

- Introduction to a Systemic Theory of Meaning - (1/4)

(Short paper. July 3rd 2014 version)

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1) Introduction

- Information and meanings are present everywhere around us as well as within ourselves.
- Specific studies have been implemented in order to link information and meaning:
 - Semiotics, Biosemiotics.
 - Analytic Philosophy, Linguistics, Phenomenology.
 - Psychology.
- No general coverage is available for the notion of meaning.
- We propose to fill this lack by a system approach to meaning generation.

2) Information and meaning. Meaning Generator System [I]

- The word "meaning" is most of the time related to the performances of humans.
- Unknown nature of human mind => unknown nature of "meaning".
- Proposal is to analyse "meaning" at the level of elementary life and to formulate the results in a system approach. Brings up a system perspective on meaning generation.
- Definitions and properties of "meaning" and of a "Meaning Generator System" (MGS).
- Meaning generation to be positioned in sensori-motor loop [III].

A meaning is meaningful information that is generated by a system submitted to a constraint when it receives an external information that has a connection with the constraint.

The meaning is formed of the connection existing between the received information and the constraint of the system.

The function of the meaning is to participate to the determination of an action that will be implemented in order to satisfy the constraint of the system.

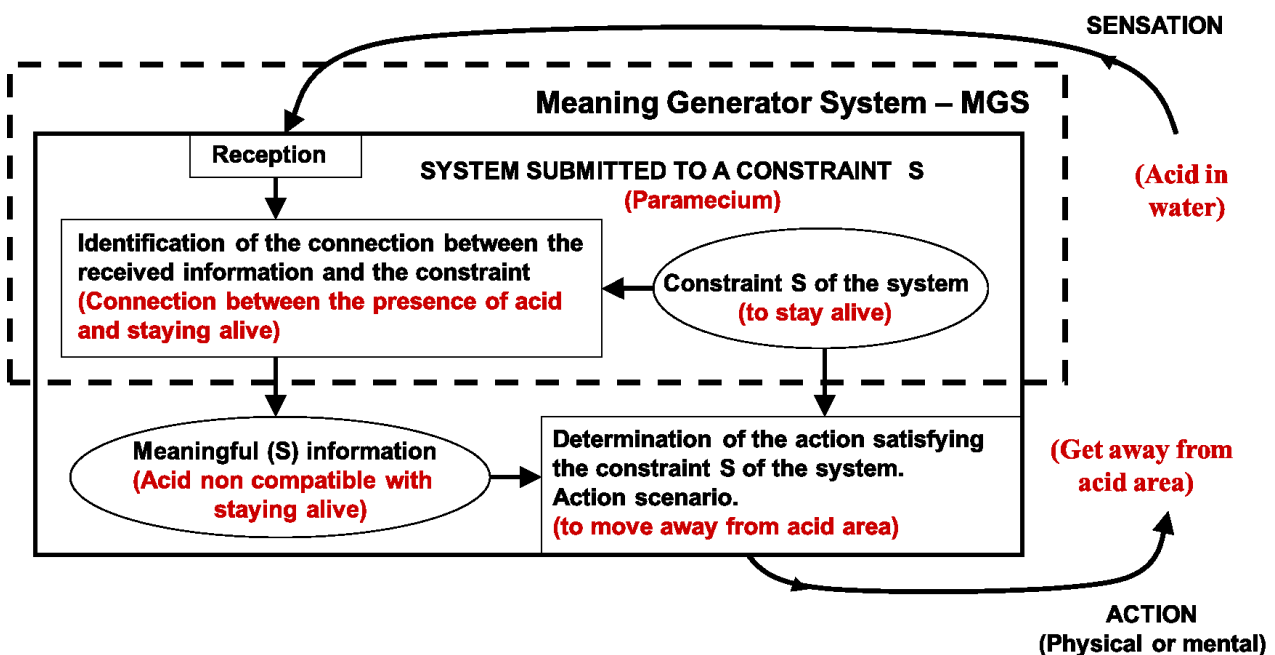


Fig 1. Meaning generation by a system submitted to a constraint

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3) MGS Characteristics

