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Libet-like Experiments and the Efficacy of the Will

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Abstract Skepticism about free will is increasingly often associated with the results of some empirical tests – launched by Libet’s trailblazing experiments on the timing of conscious intentions – aiming to teach us that our apparently free choices are originated unconsciously. In the present paper, I present some theoretical reasons to doubt if the upshots of Libet-like experiments purport to the revolutionary consequences they envisage. I will isolate a couple of points I wish to discuss, since they gained much attention in the recent philosophical debate. First, I claim that actually available neuroscientific data do not offer a solution to the *traditional free will quarrel* in compatibilist or incompatibilist terms. Second, one might doubt if the kind of free will that is at stake in Libet-like experiments is what really matters for grounding our normative concepts. My conclusion will be that what is scrutinised in Libet-like experiments resembles palely the kind of free will we would like to enjoy.

KEYWORDS: Libet-like Experiments; Efficacy of the Will; Illusionism; Compatibilism / Incompatibilism; Control.

Riassunto *Esperimenti à la Libet ed efficacia della volontà* – Lo scetticismo sul libero arbitrio è sempre più spesso associato ai risultati di alcuni test empirici – inaugurati dai pionieristici esperimenti di Libet sulla tempistica delle intenzioni coscienti – il cui scopo consiste nel mostrare che scelte apparentemente libere hanno un’origine inconscia. L’articolo si propone di offrire alcune ragioni teoriche per dubitare che i risultati degli esperimenti à la Libet portino alle rivoluzionarie conseguenze che promettono. Discuterò di due questioni che hanno ricevuto particolare attenzione nel dibattito filosofico recente. In primo luogo, si sosterrà che i dati attualmente disponibili non consentono di formulare una soluzione del *tradizionale problema del libero arbitrio* in termini compatibilisti o incompatibilisti. In secondo luogo, si metterà in dubbio che il tipo di scelta libera che è in gioco negli esperimenti à la Libet abbia un ruolo nella costruzione dei concetti normativi. La conclusione consisterà nella tesi secondo cui l’oggetto di indagine degli esperimenti ispirati da Libet è solo lontanamente simile al tipo di libero arbitrio di cui vorremmo godere.

PAROLE CHIAVE: Esperimenti à la Libet; Efficacia della volontà; Illusionismo; Compatibilismo / Incompatibilismo; Controllo.



DURING THE LAST FEW DECADES, skeptical, eliminativist, and illusionist arguments have gained an increasing share of attention, being at center stage in the free will debate. Free will-related literature is a vast and entangled web: some of the more pressing anti-free will objec-

tions appear to be refinements of everlasting doubts, while others significantly depend on the state of the art in the empirical research. Indeed, one who is inclined to defend the idea that we are *free will-equipped* is confronted with several philosophical knots belonging to

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different domains, including metaphysics, epistemology, and empirical sciences broadly construed. These arguments differ both in their strategy – some are meant to be philosophical/a priori,¹ while others are empirical/a posteriori² –, and in the normative/practical consequences they are meant to bring about, which range from conservatism to radical eliminativism.

However, due to the astonishing results of the neuroscientific revolution, skepticism about free will is increasingly often associated with the results of some well-known empirical tests aiming to teach us that our apparently free choices are largely made unconsciously. In particular, a consistent number of studies about the functioning of brain mechanisms,³ following Benjamin Libet's trailblazing experiments on the timing of conscious intentions,⁴ have been often interpreted in the direction of a progressive reduction of the ability of the subject to exercise a conscious form of control over her actions, which would be rather governed by unconscious impulses and *unintelligent* automatic processes.⁵ Taking it to the extreme, according to how the results of some very recent experiments have been divulged to the wide public, free will might be reducible to something like *background noise in the brain*.⁶

Recent progresses in the experimental work promise to shine a light on the *closer-to-the-factual-truth* side of the issue, so that one might draw the bold conclusion that philosophy – stuck in a never ending debate that did not bring us any closer to an answer – should beat a retreat. A typical defensive reaction consists in making an appeal to the apparent transparency of the phenomenology of action in order to prove that conscious agency cannot be illusory – a move that Libet himself did not disdain.⁷ There are, nonetheless, some stronger theoretical reasons to doubt whether the upshots of Libet-like experiments purport to the revolutionary consequences they envisage. In the present paper, I will isolate a couple of points I wish to discuss, since they gained much attention in the recent philosophical debate.

