) and those who held that sentence meaning is a result of the combinatorics of word-meanings (*padavada*). Bhartrhari was a firm adherent of the former position. Here too, the infra-sentential units, such as the subject and the

predicate were considered incomplete. Alone, they leave a blank which needs to be filled by a corresponding element to form a complete and independent unit, the sentence. The traditional grammatical term for this cognitive-grammatical lack and its potential satisfaction, was *Akanksha* or expectancy. It is expressive of the polarity between the major linguistic categories such as the noun and the verb, and their mutual formal attraction.

Though the understanding of language structure in terms of syntagmatic and paradigmatic relations is extremely useful, it is still important to perceive the hierarchical organization of the language units, which the tree-structures of Chomskyan generative grammar or the 'stemmas' of Lucien Tesnière attempt to capture. Language is a system where the multiple levels of organization of form and meaning are masked by a surface linearity. Sentence is not only the highest level of this hierarchy, but also, in relation to thought, the bounding structural unit. (Beyond the sentence, of course, there is the textual level which may also have its hierarchical organization, for instance, of the narrative units.) Etymologically speaking, a 'sentence' expresses what is felt or thought ('sentir'). It is worth recalling that in the Aristotelian conception, language is a mode of representing or imitating reality (mimesis), involving the use of a subject-predicate structure. It appears that in his linguistic definitions, Aristotle had sought to distinguish between the perceptual-cognitive dimension (world-mind relation) relevant for language and the actual conventional-symbolic dimension (mind-word relation). However, the symbolic dimension is both complicated and reinforced by Aristotelian conception of metaphor which he defined as a process of semantic transfer, capable of introducing , possibly and not entirely predictably, ever-new linguistic conventions. Other modes of representation such as painting, music or drama do not have this sort of a mimetic structure, and hence can not be evaluated in relation to the truth or the falsity of the representation.

Hjelmslev: The form of content and the spatial conception of cases

Luis Hjelmslev recognized that in relation to text, meanings are not attached to the signifiers in a one-to-one manner within identifiable sign-units. He undermined the idea that the signified and the signifier are bound together in a complementary manner within discrete sign units. Instead he proposed a linguistic description that

“must analyze content and form separately, with each of the two analyses yielding a restricted number of entities, which are not necessarily susceptible of one-to-one matching with entities in the opposite plane.”(Hjelmslev, 1961 edn.:45)

In the place of the Saussurean bipartite division of the sign, Hjelmslev introduced a quadripartite notion of the sign. Clarifying the Saussurean conception of language a little further, Hjelmslev insisted that the elements of the thought and the sound realms do not enter into direct and unmediated unity to form the sign, but that they have to be mediated by the form of particular languages. In addition to Saussure’s linguistic *a priori*s of thought and sound (which in his new systematization becomes content-substance and expression-substance respectively), Hjelmslev introduces the notions of content-form and expression-form. Both the content-substance and the content-form do not exist anterior to the specific semiotic functions (‘purport’) that a language is put to use by its speakers. As per this view, the content-substance (i.e., the unit of thought) is formed by the action of the content-form upon the purport. Hjelmslev suggests that the domain of colours can be taken as an example of purport, “which,

abstracted from (...) languages, is an unanalyzed, amorphous continuum, on which boundaries are laid by the formative action of the languages.”

It is in relation to such a context that Hjelmslev’s penetrating analysis of the category of case must be seen. A significant part of his famous ‘La Categorie des Cas’ (1935) is devoted to a detailed historical account of the different approaches to a theory of the grammatical case. Since there is no language where the case-system does not have a significant function, Hjelmslev believes that it is necessary for any grammatical study to begin with an analysis of the case category.

In his effort to determine the ‘constant system’ and the ‘structural principle’ associated with the diverse manifestations of it, Hjelmslev has undertaken a detailed historical analysis of the views for and against the *localist* conception of the case category. The idea was first proposed in the middle ages by the Byzantine grammarians, Maxime Planude and Theodore of Gaza. In recent times, it has been revived by John Anderson (1971) and Charles Fillmore (1977). Th. Gaza interpreted case-relations in terms of spatial movements, e. g., the accusative case as denoting the grammatical subject as directing its activity towards the object, and the genitive as denoting the subject as receiving or absorbing an object.

