

11th UES2021 Congress + 17th HSSS Conference – 07/10/2021

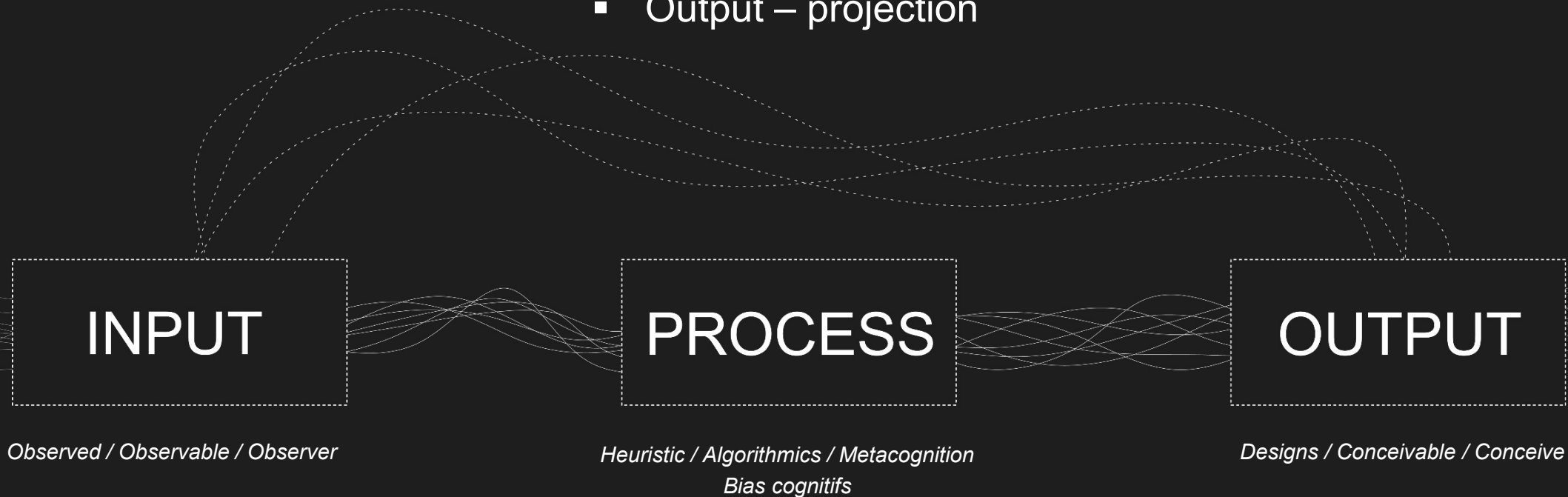
Irrational Creativity in Architectural Design

Louis Roobaert

HYPOTHESIS

At least three forms of irrationality are involved in architectural design processes, that fully stimulate the creativity of the subjects and, in turn, allow them to experiment with the way humans can inhabit the world:

- Input – data capture
- Process – cognitive strategies
 - Output – projection



INPUT : *data, capta, quaesita*

The *data* captured by a (cyber)subject in search of *quaesita* is biased and unconsciously generates irrationality unconsciously - as based on a perception of the phenomenal world - that leads to creative associations depending on the designer's sensitivity.

