

On the (Multi-)Semantic Theory of Text: Prolegomena to Formalization

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ABSTRACT

We suggest the formal model for multi-valued text-semantics based on the some modal and context-dependent conceptions. Semantics of text is considered as analogical to Kripke's model; it may be described as a function correlating linguistic expressions, possible state of affairs (possible worlds) and contexts.

Keywords

Formal structure of text-semantics, Kripke's model, possible worlds semantics

The human activity is based on permanent generation, circulation and transformation of values and meanings. Usually this is described as communication in a broad sense. At the same time, it is typical that these two aspects of informational processing are separated in theory: the semantics deals with signs and meanings and is considered in isolation from communication. Meanwhile semantics and communication are different but indivisible aspects of the same cognitive processes mapping world and language with each other. Text is an optimal pattern both for creating and transmission of meanings which can exist only in textual form. Only text (but not a sign) can be regarded as a unit of communication and an artefact of creation, transmission, conservation and transformation of information. A text is a natural and optimal pattern for informational processes in its various manifestations. The notion of text will cover the still existing theoretical gap between semantics and communication, as well as between referential and cognitive aspects of semantics.

The formation of meaning is considered as the result of juxtaposition of linguistic and extralinguistic systems within the communication, or – as a set of correlations between possible worlds, communicative contexts, texts and languages. The text is not a container for the “ready” senses, but also is generator of them. It presupposes the description of text as functions for correlating a set of possible worlds with a set of possible contexts. Subsequently, text appears neither as having fixed reference nor of fixed context but rather such a relation between contexts and domains of reference (worlds).

The lexical system of natural language is only expression plane for new-emerging connotative cognitive context-dependent entities. It can actually be understood as a description of the process of transcending from the intensional interpretation of the textual expressions to their extensional (referential) interpretation. Thus, text is liable to semantization assuming correlation with the other domains of reference (as far as the question “What is this text about?” is justified). It presupposes the description of text as relations (functions or correlation mechanism) correlating a set of possible worlds with a set of possible contexts whereby such worlds and contexts in which the value of constituent utterances acquires the value of “truth”. Text, thus, acts as a peculiar analogy of the concept of a model in logic. Subsequently, text appears neither as having fixed reference nor of fixed context but rather such a relation between contexts and domains of reference (worlds) wherein text cannot acquire the value of “being false”: worlds and contexts are correlated in a way that a certain set of worlds correspond to such contexts wherein text and its constituent language units are meaningful and are not false (they be true, possibly true or indefinite). Notions of model structures and models developed in modal logic (S. Kripke – see [1]) can serve as a formalization of the aforementioned conception of text semantics. The idea of essential plurality of text semantics can be formalized through the modal semantics apparatus that ascribes meanings in various interpretation domains (possible worlds or models) to language expressions. There are various relations of accessibility (compatibility) between these worlds and various model structures corresponding to various conceptions of text. The overall image of the aforementioned would be as follows: the semantics comprising the expressions $\langle e_1 \dots e_n \rangle$ of a certain text (T_{ext}) is **not** the conjunction (sum) of senses of these expressions $\langle \varphi_1 \dots \varphi_n \rangle$ and propositions $\langle E_1 \dots E_n \rangle$ expressed by them ($\varphi_m(e_m) \rightarrow E_m$).

In accordance with the above-stated, the sense (signified) of text is understood as the inter-world relations between the propositions $\langle E_1 \dots E_n \rangle$ expressed by the text sentences whereas the signifier is the linguistic expressions

and operators establishing inter-world connections. In this regard, the meaning of a text can be understood as a structure of expression senses $\langle \varphi_1 \dots \varphi_n \rangle$ regulated by textual operating relations $\langle t_1 \dots t_n \rangle$:

$T_{\text{sense}} \langle E_1 \dots E_n \rangle \rightarrow \langle E^*_1 \dots E^*_n \rangle$, wherein T_{sense} is the generalized representation of textual operators $\langle t_1 \dots t_n \rangle$, whereas $\langle E^* \rangle$ is the result of the transformation of sentence senses of text $\langle E \rangle$ by textual operators. It can also be understood as a set of propositions resulted from the combination of textual operators and senses of language expressions. To put it simply, $t_1 \langle \varphi_1 (e_1) \rangle \rightarrow E^*_1$ (or for short $t_1 \langle E_1 \rangle \rightarrow E^*_1$, as $\langle \varphi_1 (e_1) \rangle \rightarrow E_1$) can be understood as the transformation of language senses into textual ones, where in some cases they coincide.

Textual operators are considered as all the various forms of links between sentences and situations which in the interim are various relations of accessibility between worlds. These operators can be logical or quasi-logical –“and”, “if...then”... or else the narrative correlates of the latter ones e.g. “owing to”, “as a result of”; purely narrative e.g. “before.... afterwards”, “in the meantime”; modal (a story in a story, intention, desirable, required, etc.). These links can also be reduced to purely syntactic ones providing the list of possible conjunctions and connectives between sentences or within a complex sentence. It is, however, possible that not all of the operators are reduced to those of syntactic: aside from the modal ones, these connectives are of associative, metaphoric, thesaurus, etc.