First, less decisive perhaps, actually availa-

ble neuroscientific data do not offer a solution to what might be dubbed as the *traditional free will quarrel*, namely providing an answer to the *free will issue* in compatibilist or incompatibilist terms.

In paragraph 2, I will do a bit of rough framing, before discussing the role of philosophy in a field that is now increasingly tackled by empirical sciences. Second, and probably more important, one might doubt if – once it is granted that one cannot be a «complete instigator»⁸ of one's own actions – the kind of free will that is at stake in Libet-like experiments is what really matters for grounding our normative concepts.

The purpose of paragraph 3 – organized in a couple of subparagraphs – is to question the claim that, when real preferences are in place, the experimental results pertaining to the neuroscientific enterprise are able to prove the inefficacy of the will and of conscious mental states, allowing us to draw specific practical and normative conclusions.

It is instead far beyond the scope of the present paper to take a stance about the status of *free will* or *moral responsibility* and to opt for an account of them: when all is said and done, there could be both good a priori arguments for denying free will as we traditionally conceive it, and possible future new empirical discoveries leading to reject it. Another point that will not be specifically touched concerns the practical and normative consequences of the hypothetical debunking of our belief in free will and – consequently for some – in moral responsibility.

My conclusion is rather that what is scrutinised, and ultimately denied, in Libet-like experiments resembles palely the kind of free will we would like (or we need) to enjoy. To return to the theme with which we began, relegating philosophy to the dustbin of history might be (for the time being?) a too simplistic move.

■ Libet-like experiments and the traditional free will quarrel

The first point I wish to discuss concerns

the role of philosophy in the contemporary debate about free will. The traditional way to frame such philosophical debate consists in dividing the battlefield between two main duellists. Setting details aside, on the one hand one finds the family of compatibilist theories, sharing the thought that the truth of determinism is compatible with the existence of some kind of free will and/or the plausibility of moral responsibility attributions.

On the other side, (libertarian) incompatibilism contends that only where an indeterministic scenario is given one might act freely and responsibly. It is hard to find a univocal and satisfactory definition of “determinism” in the literature. What seems more similar to a standard characterization is that the truth of determinism entails that every event is causally necessitated by the antecedent events, so that the conjunction of the facts of the past and of the laws of nature makes just one future possible at any moment in time.⁹

The philosophical dilemma about free will consists essentially in an enquiry – taking a conditional form (“(even) if determinism / indeterminism is true, then...”) – about the compatibility between free will and the truth of determinism/indeterminism. A compatibilist theory’s *pars construens* usually consists in an attempt (“what if...?”) to define how one might be free and responsible if determinism obtains. (Libertarian) incompatibilism has the burden to show where and how indeterminism must show up in order for one to be free and responsible, and in which sense one is to be considered free and responsible if indeterminism is true.

Philosophy does not primarily have the task of demonstrating the causal structure of the world is deterministic or indeterministic, which is likely to be a scientific matter (not necessarily a neuroscientific one), and then to infer from this that we are or we are not free will-equipped.

To put it in other words, theoretical reflection has the option to begin with the acceptance of a factual truth (e.g. determinism is true, or the reverse) and then to draw nor-

mativ conclusions from it (e.g. if we are not free in an indeterministic sense, we cannot be morally responsible in a desert-based sense), but the scrutiny of the relevant factual truths *by themselves* is beyond the scope and the limits of the philosophical enterprise. Then, once a certain factual truth is (or seems to be) ascertained, there seems to be still a lot to do for philosophy. A primary question to ask might be, then, if Libet-like experiments give a solution to all the theoretical problems just sketched. The answer is likely to be negative.