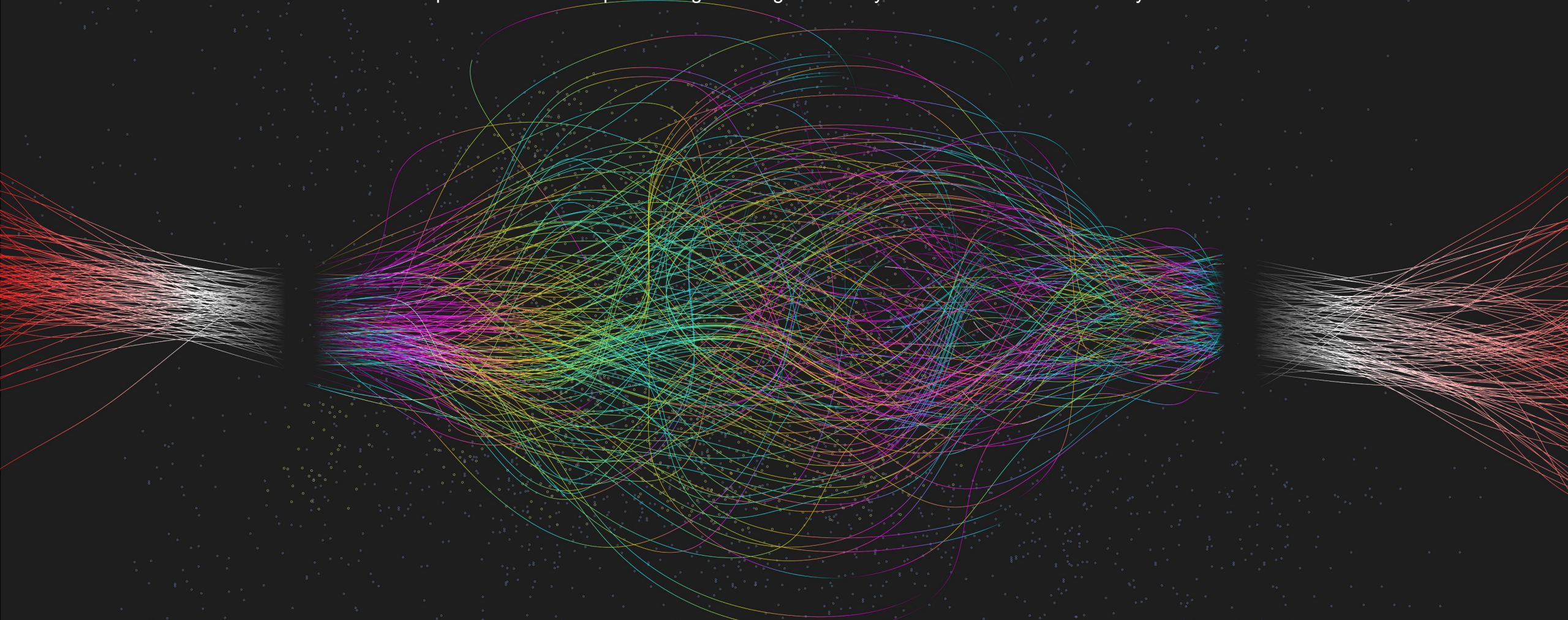
Data: All *observable* elements that remain undiscovered to the eyes of the (cyber-)subject, since they have not yet been observed so far.

Capta: All *observed* elements resulting from the collection of data by the senses of a (cyber)subject, that are used to interpret the phenomenal world.

Quaesita: all elements a (cyber)subject is seeking *to observe* amongst the range of all observables, in order to confirm an interpretation from the observed data.

PROCESS : heuristic, algorithmic, metacognition

The mental landscape is composed of at least three types of reasoning and their effects alternate – according to the designer's representation of the problem - generating irrationality which stimulates his creativity.



Heuristics : intuitive processes to make decisions quickly based on *capta* that generate satisfying solutions. Based on experiences, this reasoning type is unintentional, emotional, fast and resource-efficient, but not always reliable.

Algorithmic : methodical processing of information in order to elaborate solutions. It performs logical operation sequences that necessarily reach a solution. Not often used, since it is not very intuitive, slow, and eats up a lot of mental resources, but on the other hand, it generates optimal solutions.

Metacognitive : reflexive process that allows the mental representation of a problem as a whole and, thus, to decide which strategy should be adopted by activating or inhibiting their effects of the heuristic or algorithmic reasoning.

COGNITIVE BIAS : Distortion of Reality

Cognitive biases lead to irrational decision making, projecting designers into unexpected situations which fully stimulate their creativity.

