

A Reason To Be Free

Operationalizing ‘Free Action’

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Abstract Recent Libet-style experiments are of limited relevance to the debate about free action and free will, and should be understood as investigations of arbitrary actions or guesses. In Libet-style experiments, the concept of ‘free action’ is commonly taken to refer to a ‘self-initiated voluntary act’, where the self prompts an action without being prompted. However, this idea is based on the problematic assumption that the conscious self needs to be free from every constraint in order to be actually free. We maintain that a fundamental condition for free action is the presence of reasons to act responsibly. By analyzing a recent neuroscientific experiment, we indicate how its results could be interpreted as indicating how free action operationalization is inappropriately focusing on arbitrary actions. Hence, the way free action has been experimentally studied may have had a misleading influence on the debate about free will.

Keywords Free will · Free action · Voluntary action · Libet · Free selection paradigm · Responsibility · Self generated action · Reasons · Cues · Self

Introduction

This paper claims that Libet-style experiments have relatively minor implications for the debate about freedom of

will because of their particular operationalization of free action. In the first part, we argue that acting for reasons presents more genuine and important cases of free action than arbitrary or random actions. We then discuss a recent experiment, where a typical Libet-style operationalization of free action is utilized, to show that its results can be interpreted either as an argument against freedom of will or as revealing the relatively minor importance of the adopted operationalization. We argue in favor of the latter interpretation by proposing a thought experiment that puts experimental operationalization in an ecological perspective.

Libet’s experimental paradigm [1] is widely accepted and used in successful recent experiments [2, 3]. It focuses on the observed correlations between an action, the conscious awareness of intending, and the neural preparation for action. Both the empirical methodology of Libet’s experiment [4, 5] and the theoretical basis of the study of neural correlates of voluntary action have been extensively discussed [6–8]. This paper falls within the theoretical track, discussing the interpretation and operationalization of ‘free action’ in Libet-style experiments. Specifically, we question whether what Libet et al. called a “self-initiated voluntary act” should be taken as a prototypical free action. We believe that the concept of freedom that underlies such definition can mislead the philosophical debate about the consequences of Libet-style experiments.

We suggest a pragmatic approach to free action that centers on the concept of responsibility and interprets freedom of will as coming from the presence of reasons to act responsibly. Then we analyze a recent neuroscientific experiment (Bode et al. 2013) that exemplifies

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the traditional –and still in use– operationalization of free action. By translating the conditions of Bode et al.'s experiment to an 'ecological' context, we aim to illustrate why this operationalization constitutes arbitrary or random action, and does not present the most important kind of free action to be studied for the debate about free will.

Background: Action Distinctions, from Reactions to Freedom

We agree with the recent literature [9, 10] that actions can be distinguished according to their cues. A cue¹ is the condition that prompts or triggers an action, and it can be either external (e.g. a flashing light) or internal (e.g. remembering something). Accordingly, an action might be categorized as either 'externally-generated' or 'self-generated'.²

Self-generated action tends to be understood and defined in slightly different ways in the literature. In an experimental context, small differences in the definition can lead to significantly different operationalizations. Schüür and Haggard [10] indicate that first of all there can be self-generated actions that are.

not triggered by immediate external inputs but by identifiable and experimentally manipulated internal inputs (cues) such as memory traces, elapsed time intervals, previous actions, or (a change in) behavioral goals. [10].

These cues are well defined and can be manipulated by the experimenters (for an extensive list see [9] pg.18). Secondly, there are actions that are characterized by the absence of specification by inputs. This way of conceiving self-generated action is justified by the attempt to avoid the action being triggered or prompted by cues that are not attributable to the subject's self, and

¹ Although the concept of "cue" is used often, its relationship with the concept of "cause" and "reason" is not completely clear. To our understanding, in the current context "cue" has an epistemic connotation, a cue provides information that is used (e.g. taken as a reason) for potential action.

² It has to be noticed that conceptual issues have been raised about the scientific validity of appealing to internal cues in general. An extensive review of the debate would be beyond the scope of this paper. Those interested in deepening this topic may check [7, 9, 11, 12].

figures prominently in the use of what is commonly called the free-selection task [13], often used by Libet and others (e.g. [2, 14]).