Let’s take a step back and put some flesh on the bones. Libet’s main experiment featured a number of participants who were required to spontaneously flex their right wrist or the fingers of their right hands whenever they felt a wish or an urge to do so. Contemporary, participants were asked to watch a clock with a dot circling around it, checking the time when they decided to flex their wrist or their fingers. The electrical readings (EEGs) from the scalp indicated the presence of a *readiness potential* (RP) – a phenomenon originally reported by Hans Helmut Kornhuber and Lüder Deecke as *Bereitschaftspotential*, and indicating an activity in the motor cortex and in the supplementary motor area of the brain¹⁰ –, located 550 milliseconds (Type II) before the onset of the correspondent action, and 350 milliseconds before participants’ awareness of having made that decision.

The onset of the action was measured by an electromyogram (EMG), showing muscular motion to begin. Where the required action is pre-planned, the readiness potential (Type I) is located even earlier, approximately 1000 milliseconds before the motor activity was registered.¹¹ Libet concludes that

free will cannot be viewed as an initiator of such a freely voluntary process. We clearly found that the initiation of the preparation to culminate in a freely voluntary movement arises unconsciously in the brain, preceding the conscious awareness of wanting or intending to “act now” by about 400 msec or more.¹²

Through a number of subsequent experiments, Libet put much effort in the attempt to prove the existence of conscious volitional control – known as “conscious veto” or “free won’t”¹³ – as something operating at a later level either by «permitting or triggering the final motor outcome of the unconsciously initiated process or by vetoing the progression to actual motor activation».¹⁴

Needless to say, also the process of vetoing might originate unconsciously.¹⁵ During the last few years, more sophisticated experiments conducted with fMRI scanners¹⁶ or implanted electrodes¹⁷ have substantially confirmed Libet’s results, in some cases also shockingly shifting the beginning of brain activity up to 10 seconds before the subject’s awareness starts.¹⁸

Critics have often pointed the finger at some false steps and misinterpretations of the scientific data. However, let’s take for granted that Libet-like experiments are able to effectively prove that conscious decisions are initiated by unconscious activity in the brain. The question I wish to address here is if what we can learn from these empirical tests does help to solve the *free will quarrel* – which originally was, keep it in mind, an issue about the compatibility between our having free will and a certain metaphysical scenario –, allowing us to isolate the most plausible view about free will, and to decide between compatibilism and incompatibilism.

The results of Libet-like experiments have been often interpreted as a good ally for the *illusionist* views on free will and/or moral responsibility, namely the theses according to which free will and/or moral responsibility are just subjective illusions.

It seems worth noting that the greatest part of the anti-free will philosophical arguments – from Galen Strawson’s *Basic Argument*¹⁹ to Derk Pereboom’s *Four-stage Argument*²⁰ – appeal to the hypothetical truth of determinism or indeterminism, ultimately drawing an incompatibilist moral, in order to deny the possibility of free will and moral responsibility or the compatibility between free will and determinism/indeterminism. In-

deed, the theoretical basis of such arguments consists in the assumption of a given metaphysical scenario (in which determinism or indeterminism obtain), from which some skeptical, reductivist, or eliminativist conclusions are gathered. If one wishes to begin with neuroscientific data, and then proceeds inferring some conceptual truth about free will and moral responsibility, the road must be different.

