

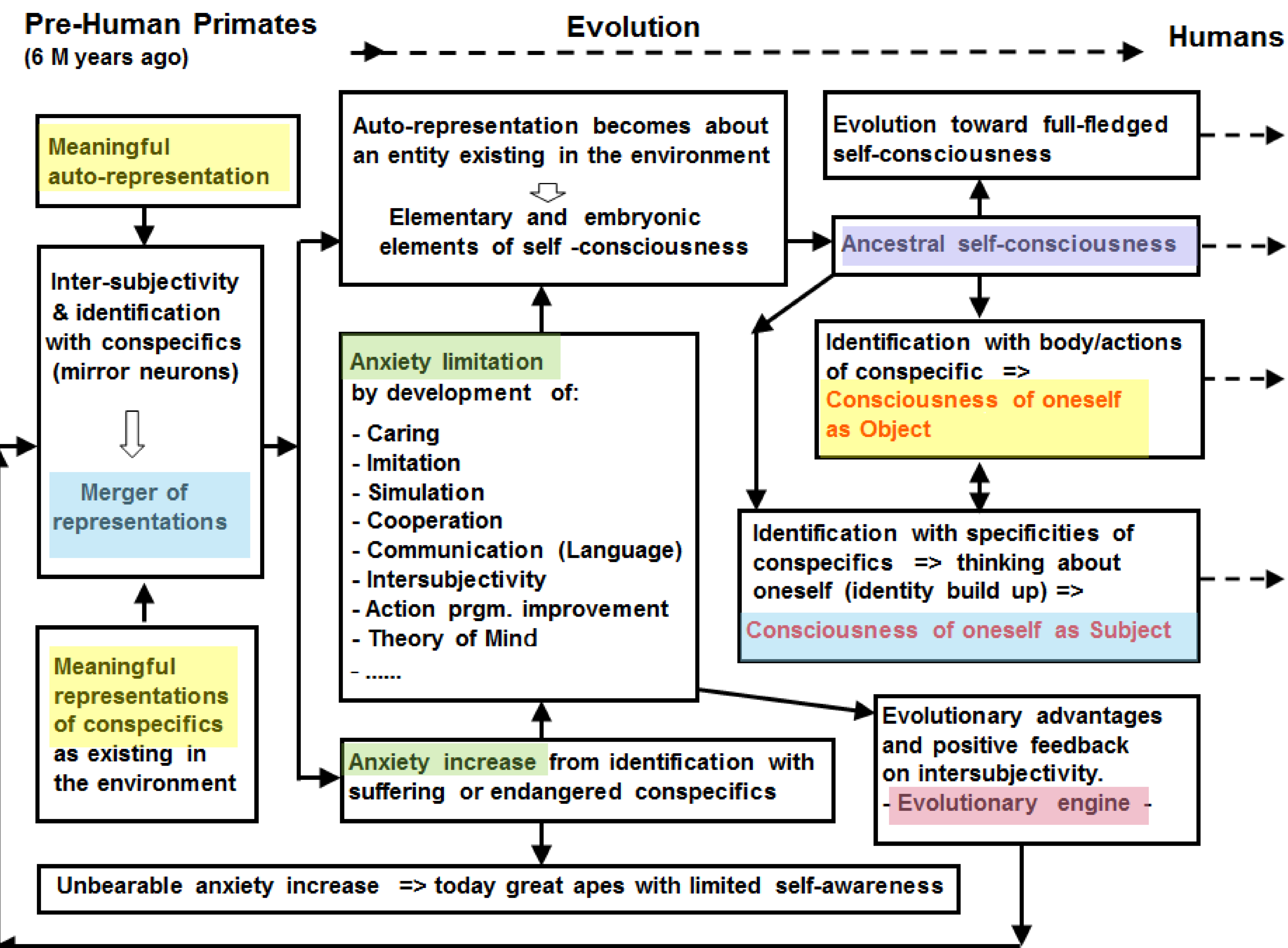
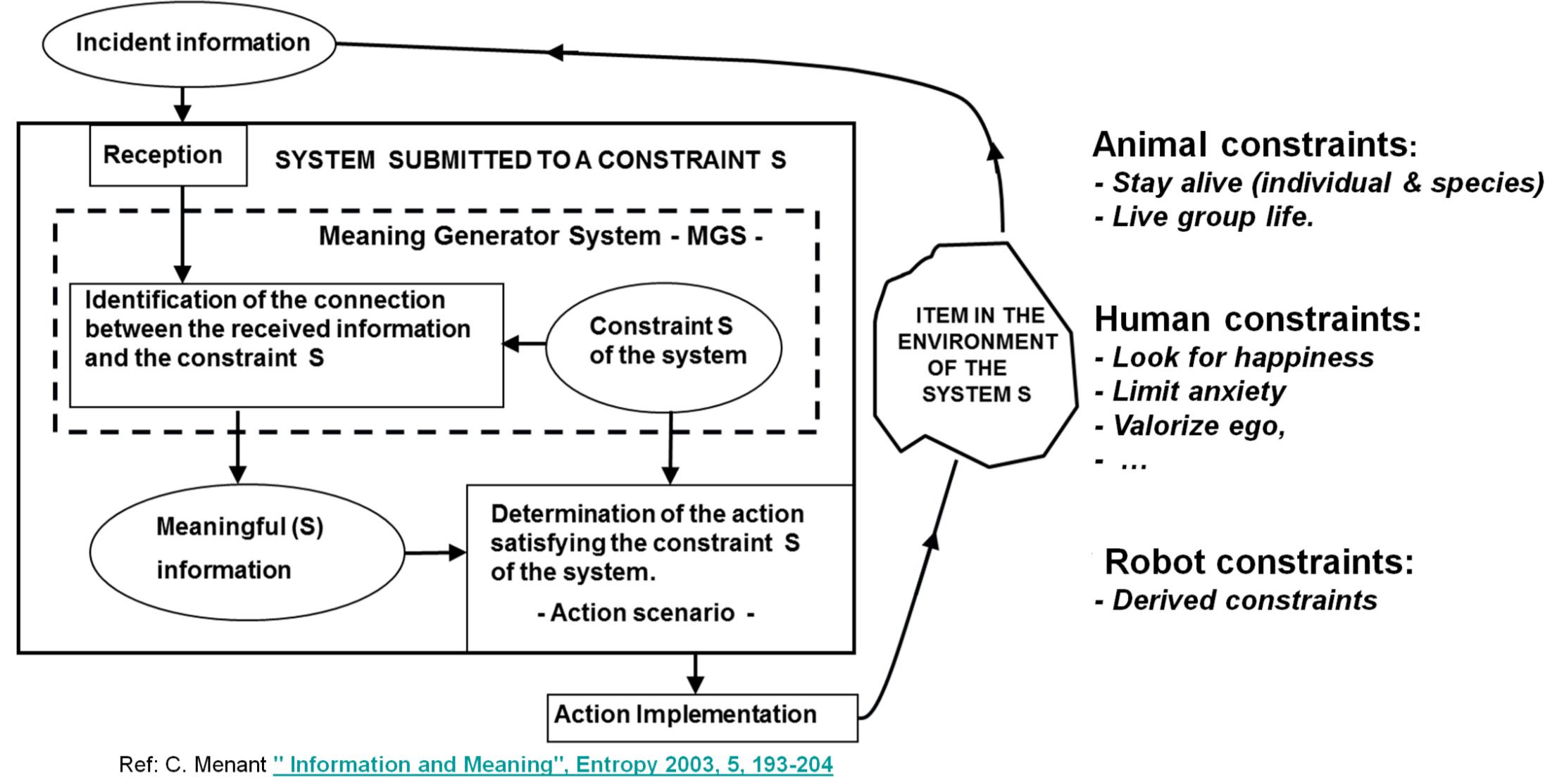
* Consciousness of Oneself as Object and as Subject. Proposal for an Evolutionary Approach *