In free selection paradigms, all cues for action, both external and internal (here understood as conditions for action as specified by Passingham et al. 2010, p. 18) are removed. [...] In free selection paradigms, these internal cues are not only *not* experimentally manipulated or controlled for, in fact, they are *deliberately* left out of the experimental design. [...] The reasoning underlying free selection paradigms seems to be that if the degree of self-generatedness of an action is defined by the absence of specification by inputs, then free selection paradigms allow the study of self-generated actions in their 'purest' form [10]

Libet-style experiments indicate that the awareness of a decision to act is preceded by brain activity, such as a readiness potential. In such experiments the subjects are usually asked to lift a wrist or finger, letting "the urge to act appear on its own at any time without any pre-planning or concentration on when to act" [1]. 'Free action' is designed to be as cue-less and unconstrained as possible. However, this is a problematic way of considering free action as Nachev [11] notices:

when one makes the choice "free" one does not make it unconditioned. Something has to determine the subject's decision, by asking the subject to choose freely we are merely asking him not to give us an explicit criterion: in essence, to conceal (perhaps even from himself) the reason for his choice.

This is to say that actually freeing an action from any condition or influence may be hardly feasible. Even if all the cues were systematically ruled out, we might remain with hidden internal cues of which both experimenters and subjects are not aware. Indeed, the whole point of the experimental setup is to oust all potential factors that could provide reasons for, or influence in any way, the subject's urge or intention to act, so that there is just no way to retrieve any temporally antecedent condition, at any level, that could be used in an explanation of the mechanisms of action. However, it is not clear to us why such a type of self-generated action is considered to be so prominent for the debate about free will. In essence it presents deliberate refrain

of experimental control [7]. Moreover, this free-action paradigm seems to contemplate a *sui generis* self that ultimately cues the action [10]. Such a postulated entity comes close to possessing a metaphysical free will, prompting the action without being prompted. Its *autonomous* decisions are not depending on anything else than its own will. As Susan Wolf [15] explains in her book, this

idea of an autonomous agent appears to be the idea of a prime mover unmoved whose self can endlessly account for itself and for the behavior that it intentionally exhibits or allows. But this idea seems incoherent or, at any rate, logically impossible.

We suggest that this type of free action, defined according to the absence of cues, does little justice to the common sense practice of holding people responsible for their freely willed actions that consists in asking explanations and justifications from the actor. It is remarkable that most empirical research has focused on experimental setups that make any answers to the 'Why did you do it?' question as impossible as possible. Why aim to set up conditions such that the only possible answer would be the *sui generis* explanation 'because I felt like it'? Any follow-up question, such as 'Why did you feel like it?' would have to be answered by 'I do not know'. In the remainder, we will discuss this in more detail and suggest that a more relevant operationalization of free action should not only admit, but actually require, the presence of cues.

Freedom Worth Wanting

An alternative to setting up experimental conditions conducive to the investigation of completely cue-less, unconstrained, self-generated actions is the investigation of free action in the context of the attribution of responsibility. From this 'pragmatic' perspective, cues make the attribution of responsibility possible by prompting action, e.g. by constituting or providing reasons for it. Of course some cues are more prototypical cases of being or providing a *reason* (e.g. an alarm signal) than others (e.g. an elapsed amount of time [16]). But in general this reason-responsibility view contrasts with the current experimental Libet-style assumption that the more absent cues are, the less reason

for action there is, and the more free the action can be taken to be. It is not our aim here to provide a complete review of the different perspectives on the free will and responsibility relation, but we will give several quotes to provide some background.³

Galen Strawson once stated: "are we free? It depends on what you mean by 'free'" [17] p.1]. One may search for a freedom of will in natural attitudes towards each other [18], in a certain interpretative perspective towards an agent [19], in a volitional quality of one's real self [20], or in the psychological ability to act upon [15] or be sensitive to [21] reasons. Many of these proposed solutions rely on a less demanding, metaphysical, definition of freedom, and instead center on the action's practical consequences and the criteria for the attribution of responsibility. As Strawson says: "What freedom means here is nothing but the absence of certain conditions the presence of which would make moral condemnation or punishment inappropriate" [18]. Freedom allows the attribution of responsibility. For instance, according to Michael McKenna [22],

as a theory-neutral point of departure, free will can be defined as *the unique ability of persons to exercise control over their conduct in the fullest manner necessary for moral responsibility*.

O'Connor adds that,

most philosophers suppose that the concept of free will is very closely connected to the concept of moral responsibility. Acting with free will, on such views, is just to satisfy the metaphysical requirement on being responsible for one's action. [23].

Reasons, as noticed by Roskies, are an essential part of a widely shared concept of free action. Discussing the Libet paradigm, the author remarks that

the first reason we should worry about the choice of finger or wrist movements as a paradigm case of free will is that when we think about freedom, what we care about is that we are free to act for reasons, and for those reasons we judge to be salient and compelling. Freedom matters because

³ We do not wish to imply that the authors agree on all issues, rather to illustrate the various ways of emphasizing the relation between free will, free action and responsibility.

it is thought to ground moral responsibility, and the notion of holding someone morally responsible for an action that has no real consequence seems for the most part pointless. However, *when we generate actions spontaneously in the context of such an experiment, we do not act for reasons at all, save the reason of complying with the experimenter's demands.* (our italics) [24].