Evidently, according to this approach T_{sense} , the text semantics (sense) is the same as its forming structure $\langle t_1 \dots t_n \rangle$. However, there exist the following distinctions between them: both $\langle t_1 \dots t_n \rangle$ and T_{sense} demand domains of definition (specification) as regards to some sequence of language senses $\langle \varphi_1 \dots \varphi_n \rangle$. Nevertheless, although $\langle t_1 \dots t_n \rangle$ is manifested only through another text, it can, however, be considered autonomously as an abstract text structure, as a macro-structure characterizing some speech genre (as believed by T. van Dijk – [2]) or, as a classic example, a set of functions describing a fairytale (V. Y. Propp – [3]). Such structures exist outside the domain of definition as a potential scheme of text organization whereas the sense T_{sense} occurs and exists only in combination with $\langle \varphi_1 \dots \varphi_n \rangle$ language senses that are transformed into textual ones as a result of imposing a set of operators upon a set of language senses. One and the same text structure $\langle t_1 \dots t_n \rangle$ can be applied to various language senses, transforming the latter into textual ones whereas T_{sense} is unique because it is inextricable from the sphere of its specification i.e., a set of language expressions and their meanings that form a certain text (T_{ext} or $\langle \varphi_1 \dots \varphi_n \rangle$). Anyway, in case a set of textual operators is changed, the T_{sense} sense of text is also liable to change. This can be defined as a change of reading rules (reception

strategies) of text expressions. Thus, $\langle t_1 \dots t_n \rangle$ can be defined not only as rules of text organization (generation) but also as rules of its interpretation: the $\langle t_1 \dots t_n \rangle$ set of textual operators can be placed not only upon the present set of language expressions and their meanings (T_{ext}) but also upon an already semanticized text (T_{sense}) with a certain sense. That is, a different $\langle t^*_1 \dots t^*_n \rangle$ set of operators is sited upon the $\{ \langle t_1 \dots t_n \rangle \ X \ \langle \varphi_1 \dots \varphi_n \rangle \}$ structure. This leads to the formation of a new (T^*_{sense}) text sense which does not terminate the preceding sense but becomes the “deepening”, “intensification”, “comprehension”, “deconstruction”, et cetera:

$\langle t^*_1 \dots t^*_n \rangle \ X \ \langle t_1 \dots t_n \rangle \ X \ \langle \varphi_1 \dots \varphi_n \rangle \rightarrow T^*_{\text{sense}} \langle E^*_1 \dots E^*_n \rangle \rightarrow E^*_1 \dots E^*_n$.

The new set of operators imposed upon the already semanticized (T_{sense}) text stipulates the $\{ \langle E^*_1 \dots E^*_n \rangle \rightarrow \langle E^*_1 \dots E^*_n \rangle \}$ structure i.e., mapping of the initial set of textual propositions in a newly formed one. This is a second level interpretation for which the initial interpretation $\langle E^*_1 \dots E^*_n \rangle$ is a signifier as was the case with the language meanings $\langle \varphi_1 \dots \varphi_n \rangle$ (zero interpretation) being the signifier for first level interpretation. The following are noteworthy examples of such elaborated practices of imposing new rules of reading upon the already existed interpretation (s).

The suggested approach allows applying the accepted demarcation between sense and meaning to the semantics of text. It can actually be understood as a description of the process of transfer from the semantic interpretation of text expressions to their referential interpretation. As the suggested approach is based on the idea of inter-world accessibility, it would be reasonable to refer to its classic source, that is, S. Kripke’s concepts of model structure and model [1]. Similar to the description of sentence and utterance semantics, it is necessary to draw certain indefinite universe of worlds (V) as a domain of definition (interpretation) wherein the intensional semantics of text ($T_{\text{sense}} \langle E^*_1 \dots E^*_n \rangle$) points out certain set of inter-compatible (accessible) worlds associated with a given text. The semantic value of the text can be given as a function:

$$V \xrightarrow{T_{\text{sense}}} T_{\text{meaning}};$$

or, in an expanded form,

$T_{\text{sense}} ; \langle E^*_1 \dots E^*_n \rangle ; V \rightarrow T_{\text{meaning}} ; \{W_0 ; \{W\} ; R\}$,

where $\{ \{W_0 ; \{W\} ; R \} \}$ is the model structure according to S. Kripke : $\{W\}$ is a certain set of possible worlds, W_0 - a certain “privileged” (or “centered”) world, R - given interrelations upon the $\{W\}$. It actually means that a certain “privileged” world (world of text?), alongside with a set of the compatible worlds, is selected out of a certain universe of worlds. The sense of the text is a function that correlating with domains of objects (set of possible worlds), points out in the universe $\{V\}$ a structure