- Toward a Science of Consciousness 2014 - [Christophe Menant](#) Bordeaux - France -

Evolutionary Scenario. From Pre-Human Primates to Humans

MEANING GENERATION - Meaning Generator System (MGS)

- Meaning generation by a system submitted to an internal constraint (MGS).
- Generated meaning => Action determination for constraint satisfaction.
- Meaning: Connection between received information and constraint.
- Networks of meanings build up **meaningful representations**.



ANCESTRAL SELF-CONSCIOUSNESS

- Came up in the mind of our ancestors:
 - * By an evolution of inter-subjectivity (mirror neurons).
 - * Through the performances of the **evolutionary engine**.
 - Was an elementary and embryonic representation of oneself as an entity existing in the environment.
 - Representational nature (**meaningful representation**).
 - Allowed **self-consciousness as object & as subject**.
 - Evolved up to today full-fledged self-consciousness.
 - * Remains in our today minds as a "diffuse sense of being".
 - **Anxiety Management** as key evolutionary contributor.
- Ref: C. Menant 2014 ["Proposal for an evolutionary approach to self-consciousness"](#)

MEANINGFUL REPRESENTATIONS

- **Meaningful Representation of an item for an agent:**
 - * Meanings generated by the agent about the item.
 - By information coming from the item in the environment.
 - By information about the item coming from inside the agent.
 - * Networks of meanings relative to the item build up a **meaningful representation** of the item within the agent.
 - **Meaningful representations for pre-human primates:**
 - * **Representations of conspecifics:**
 - Entities existing in the environment
 - * **Auto-representation:**
 - Perceived parts of the body (extero/intero/proprioception).
 - Perceived actions with action scenarios.
 - Related emotions.
- Ref: C. Menant 2010 ["Computation on Information, Meaning and Representations, An Evolutionary Approach"](#)

CONSCIOUSNESS OF ONESELF AS OBJECT

- Is the representation of oneself as an entity perceivable in the environment.
- Evolution from pre-human primates (mirror neurons):
 - * Conspecifics were represented as entities existing in the environment:
 - Body parts.
 - Acting body.
 - Shared actions.
 - * Evolution of inter-subjectivity towards identification with conspecifics:
 - => Auto-representation to merge with representation of conspecifics.
 - => Auto representation became as being about an entity existing in the environment.
 - => Our pre-human ancestors accessed a representation of themselves as entities perceivable in the environment.
- Our ancestors became **conscious of themselves as objects**.