Roskies' criticism suggests that the free selection paradigm ignores an important component of free action, i.e. the reasons that prompt and potentially justify them. All the freedom we might need to be responsible for our actions could be, to quote Susan Wolf, just “a freedom *within* the world, not a freedom *from* it” [15]. Society is ultimately structured on such kinds of reason-based freedom.

Fortunately, some experimentalists within cognitive neuroscience are no stranger to this kind of approach. Some neuroscientists acknowledge that the existence of cues for action is not just compatible with, but also required for a proper understanding of free action. Bode et al., for instance, recently suggested that the empirical study of voluntary action should focus on the joint role of external and internal cues, instead of trying to get rid of them [25]. We will examine one of his recent experiments on free action [14] in order to illustrate our plea for a more pragmatic experimental approach to free action.

Bode et al.'s Experiment

Bode et al.'s [14] experimental paradigm operationalizes free action in a way that is consistent with the Libetian tradition (i.e. as a cue-less self-generated action). It consists of three tasks: all of them are about categorizing two different classes of objects under varying conditions. The first task is called “categorization under high visibility condition”. The subject has to indicate whether a clearly recognizable presented picture represents a piano or a chair. The second task is called “perceptual decision under low visibility”. It is the same task as the first one, but with scrambled and unrecognizable images. Actually, this condition is a zero information condition, as no information is present in the images shown, hence the subject has no other option than, in Bode's terminology, a “perceptual guess”. However, thanks to masking stimuli presented both before and after the image itself and a manipulation of the timings, the subjects report just having difficulties in perceiving the picture, but that they do perceive it. The

third categorization task is almost identical to the second one. This time, the subjects are instructed to ignore the visual stimuli presented, which again consist of scrambled pictures. They have to make a free decision and “*freely* express the first category that comes into their mind” among chairs and pianos.

What the authors found while analyzing the scanner's data “points toward a common mechanism for internal decisions when external input cannot be used to resolve a decision conflict” [14]. In a nutshell, they found that zero information decisions (task 2) and “free decisions” (task 3) share (at least some) neural substrates. This would allow to cross-predict the outcome of both tasks, i.e. one can tell what the outcome of the latter will be just by monitoring the very same brain areas involved in processing the former. Both conditions, as the experiment characterizes them, present cases of “Buridan's donkey” [14]; conditions in which there is no rational way to decide between two options.

Two different philosophical interpretations of these findings can be given. From the Libetian perspective one could focus on the implications of the existence of common brain processes prior to action in task 2 and 3, which may lead one to conclude negatively about the existence of freedom of will. From our perspective, the issue is rather that the Libetian tradition is inappropriately focusing on arbitrary actions as *the paradigm case* of a free action. Here is how the argument goes. Given the presence of common neural mechanisms between what is assumed to be arbitrary (what Bode refers to as ‘perceptual guesses’) in task 2, and a free choice in task 3, one may argue that what is happening in task 3 is actually akin to perhaps not the most important case of free action, namely an arbitrary action. Put differently, the experimental results could suggest that the kind of action that was taken to present a case of free will has little to do with (the possibility of) taking responsibility. In cases where there is no information to base one's decision to act on, it makes no sense to speak of a responsible action. The decisions made in the second and the third task share the same lack of information, they only differ in the subjects' awareness of not having that information.

To be sure, we are not saying that actions performed under *partial* uncertainty conditions have to be taken as random. Many reasonably defensible decisions are performed under a certain degree of uncertainty. Rather, we are suggesting that the label ‘free action’ may not be meaningfully applied to situations in which a person is absolutely clueless. This is not a problem with the

authors' empirical research; moreover, they are in line with a commonly shared definition of free action, based on the Libetian tradition. Rather, our claim is that this tradition may be misleading regarding free action, especially regarding its relevance for the philosophical debate on free will. Also, we point out that this empirical research can be valuably taken as showing how free action, as classically conceptualized, is closely entangled—both neurologically and conceptually—with that of an arbitrary action.

In the next section, we will offer a reinterpretation of Bode et al.'s experimental conditions in an ecological context, aiming to show how the commonly shared experimental approach to free actions is in fact counterintuitive and not of the greatest relevance for its philosophical interpretations. We will also show how Bode et al.'s empirical results, once translated into an ecological scenario, suggest the need of a terminological revision.