Here, determinism or indeterminism cannot be assumed from the start – as anti-free will *a priori* arguments usually do –, but must be rather inferred from the observation of the empirical data. Yet, it is not to be taken for granted which metaphysical interpretation is supported by the available data. Indeed, it is far from being clear if a choice-making process characterized merely by the absence of a role for conscious will at the onset might be counted as a deterministic causal process. In the social-cognitive debate, automatism as absence of conscious deliberation at the level of mental and behavioural processes has been often paired to determinism *tout court*.²¹ This might have favoured an interpretation of neuroscientific results according to which the attack to free will they launch is of a deterministic nature. If this is the case, the anti-free will thinker would say that we are not free will-equipped because our choices are determined by some previous factors, which seems to be proven by Libet’s results.

Libertarians deny that it could ultimately work, but compatibilism teaches us that there is some sense in which we might act freely and responsibly even if our actions are determined by some previous factors. If this is the right interpretation of Libet-inspired results, they rather seem to constitute some empirical evidence that compatibilism might potentially recruit.

Once acknowledged that our free actions are generated by a chain of events that stretches backward in time, understanding how choice-making processes work in scientific terms does not necessarily threaten the belief in the causal efficacy of the will. Where

«reduction is just a matter of different terminology»,²² explaining the causal efficacy of the will is not necessarily meant to be a synonymous of annihilating it.

To sum up, given a conception of free will that does not require *ultimate control* – namely control over the determinants of our own actions –, our actions being determined by factors that are beyond our conscious control might *prima facie* fit a compatibilist view. However, claiming that Libet's results support a deterministic view of mental processes might turn out to be too precipitous, given that the makeup of our neurons is more ambiguous than our techniques are able to detect. Indeed, what can be inferred from the data is not that determinism is true, but simply that we can predict some future action detecting the unconscious brain activity some instants before the decision's awareness is developed.

As Adina Roskies claims, «predictability is at best a poor cousin»²³ – and not one of the most faithful – of determinism. What seems even more remarkable is that neuroscientific data are surprisingly compatible also with an indeterministic interpretation of mental processes.²⁴ Indeed, the accuracy of the predictions in Soon et al.'s experiment is around 60%, a result that might be derived both from the epistemic limitations of the present techniques (the rate goes up to 80%-90% using implanted electrodes detecting individual neurons instead of fMRI²⁵) and from the intrinsic structure of causal relations in the physical world.

So, Libet-like experiments do not offer a precise answer to the *free will quarrel* as it has been traditionally posed. Even though they might constitute an evidence against the picture of a free will-equipped agent as a completely self-originator, they do not allow deciding between compatibilism or incompatibilism and they do not offer solutions about how normative concepts are to be construed and applied, which remain a prerogative of theoretical reflection.

Nonetheless, there is an easy reply that

the Libet-like anti-free will thinker could offer. The dialectic could go as follows: Libet-like data might be not sufficiently clear for solving the dilemma between determinism and indeterminism, thus exhausting all the aspects of the traditional quarrel between compatibilists and incompatibilists.²⁶ Fair enough: philosophy could still play a role in defining what conceptions of “moral responsibility”, “punishability”, etc. are compatible with our view of the world, or with a naturalistic picture of the mind. However, this might be left to philosophical ruminations and anxieties.

What really matters is that, given that our decisions are originated unconsciously, free will is just illusory, no matter if the connection between the early stages of the decisional process and the subsequent decision is to be understood in deterministic or indeterministic terms. This is a scenario in which even a compatibilist might not feel at ease. However, if this is the case, a compatibilist/incompatibilist free-will defender could still claim that it is the anti-free will thinker who shoulders the burden of proof. Indeed, without relying on determinism or indeterminism, Libet's skeptic/illusionist sympathizer must prove that our choices are not free because they are originated unconsciously. It is a task for the next paragraph to address this issue.