In the modern period, innovative proposals were made for treating the cases and prepositions as belonging to a common semantic category. Bernhardt (1805), for instance, conceived of the case-morpheme as a ‘condensed preposition’. Another important idea was that of G. M. Roth (1815) who sought to treat case as a category signifying ‘relation’, explicitly founded on the Kantian category of ‘relation’. This view that the case category signified ‘relation’ seems to have been widely held during most of the 19th century, with or without Kantian underpinnings. Attempts were made during this period to link the linguistic categories with basic

epistemological categories. It was felt that concepts of the deep linguistic level were of the same type as the logical/epistemological concepts.

In about the same period, Franz Bopp introducing his own version of localism saw a connection between 'primitive expressions of spatial order' and the expressions of time and causality, which he considered as attributes of more complex thought. Bopp's student, Wullner, directly transposing some of the basic tenets of Kantian philosophy on linguistic analysis, set up three principles. These are:

- subjectivity, as per which the phenomena denoted by the linguistic sign was not of objective, but of subjective order; the speaking subject chooses a particular grammatical form not according to any objective requirements imposed by the real state of things, , but according to the idea or conception with which he regards the objective fact;
- fundamental signification which can be identified at a certain degree of abstraction, and which permits the deduction of all the concrete uses of a linguistic form; and
- of empirical method in language study.

On the basis of his long historical survey of positions for and against localism in linguistics Hjelmslev goes on to make a structural delimitation of the case category. Since there are cases or case-like elements in all languages, it is possible to identify this category as a linguistic subsystem having a definite range of significations, or rather, being based on a 'fundamental signification' that manifests with minor variations in all languages.

Hjelmslev follows a Kantian epistemology rather closely, and adapts it for the purposes of his own structural linguistics. In the place of the Kantian notion of 'function', Hjelmslev introduces the notion of 'expressed value' (valeur exprimee). A grammatical category is thus to be defined by its value, and simply as an expression."A linguistic form is an expressed value. The relations that we are concerned with are thus in all languages, expressed values."

Following Wullner principles and his own Kantian elaboration of them, Hjelmslev goes on to claim that "grammar is the theory of fundamental significations or values, and of systems constituted by them ..." In fact, the actual definition of the category of case that he arrives at is a complex consisting of:

- the concrete significations of its various manifestations (directionality, dependence-independence of objects, etc.);
- a notion abstracted from these diverse significations, i.e., the 'fundamental signification', and
- the spatial conception.

The system of fundamental signification for the case at this stage appears to consist of 3 dimensions:

- Direction (“éloignement” [distancing] — “rapprochement” [nearing]);
- A double conception of direction, namely dependence-independence;
- Subjectivity — Objectivity.

In order to deal with the theoretical difficulties regarding the first of the above dimensions, Hjelmslev says that certain specific linguistic attributes must be taken into account. He insists that language cannot be reduced to pure and simple principles of logic; the logico-mathematical type of opposition (e. g., positive and negative) is not the only type of opposition to be found in language. For instance, on the direction dimension what we see is not a relationship of opposition, i.e. the presence of one feature implying the absence of the opposite. Instead of a logical system based on a law of opposition or of non-contradiction, languages, Hjelmslev suggests, are guided by a *prelogical* system with its own ‘law of participation’. The opposition is not between one language having a feature A, and another language having a feature non-A, but it is of having the features A and non-A in the same language. A pre-logical (non-oppositional, participational) character of language is exemplified by the fact that “the normal system of Latin as it is obtained in the traditional grammar is organized on the basis of the ablative, whereas the system of Greek is organized on the basis of the accusative.” Between the ablative, with its feature of [- rapprochement] and the accusative with its feature of [+ rapprochement], on the direction dimension, there is no opposition, but there are only different orientations while the case with the supposedly opposite feature is present in one and the same language.

Hjelmslev observes that it is not surprising to find a prelogical system in natural language, especially in the light of Lucien Levy-Bruhl’s

demonstration of a 'pre-logical mentality' (originally attributed to a 'primitive mentality') in all languages. According to Levy-Bruhl, the prelogical mentality is characterized by a community's collective representations involving the 'law of participation'. It is 'most often indifferent to contradiction' (Levy-Bruhl, 1922: 88). Further, the prelogical mentality is 'essentially synthetic'. It is not a synthesis involving a prior analysis into concepts, but where "the connecting links of representations are given with the representations themselves."