of worlds or a model structure. Model structure is a set of worlds interrelated by certain relations of accessibility. In other words, this model structure is a certain world with a given relations of transition to other worlds. Touching upon S. Kripke's model structure, we should but mention its inextricable concept of model i.e., the binary function $f(E, W)$ attributed upon the model structure. The E of the binary function is the proposition (sense of sentence), W is a world from the set $\{W\}$, whereas the value domain of the function will be the $\{T, F\}$ truth value of the given proposition in the world concerned. Thus, corresponding to a given particular sentence proposition E_x out of a set of propositions $\langle E_1 \dots E_n \rangle$ describing a certain world sorts out a certain sub-set $\{W_x\}$ of the set of possible worlds $\{W_1 \dots W_n\}$, that is, worlds $\{W_x\}$ containing the situation corresponding to E ; or - this proposition separates within $\{W_1 \dots W_n\}$ from the worlds which do or do not contain proposition E_x . It can be considered as a certain way to determine as to whether or not a certain proposition corresponds to the certain state of affairs in certain worlds of a text Versus the case of an isolated sentence, the proposition is valued not within the uncertain universe of worlds but within an already determined model structure, that is within the worlds included in the $\{W\}$ and the worlds forming the text meaning according to the aforementioned definition. It thus becomes possible to describe as to what states of affairs (possible worlds) are possible in regard to the given text. For instance, in what respect the worlds of subsequent sentences are accessible from the preceding worlds and contexts.

The description of the concept of model sheds light upon the inter-connection between the concepts of text model structures and text value correlated with it. The concept of $f(E, W)$ model and the aforementioned function of transfiguration of text sense structure into text meaning leading to a certain model structure, a set of worlds and interrelations,

$T_{\text{sense}}; \langle E^*_1 \dots E^*_n \rangle; V \rightarrow T_{\text{meaning}}; \{W_0; \{W\}; R\}$, formalizes and represents one and the same relation differently. The semantic function of model $f(E, W)$ can be equated to the reverse function of the text sense. The sense of text is formed by separate propositions and leads to a model structure wherein the interrelations between those propositions are expressed. On the contrary, the model ascribes the truth value of a separate proposition in one of the worlds, but not in any of the $\{V\}$ universe worlds, but in the world of the model structure (formed by the semantics of text) and text expressing it. This function of ascribing truth value is displayed in the structure: $T_{\text{meaning}}; \{W_0; \{W\}; R\}$ in compliance with the way we defined the semantics of text. Otherwise stated, model structure sets the relation between worlds, whereas the model itself ascribes the truth value of a separate

proposition within one of the worlds of the given set. Model structure encompasses a set of somehow correlated propositions, whereas a model is the function determining the truth or falseness of a separate proposition in the worlds of model structure. The fundamental thesis is, thus, explicated: text itself does not possess truth value; nonetheless its semantics is a function (procedure, set of operations, conditions of truth) that allows establishing the truth value concerning each sentence. Text value is neither true, nor false. It is the model structure that employs a model to determine the truth and falseness of separate propositions in worlds correlated through the set model relations. More adequate turn out to be the concepts of model and model structure because the value (truth value) is not single-valued "yes"- "no", but a function; that is a procedure of correlating propositions and worlds within this or that model structure formed by the text itself.

Summing up: the process of formation and functioning of semantic structures of text starts at the level of subtextual structures in their correspondence to the following supra-textual structures of senses and meanings: a) intertextual (a set of texts); b) pragmasemantic (set of communicative contexts assigned to the text); c) extralinguistic structures (stratified domain of interpretation); and, finally, d) the functional-pragmatic ("language games"). Such an approach can be developed in substantial way - as a fundamentals for the construction of a new, multimodal and text - oriented version of semiotics and linguistics, wherein text and context will be the basic initial concepts and signs (words) and their senses and meanings will be considered as context-sensitive variables and, simultaneously, context-forming operators. In accordance with the principles of dynamic semantics, it should be assumed that the semantics of constituent units not only depends on context but in turn also changes context. Such a version of semiotics will be able to cope with semiotic systems without pre-established signs and an initial alphabet (vocabulary). At the same time such textocentric theory of language provides the methodological ground for differentiation between the various types of interpretation of text, based on its referential or cognitive semantics. Referential semantics is derivative from the textual and pragmasemantic transformation of linguistic meanings. The set of conceivable interpretations is infinite, although it is possible to put some limits, which allow separating appropriate interpretations from non-appropriate ones. The semantization is based on cognitive orientations of the recipient, and the text semantics is transformed from denotative into connotative. That is why it is not possible to set any limits for potential interpretations. Ambiguity (polysemy) vs unambiguity (monosemy) are rather features of interpretive strategies than properties of text. Semantics and semantization, referential and cognitive interpretations are both conflicting and complementary processes of

functioning and actualization (re-creation) of text. This presupposes a new way for typology of discourses – it will be dependent not so much from distinctive linguistic features, but from strategies of linguistic behavior and rules of interpretation: the same structures (texts) can be used in the various discursive practices. Modern society has various institutional and ad hoc mechanisms for the formation of interpretative strategies, demarcation of the domains of their application, as well as the regulation of interpretation processes.

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