

- Information and Meaning in Life, Humans and Robots -

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paper at <http://www.mdpi.org/fis2005/F.45.paper.pdf>

I) Introduction

II) Information and Meaning Generation. Meaning Generation for **Life**

II-1) Information and Meaning. The Meaning Generator System (MGS).

II-2) Meaning Generation for Life. « Stay Alive » & «Group Life » Constraints.

III) Meaning Generation for **Great Apes**

III-1) Great Apes in Evolution.

III-2) Meaning Generation for Great Apes. «Anxiety Limitation » Constraints.

IV) Meaning Generation for **Humans**

IV-1) Linguistics and Meaning.

IV-2) Evolution and Meaning Generation for Humans. «Self-Consciousness» Constraints.

V) Meaning Generation for **Robots**

V-1) Artificial Intelligence, Chinese Room, Symbol Grounding.

V-2) Meaning Generator System and Grounding In/Out. Network of Meanings.

VI) Summary and Related Themes

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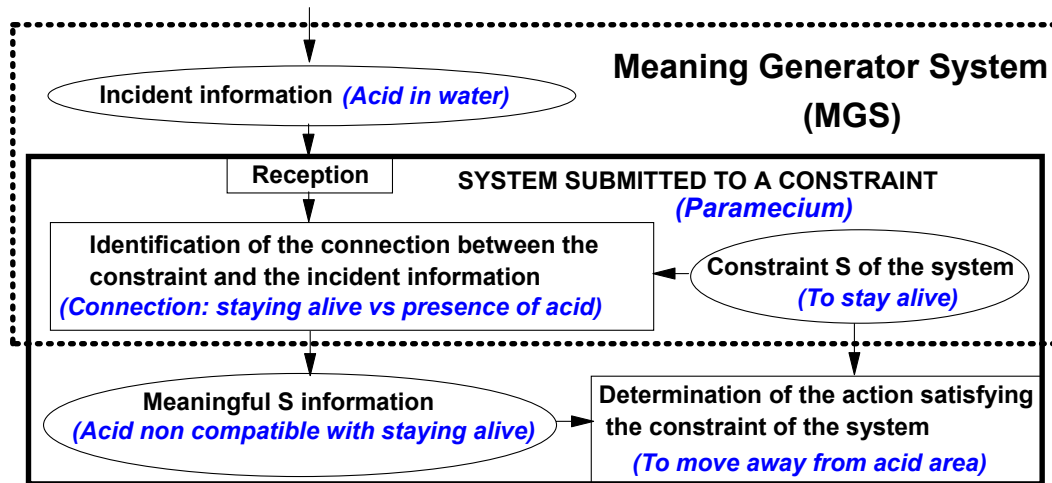
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II) Information and Meaning Generation. Meaning Generation for **Life**

"A Meaning is a Meaningful Information produced by a System submitted to a Constraint when it receives an Incident Information that has a Connection with the Constraint. The Meaning is that Connection".

Ex: *Paramecium in water*. Constraint: "*stay alive*". Received information: *Increase of acid density*.

Meaning: *Acid non compatible with staying alive*



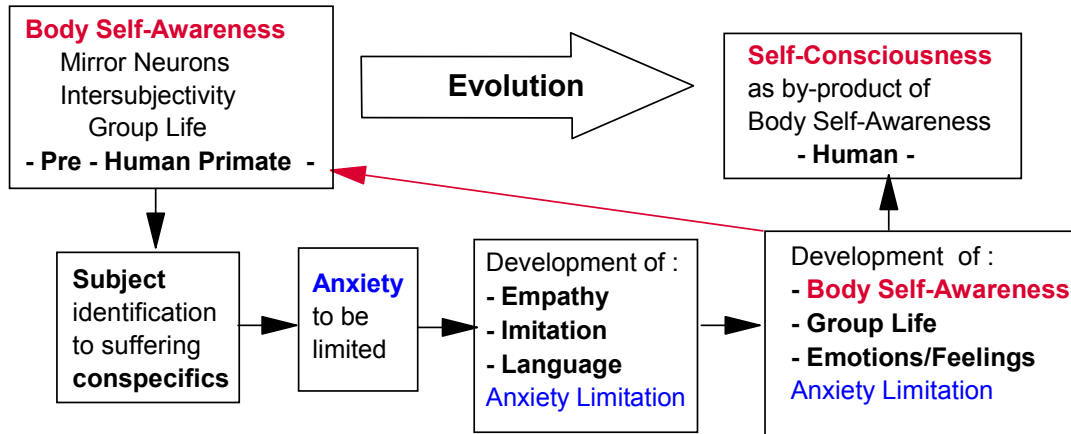
- * Generic Constraint => Sub-constraints.
- * MGS as building block of higher level system.
- * MGS links system to environment.
- * "Group life" Generic Constraint adds to the "Stay alive" one.

