*Gatherings in Biosemiotics 2016 * Prague 4 – 8 July 2016

Meaning generation for constraint satisfaction. An evolutionary thread for biosemiotics

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Abstract:

One of the mains challenges of biosemiotics is 'to attempt to naturalize biological meaning' [Sharov & all 2015]. That challenge brings to look at a possible evolutionary thread for biosemiotics based on meaning generation for internal constraint satisfaction, starting with a pre-biotic entity emerging from a material universe. Such perspective complements and extends previous works that used a model of meaning generation for internal constraint satisfaction (the Meaning Generator System) [Menant 2003a, b; 2011].

We propose to look at such an evolutionary thread for biosemiotics in three steps.

The first step presents the proposed emergence of a pre-biotic entity as a far from thermodynamic equilibrium volume constrained to maintains its status [Menant 2015]. Such constraint dependence introduces natural links with teleology and with meaning generation. It also introduces perspectives for evolutionary origins of agency, self, and autonomy, coming in addition to other biosemiotic perspectives [Tønnessen, 2015].

The next step recalls the MGS as being a system approach linking the agent containing it to its environment and bringing to the agent a control from within. We apply the MGS to animal life. Relations with the Umwelt, with constructivism and with the Peircean triadic approach are highlighted.

The last step of the thread brings the evolution of life up to humans where specificities related to human mind have to be taken into account. Among them is self-consciousness for which an existing evolutionary scenario introduces anxiety management as a foundational human constraint [Menant, 2014]. We link that scenario to the evolutionary thread because it introduces specific human constraints and is based on the evolution of meaningful representations.

A conclusion summarizes the steps of the proposed evolutionary thread. More work is needed on that subject. Possible continuations are introduced.

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A) Biosemiotics, meaning and evolution

B) Meaning and local constraints. The MGS. Animal life and meaningful representations

C) Meaning generation and self-consciousness. Humans with new constraints and meanings

D) Conclusion and continuations

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A) Biosemiotics, Meaning and evolution

* "**Human semiotics** can be fully understood only after analyzing the **evolution of signification processes in living organisms starting from the origin of life** "(Sharov 1997)

* "A study can be called **semiotic only if the meaning-making aspect is made explicit**" (Kull 2014)

* "**biosemiotics** has acquired a more general scope. Today**,** its **main challenge is the attempt to naturalize** not only biological information (genetic, epigenetic, sensorial, and behavioral) but also **biological meaning**" (Sharov and all 2015)

* "**Biosemiotics encompasses all living systems from the cell, over bacteria, fungi, plants and animals to humans** as sign producers and interpreters. Signs are the basic units for the study of life**"** (Brier 2005)

* "Humans, too, have their particular *Umwelten*, and hence **biosemiotics is a comparative study of meaning in human and nonhuman worlds"** (Rattasepp and Kull, 2015)

Starting point: "Meaning" is an evolutionary thread for biosemiotics

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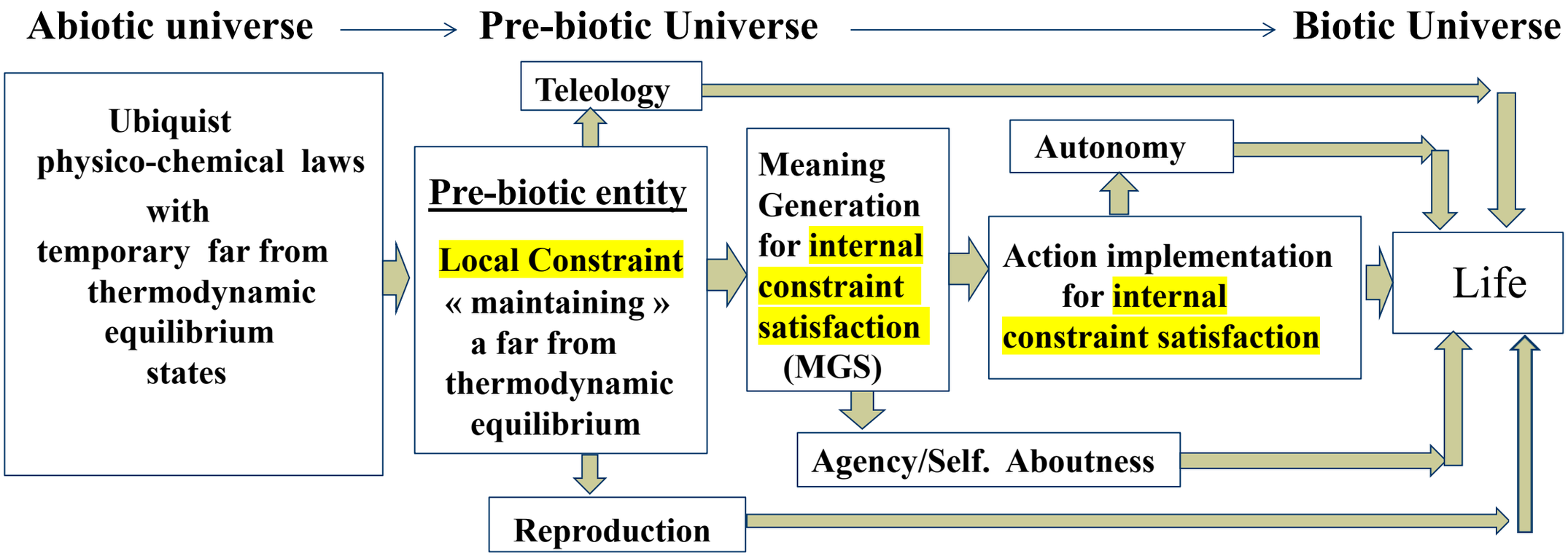
B1) Meaning and local constraints. The MGS. Animal life and meaningful representations



