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A Network Based Semiotic Analysis: Critical Commentary on the "Field and Dynamic Nature of Sense-Making: Theoretical and Methodological Implications"

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Social representations (SR) are not atomistic entities contained in independent sign units labelling factual phenomena but operate in a structural chain of relations which makes sense only when different sign configurations are put into practice in everyday life. The following critical commentary emphasizes the pragmatic aspect of meaning generation process besides its semantic aspect and proposes a conceptual framework paving the way for an abductive strategy that iteratively goes in between the analysis of the structural whole and the interpretation of individual meaning units to capture the dynamicity of the sense making process. Standing on this framework, it discusses that combining hermeneutic-interpretive analysis with network-graph theory based approach would better capture the dynamic and relational nature of sense making than the Principal Components method proposed by the article *"Field and dynamic nature of sense-making: Theoretical and methodological implications"*.

Keywords: Semiotics. Culture and Cognition, Meaning Generation, Semiotic Networks, Social Representations

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The article *"Field and dynamic nature of sense-making"* provides strong reasoning in support of the argument that sense making is a distributed process rather than an exchange of information between individuals. I think that this argument is essential for understanding the link between semiotics and social representations theory (SRT), the link between meaning and representation, hence a nice contribution for the purposes of this issue. Social representations (SR) are not atomistic entities contained in independent sign units labelling factual phenomena but operate in a structural chain of relations which makes sense only when different sign configurations are put into practice in everyday life. SR get their meanings only following a communicative act within which individuals express their intentions to call the other for an action. Action does not follow the transfer of a message containing a representation but meaning of a representation is constructed out of interaction. Sense making in itself is action; it is an active process of interpretation rather than a process that passively receives the intentional content delivered via a sign unit allegedly representing an external phenomenon. Hence, meaning generation is not the processing of the transmitted conceptual information by the individual mind but emerges within a semiosis where signs and meaning attribution to them are culturally produced within a sign structure.

Emphasizing the pragmatic and contextual nature of sense making, the article proposes that the structural aspect of signification can be methodologically captured from the distribution of words internal to a large text corpus produced by the members of a culture. This argument implicitly refers to the premises of distributional semantics (Harris,1954) which anticipates to categorize lexical units with the help of statistical pattern detection techniques to reveal semantic similarities according to their spatial proximities in text units. Depending on this theory, the paper claims Principal Component Analysis (PCA) as a semiotic tool to reveal paradigmatic meaning classes.

While I agree with the essential premises of the paper, I think that the nature of the code underlying the structural whole and pragmatic use of discrete signs remains implicit. The paper proposes an abductive strategy without elaborating the interpretive element in semiotics. In this critical commentary, I will elaborate a conceptual framework paving the way for an abductive strategy that iteratively goes in between the analysis of the structural whole and the interpretation

of parts to capture the dynamicity of the sense making process. I will undertake a critical view on adopting PCA for capturing the non-linear and dynamic nature of semiotic relations. Actually, PCA is an established method in vectorial semantics and its implementation is called Latent Semantic Indexing (LSI) (Landauer et al., 2007). LSI is a dimension reduction technique for extracting the aggregate conceptualizations covering a set of words similar in terms of their proximities within a context. Although the distinction between semantics and semiotics is rightly granted in the paper, the methodological solution offered confuses these two aspects of meaning generation. Semantics is the study of the conceptual meaning; it involves the relationships between words. It is more concerned with the denotational aspect of the meaning: how words refer explicitly to a referent. On the other hand, SRT and semiotics is more concerned with the connotation: implicit, cultural, sensational and phenomenal side of the sense making process. PCA would not be able capture this feature of signification as it is a method for eliciting meaning from linear semantic patterns. Standing on this framework, I will discuss that a network-graph theory based approach would better capture the dynamic and relational nature of sign systems than the PCA.

SOCIAL REPRESENTATIONS AS SIGN SYSTEMS

SRT accounts of meaning predominantly underscore socio-cognitive mechanisms such as anchoring and objectifying compared to the semiotic signification processes. Such accounts are more concentrated on the denotative, semantic aspects of representations and explore relationships of representations to what they stand for. Although the semiotic nature of SR has been brought forward on theoretical (Moscovici, 1976; Jodelet, 1984), and empirical grounds (Lloyd & Duveen, 2005; Abric, 1993), habitually SR research tends to emphasize the atomistic nature of representations (Lahlou & Abric, 2011). In these studies, units of analysis are usually discrete cognitive elements such as words, images or concepts and the researcher analyses how these elements are semantically compounded to refer to a phenomenon or object. However, semantics is only one aspect of meaning structure which also includes syntactics (the formal or structural relations between signs); and pragmatics (the relation of signs to their users) (Morris,1938).