- * Building block for higher level systems (agents).
- * Creates interactive and dynamic relations that link agents to their environments in order to maintain/adapt their natures. Meaning is generated by the agent and for the agent [II].
- * Constraint satisfaction oriented. Not action oriented [II].
- * Compatible with Uexkull Umwelt and with Peircean Interpreter [I, II].
- * Basic contributor to cognition [IV]. Close to Enactive sense making [II, VI].
- * Provides criteria for possibilities in Artificial Intelligence and Artificial Life [V].
- * Compatible with an evolutionary approach.
- * Needs some conceptualization on the notion of constraint. [II]:
 - Animal constraints: Stay alive (individual & species). Live group life.
 - Human constraints: Limit anxiety, Look for happiness. Valorize ego, ...
 - Robot constraints: Derived constraints (from designer/user).
- * A meaning does not exist by itself but relatively to a system having a constraint to satisfy.

4) Groundings of meaning [II]

MGS approach usable as a tool for groundings of meaningful information (Fig. 2):

- Grounding in the MGS by the reception, the constraint, the identification of the connection.
- Grounding out of the MGS by the incident information, the action determination and its implementation.
- Constructivist and objectivist aspects of meaning become part of the same chart.

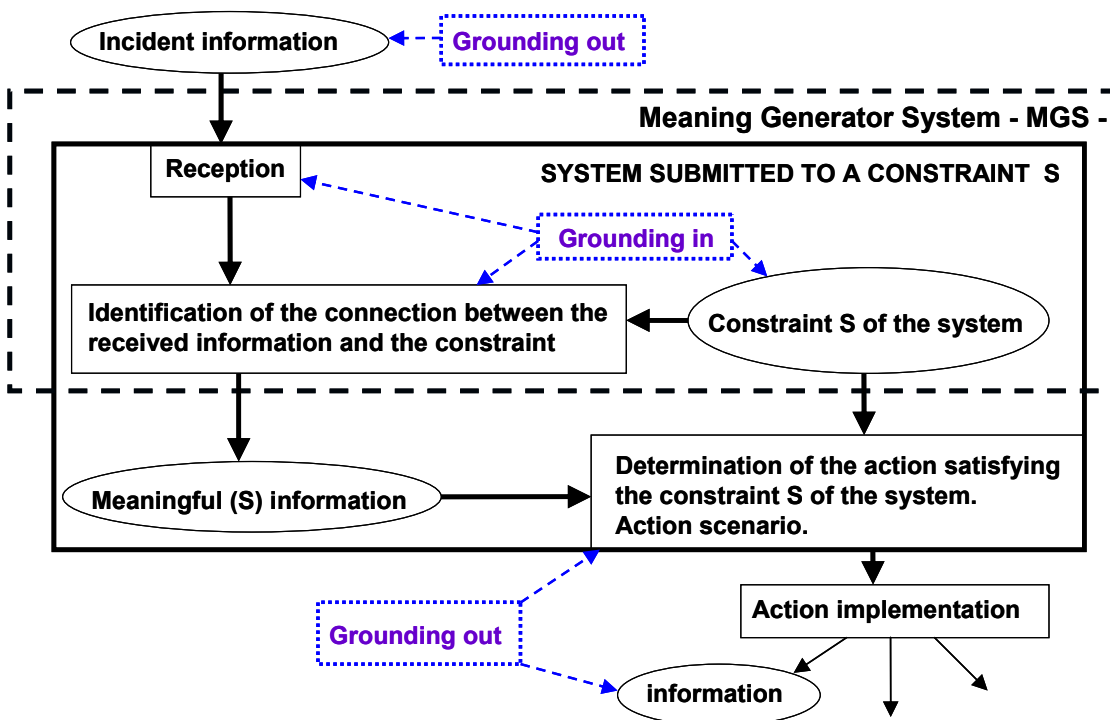


Fig 2. Meaning generation and groundings

5) Transmission and processing of meaning [I]

- A meaning can be transmitted to other systems and survive to the MGS.
- Introduction of "Efficiency of a Meaning" and of "Domain of Efficiency of a Meaning".

