

Trying to define Free Will : a cognitive and functional model proposal

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Introduction: This is not the Free Will you're looking for

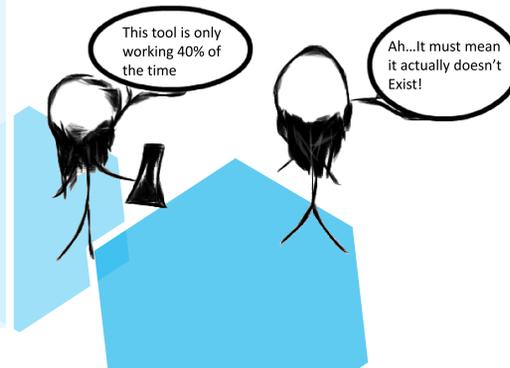
The debate about Free Will has been in the human mind for centuries, but has become even more intense with the recent scientific findings adding new lights on the problem. This interdisciplinary explosion of interest for the topic has brought many insightful knowledge, but also a great deal of epistemological problems. We think that those epistemological problems are deeply related to the very definition of Free Will and how this definition interacts with the interpretations of experimental results. We will thus outline a few of these problems and then propose a definition of Free Will which takes into account those epistemological pitfalls.

What is wrong between Free Will and Experimental Psychology

What is really tested when it's said that Free Will doesn't exist based on experimental psychology results :

- In all Libet-like experiments we are able to predict a certain number of conscious, free, decisions. For example, in the fMRI experiment of Bode & Al. (2011) they could predict 56% of the participants binary choices. Some authors (Harris, 2012) would use such results to say that Free Will cannot exist since we can predict conscious decision using unconscious correlates. We argue that this is a weak use of the data, but it brings interesting questions :

- 1) What do we do with the 44% of unpredicted choices ?
- 2) How does such a result allows to refute the existence of a phenomenon ?
- 3) If determinism was true, wouldn't we observe 100% of prediction ?
- 4) With such thinking couldn't we also invalidate determinism ?



Why do we only discover scientific data "against" the existence of Free Will ?

Arguments for Free Will : conscious processes have a potent effect in the causal chain leading to behavior
Arguments against Free Will : unconscious processes can be used to predict the behavior regardless of any conscious activity

- 1) Experimental procedures, thanks to EEG and fMRI, allow us to observe brain activities.
- 2) We cannot yet clearly separate unconscious from conscious activities
- 3) We cannot clearly « decode » brain activities, we can **only make inferences**
- 4) **We will never observe conscious processes happening without unconscious processes**

What does that tell us ?

As long as we cannot decode brain activity and differentiate unconscious from conscious processes we will never observe a behavior that isn't preceded by some kind of unconscious activity that could be interpreted against Free Will. Right now, **we cannot experimentally generate data in favor of Free Will.**

What can we do with Free Will then ?

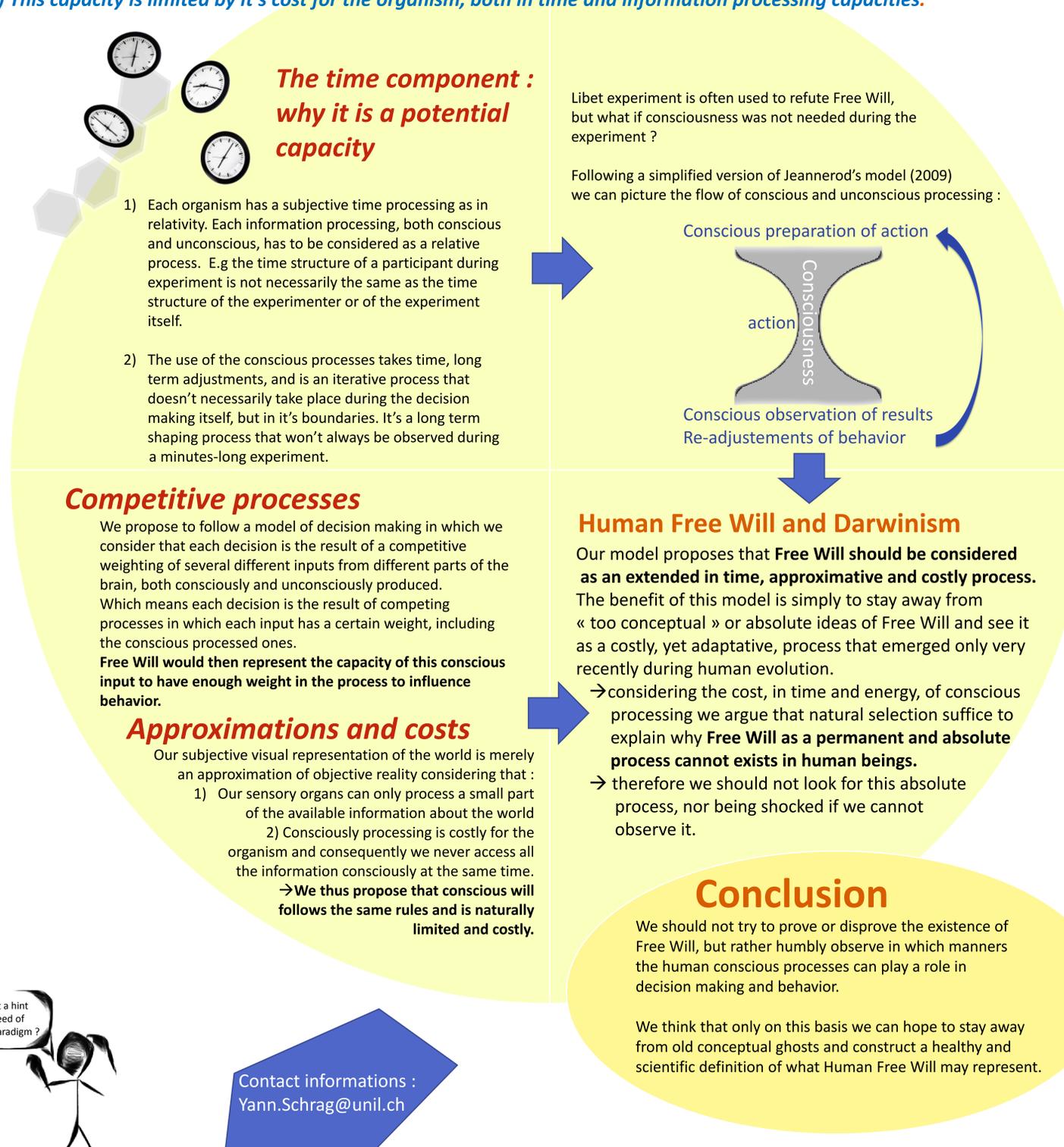
- 1) Psychological experiments **never** explain (yet?) 100% of the cause of a behavior, only a small part of the variance, each time we do an experiment, we chose to observe 1 or 2 of the hundred of the variables that lead to a behavior.
- 2) Free Will is a hypothesis, which is only supported by :
 - a) The shared feeling of most humans to experience some degree of freedom in their actions
 - b) Our inability to predict human behavior with 100% of success rate.
- 3) The very sense of science is to predict behavior of different variables. In opposition, by essence the idea of Free Will is that some events are unpredictable.
→ The methodological tools at our disposal only can detect predictable events by nature.
Free Will is simply « unsolvable » within the current scientific dominant paradigm.