Cognitive bias : Distortion in the way a designer interprets and processes captas in order to make a decision.

At least four situations may lead to the emergence of cognitive biases: Too much information / Lack of time / Lack of meaning / Trade-off between forgetting and knowing.

Non-exhaustive list of the most common cognitive biases in an design processes: storytelling, confirmation, experience, attribution, planning, anchoring, Ikea effect.

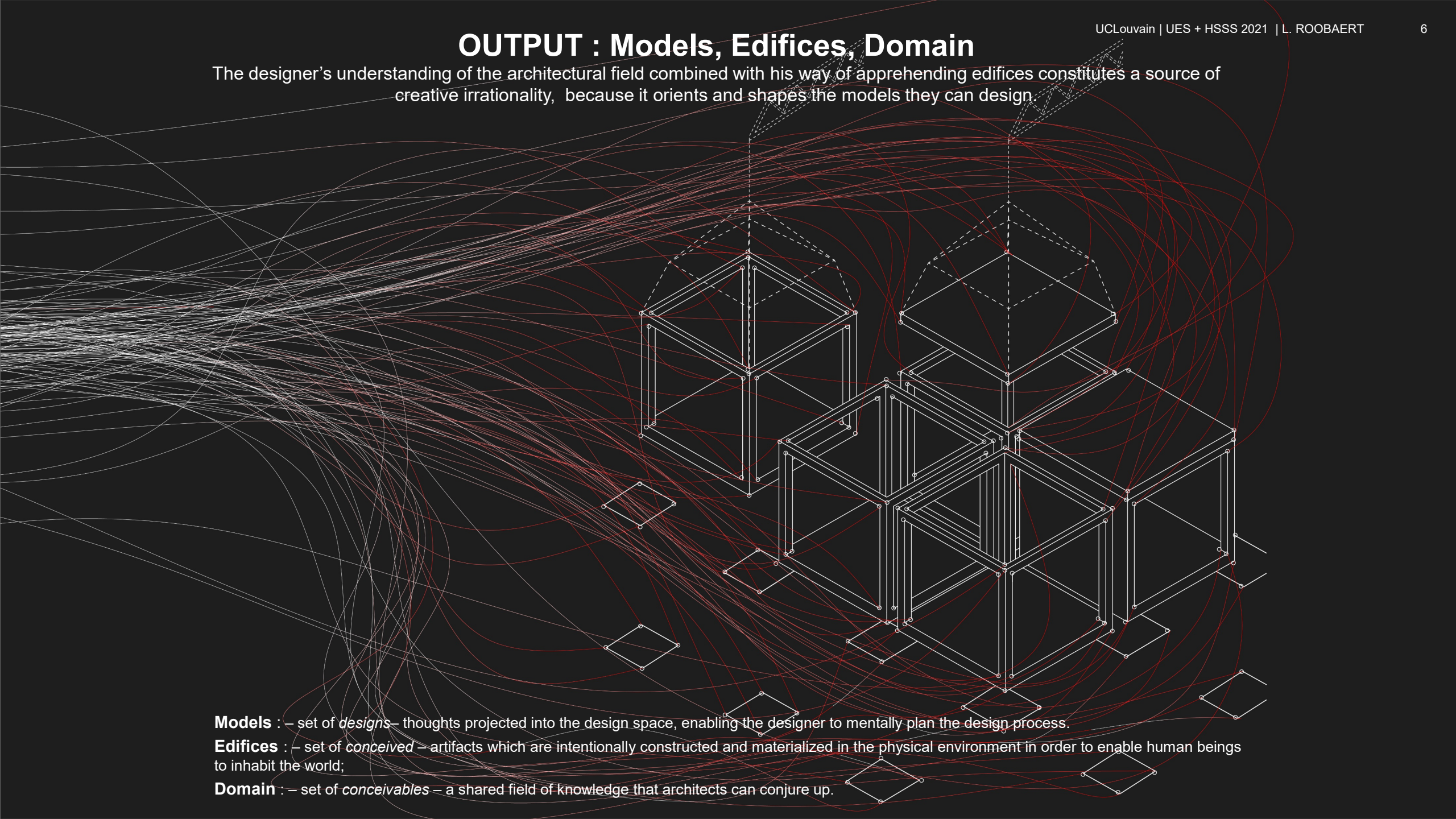
OUTPUT : Models, Edifices, Domain