A Pragmatic Framework for Free Action

We suggest to challenge the importance granted to the type of free action is examined in experiments such as those of Libet and Bode et al. Specifically, we propose to consider an action important to the debate about free will first and foremost when it is undertaken in the presence of identifiable cues. The requirements for an action to be paradigmatically free might include pragmatic criteria involving reasons, responsibility and practical consequences.

To substantiate our suggestions, we will show that the traditional free selection paradigms' definition and operationalization of free action appears slightly counterintuitive when as-accurately-as-possible translated into a practical scenario. In fact, one of the reasons why free decisions are operationalized in the way that Libet and followers do, is because the experimental context is in a number of ways different from the real world. The action produced by the participant in the experiment is performed without any actual reason, neither internal nor external, except for the general one to comply with the experimenter's request, and regardless of the consequences (for there are none within the experiment). To be able to appreciate the possible differences between these two settings (the real and the experimental one), we made up a set of scenarios that 'ecologically' reproduce the conditions of Bode's experimental context we examined. Given our assumption that moral responsibility is important to the

notion of free action, we tried to stress it in our stories, which reproduce Bode's experimental conditions in an environment that presents additional elements such as reasons and consequences.

In our version of the task the experimental subject will be a nuclear technician. Furthermore, our subject does not need to simply classify an image, but needs to use the image to determine a certain step of a reaction process in a power plant. We assume that the difference between this task and a pure classification one is irrelevant to our point, as the decisional nature of the action based on the presented information is preserved. The monitor in front of our technician flashes due to a malfunctioning caused by an emergency situation, providing both masking stimuli and scrambled images, hence creating the same conditions of as of Bode's paradigm. The technician has to decide, according to the information displayed on the screen, whether to push a red or a green button. If the incorrect button is pressed, there will be a core meltdown. For the argument's sake, we will ignore the emotional component of this particular situation. Following are three stories, where each story corresponds to one task of Bode's experiment that was analyzed in the previous paragraph. Further below, we will comment and discuss them.

- (a) *Bode's externally cued decision under high visibility: the information is available and the technician is correctly aware of it.*

Although the control panel screen was almost gone, it was showing reasonably reliable information. Trying not to panic, the technician shut down the core and saved the city. Next day there were celebrations, and she was honored for taking a good decision that day at the power plant. Her colleagues and fellow citizens were proud of her, for she was responsible for saving their lives.

- (b) *Bode's unintentional internal decision, a.k.a. perceptual guess: no external information is available, but the technician still believes that an informed decision can be made.*

The technician looked at the screen and the image appeared to be distorted. Nevertheless, she seriously believed that what she could see was informative enough to make a responsible choice and push the right button with a degree of confidence. Unfortunately, the core melted down and an environmental disaster could not be avoided. However, she was able to survive, and blamed herself for her

wrong decision. Unexpectedly, a few months later, beneath the debris of the plant, someone retrieved a black-box, which showed that the information to be shown in the screen that fateful day was not available: the screen actually presented nothing useful to make the technician's decision easier. The mayor called her immediately and held a press conference to tell everyone that, although unaware of it, she was not in condition to decide, hence not responsible for what she did. Although she took herself to have reasons for her decision (and hence had them in a sense) these 'reasons' were not based on relevant information. Despite her conviction, she actually was cue-less and her decision arbitrary.

- (c) *Libet and Bode's intentional internal decision, a.k.a. free decision: the technician has no external cues to base her decision on and does not believe to have any.*

The screen was broken, the technician thought there were no options left but to push the button randomly, eventually saving the situation despite the fifty-fifty chance of success. It could have just been her lucky day, because she hit the right button, shutting down the core and saving many lives. However, she decided not to tell anybody about what happened, taking the honors without revealing the real fact that she was just lucky. As lies can get you nowhere, days after the fact, a colleague of hers checked the closed-circuit camera recordings containing clips about the day of the crisis. There she found that nothing actually showed up on the screen and that her supposedly heroic colleague had no elements to ground her decision on, yet she undeservedly took credit for what had happened. A press release revealed the fact and many blamed the boastful technician who claimed to be the responsible for that decision.