■ The role of conscious will

Even though the interpretations of Libet-inspired experimental data leave us undecided about the kind of causal connection between a decision and its unconscious antecedents, it seems that the challenge nowadays posed by cognitive neurosciences is located at a different, maybe deeper, level, concerning the real nature of our choices. Indeed,

a free will process implies one could be held consciously responsible for one's choice to act or not to act. We do not hold people responsible for actions performed

unconsciously, without the possibility of conscious control.²⁷

If one is willing to conclude that we are not free will-equipped, she must also claim that, if our choices have unconscious preparatory antecedents, they are not freely made:

it is a suppressed premise that conscious intention must somehow govern free action, and if we do not consciously initiate or control our actions, they are not freely willed.²⁸

Before leaving in the background what we dubbed as the *free will quarrel*, it seems worth noting that there is a difference between neuroscientific-inspired illusionism and the traditional debate about determinism. Indeed, deterministic causation by itself might not jeopardize our acting freely as long as our actions appear to be the natural outcomes of the mental states we endorse and/or we are able to exercise practical reasoning of some sort. The specific nature of the relationship between mental states and physical states/processes might be characterized according to (not so) many options: “supervenience, emergence, realization, reduction”, quoting one of Kim’s contributions on the metaphysics of causation.²⁹

Needless to say, a lot of work is still to be done in order to explain how conscious mental events and the physical processes underlying the various phases of choice-making processes are related. Since one might easily doubt that we could be morally responsible if our mental states are not causally relevant, the theme of mental causation is likely to be the central one in future discussions about free will.

This must be obviously an issue for those who do not want to reject a naturalistic picture of the mind, but neither compatibilism nor incompatibilism have usually denied the role of conscious mental states in the occurrence of the correspondent actions. Since conscious mental states – as they have been

understood by folk intuitions – figure prominently in our moral psychology, dismissing them as illusory is likely to have a huge impact, potentially more disruptive than that of traditional skeptical worries, on our philosophical beliefs about many moral issues, including moral responsibility attributions.

The question I wish to address is, then, if neuroscientific results are sufficient to show that we are not free will-equipped *because* our conscious mental states do not carry out any causal role in the early stages of the choice-making process – whichever specific connection between mental and physical states one is willing to grant.³⁰ I argue that such a conclusion is unwarranted.

Setting aside methodological and empirical knots – e.g. lack of accuracy in the time estimation,³¹ individuation of the correlation between mental and physical processes³² –, I will mostly rely on two conceptual points. First, the nature of the relationship that links the early stages of the choice-making process, the development of the agent’s awareness, and the subsequent action appears to be unclear. Second, the generalization from the kind of decisions made by the participants in Libet-like experiments to choices made in other contexts might be groundless. These points are the subjects of the next two subparagraphs.

■ The nature of choice-making processes

In order to show that a decision is not freely made, a supporter of Libet must claim that the unconscious beginning of that choice is sufficient to make it unfree. The claim contains an implicit characterization of free will as consciousness/awareness of choosing to make a movement.³³ It is generally accepted that, for one to act freely, one must be able, at a certain time *t*, to consciously consider the reasons from which the action derives. However, it is not clear if consciousness must be located at the very beginning of the process ultimately causing a certain action to occur.

The tendency to support this view is rout-

ed in the representation of conscious will as the causal link between conscious mental states and the correspondent action. A typical move – suggested by Libet himself with his vetoing experiment³⁴ – would consist in claiming that free will, if it exists, must be localized at a different level (e.g. the ability to rationally assess the different reasons for action). This is why many philosophers do not engage at all with neuroscientists, claiming that the latter do not have a real grasp on the concepts that really matter. Furthermore, many free will defenders are at ease with a materialistic conception of the mind, so that it is not to be taken for granted that explaining the physical processes underlying mental events should count against our having free will.

However, if it is the case that a lack of consciousness at an early stage of the choice-making process undermines the relevant kind of *control* and *autonomy* we need for being morally responsible,³⁵ then dismissing neuroscientific results as irrelevant might turn out to be unwarranted. Indeed, this must be a problem also for compatibilist thinkers, in particular for those who claim that, no matter if determinism is true, we are free and/or morally responsible insofar as we are significantly in control of our actions and/or we are autonomous decision-makers.