The designer's understanding of the architectural field combined with his way of apprehending edifices constitutes a source of creative irrationality, because it orients and shapes the models they can design.

Models : – set of *designs* – thoughts projected into the design space, enabling the designer to mentally plan the design process.

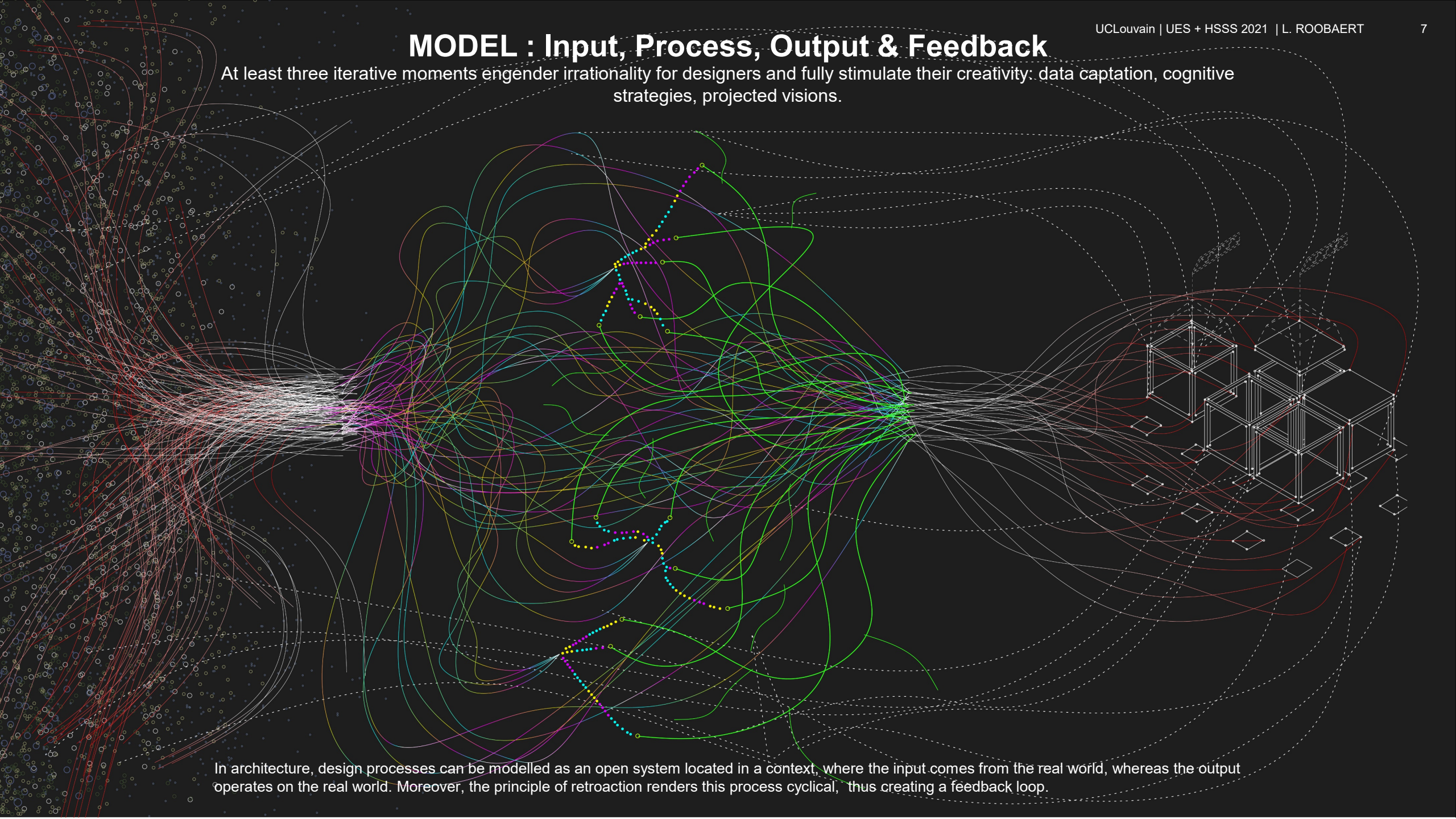
Edifices : – set of *conceived* – artifacts which are intentionally constructed and materialized in the physical environment in order to enable human beings to inhabit the world;

