* Introduction to a Systemic Theory of Meaning *

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(Based on "Information and Meaning" http://cogprints.org/3694/)

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

2) Information and meaning. Meaning Generator System.
a) The word "meaning" is most of the time related to the performances of humans.
b) The nature of human is unknown ("Hard Problem") => Nature of "meaning" unknown.
c) Proposal is to analyse "meaning" at the level of elementary life and to reformulate the results in a systemic approach.
d) Definitions and properties of "meaning" and of a "Meaning Generator System" (MGS).

*A **meaning** is a meaningful information that is created 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.
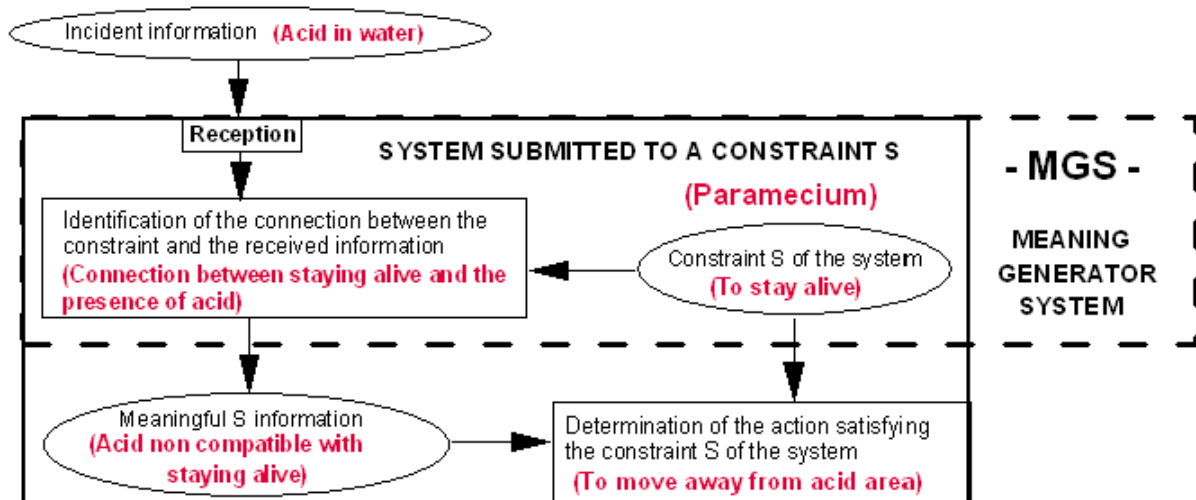

Fig. 1. Meaning generation by a system submitted to a constraint

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3) MGS characteristics.
a) Usable as a building block for higher level systems. Fits with an evolutionary approach.
b) Creates interactive and dynamic relations that link systems to their environments in order to adapt and maintain their natures. Meaning is generated by the system and for the system.
c) Usable for different systems having different constraints (animals, humans, robots, ...).
 The same information incident on different systems will generate different meanings.
d) Allows for groundings of the meaning "in" and "out" of the MGS.
e) Several MGSs are linkable to build up networks of meanings.
f) Close to a simplified version of the Peircean triadic approach on sign.
g) Needs some conceptualization of the notion of constraint.

4) Groundings of a meaning.
The MGS approach provides two components for the grounding of a meaningful information generated by a system submitted to a constraint in its environment:
- Grounding in the MGS by the reception, the constraint and the identification of connection.
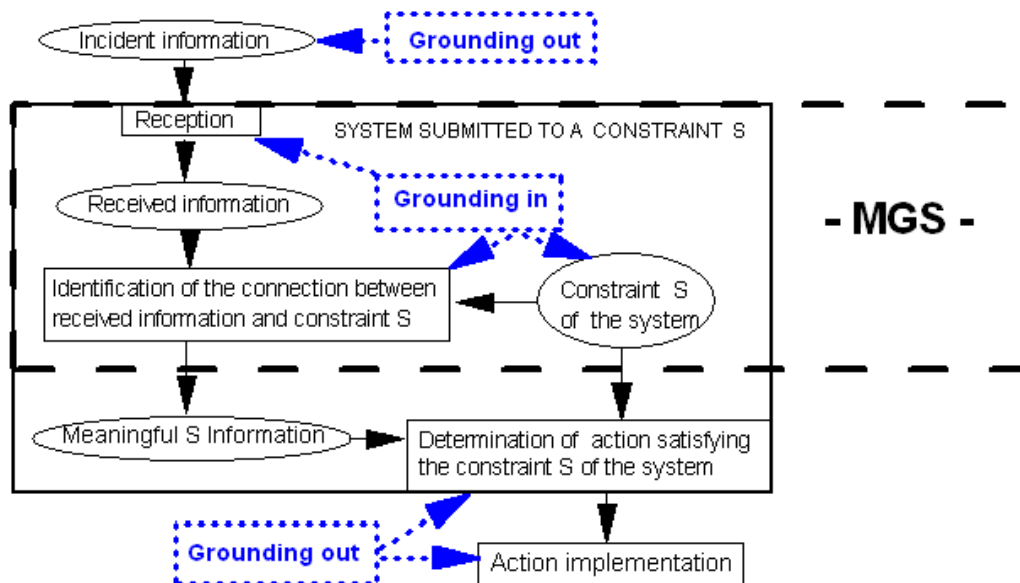- Grounding out of the MGS by the incident information, the action determination and its implementation.

