Structure

While the initial understanding of structure, i.e., of building, or of ensuring the underlying stability of a building, never escaped the use of the word, its more recent interpretations fall within two distinct perspectives:

1. a stable set of relations among constitutive elements;
2. a holistic entity defined by its intrinsic properties (recalling I.L. Smuts' notion of the holistic world, 1938).

The first perspective is relatively static (close to the original architectural meaning); the second is dynamic, implying the overarching notion of system (including structure and the elements structured). Nevertheless, both have Platonic affiliations since they recall echoes of a concern for an immanent form, or at least for some of the ways in which it might be embodied in particular structures. Indeed, in many ways, structure emerges as what is beyond the physical, the formal, different from the genetic fabric, and free of historic development, function or purpose. Probably first acknowledged in the terminology of seventeenth century biology, structure became a powerful concept due to its linguistic and moreover anthropological foundations. In many ways, the linguistic foundation results in the implicit assumption of an extraordinary role attributed to language, a role further emphasized by the psychoanalytical and philosophical appropriation and re-elaboration upon of structure. Preoccupation with structure, as a given or projected underlying set of relations, and preoccupation with particular structures, identified or assumed as gnoseological devices in well-defined areas of investigation, are related, but not reducible to each other.

Defining structure and furthermore questioning the nature of structure – objective or subjective, or as an interplay of the two – was influenced by preoccupation with systems. From this perspective, one view holds that structures are structures of systems, entities supposed to function precisely because they are structured (since structures themselves do not function). But before being ascertained as the subject of an entire field of inquiry (structuralism), structure was acknowledged in various sciences. Let us recall that by no accident, Roland Barthes, one of the most influential writers in the modern theory of signs, even initiated his perspective by giving meaning to the occurrence of the word *sign* in the vocabulary of theology, medicine, linguistics, (especially that of Ferdinand de Saussure), and other domains. Thus, assimilating structure and the basic tenets of structuralism, he remarked that *sign* unconditionally refers two related terms *(relata)* one to the other. But until this conclusion was reached (and thereby a very distinct structuralist sign theory founded), many other contributions were made to the understanding of particular or more general structures.

An elementary structure is represented by the simplest relation among two elements. In this respect, all polarities are essentially elementary structures: Yin and Yang in pre-Confucian China, pre-Socratic polarities, the odd-and-even of the Pythagoreans, Heraclitus' day and night, hot and cold in Anaxagoras, Empedocle's love and strife. Their formal structure is not different from that ascertained in Lévi-Strauss' binary opposition that constitutes the nucleus of his structural anthropology, or from Saussure's structural theory of language (although Saussure did

not use the word *structure*), or from Barthes' structural semiology.

But while previous to Dilthey (who introduced the term within humanities, i.e., *Geistwissenschaften*) structural considerations were either literal (structures of buildings, machines, tools) or sporadic, in their epistemological use at most, after the major contributions to the definition of structure in linguistics and anthropology were made, the term entered a phase of loose usage from which gnoseological return could no longer be expected. This is one reason why some researchers of structure (Foucault is the example *par excellence*) simply opted out of a structuralist school of thought or direction of concern. Other reasons can be found in the political appropriation of the term (in particular, in Marxian inspired philosophic, economic, and social jargon), as well as in the expectation of rigor to which structuralist ideological discourse refused to obey. All these and epistemological optimism make the need for revising definitions even more critical, if indeed semiotic implications from the perspective of structure will continue to be examined.

Structure as relation among relata – a subject that brings to mind the *signans* and *signatum* of the Stoics and the *signifiant* and *signifier* of Saussure – was pursued in the establishment of structural semantics by Greimas. In his view, a relation to another element defines the meaning of each individual element. By extension, *to structure* is then seen as to perceive differences, moreover, to organize. This brings the issue in the direct proximity of information theory, where indeed Greimas' thought meets that of Max Bense, whose semiotic orientation is rather influenced by Peirce than by Saussure.

Lévi-Strauss issued what he called the requirements of a model for embodying a structure. "First, the structure exhibits the characteristics of a system," (change of one element affects change of all others). "Second (…) there should be a possibility of ordering a series of transformations resulting in a group of models of the same type," (a property of homology). Third, we can predict the behavior of the model when elements are modified. Fourth: "the model should be constituted so as to make immediately intelligible all the observed facts." Somehow, at the opposite end of the spectrum is Saussure's implicit understanding of language as structure, with the two primary relations – difference and opposition – as the nucleus. His thesis, "There are no signs, there are only differences among signs," resonates in Hjelmslev's theory concerned not with sounds, letters, or meanings in themselves, but focused on their reciprocal relation. But even deeper, here is illustrated the difference between a nominalist understanding of structure – as a means or result of analysis – and the realist understanding – not only is language to be structurally analyzed (as Hjelmslev ascertains), but language is structure. Chomsky's contribution is in distinguishing surface structures, which traditionally preoccupied grammarians, and deep structures, basic entities from which the variety of surface structures are realized. Language as a potential set of realizations is controlled by its deep structure. The hope that the structure of the mind might be revealed in what is common to languages of different surface structures is echoed in similar hopes expressed in anthropological, psychoanalytic (Jacques Lacan), and philosophic (Derrida, Althuser) structure research. Other distinctions, such as the conscious and unconscious, or the open and closed structure, also captured the attention of cognitive researchers. Claiming to examine the "mind in its natural state," Lévi-Strauss (*La Pensée Sauvage*, 1962) examined primitive cultures as the result of successive transformations against the background of perceived mental patterns. Through the notion of structure and its implicit system correlations, semiotics

