

Actor Epistemology and Semiotics

Version 1

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Gerd Doeben-Henisch
gerd@doeben-henisch

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Abstract

In the last post with the title 'Extended Concept for Meaning Based Inferences – Part 2. Version 2'¹ the two main types of texts S and X and the inference relations between these two texts have been described. The new aspects are related to the different kinds of actors, especially the new type of a *protocol actor*. These machinery presupposes an epistemology and a semiotics, which has been derived in some posts before. Below this knowledge will be repeated in a more condensed format.

1 Actor Epistemology

In an *epistemological perspective* one clarifies all the components and processes which are assumed to be active for the process of knowing and communicating as far it is known in our daily experience. While in the past the main point of reference for the description of knowledge was the so-called *1st-person view* from the *inside of the consciousness* we can – and should – today take the results of the empirical sciences into account, especially Neuro-Psychology, combining observable behavior, observable brain activities as well as self-testimonials of human persons. One result of this change in the viewpoint is that the whole universe of unconscious brain processes can be exploited. This is important because the content and the working of our memory is nearly completely unconscious and only occasionally and partially small bits of information are perceivable in our consciousness. Here a rough overview of the main components:

1. **Real World [RW]:** The real world is from the point of view of a brain in a body not a direct real object. It is a construction based on sens

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¹See: <https://www.uffmm.org/2020/09/02/extended-concept-for-meaning-based-inferences-part-2-version>

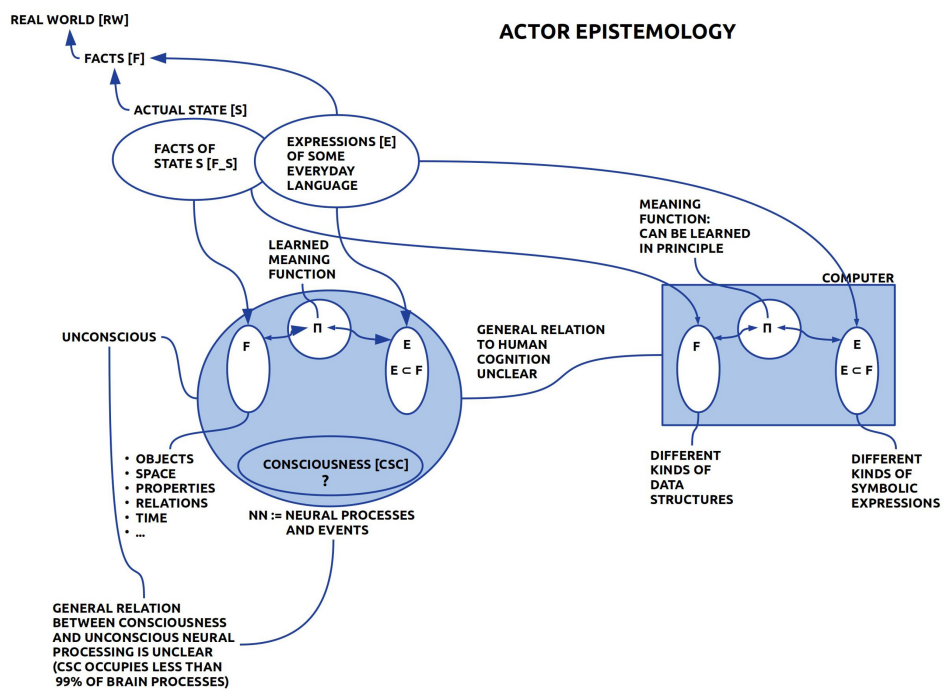


Figure 1: Actor Epistemology: Which components are assumed to be functionally important for the assumed processes

data and many complex internal computations of the brain. Nonetheless according to our knowledge about 'everything' it seems that the real world is the primary reference for the whole biological evolution, therefore the biological structures are a kind of a 'mirror' of this real world.

2. **Facts [F], Expressions [E], $E \subset F$:** The brain processes all the incoming and internal data in a way which allows several kinds of structuring the data into different kinds of abstract structures known to us as *objects, space, properties, relations between objects, time, processes, ...* which we can *identify* through the perceptions as possible external structures functioning as *real facts* F_{RW} . Part of the real facts are *expressions* E_{RW} which can be used in a *semiotic way for communication*.
3. **Meaning[μ]:** Expressions E_{RW} as such have no meaning, they are objects like any other objects too. But human actors can *internally learn* different kinds of mappings between F_{NN} and E_{NN} in a way which makes the expressions to vehicles (signs) pointing to facts and vice versa let facts pointing back to expressions: $\mu : F_{NN} \longleftrightarrow E_{NN}$. This presupposes a mapping from the real objects F_{RW}, E_{RW} into corresponding neural correlates F_{NN}, E_{NN} .
4. **Conscious/ Unconscious:** Until today it is difficult to say what exactly is the role of the so-called *consciousness* associated with a human brain. The case of the *memory* demonstrates strongly that the memory is mainly working without the consciousness, only in a very limited and timely short sense interacts the consciousness with the mainly unconscious memory. All the complex processing of the memory is beyond our conscious scope.
5. **Computer:** A computer in the light of the mathematical concept of a (*Universal*) *Turing machine* (U) TM is a system with input and output and to handle the input – arbitrary symbols or data – in a way similar to the way how the human brain does it. To which extend it will be possible to use a computer to mimic human actors or to help human actors in their understanding of the world and in the human communication is actually not clear. In principle a computer could learn a meaning function μ like a human actor, but the concrete way how to do this is actually rather unknown.²