Fig 2 Meaning generation and groundings

5) Transmission and processing of a meaning.
a) A meaningful information can be transmitted to other systems and survive to the MGS.
b) Introduction of "Efficiency of a Meaning" and of "Domain of Efficiency of a Meaning".
c) A generated meaning processed by other functions becomes a derived meaning.

6) MGS and higher level systems
a) The MGS is linked to other functions, to other MGSs and to higher level systems.
b) Action implementation can be of many types (physical, chemical, nervous, data processing, conscious, unconscious, ..). It can be a direct interaction with the environment or the result of data processing by other functions. The action can take place at higher level systems and lead to modifications of the functions or of the constraints.
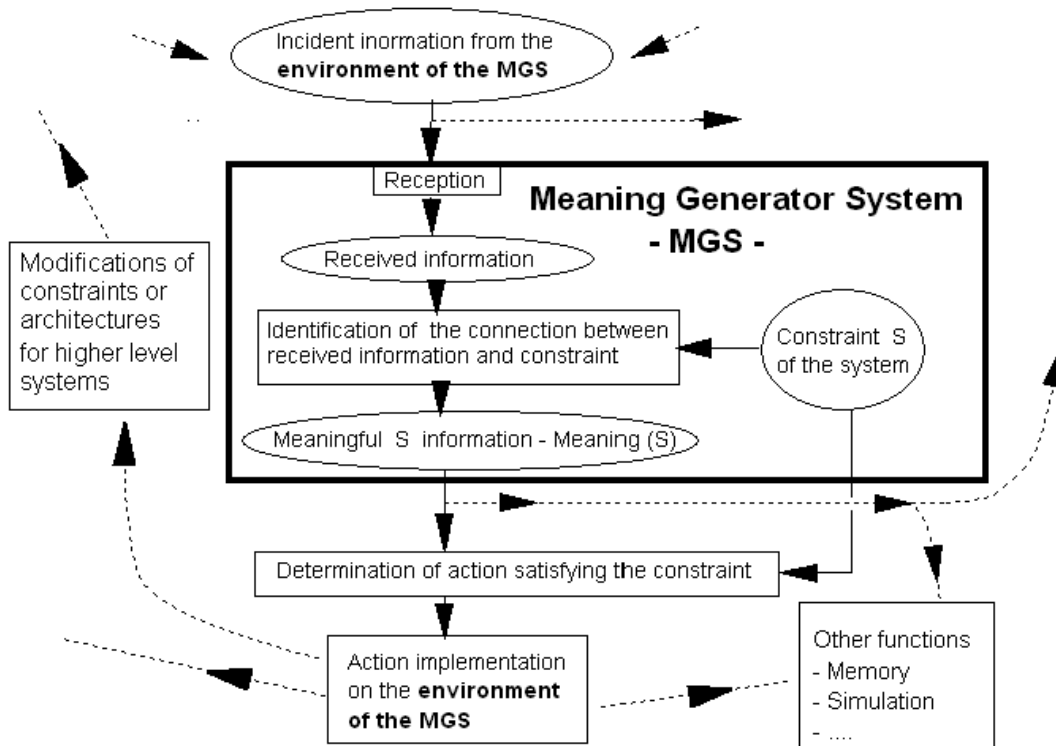
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Incident inormation from the **environment of the MGS**

Meaning Generator System - MGS -

Reception

Received information

Identification of the connection between received information and constraint

Constraint S of the system

Meaningful S information - Meaning (S)

Modifications of constraints or architectures for higher level systems

Determination of action satisfying the constraint

Action implementation on the **environment of the MGS**

Other functions
- Memory
- Simulation
- ....

Fig 3. MGS as a building block

7) Conclusion and continuation.

a) Basic elements for a systemic theory of meaning have been introduced.

b) Key notions have been defined (meaning, constraint, MGS, meaning transmission, efficiency of a meaning, groundings of a meaning in/out the MGS, relations with other systems).

c) Needs some conceptualization of the notion of constraint.

d) Continuation with applications to specific domains (life, human, robots, ..) needs clear definitions of the systems and of the constraints.

e) MGS to be used to define a representation of an item for a system on an evolutionary approach as a set of meaningful information of the item for the system.