There are no uncontroversial, univocal concepts of “control” and “autonomy” to be found in the literature. Specifying how one might be in control of one’s own action or how one satisfies the condition of autonomy is a problem that typically lies at the core of some of the most attractive contemporary theories of free will and moral responsibility. Even just considering the compatibilist field, these basic ideas can be cashed out in many different ways. John Martin Fischer and Mark Ravizza have contended that one might be morally responsible for one’s own action if one possesses what they dub as “guidance control”. One possesses moral responsibility-relevant guidance control if one is the owner of the mechanism of choice from which the action flows, and if one is

able to respond appropriately to (at least) some reasons for action.³⁶ Alfred Mele claims that the “psychological autonomy” relevant for moral responsibility is guaranteed if the following three (sufficient) compatibilist conditions are jointly satisfied:

- (1) The agent has no compelled motivational states, nor any coercively produced motivational states;
- (2) The agent’s beliefs are conducive to informed deliberation about all matters that concern him;
- (3) The agent is a reliable deliberator.³⁷

One might argue that – if neuroscientific results prove to be able to show that we lack relevant kind of control on our actions – at least control-based accounts of moral responsibility could be undermined. However, this seems to be contentious for a number of reasons. The crucial point is that being sufficiently in control of my future action does not necessarily coincide with my being in control of all the factors that causally contribute to the occurrence of that action. Hence, one way to proceed consists in asking if what is absent in Libet-like scenarios is the kind of control relevant for moral responsibility.

Trying to dismiss the belief that neuroscientific results succeed in undermining the role of conscious will in the production of one’s actions, Mele invites Libet’s supporters to carefully distinguish between activities such as intending, deciding or being in a certain motivational state, like a desire or an urge.³⁸

The relationship between those motives and being in a subjective state of awareness is much more complex than it is usually exemplified in the interpretation of neuroscientific data. In particular, it is not clear if – for an action to be free –, consciousness as “awareness of one’s own intentions or urges”³⁹ must figure among the factors that causally contribute to the occurrence of the very same action. This seems to be relevant since, in Libet-like experiments, the (time of) subjects’ awareness plays a decisive role. Indeed, the

conclusion of the experiments is that the patient is not freely deciding because she is too late aware of having a desire/urge to do a certain action.

First, it is questionable if every free-willed action is the product of a desire we are aware of. Needless to say, we perform many actions we did not give a conscious assent to. Just for typing a single meaningful sentence on my keyboard (consider “All work and no play makes Jack a dull boy”), I have to quickly press a number of letters, which ultimately form single words and a whole sentence. If I voluntarily type the sentence on my keyboard, my desire to write every single letter of the sentence “All work and no play makes Jack a dull boy” is to be included in the list of the causes of my typing the correspondent letters on my keyboard. However, it is not so clear if my awareness of my desire of wanting – what Roskies calls a «meta-state, consciousness of conscious intent»⁴⁰ – to type the sentence plays any causal role in the occurrence of the correspondent action.

In other words – granted that the desire/urge to raise the right wrist at a time t must have an identifiable causal role in the production of the subsequent action –, it is not clear which is the causal role that this kind of awareness must accomplish in order for the subsequent action to be freely made. Consider also actions that are performed routinely – such as moving our legs in a certain way to walk without losing balance –, where a conscious decisional process is not always involved, but the action appears to be still freely performed.⁴¹ Sometimes we also do things that happen so instantaneously that we do not have the time to be involved in a proper choice-making process we can be aware of.