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6) MGS and higher level systems (agents) [III]

- The MGS is part of a higher level system (agent) containing other functions like memory, scenarios simulation, action implementation, other receivers, other constraints and MGSs.
- The agent can be biological or artificial (intrinsic or derived constraints and meanings).
- Action implementation can be of different types (physical, mental, conscious, unconscious, biological, data processing, , ..). Actions can be internal or external to the agent.

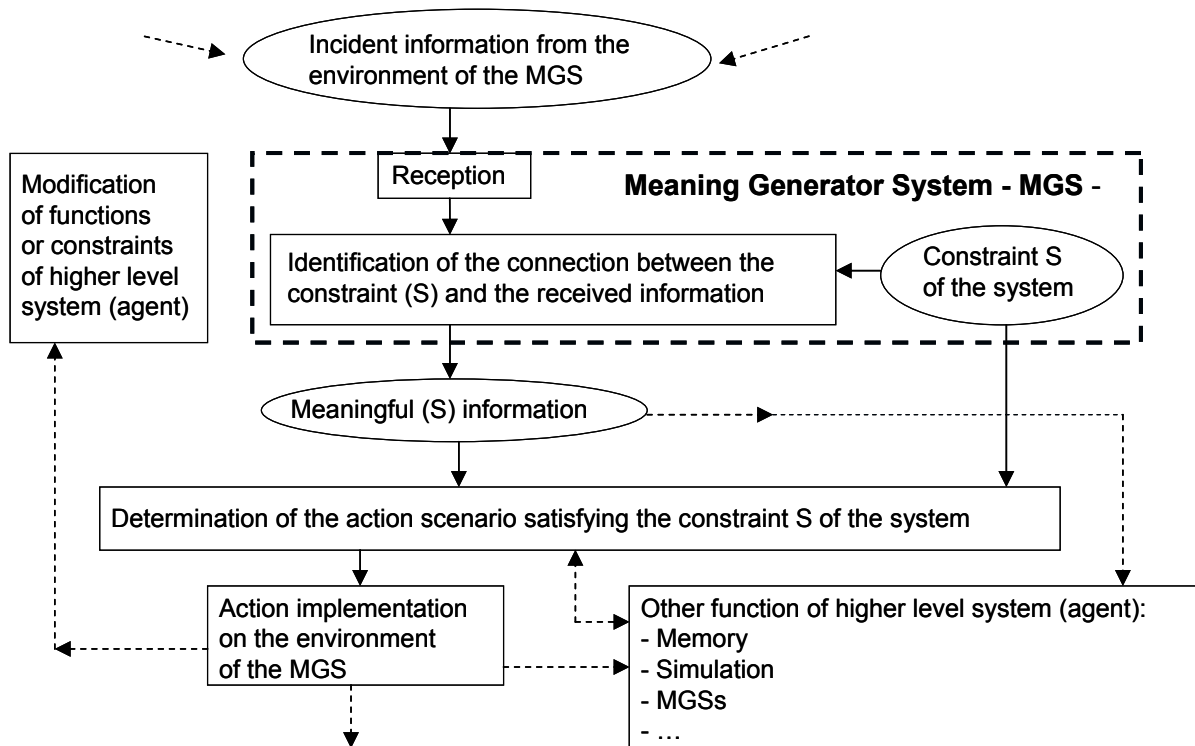


Fig 3. MGS as a building block in agent

7) From meaningful information to meaningful representation [II]

- Different meanings generated by an agent about an entity create a network of meanings relative to the entity for the agent. Such network is a meaningful representation of the entity for the agent.
- Meaningful representations are constraint satisfaction oriented.

8) Conclusion and continuation

- Basic elements for a systemic theory of meaning have been introduced: meaning, constraint, meaning generation (MGS), meaning transmission, groundings of a meaning, relations with higher level systems (agents), meaningful representation.
- Continuation by application to life, human, and robots. Needs clear enough an understanding of the systems/constraints (problem with natures of life and of human mind).
- Needs some conceptualization of the notion of constraint (intrinsic, derived, ..). "Pre-biotic constraints" to be introduced between physical laws and organic constraints.
- Look at how the notion of autonomy could be related to the notions of constraint satisfaction and of meaning generation.

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