"A THREE-COMPONENT COGNITIVE THEORY"

A theory about universal cognition.

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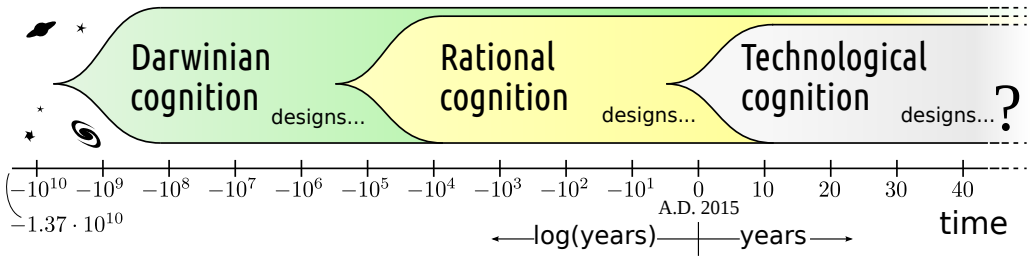
TERMINOLOGY

Intelligence: Any mechanism that SOLVES PROBLEMS in a target environment.
Example: Computer programs.

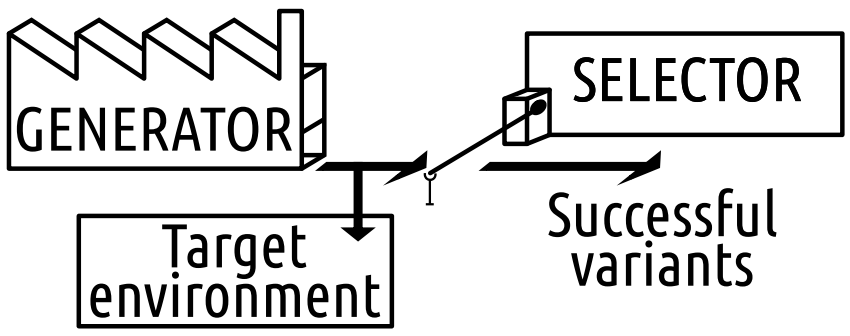
Cognition: Any mechanism that LEARNS TO SOLVE PROBLEMS by devising intelligent methods.
Example: Primordial RNA molecules.

TEMPORAL EMERGENCES OF KNOWN COGNITIONS



THE THEORY

- This theory proposes a mechanism that describes the source of every intelligent behaviour.



Variant Each of the **tentative solutions** available to solve a predefined goal. Made up of pure information.

Generator **Supplies variants** devised by automatic methods. Its heuristics have a variable degree of sophistication.

Selector **Evaluates the variants** or their effect on the environment according to a goal implicitly defined in the assessment method.

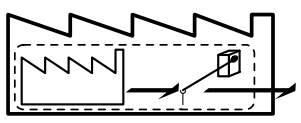
Substrate Holds the **physical support** to store the information carried by each variant and decodes the latter in the target environment.

EXAMPLE COGNITIVE ENHANCEMENTS

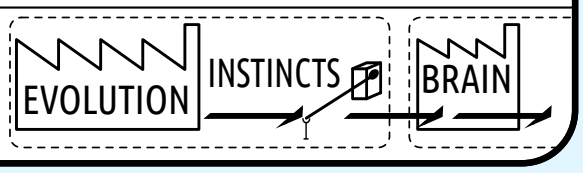
Goal models: Successful variants are stored together with goal compliance information for later retrieval by the generator.

Self-reference: The cognition can modify the automatic methods that make up its own components for self-improvement.

Recursion: The functions of the three components can be controlled by additional embedded cognitions, i.e. a simulator.

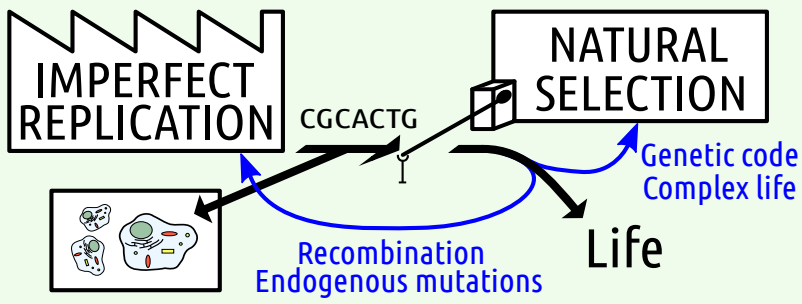


Cognitive communication: Variants may be supplied by external cognitions.