We could sum up by saying that, similarly to what *confabulation* theorists often contend,⁴² introspection is not such a trustworthy guide for what is happening inside the box. Obviously, awareness – as *self-reflection* – of my own intentions might play a causal role insofar as my being aware of my own de-

sires modifies my future conduct. For example, my being aware of having an excessive craving for chocolate might be among the causal factors that push me to avoid walking too close to pastry shops. Indeed, awareness as self-reflection plays a relevant role in many popular theories of moral responsibility. Though maybe absent in the early phases of a decisional process, it is obviously part of what grounds morally responsible actions: in a case in which one lacks the ability for self-reflection, agency itself appears to be imperilled. However, this is different from claiming that the awareness of an urge must be among the causes of any action we freely perform. What is more is that, in the ordinary usage of the term, awareness of an intention is something that follows and not something that precedes the intention formation.⁴³ I wish to write the sentence “All work and no play makes Jack a dull boy” on my keyboard and then I am *a posteriori* aware of my wish. It is not clear how the reverse might be possible.

Nonetheless, there is a stronger way to put the issue, which might be not so easy to dismiss. Saying that consciousness of a decision, where reduced to a biochemical afterthought, does not play a role in the production of the subsequent action might signify that conscious will and conscious mental states are just *bypassed* by unconscious stimuli, something that determinism does not necessarily imply by itself.⁴⁴ If this is the case, the agent may be assimilated to a “spectator” of what is happening to her own mental life. Following this line, psychologist Daniel Wegner has questioned if intentions might be located among the causes of the correspondent conscious actions. If a thought is not the causal antecedent of the correspondent movement (and it is not consistent with the correspondent movement), free will and also voluntary agency turn out to be illusory.⁴⁵ No matter my subjective perception of voluntariness, there is no voluntary action at all. One might object that this picture of one’s mental life heavily depends on a hackneyed representation of the relationship be-

tween mind and body,⁴⁶ where free will is to be seen as a force generating a movement.

Nonetheless, if one proves able to demonstrate that unconscious RP is all that is required for a certain outcome to occur, free will thinkers are likely to have a hard time. Luckily for them, this is not a given truth.⁴⁷ Elisabeth Pacherie has argued that even simple decision-making scenarios, like the ones characterizing Libet's experiments, are multi-step processes, involving different conscious mental activities that should coordinate for the relevant action to occur.⁴⁸ Mele stresses how the conscious feeling of having an urge/desire to move is among the causes that produce the subsequent outcome, since the subjects involved in the experiments are required to wait until they experience an urge to flex and then to flex their wrist in response to the correspondent feeling.⁴⁹

At this point, a Libet supporter might reply that, even though the initial trigger is not all there is, still the unconscious origin of one's decision is something that undermines free will as we conceive it. I will try to say something about this issue in the next subparagraph.

■ Neuroscientific data and real decisions

In Libet's experiments, participants are asked to flex their wrist at the time of their choosing. They are instructed to spontaneously give an answer to an urge they are required to experience. In Soon et al.'s more recent version of the experiment, participants are asked to complete a slightly more complex task. Whenever they feel the urge to do so, they have to choose between two different buttons, each of them operated by their left or right index fingers, and then to press the one they choose immediately after deciding. There is some sense in which, obviously, the participants are making a free choice. Ironically, a typical way to illustrate what our being free will-equipped implies consists in asking the interlocutors to raise one of their hands or fingers at their wish, and

then in suggesting that one is able to freely decide what to do. However, it might be possible that the choice the participants are required to make in Libet-like scenarios do not shed (so much) light on the free will problem. Here, two basic points seem to be relevant.

First, the kind of choices that are tested in Libet-like experiments are guided solely by *proximal* intentions, involving what the agent decides to do immediately after being settled about a particular course of action. The free will defender may claim that it is doubtful if the same model could be applied to *distal* intentions and planned actions – whose connection with short-term intentions is still to be explored –, where rational reflection has much weight, or where the decision-maker is not previously instructed to make a definite decision at a time. This is a case of what Michael Bratman defines as *future-directed intentions*, representing a distinguishing element of our acting over time.⁵⁰ With long-term affairs, once I am settled about a certain future plan (*goal intention*), I form *implementation intentions*⁵¹ regarding when, where, and how I will perform the correspondent action. For example, if in January I start thinking that it would be an amazing idea to spend the summer at the Overlook Hotel, and I suddenly proceed to the evaluation of several pros and cons, it is hard to see how conscious mental states (or the mental states I am aware of) might be excluded from the set of causes leading to my final decision.