A semiotic theory of SR needs to start with the critique of the atomistic approach: SR are not compounds of individual mental representations but publicly available sign systems; they signify with reference to cultural codes but not to factual objects or phenomena. Through these codes, SR mark objects and mediate the mental processes by providing the link between the macro social order and the individual cognitive order (Lloyd & Duveen, 2005). Hence, units of analysis for a semiotic theory of SRT should be the *relational mechanism* decoding this order rather than the discrete units such as words; themes; or thought units.

REPRESENTATION AND SIGN

Accordingly, a semiotic theory of SRT should take representations not as a mental picture of an external object or phenomenon but as sign configurations: representations signify rather than 'represent'. Peirce (1998) identifies anything standing for something else as a sign. A sign is compiled as a 'signifier' (*signifiant*- the *form* which the sign takes); and the 'signified' (*signifié* – the *concept* it represents) (Saussure, 1966). Understanding the link between representation and sign requires clarifying the relationship between these two aspects of the sign. Saussure defined signified as a mental state: signs are carriers for the conception of things rather than the things themselves; we can consider them as representations. However, these representations do not refer to the objects in themselves but signify as a constituent part of a sign system. This structural aspect of signs approaches semiotics to social representations which can also be defined as structurally organized sets of cognitive elements (Lahlou & Abric, 2011).

Traditional cognitive science quests for understanding cognitive structures and clarifying their constituting rules and processes. According to the dominant paradigm in cognitive sciences, these constituents are concepts. Concepts are common sense mental states such as thoughts, beliefs, desires, perceptions and images supposed to have some intentional content: they refer to things; and consistency, truth, appropriateness of this reference can be assessed (Pitt, 2012). Concepts communicate intentions as they are used to infer the actions of the others: a person's thoughts, beliefs, desires, etc., are indicators for making sense of what that person will do. They can be considered as mental elements capable of inference and subject to semantic assessment. Computational Theory of Mind (CTM) (Fodor, 1998) pushes these arguments further and defines concepts in terms of pure informational semantics: content of one's concepts is not determined

according to the inferential positions but is constituted exhaustively by symbol–world relations. Representations are information-bearing structures stored and processed in the mind/brain that are intermingled to constitute mental states. They are information containers and thinking is computing: thinking is establishing some kind of content-respecting causal relation among signs. To sum up: token mental representations are symbols. Tokens of symbols are external objects or phenomena with semantic properties. Thinking is establishing casual relations among symbols with respect to the semantic information contained. Hence, meaning production is information processing: a computational relation accomplishing the meaning of the act.

Although the idea of taking signification process as establishing associations through symbol crunching seems to be in line with the Saussurian structural aspect of meaning production, this idea is prone to an important problem as underlined by Eco: "The meaning of a representation can be nothing but a representation...the interpretant is nothing but another representation...and as representation, it has its interpretant again. Lo, another infinite series". The interpretant (the information about the properties) of a sign "becom(es) in turn a sign (representation), and so on *ad infinitum*..." (Eco ,1990 citing Peirce, 1931 p. 339).

Such a structural analysis can be reduced to an infinite exercise of associating sign units to each other without caring much about how they make sense. This makes sign systems stochastic processes where we can allegedly detect the formation of semantic patterns from the statistical distribution of lexical units.

Semantic computation can decode the sign patterns transmitted from a source; and re-encode this information to the target according to some algorithmic rules as the machine translation does. It can pass the Turing test: can accomplish artificial human chat; correctly predict the forthcoming signification chain depending on the patterns in the sign structure. However, this chat would be like correctly speaking Chinese without understanding it. Searle's (1999) Chinese Room argument puts into stake pure structural analysis depending on CTM: availability of a whole set of Chinese symbols (a word space) together with a code for manipulating these symbols (the algorithm; syntax) may predict the correct response to a sign stimulus without understanding it. Formal sign systems help us to reveal the systematic properties of the text but this is not same thing as understanding the meaning. Understanding requires symbol grounding: anchoring the symbols directly into their referents. This anchoring must be

sensorimotor; a phenomenological exercise to avoid infinite regression of inter-referring signs (Harnad,1990). Moreover, this symbol grounding is not an individual cognitive act of substantiating the symbols into external things but is a way of experiencing them collectively: sign systems are conventionalized expressions of the shared lived experiences. Hence, representations do not only have conceptual properties but also have pragmatic-phenomenological features such as sensations. They tell both about the social context of their production and provide us with the means to share phenomenological experiences.