Domain : – set of *conceivables* – a shared field of knowledge that architects can conjure up.



MODEL : Input, Process, Output & Feedback

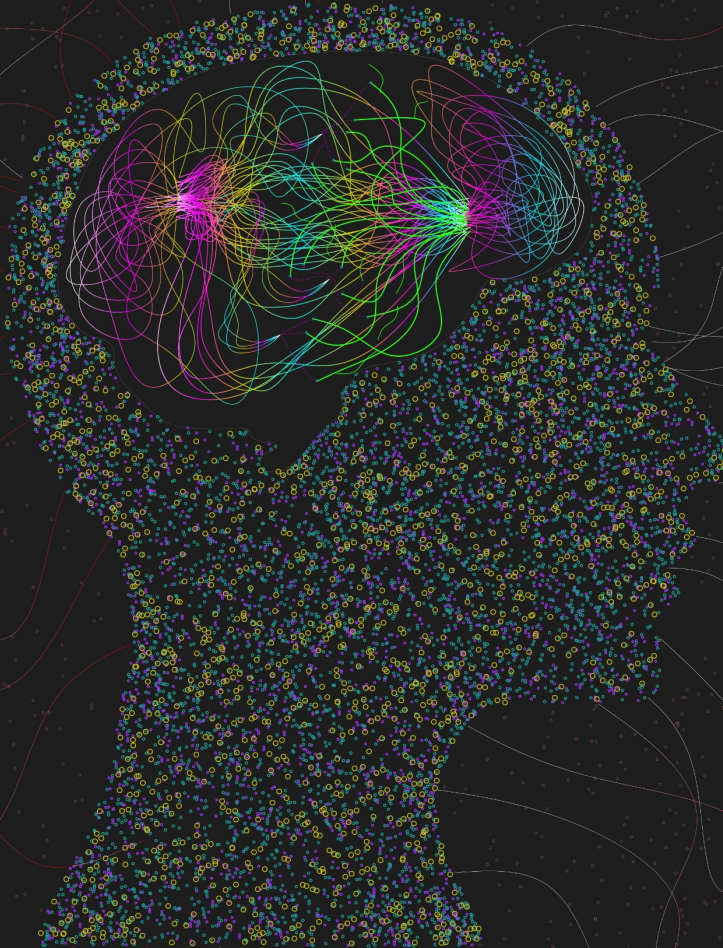
At least three iterative moments engender irrationality for designers and fully stimulate their creativity: data captation, cognitive strategies, projected visions.



In architecture, design processes can be modelled as an open system located in a context, where the input comes from the real world, whereas the output operates on the real world. Moreover, the principle of retroaction renders this process cyclical, thus creating a feedback loop.