* Abiotic universe: ubiquist laws with temporary far from thermodynamic equilibrium (FfTE) states
* Proposal for emergence of local constraint maintaining a local FfTE volume => pre-biotic entity (same purpose as Deacon Autogen reciprocal catalysis)
* Emergence of local constraint => teleology, meaning, agency/self, aboutness, action, autonomy, life
* Proposal for considering « reproduction » as an evolutionary tool to maintain FfTE
* Life as a outcome of these pre-biotic performances, not as source of them

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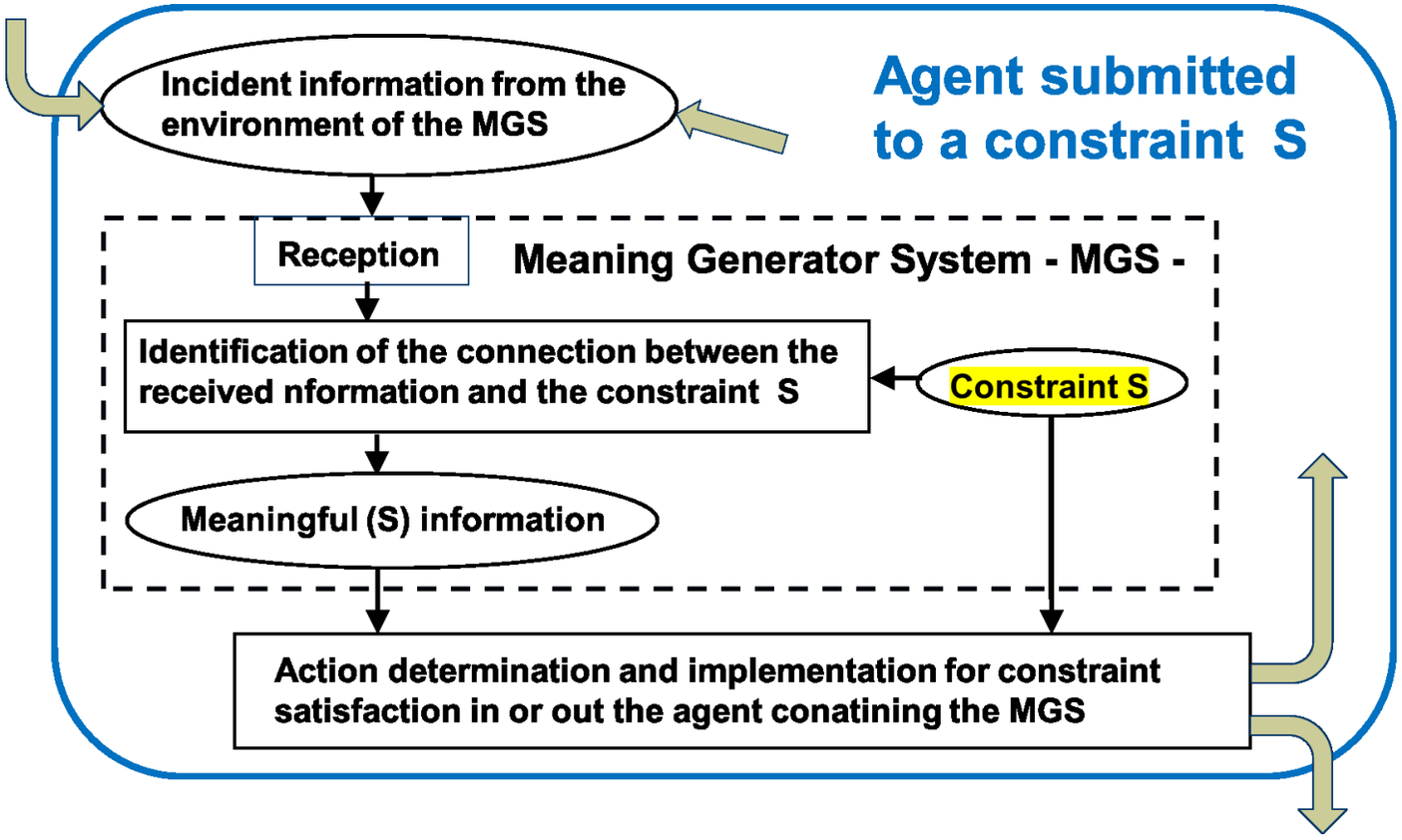
B2) Meaning and local constraints. The MGS. Animal life and meaningful representations