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III & IV) Meaning Generation for **Great Apes and Humans**

- * Huge gap from Life to Humans (consciousness). Intermediate stage: Pre-Human Primate.
- * Pre-Human Primate (Australopithecus) close to Great Apes performances wise.
- * Intersubjectivity => Anxiety. "Anxiety Limitation" as new constraint. Adds to "stay alive" & "group life".



- * Development of Empathy, Imitation, Language, Group Life, Emotions, Body Self-Awareness => Positive evolutionary feedback. Anxiety limitation as evolutionary engine.
- * Evolution to Humans: Self-Consciousness as a by product of Body Self Awareness evolution.
- * Constraints associated with Self-Consciousness are unknown. Concept of Constraint to be studied.
- * If anxiety not acceptable/limitable, pre-human primate has to find a niche (chimps) or disappear.

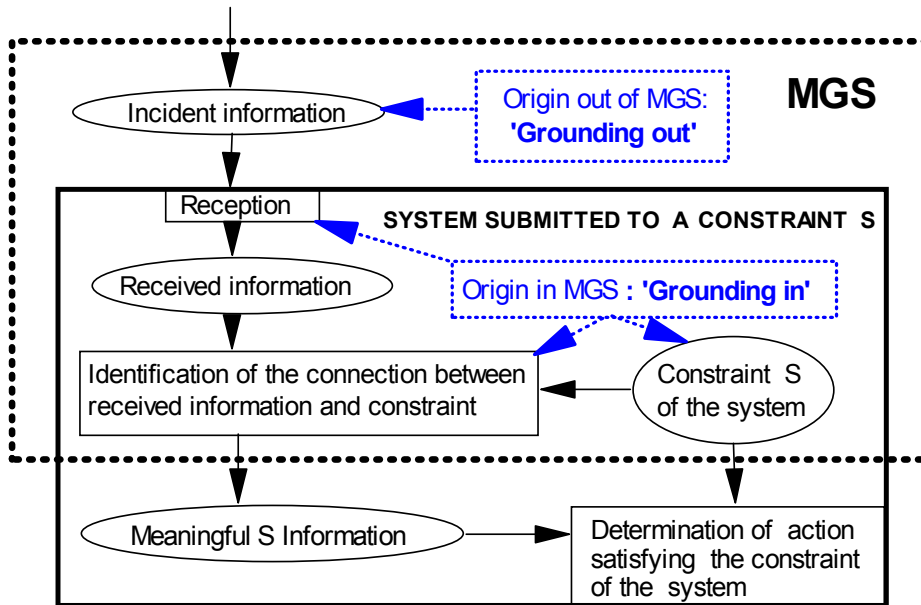
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V) Meaning Generation for Robots

* Application of MGS to Artificial Intelligence (AI):

- Strong AI: Computers with right programs can have cognitive states.
- Challenged by Chinese Room (Searle) and Symbol Grounding (Harnad).
- MGS model separates “Grounding in” from “Grounding out”.



* Differences in MGS for Life and Robot:

Grounding out: no difference. Grounding in: constraints are different.

* Need for studies on the concept of constraint.

* Meaning from S1 becomes incident information for S2. Networks of Meanings.

* Evolution: Different constraints (due to mutations) from parents to offspring.

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VI) Summary and Related Themes

- * **Content of Meaning Generator System (MGS) approach has been reminded.**
- * **Evolutionary usage of MGS has been introduced for life, humans and robots.**
- * **Different generic constraints and sub-constraints at different stages of evolution:**
 - Life: “stay alive”, “group life”.
 - Pre-human primates: “limit anxiety” to be added.
 - Human: unknown constraints related to consciousness to be added.
- * **Notion of Constraint is key to MGS. Need for philosophical conceptualization.**
- * **Anxiety/Anxiety Limitation as evolutionary engine for pre-human primates and humans.**
 - Other evolutionary outcomes due to not accepted anxiety (niche, disappear).
- * **MGS allows introduction of groundings in/out.**
 - Possibility for networks of meanings and for evolutionary groundings.
 - Application to robots: constraint is key difference between robots and living elements.
- * **Continuation:**
 - Have the notion of constraint analyzed and conceptualized.
 - Determine sub-constraints for each level of evolution.
 - Address the grounding problem with MGS based evolutionist networks of meanings.
 - Analyze components of anxiety/anxiety limitation with corresponding outcomes.
 - Detail the process of Self-Consciousness as by product of Body Self-Awareness evolution.