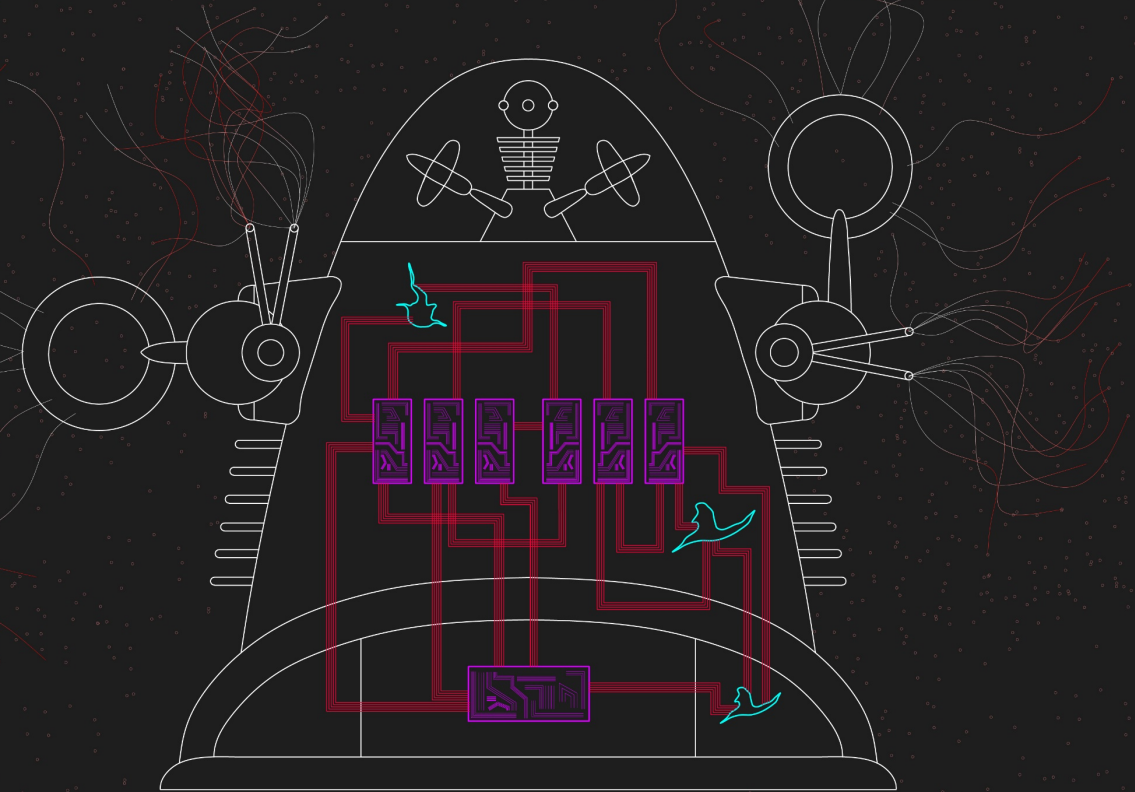
RATIONALIZATION : Externalization of mental routines

Subjects and cyber-subjects capture data, process it, and operate on the real world in an autonomous way.



EXPERIMENTATION

Subjects are efficient in exploring the unknown through their creative irrationality and in the resolution of complex problems, thanks to their critical thinking skills that generate a global vision.