(http://philpapers.org/rec/MENITA-5)

* Meaning as connection between received information and internal constraint. Phenomenal content
* MGS => Control from within. Action for constraint satisfaction can be physical or mental
* Usable for Umwelt, for Constructivism, for Peircean approach (partly), for artificial agents
* MGS => closed loop processes. Permanent interactions within agent and with its environment
* Meaningful representation as network of meanings. With past experiences & action scenarios



Ref: C. Menant " Information and Meaning", Entropy 2003, 5, 193-204"

MGS: System approach

Animal constraints :
- *Stay alive (individual & species)*
- *Live group life*

Human constraints:
- *Limit anxiety*
- *Look for happiness*
- *Avoid pain. Pleasure seeking*
- *Valorize ego, ….*

Artificial Agent constraints:
- *As programmed (derived constraints)*

(http://philpapers.org/rec/MENTTC-2)

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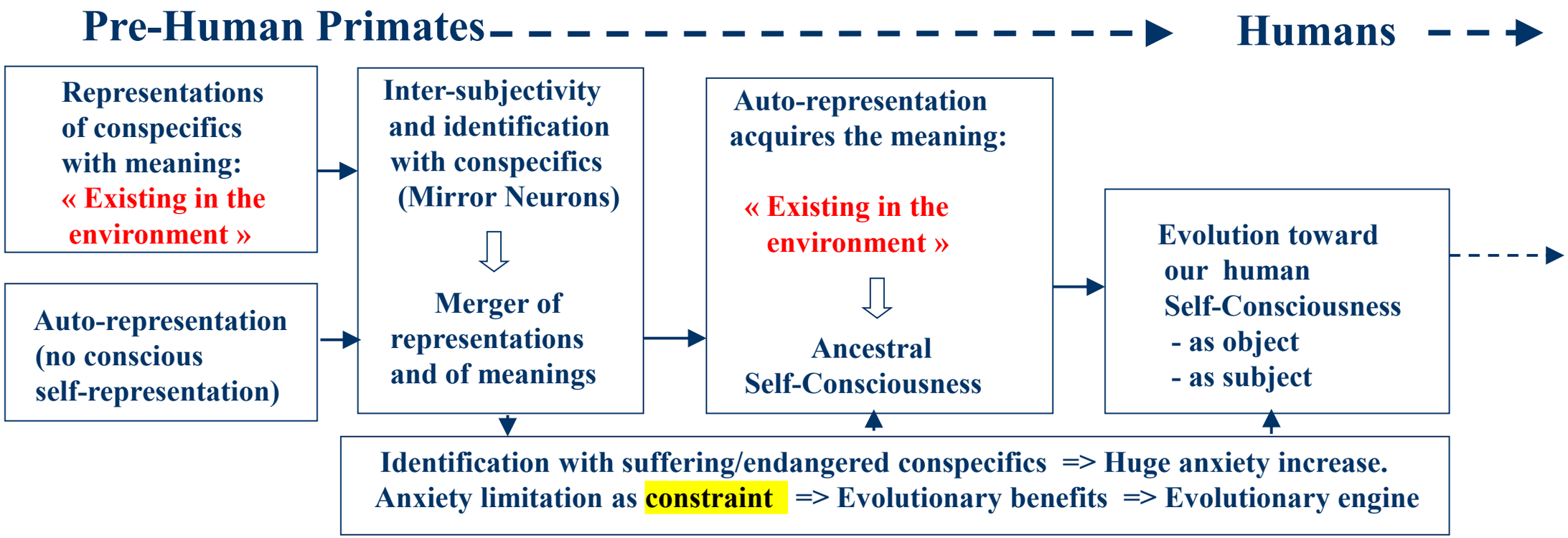
C) Meaning Generation & Self-consciousness. Humans with new constraints and meanings