MERGER OF REPRESENTATIONS

- Evolution of inter-subjectivity (mirror neurons) towards identification with conspecifics =>
 - * **Merger of auto-representation with representations of conspecifics.**
 - * Auto representation became about an entity existing in the environment, like conspecifics were represented.
 - * Our ancestors became able to represent themselves as entities existing in the environment.
- The representations of themselves as entities existing in the environment brought in the minds of our ancestors some elementary and embryonic elements of self-consciousness => **Ancestral Self-Consciousness**.
- Identification with suffering or endangered conspecifics has created an important **anxiety increase** that had to be limited:
 - * **Successful anxiety limitation** => continuation of evolution and build up of an **evolutionary engine**.
 - * **Unsuccessful anxiety limitation** => stop identifying with conspecifics. Find an ecological niche or disappear.

ANXIETY INCREASE / LIMITATION PROCESS

- **Anxiety increase** came from identifications with suffering or endangered conspecifics.
 - * Unbearable if not properly limited (too much suffering).
 - * If not limited: stop of evolution towards self-consciousness.
 - => pre-human primates that became today great apes with limited self-awareness.
 - **Anxiety limitation process** developed by implementing:
 - Caring
 - Imitation
 - Simulation
 - Cooperation
 - Communication (Language)
 - Intersubjectivity (= positive feedback on evolutionary process)
 - Action programs improvements
 - Theory of Mind
 - ...
 - Evolutionary advantages of process => **Evolutionary engine**.
 - **Anxiety limitation constraint** => Anxiety related **meaning generation**.
 - * Key contributor to the evolutionary nature of Self-Consciousness.
 - * Still active in today anxiety related meaning generation for humans.
- Ref: C. Menant TSC 2005 ["Evolution and Mirror Neurons, An Introduction to the Nature of Self-Consciousness"](#)

EVOLUTIONARY ENGINE

- Built up from:
 - * Performances developed for **anxiety limitation**.
 - * Positive feedback on inter-subjectivity.
 - Allowed the coming up of **ancestral self-consciousness** and its evolution towards full-fledged self-consciousness.
 - Entry point to the 'how' & 'why' of self-consciousness.
 - Based on **anxiety management**.
 - => Contribution of anxiety management to the nature of self-consciousness.
 - Still active today.
 - * Possible phylogenetic source of some today anxiety disorders.
- Ref: C. Menant 2014 ["Proposal for an evolutionary approach to self-consciousness"](#)

CONSCIOUSNESS OF ONESELF AS SUBJECT

- Understood as the representation of oneself as a thinking entity.
- Evolution from pre-human primates (mirror neurons):
 - * Evolution of inter-subjectivity towards identification with conspecifics brought auto-representation to merge with representation of conspecifics.
 - * Identification with conspecifics had to address specificities for fit:
 - Tall/small, dominant/submitted, audacious/fearful
 - * Involved addressing specific components of auto-representation.
 - * Addressing specificities in auto-representation => thinking about oneself => ability to represent oneself as a thinking entity (self-conscious identity).
- Our ancestors could become **conscious of themselves as subjects**.
 - * Interwoven with consciousness of oneself as object.
 - * Transcendental Self as Subject to be addressed.

Continuations to the proposed evolutionary approach

1. Use the proposed evolutionary scenario for the **why?, how? and when? questions on self-consciousness**.
2. Investigate possible anxiety related forking paths in human evolution (phylogenesis and ontogenesis).
3. Link today **'diffuse sense of being'** to the evolution of Ancestral Self-Consciousness.
4. Analyze the participation of **anxiety management** to the evolution of **Ancestral Self-Consciousness** towards Full-Fledged Self-Consciousness.
5. Introduce a **human conscious self** from the proposed evolutionary nature of self-consciousness. See how it could be related to a possible **nature of free will**.
6. Identify in more details **human constraints** as sources of human **meaning generations** (with 'anxiety limitation' as a key constraint).
7. Investigate the biological nature of **inter-subjectivity (mirror neurons)** as based on the unknown **nature of life**.

(more details in <http://philpapers.org/rec/MENPFA-3>)

8. Investigate a possible **future of human evolution** based on a continuation of the proposed scenario.
9. Look for a **phylogenesis of human emotions** as resulting from the proposed evolutionary nature of human consciousness.
10. Relate some of today human **mental disorders** and **existential angst** to the contribution of **anxiety management** in human consciousness.
11. Develop the notions of **intrinsic/derived constraints** and **meaning generation** to see how parts of the proposed scenario could be used for artificial agents.
12. Analyze a possible path to **artificial self-consciousness** with **inter-agentivity** duplicated from primates inter-subjectivity.
13. Explore **Transcendental Self as Subject** with the proposed evolutionary scenario.