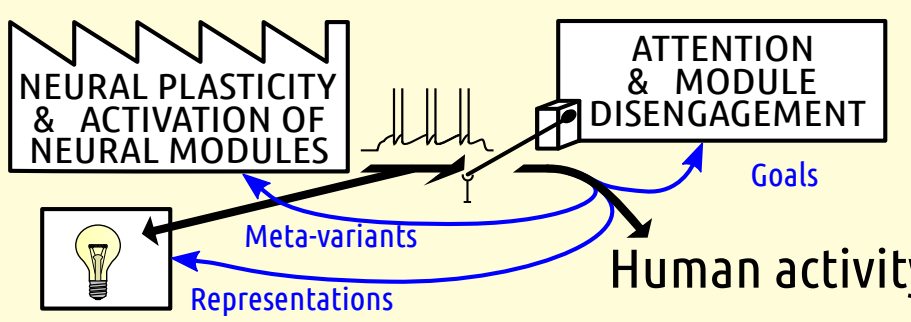
INSTANCES

EVOLUTION: THE DARWINIAN COGNITION



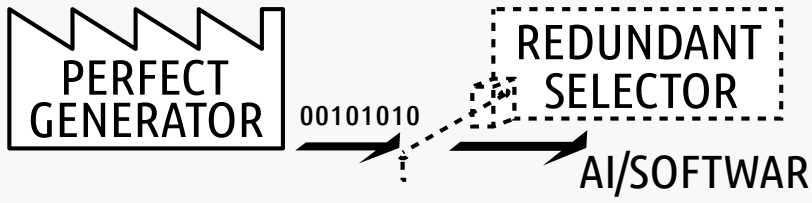
- Evolution qualifies as a simple cognitive process that emerged spontaneously from nature.

THE HUMAN BRAIN: RATIONAL COGNITION



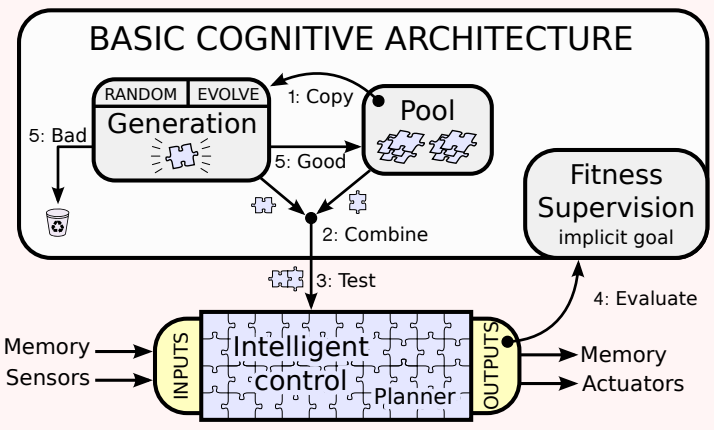
- Traditional cognitive abilities (deduction, planning, etc) might only play a secondary role in human cognition.

A.I.: TECHNOLOGICAL COGNITION

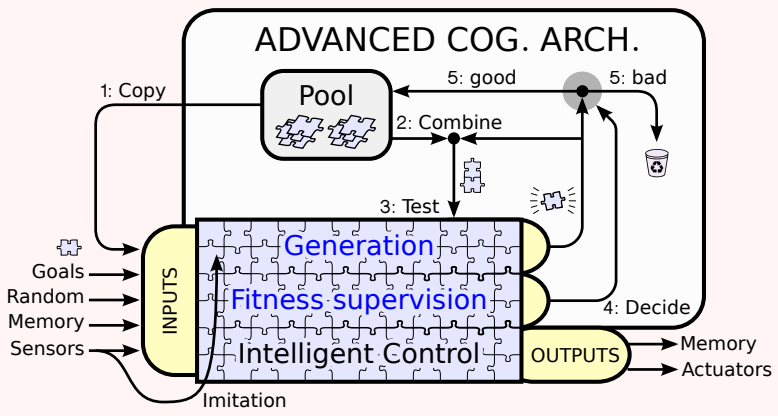


- Fixed program sequences run blindly in Turing-like machines.
- Available technologies in A.I. do not conform to the theory, which agrees with failure to reach general intelligence.

SUGGESTED COGNITIVE ARCHITECTURE, DERIVED FROM THE THEORY



- Creates and manages blocks of code that process sensor data.
- The cognitive components can be disabled with no effect on system performance except for learning of new abilities.



- Self-referentiality in the cognitive components allow for self-improvement. In this case, stability is critical in the fitness supervision function for successful goal accomplishment.