PRAGMATIC NATURE OF SIGNIFICATION

Hence, sense-making is pragmatic besides being semantic: it requires an interpreter (or 'user') of the sign. The meaning of a sign is not contained within it, but arises during its interpretation. This is the cognitive-representational aspect of the signification; albeit not in my mind but in the other's mind. A sign configuration does not refer to the objective qualities of the signs themselves, but to a viewer's experience of the sign vehicle (Peirce,1998). We cannot separate the signifier and signified. Sign vehicle (the form of the sign); sense (the sense made of the sign); and the referent (what the sign 'stands for') altogether ground the signification to shared experiences. Hence, sense-making is sensual not because it stimulates individual mental representations but con-sensual as it evokes social representations. Social representations play an important role for transforming the arbitrary sign configurations to consensual experiences. They ground sign configurations to shared everyday practice patterns (common sense): social markings which function as representations. (Llyod & Duveen, 2005). Common sense is not about the properties or truth conditions of an object or phenomena but is about making sense together (arriving to a con-sensus) the patterns of everyday life (Maffesoli, 1998).

Social representations are systems of values, ideas and practices both used for mapping the material and social world and for providing a code for social and symbolic exchange to enable communication (Moscovici, 1973). While social representations as maps enabling individuals to orientate themselves in their life-world have been widely empirically studied through anchoring and objectification studies; studying social representation as a cultural code is relatively overlooked. Empirically, constitution of the structural aspect of a social representation can be traced through an analysis of the capacity of the members of a community to use signs in

accordance with the conventions of their community (Llyod & Duveen, 2005). The signification is in the social context of the sign use rather than its arbitrary relations to other signs.

TRANSCODIFICATION AND SOCIAL REPRESENTATIONS

The relation between signifier and signified is arbitrary a priori but this relation acquires a history through the social use of signs according to a code and culturally determined connotations of their own which cannot be arbitrarily changed a posteriori (Lévi-Strauss, 1972, p.91). Grounding of the chain of signifiers is not individual but is socially situated. Sign configurations are embedded into collective habit or convention: we interpret signs according to 'a rule' or 'a habitual connection' (Saussure 1983, p.68; Peirce 1931, p.58). Hence, social representations as codes are consensual interpretive frames within which signs make sense to both the producers and users of signs. If the link between a signifier and its signified is relatively arbitrary as suggested by the semiotic theory, then the relation between signs can only be grounded if the communicating parts can relate it to common codes (Jakobson, 1971). Codes constrain the range of possible meanings and reduce the complexity of phenomena to facilitate the sharing of experiences (Gombrich, 1982).

On the other hand, codes are not simply 'conventions' of communication that provide a culture with a common paradigm but exist within a *semiosphere* interweaving the contexture of different conventions functioning in particular domains. *Semiosphere* is 'the whole semiotic space of the culture in question' (Lotman, 1990) where different semiotic codes interact. These codes dynamically organize signs into meaningful configurations to link signifiers to their signified in terms of kaleidoscopic chains of signification. In that respect, the relation between signs is not limited to paradigmatic meaning domains but function as a set of practices familiar to sign users within their everyday life-world. Every culture is a *macro-code* interweaving different codes reflecting and constituting different values, attitudes, beliefs, assumptions and practices that make sense in different contexts and used by the individuals to make sense of the reality (Danesi, 1999). Signification is a dynamic multi-layered process where one paradigm is transposed onto another and meaning is produced as a result of such transcoding[1] (Greimas, 1987). Understanding proceeds from one Gestalt to another, rather than on a one-to-one basis (Jameson, 1972). Hence,

[1]This aspect of sense making cannot obviously detected by PCA which extracts orthogonal dimensions.

unlike semantics, a semiotic theory of truth is not concerned if representations really represent what they stand for. Truth is produced within a semiosis, and like social representations signs also signify according to the rules or conventions of the codes arising from the values and beliefs of different social groups.

Hence, culture as a sign system does not provide a unique code for making sense according to a homogeneous language but is transcoded with specific discursive positions. Identifying oneself with a cultural group is contingent upon both to the knowledge of the proper semiotic code and the assumption of a position in relation to it. Codes and positions play different roles during the signification of the social and material order. On the one hand, cultural coding does indeed connect relations of a cognitive order with those of a social order, on the other hand it is a connection which is mediated by social identities (Llyod & Duveen, 2005). Appropriateness of a statement in a given position is as important as the truth of that statement. Such an appropriateness is determined by the maxims which are expressions reflecting simple and memorable rules or guides for living (Wieder,1974). Maxims are discursive practices assembled in discursive formations shaping the systems of representational codes for constructing and maintaining particular forms of order. Their transcoding provides tools for the members of a life-world to formulate a schema to identify and elaborate the sense of objects and phenomena in the context. A particular “discursive formation” dominant in a specific historical and socio-cultural context is a set of relations that unites the various discursive practices, shapes the mode of knowing and maintains the 'regime of truth' within that context (Foucault,1974). Discursive formations are constituted as a chain of sequences of signs arranged as expressions (maxims) assigned to “particular modalities of existence".