Our thought experiment is not designed to be a proof of anything. Rather, it is an intuition pump [26], and its function is to show how concepts like guesses and free decisions are used in everyday ethical practice. We introduced some elements in order to enrich Bode et al.'s experimental setting and make it ecologically valid. First, the scenarios present good *reasons* (cues) to act in a certain way, and our subject was or was not aware of them. Second, decisions lead to moral *consequences* for the subject. Third, there is a strong accent on *responsibility*, and its attribution is based on reasons why our subject acted in the way she did. By changing the criteria for free action in this way, we make room for more freedom

outside the narrow space of cue-less internal actions. Furthermore, it allows interpreting Bode's underdetermined internal decisions of task three as an arbitrary kind of action. As we can see, in these stories the sharp conceptual divisions characteristic of Bode's experimental context tend to fade away. For instance, let us examine the first case, in which our subject has all the information she needs to make a decision. She has reasons and clear cues to act the way she does. Is that decision free? On one hand, that decision is indeed free, for the subject is free to refrain from acting and might choose to avoid pushing *any* button, turn her back and run away. On the other hand, she is constrained by compelling reasons like the status of the external world (she might die together with many others) and the nature of her task, which is to shut down the core in order to avoid grave consequences. To achieve her goal, she is not free to decide *which button* to push or *whether* to push it. Yet, what really seems to make that action a free decision is not her being free or being free from constraints (cues, reasons...), but the fact that she correctly followed the available information. She made herself both responsible for what she did and willing to take the burden of her choice. Of course, despite the presence of external information constraining her potential range of choices, she could have made mistakes or have chosen differently, perhaps due to a wild dream of exterminating a population. Yet there were good reasons to choose one option over the other, and she can justify her choice adducing those evidences: this is exactly why this kind of decision entails freedom and responsibility as they seem to be commonly conceived.

The second scenario presents a subject that believes to be aware of the presented information, but who is actually cue-less. Is she responsible for her decision? We could argue, as before, that she is free to refrain from pushing the button at all, but given her task, she has compelling reasons to push it and at least *believes* to have the means to make a rational decision. Even though believing to have reasons provides one with reasons, those reasons would not be the ones relevant to the attribution of responsibility.⁴ In a way, one could

⁴ There is one potential confusion we would like to forestall here. One could still meaningfully attribute responsibility in this case in the following way: If one believes that X and therefore one does Y, that could be wrong (blameworthy) in the sense that never in the case of X one should do Y, regardless of whether or not X is actually the case. This, however, is a type of responsibility (what would you do if X applies) that we are not discussing here. We are addressing responsibility for action, not for hypothetical action.

compare this situation to a visually stimulated hallucination of the technician. Unaware of it being a hallucination, she responds to what she thinks were cues. Yet if there were no cues she could act upon, there was nothing she could do but guess, or, in our terminology, there was nothing left for her to do but acting arbitrarily. Having to act arbitrarily exempts one from the responsibility that normally accompanies decisions.

The third scenario is the one where the dissonance between experimental context and reality seems to be more tangible. Here our subject is aware that she has no reason to ground her choice and, given that there is no information available and it's worth giving a try, she decides to take a guess and randomly presses one of the two buttons. Again, we would say that she was free in choosing whether or not to push *any* button, and although she could have gone home, there were good and justifiable reasons (surviving is one of those) why she *decided* to intervene.⁵ Differently, when we come to the decision of *which button* to press, we may find it challenging to claim that this was a free decision in a relevant sense, for the action itself has very little to do with the subject's responsibility and her ability to decide. She guessed, because in order to be able to make a responsible decision she would have needed information that was completely absent. Arguably, her decision could have been made by tossing a coin.

In all, we believe that the reinterpretation that we suggested above portrays actions in a way that better reflects the customary connection between free action and the attribution of responsibility. Moreover, it may contribute to a change in the way free action is operationalized within experimental contexts, potentially leading to novel findings and/or interpretations of data.

Conclusions

In this paper we tried to show how different conceptual assumptions about freedom can lead to different interpretations of empirical data. The conceptual vocabulary underlying Libet's experiment, and regularly adopted by others does not seem to fit well with the notion of freedom as commonly endorsed in daily practice. We illustrated this by a thought experiment translating a scientific experiment to a real life context, indicating

⁵ In Bode's experiment, this freedom is represented by subjects' liberty not to comply with experimenters' requests.

how a certain experimental paradigm loses part of its appeal when it is translated into an ecological equivalent. Specifically, we hope to have indicated how the alternative view discussed in this paper may be relevant for the design as well as the interpretation of empirical research about free will and free action. Of course the examples presented here do not hold the strength of a logical argument. We are aware that there is still no full agreement in sight concerning the nature of free will, what its paradigmatic cases are, its relation to the attribution of freedom and responsibility, or even what free action and responsibility ultimately mean. Yet, since those concepts do not belong to the scientific domain any more than they do to the political and societal one, debating them is a concern of both the experimental sciences and humanities.

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