We can thus adopt two positions toward Free Will :

- 1) Reject the hypothesis because it will never ever fit in the current paradigm.
- 2) Take it as a hint that the current paradigm is not sufficient to explain all the events of this world.

Free Will : the potential capacity of an organism to use consciously processed information to influence it's own behavior.

- 1) **This capacity is relative to the organism subjective approximation of informations about the world and itself.**
- 2) **This capacity is relative to the time structure in which the organism apprehend the world**
- 3) **This capacity is limited by it's cost for the organism, both in time and information processing capacities.**

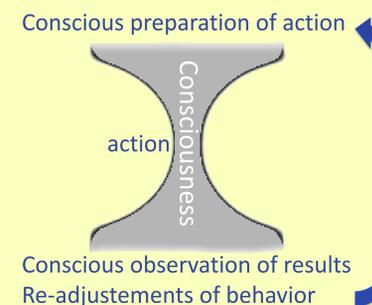


The time component : why it is a potential capacity

- 1) Each organism has a subjective time processing as in relativity. Each information processing, both conscious and unconscious, has to be considered as a relative process. E.g the time structure of a participant during experiment is not necessarily the same as the time structure of the experimenter or of the experiment itself.
- 2) The use of the conscious processes takes time, long term adjustments, and is an iterative process that doesn't necessarily take place during the decision making itself, but in it's boundaries. It's a long term shaping process that won't always be observed during a minutes-long experiment.

Libet experiment is often used to refute Free Will, but what if consciousness was not needed during the experiment ?

Following a simplified version of Jeannerod's model (2009) we can picture the flow of conscious and unconscious processing :



Competitive processes

We propose to follow a model of decision making in which we consider that each decision is the result of a competitive weighting of several different inputs from different parts of the brain, both consciously and unconsciously produced. Which means each decision is the result of competing processes in which each input has a certain weight, including the conscious processed ones.
Free Will would then represent the capacity of this conscious input to have enough weight in the process to influence behavior.

Approximations and costs

Our subjective visual representation of the world is merely an approximation of objective reality considering that :

- 1) Our sensory organs can only process a small part of the available information about the world
- 2) Consciously processing is costly for the organism and consequently we never access all the information consciously at the same time.

→ We thus propose that conscious will follows the same rules and is naturally limited and costly.

Human Free Will and Darwinism

Our model proposes that **Free Will should be considered as an extended in time, approximative and costly process.** The benefit of this model is simply to stay away from « too conceptual » or absolute ideas of Free Will and see it as a costly, yet adaptative, process that emerged only very recently during human evolution.

- considering the cost, in time and energy, of conscious processing we argue that natural selection suffice to explain why **Free Will as a permanent and absolute process cannot exists in human beings.**
- therefore we should not look for this absolute process, nor being shocked if we cannot observe it.

Conclusion

We should not try to prove or disprove the existence of Free Will, but rather humbly observe in which manners the human conscious processes can play a role in decision making and behavior.

We think that only on this basis we can hope to stay away from old conceptual ghosts and construct a healthy and scientific definition of what Human Free Will may represent.

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