and cognitive sciences come closer together than the critics of psychologism ever anticipated. The ontology of structure and its epistemological and logical understandings are not independent of each other. This is why, in reviewing the historic evolution of the notion, one cannot ignore all other aspects as these actually constitute the meta-level of structure.

As a premise for the elaboration of a structural semiotics or of a system of semiotics, the notion of structure is appropriated, by various authors, with all it carries in one or another of its adopted definitions. In the shift from concern with form (or even Gestalt) and comparative methods to preoccupation and infatuation with structure, semiotics undergoes a re-evaluation of its major concept, that of *sign*. By no accident, aesthetic research is at that time in the forefront, almost in pace with linguistics, frequently surrendering the artistic to the logocratic model. Mukarovsky, coming from the area of interest in artistic artifacts and value, implicitly assumed that Gestalt or form and meaning constitute a whole best captured by the notion of artistic structure. What counts is the immediate reality of the work, its concrete existence as matter structured according to aesthetic intentions. The aesthetic effect is to be explained from the aesthetic structure of the work itself, not by artistic, psychological, or sociological causes. The thought extends the approach of Russian formalists, intent upon discovering structural laws governing the relation between literary accomplishments and other historic events. They all interpose between the work of art and the individual the aesthetic structure that acts as a mediating entity between the collective conscience and the individual experience of art. The work is a complex web of signs that carries the complicated structure of interpretations. Due to this semiotic implication, the decisive step is made from the prior understanding "everything in a work of art is form" to "everything is meaning," as meaning results from the realization of the semiotically constituted aesthetic structure. In the area of aesthetic concern, a distinction needs to be made between structure applied or revealed in literary criticism – evidently in the spirit of the linguistic foundation – and the same applied to non-language-based expression, in particular music and the visual.

After quickly establishing the structural context, Barthes pursued his semiological journey into the territory opened to inquiry by Saussure. The relation (difference and opposition) applies to the literary signifier and signified, but also to the referent. Barthes extended the understanding of literary structure as foundation of semiotics in order to capture higher level structures where the ideological comes to expression and can be revealed. He went beyond the work to the making, which is seen as structure-generating, a semiotic endeavor nonetheless. When continuing his fascination with structure in the visual arts, he effectively and brilliantly reduced them to the word, as fashion, for instance, or photography are for Barthes not the actual clothing or photographs, but the discourse about them; or better yet, the process leading to the discourse. Umberto Eco, reflecting on Piaget's notion of structure – unity of wholeness, transformation, and self-regulation – comes up with a semiotics within which structure is identified as dynamic system (of culture, in his case). In the so-called absent structure, what was considered determined and perfected opens to the many realizations of the work through its interpretation. Here it becomes obvious that the complementary concept of function needs to be accounted for if the desired epistemological reward of a structural perspective (even if applied to absent structures) will ever come to fruition. Structures are, after all, defined through their function in a system, text, or communication endeavor. The reciprocal relation function-structure, which seemed of interest from a system perspective, thus becomes critical for the understanding of

dynamic semiotic phenomena.

Finally, in extension of Peirce, and reflecting his shift between nominalism and realism, an entire semiotic development – very contradictory – celebrates the functional triadic relations among the elements constituting the sign (object, representamen, interpretant). In fact, this definition is as much structural as any other, only the structure here is more complex than in the diadic (dualistic) tradition. Consequently, structure dominates all Peircean inspired typologies (followed mainly by Deledalle and Marty, as well as by Bense and the school around *Semiosis*).

The dynamic view, focused on the functions, so close to semiotic implications, of design, architecture, and political action, and even more on the semiotic considerations of computing (programming, artificial intelligence, man-machine interaction), impregnated the work of many American and Canadian scholars. Beyond the structuralist thought, and the heavy baggage it carries from a long history of obsessions with structure, attempts are currently made to deal with the self-organizing nature of sign processes (a notion inspired by artificial life research). Other notable attempts regard Husserl's definition of the sign (a revival of Plato's theory of ideas) focused on the extra-mental existence of eidetic essences. It is clear in both cases that, beyond their very dissimilar nature, the attempt is to transcend the thought of structure and to proceed towards a better understanding of what might be the underlying motivation for the construct we call structure. Even Derrida's notion of *trace*, "the arch-phenomenon of memory," and *difference*, is designed to perform the same function.

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