(short version of http://philpapers.org/rec/MENCOO)



- Evolution of inter-subjectivity => Merger of auto-representation with representations of conspecifics
- Representation of one's own entity as existing in the environment, like conspecifics are represented => Ancestral Self-Consciousness & Self-Consciousness as meaningful representations
- Identification with suffering conspecifics => Huge anxiety increase => Evolutionary engine
- Evolutionary benefits of Self-Consciousness come from anxiety management processes

(http://philpapers.org/rec/MENPFA-3)

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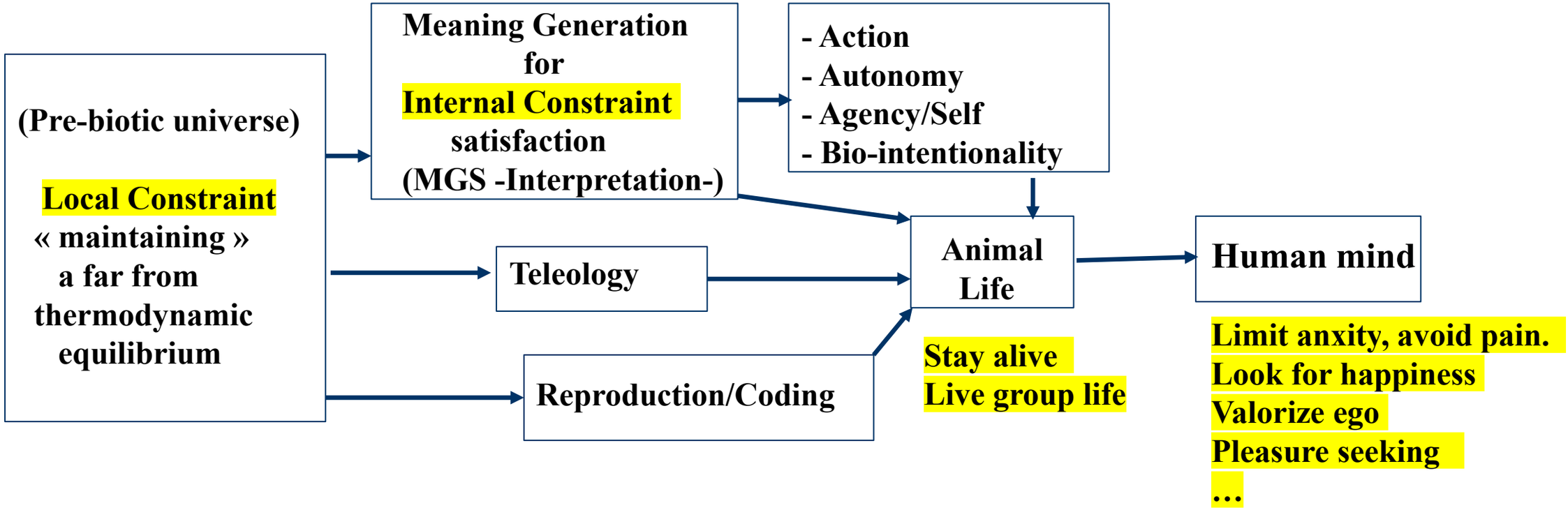
D1) Conclusion

Starting point was: "Meaning" is an evolutionary thread for biosemiotics



Conclusion is:

*Internal constraint satisfaction is an evolutionary thread for Biosemiotics

* Interpretation and coding have a common evolutionary origin in far from thermodynamic equilibrium state (?)

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D2) Continuations

*** Find scenarios to validate :**

- Emergence of local constraint maintaining a local far from thermodynamic equilibrium

- Reproduction as a tool to maintain a local far from thermodynamic equilibrium

*** Address possible Biosemiotics developments about:**

- An evolutionary approach to the nature of human mind (http://philpapers.org/rec/MENPFA-3)

- Bio-intentionality as based on meaning management (http://philpapers.org/rec/MENBAM-2)

*** Look at how molecular semiosis can be related to meaning generation**

- Works in process by other researchers