An important feature of the prelogical mentality is the strong sense of space and time. Devoid of a 'logical' unity of the object, for the prelogical mind, "the same object, in different circumstances may have different meanings." (ibid., 117) Levy-Bruhl notes that the central feature of the prelogical knowledge is that of 'preformed connections':

"...if connections are the chief consideration, we pronounce it as prelogical. By prelogical we do not mean to assert that such a mentality constitutes an ante-cedent stage, in point of time, to the birth of logical thought. Have there ever existed groups of human beings, or pre-human beings whose collective representations have not been subject to the laws of logic?" (ibid. 78)

The prelogical is neither anti-logical nor alogical. The 'logical' which is sensitive to the law of contradiction and the 'prelogical' which obeys law of participation always coexist. Hjelmslev echoes Levy-Bruhl's view that the prelogical mentality is far from extinct, and that it coexists with the 'pensee logique' in modern societies, "more or less independent, more or less subdued, but ineradicable" (Levy-Bruhl, 1936: 243). This coexistence of two different mentalities is an inevitable fact, for:

”...la pensee logique ne saurait etre l’heritiere universelle de la mentalite prelogique. Toujours se maintiendront les representations collectives qui expriment une participation intensement sentie et vecue et dont il sera impossible de demontrer soit la contradiction logique, soit l’impossibilite physique.”

[“...logical thought can never be the universal inheritor of prelogical mentality. There will always be collective representations which express a participation intensely felt and lived, whose logical contradiction nor its physical impossibility can never be demonstrated.”]
(ibid., 241)

However, instead of wanting to maintain the relative autonomy of the prelogical, Hjelmslev’s curious strategy towards the end of the theoretical part of his ‘La categorie’ is to forge what he calls a ‘sublogical system’ which will bring under a common principle both the prelogical system and the system of formal logic. This, in his view, is the best structural solution.

The sublogical system that lies “at the base of both the logical system and the prelogical system” consists of representing the principal points of the relevant conceptual zone. The procedure is to identify the fundamental signification in terms of positive and negative values, and zero when necessary, without resorting to all the possible nuances of formal logic, and without admitting all possible extensional configurations. (Hjelmslev, 1935: 127)

The conceptual zone concerning the system of case and prepositions is that of the relations between two objects on a spatial plane. The ‘dimensions’ of these relations are:

1.	Rapprochement (nearing)	eloignement
Direction:	and	(distancing)
	— —>~	~— —>

2. Coherence – Non-coherence:

These are relations with or without contact; the former is further divided into Interiority and Exteriority.

3. Subjectivity – Objectivity:

Here there are two axes; the vertical axis represents objectivity (the relations involving ‘above’ and ‘below’ or ‘under’ are independent of the speaking subject’s perspective), and the horizontal axis represents subjectivity (‘before’ and ‘after’ are oriented to the speaker’s perspective).

The Actantial Paradigm

Alongside the unit-to-unit correspondence between language and the world, which has been in vogue since the Socratic Greek tradition, we can also observe interest in a figure-like adequation of language to reality. Thus, in addition to the logical/ propositional value of the sentence implicit in the former, philosophers and linguists have considered sentence as a mode of reflecting events in the world in a somewhat pictorial manner. Lucien Tesniere, for instance, has proposed such a view in his *Elements de syntaxe structurale* (1959). His purported goal was to found a science of the sentence, or Syntax. The so-called ‘dependency’ grammar of Tesniere is based on an implicit notion of ‘action’ which was also central to the ancient Indian grammarians. For Tesniere, the meaningfulness of a sentence was due the central organizing role of the predicate verb which

represented an action, and functioned as the highest syntactic node of the sentence. The verb is the complete and the independent term of a sentence. Dependent on the verb are the 'actants' which are the participants in the action. (This dependency relation is diagrammatically represented by means of a tree-structure or 'stemma'). Tesnière viewed the sentence as representing a 'little drama' (*un petit drame*) wherein the predicate represents an action (in the theatrical sense), or even a process, and the dependents of the predicate are the principal elements in the action. Since Tesnière distanced himself from a logical conception of grammar, he also eschewed the Subject-Verb-Object-Indirect-Object type of propositional analysis. He opted for a rather theatrical conception where the nominal elements are initially non-heterogeneous actants participating in a process, but appearing in their functionally specialized roles as subject, object and indirect object in the context of the sentence- structure. Tesnière defines actants as "beings or things which in some capacity and in whatsoever manner, even in the capacity of mere onlookers and in the most passive manner participates in a process." (Tesnière, 1959/1988 :102). According to him the interrelationship among the actants belonged to the structural order (distinct from the linear sentence order) and hence to a 'dynamic' syntax.