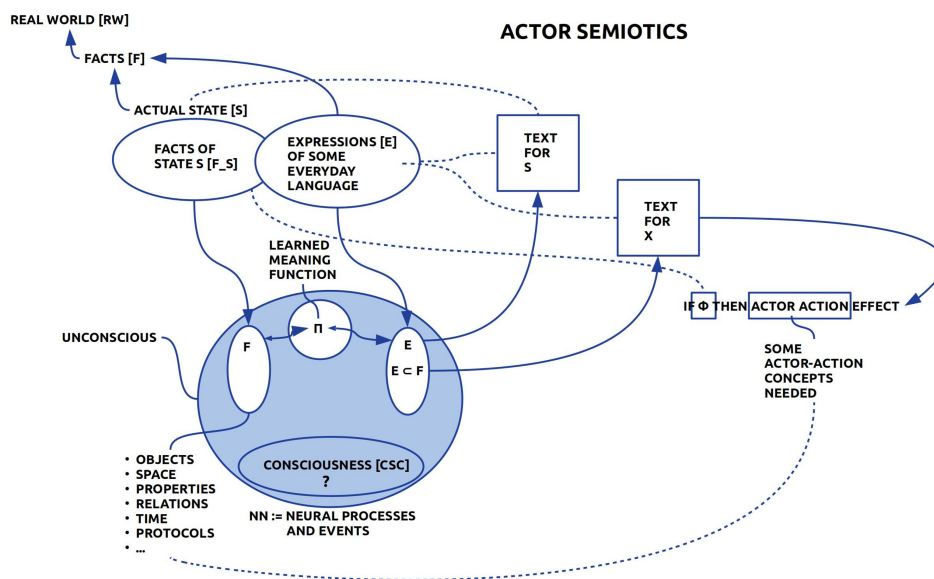


Figure 2: Actor Semiotics: Which components are assumed to be important to enable the symbolic communication about the real world

2 Actor Semiotics

Semiotics is the general science from *signs*.³ But as the history of semiotics reveals there have been and there are many different concepts of a sign been proposed; a final theory is waiting.⁴ Here I mention only the basic concepts which are somehow common to all different approaches:

1. **Expressions [E], Meaning [μ]:** One moment of a sign concept is given by those *expressions* E which are used within a communication. As mentioned above expressions as such have no meaning if there exists not a *meaning function* μ which has been learned among a group of hearer-speaker in a sufficiently similar way. A meaning function enables mappings between neural correlates of expressions E_{NN} and neural correlates of facts F_{NN} (whereby expressions can also be facts $E \subset F$). Having such a meaning function μ in operation then an expression can become a *sign* for some meaning and even some facts can become pointers to expressions.

²The existing systems hosted on big platforms to interact with human users with a natural language interface are far from any satisfying solution. There are many reasons why not. Besides the rather technical questions how to do it there is the social perspective which classifies these kinds of business models as *digital slavery* for the user. This is not an attractive goal.

³See e.g. Noeth (1990)[N90]

⁴This is a situation which can be met in most other sciences too, e.g. in Psychology.

2. **Hearer-Speaker:** Because meaning functions can only exist in the *inner states* IS of some actor the *actor* is necessary for the existence of a meaning function as well as for its definition. Thus input-output systems with a learning behavior function $\phi : I \times IS \rightarrow IS \times O$ are preconditions for the processing of facts and expressions as well as for their mapping according to a cultural biased meaning function μ .
3. **Inference** \vdash, \models, \dots : Doing some inferences from a given set of assumed true expressions presupposes in the case of formal logic no explicit meaning but in the *syntactical case* \vdash as well as in the *semantical/ model case* \models it presupposes basic *knowledge*, basic *intuition* which itself is not explained within logical. Inference always presupposes more than logic itself can give.⁵ This points back to the fact that questions of *truth* can only handled sufficiently well within an explicit framework of *meaning*. This leads to the consequence that a *satisfaction-relation* \models as assumed for the *change rules* X can not by formal relations to the state expressions alone be solved (only in very special trivial cases). Full inference requires sufficient support by meaning relations and related knowledge.
4. **Actor Actions:** The only source for sufficient meaning and knowledge can only be those actors which are acting responsibly in the real world. Thus in case of inferring the next changes in the actual world either the *real actors* themselves are acting or *artificial actors* mimicking the real actors in those aspects which are called for in the inference.

References

- [Goe31] Kurt Goedel. Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme, i. *Monatshefte fuer Mathematik und Physik*, 38:173–98, 1931.
- [N90] Winfried Nöth. *Handbook of Semiotics*. Indiana University Press, Bolomington - Indianapolis, 1 edition, 1990. Enlarged and completely rewritten edition of the 'Handbuch der Semiotik' (1985).

⁵The famous Goedel paper (1931)[Goe31] is one way to show this.