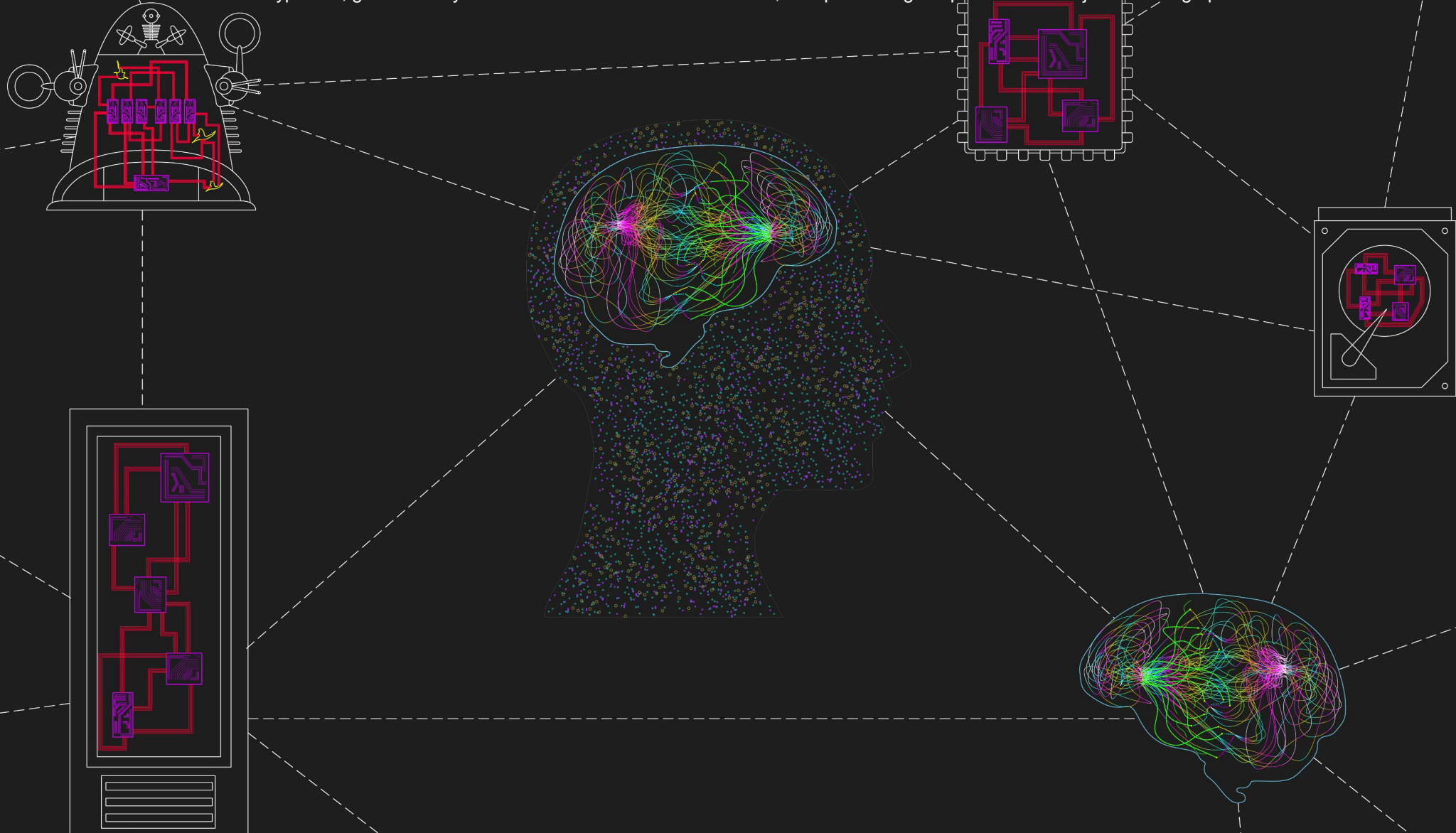


RATIONALIZATION

Cyber-subjects are efficient in task optimization thanks to their logical processes and their algorithmic procedural skills, they are also performant in the resolution of complex problems through their ability to handle a large quantity of resources.

DESIGNER, A NETWORKED BEING : Alliance or Duality?

The new types of , generated by the externalization of mental routines, are questioning the place of the subjects in design processes.



If subjects and cyber=subjects interact in architectural design processes, they can mutually relieve each other of the tasks which are not up to the potential of their cognitive abilities. As a consequence, one may raise the following question: "Did this alliance make humans more human by allowing them to develop what is more specifically human, such as his irrationality?"



laboratoire
Théorie des systèmes
en architecture

louis.roobaert@uclouvain.be

www.tsa-lab.be