In this vein, the aim of semiotic effort is to identify complex codification and the tacit rules and constraints underlying the chain of signification. Understanding such codes, their relationships and the contexts in which they are appropriate and how they attain truth status involves assuming the complexity of values, preconceptions and 'world-views' which are built into them (Chandler,1994). Culture as a sign system transcodes the arrangement of overlapping chains of signification within a semiosphere, and semiotic analysis requires considering multilayers of codes and relations between them. This transcoding is usually implicit and decoding a signification chain involves clarifying the rules of an appropriate code which is

familiar to the sign user who is usually not explicitly aware of these rules as they are naturalized as common sense. Decoding these rules by a researcher requires a hermeneutic exercise going between the whole and the part; patterns and individual elements; and structural analysis and interpretation.

Addressing these dichotomies, Eco (1992) suggests abduction as a solution after Peirce. Abduction is a continuous process of hypothesis building from interpretive insights and testing them in structural patterns. This process engulfs the analyst-interpreter in a constant dialogue with the sign system, meaning producers and sign users. Interpretation is not a one-shot hypothetico-deductive prediction game but an on-going process of abductive inference requiring meticulous examination of the structural patterns in the text. The Peircean logic of 'abduction' resolves the incompatibility between interpretive and structural analyses and offers a re-formulation of the "old, and still valid hermeneutic circle" (Ibidem, 1992) by incorporating structural analysis into the interpretation exercise.

EMBEDDEDNESS AND SEMIOTIC NETWORK ANALYSIS

Graph theory in which social network analysis is grounded can offer us some hints for establishing an abductive structural analysis. Granovetter (1985) challenges the dominant "under-socialized" atomistic and "over-socialized" substantialist-structuralist opposition in social sciences and proposes "embeddedness" approach as an alternative. While structure in the traditional sense refers to macro arrangements constrained by established conventions, the idea of embeddedness is a contiguous one focusing on the role of concrete interactive relations and networks. To quote Grannovetter (ibid, p. 487): "actors do not decide as atoms outside a social context, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that they happen to occupy". For semiotic analysis where the nodes are signs rather than actors, this argument implies that signification process is neither determined according to the general semantic and structural conventions arranging individual signs to larger contexts nor is an aggregate of the contents of atomistic signs. The interaction of signs to generate meaning in a corpus is embedded in a contingent code connecting a network of signs. Granovetter's embeddedness idea played a great role in carrying social network concept from a being an evocative metaphor to a method with its own conceptual statements, procedures, metrics

and tools. Application of graph theoretical network node connectivity based research helped to the empirical applicability of the concept (Moody & White, 2003). To wrap up this critical commentary, I propose that a graph theory based semiotic network analysis can provide semiotic analysis with useful conceptual statements, procedures, metrics and tools (Suerdem, 2009) for an abductive juxtaposition of structural analysis to the hermeneutic interpretive exercise.

CONCLUSION

Obviously, the idea to treat texts as a network of signs is not new and there is variety of well-established techniques of network text analysis (Carley,1997). These techniques are mostly concerned with extracting the network structure of the text according to the underlying semantic patterns. They are based on the distributional word space theory criticized in the previous lines. The difference and similarities between the method proposed here and semantic network analysis requires a thorough enquiry which can be the scope of future studies. For the time being, depending on the conceptual framework developed in this critical commentary it suffices to remark that semantic network analysis usually considers the text as a closed system and is involved with the denotative aspects of meaning generation. On the other hand, semiotic network approach considers text as an open system and is more involved with the connotative aspects. Hence, the formalism as proposed here presents itself as a complementary but not as an alternative to hermeneutic-interpretive analysis. Its aim is by no means to replace the interpretive effort with an objectivist-structuralist one. The nodes connecting the network should be considered as *cognemes* (Lahlou & Abric citing Codol, 2011), undefined and non-essence tokens, that get their contents through an iterative abductive exercise rather than atomistic information bearing concepts-words. Structural analysis as proposed here is a descriptive tool and should never be considered as an ontological theory of sense making and social representations. Maps should not be confused with the territories themselves but useful tools for finding our way while going in between the whole and the part. This approach aims to methodologically capture the sense making nature of social representations better than the Principal Component Analysis which is concerned with the semantic nature of meaning.

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