While the actants are one type of dependents of the predicate (they designate characters in an anthropomorphic sense), the other type called the circumstants designate the spatio-temporal situation or the manner. According to Tesnière there can be a maximum of only three actants in a sentence while the circumstants may be several. The following example may suffice as an illustration:

Sentence:

Mohan bought an electronic camera for his son yesterday.

Stemmatic representation:

Here, A1 (= Mohan) is the First actant or the Subject, A2 (= Camera) is the Second actant or the Object of the transitive verb or the agent of the passive verb, A3 (= son) is the Third actant, or the Beneficiary, and (C = yesterday) is the circumstant.

Tesniere's dependency grammar is a kind of case-grammar describing the semantic roles of sentence constituents. We may note that he had also introduced the notion of "valency" to denote the number of actants carried by a verb. Thus the valency could be zero ('rain'), one ('cry'), two ('hit') or three ('give'). The notion of valency helps us to have clearer idea of the relationship between the actantial dynamics and its perceptual organization one hand, and the case-structures on the on the other. The action associated with a zero-valent verb, 'rain' pervades the whole of the perceptual frame, and hence linguistically manifests itself with no grammatical subject, or a so-called 'dummy subject' as in many languages, like English (*it*) and French (*il*), or even an Absolute subject as in Arabic. Uni-, bi-, and tri- valent verbs represent actions with increasing complexity, and hence yield correspondingly different case-structures, such as the nominative, the accusative, and the dative, etc.

Despite their apparent similarity, Tesniere's stemma is different in content from Chomsky's tree-diagram. While in the latter, the connections between the nodes have no theoretical value, in the former these connections are perceived in an organic way, that is, as the connections between the participants in an action. The stemmas are the diagrammatic representation of a holistic image of the meaning of the sentence meaning conceived as action. They are suggestive of the sentence-meaning as some sort of dynamical gestalts.

We notice that Tesniere is trying to describe a semantic continuum underlying the surface sentence structure. His starting definition is: "A sentence is an organized ensemble whose elements are the words." Further: "Every word which forms part of a sentence ceases itself to be isolated as in a dictionary. Between it and its neighbours, the mind perceives connections whose ensemble forms the framework of the sentence ... These connections are indicated by nothing. The sentence can be comprehended only when the mind perceives these connections" (Tesniere, 1959: 11). For example in the sentence, "Alfred speaks, "there are three elements: 1. Alfred, 2. speak, and 3. the connection which unites the two first elements, and without which they would not form a sentence. Not to account for the connections "is to ignore the essential, which is the syntactic link." "The connection is indispensable for the expression of thought. Without connection, we will not be able to express any thought, and we will only be uttering a succession of images and indices, isolated from each other, and without any link between them." (ibid., 12) Thus it is the connection that gives the sentence its organic and living character, and is its vital principle. Tesniere sought to relate his organicist and vitalist ideas on language to Humboldt's description of speech activity as *'energeia'* in opposition to the *'ergon'* or the static aspect of language, or *langue*. On the importance of connections, Jean Petitot remarks: "...a sentence is above all a system of connections which being 'incorporeal' (non sensible) can only be grasped by the mind. These structural connections, oriented and hierarchised, are not of logical essence, but constitute an 'organic and vital' principle of organization ..." (Petitot, 1985:45).

In Tesniere's idea of the sentence, its linear order represents the actantial dynamics in the world by means of the verb, the actants and the circumstants. But its structural and dynamic order, though not linguistically manifested, is perceived by the mind. The linear sentential order

transposes itself upon the dynamic and structural order in diverse ways depending upon the specific typology of the language considered.

The actantial perspective and the notion of structural connections are part of Tesnière's theatrical perspective on the sentence structure, developed at least in part to facilitate grammatical pedagogy. Indeed, he whole-heartedly supported an organicist and holist conception of the sentence. The advantage of such a position is that it permits us to think of a structural space where the actants are related to each other via the activity referred to by the verb. Among other scholars who have maintained similar views is the Russian linguist, S. Katznelson who, while noting the fragmentary nature of words as against the holistic character of sentence observes that it is the "grammatical elements ...(that) re-establish the living links which full words tend to lose when they are withdrawn from the images of coherent events." (Katznelson, 1975: 102)

Tesnière's fundamental ideas of actant and valency as well as his organicist perspective has much influenced the semiotic/semantic thinking of Rene Thom known for his Catastrophe Theory. The central role assumed for the verb in virtue of its signifying an action/interaction, and of its assigning actantial roles is also a common factor between the systems of ideas of Tesnière and Thom.

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