Obviously, my mental states being relevant is not enough for saving free will and moral responsibility as we traditionally conceive them. If it is the case that my final decision turns out to be the result of a purely deterministic process – so that, for example, I could not have had mental states different from those that I had –, one might still plausibly contend that my choice was not freely made or that I am not accountable for choosing such a dangerous location for my exciting summer. But, without invoking determinism from the start and granted that neuroscientific data are reliable, the only proven thing is

that I started being aware of some very basic factors contributing to my final choice after they started playing a role in the production of the subsequent action.

A reductivist, claiming that all mental events are reducible to physical states, might still draw the conclusion that, since all the events are ultimately physical, there is no room for free will as we traditionally think of it. However, as mentioned before, the truth of reductivism does not seem to be clearly entailed by neuroscientific results.⁵² The one just made is a point about the temporal link between the development of a certain set of intentions/desires/urges and the occurrence of the correspondent action.

A second point, concerning the nature of the decisions made in Libet-like experiments, is related to their contents. As many have noticed, in Libet-like experiments, participants are required to give their assent to something for which they do not have a real preference.⁵³ They may have to decide between pressing the right or the left button, knowing that no relevant consequences will derive from their choice. Consider, instead, if they were required to decide between the right and the left button, both having some relevant consequences. For example, they know that, pressing the right button, they cause a fat man to fall from the train saving the group of people on the track while, pressing the left button, they will protect the fat man and sacrifice the group of people on the track. Given that they are allowed to take their time to decide (no rush in this version of the trolley problem!), they would probably decide to take into account different relevant factors, including, probably, their ethical considerations and preferences, or the particular reasons that are in place in the context of choice.

Again, if the scenario is deterministic, one might contend that the participants will ultimately decide what they are deterministically caused to decide, so that they cannot be held fairly accountable for their choice of sacrificing/saving the fat man. However, in the absence of a deterministic premise, saying that

the initial trigger of such a complex decision was unconscious seems to be a too tiny basis for undermining the belief that the choice, whichever it is, is made freely and responsibly.

It remains still possible that Libet-like experiments prove able to show that the so-called *liberty of indifference* (consider the paradox of *Buridan's ass*) is just illusory, because it turns out to be false that we just consciously freely decide what to do when no effective preferences are implied. When one is rationally undecided between two or more options, it might be possible that unconscious factors play a leading role. There are, nonetheless, other cases in which one might have the impression of “just deciding”, without giving her rational assent to any of the options. For example, it might be the case that neuroscientific data have something to say about what Mark Balaguer dubs as “torn decisions”. A *torn decision* is a decision in which the agent

(a) has reasons for two or more options and feels torn as to which set of reasons is stronger, that is, has no conscious belief as to which option is best, given her reasons; and that (b) decides without resolving the conflict – that is, the person has the experience of “just choosing”.⁵⁴

The example made by Balaguer is that of a man, Ralph, who is deliberating between two long-life decisions (a tranquil existence in Mayberry vs. an eventful life in New York), both of which having many pros and cons. Balaguer contends that, once Ralph ultimately gives his assent to one of the options (e.g. going to New York), this is not because he understood that the one he chose outweighs the other, but simply because <he *just decided to go*>.⁵⁵ In Balaguer's libertarian event-causal view, adequately non-random torn decisions are the sign of our having free will.

Here, a Libet supporter may object that, in a case in which one set of reasons does not clearly outweigh the other, and one gets the impression of “just deciding”, the decision is

simply determined by unconscious antecedents. Then, it seems that even big or long-life decisions – when there are, indeed, relevant differences between two opposing options –, might be ultimately produced by unconscious antecedents. One way to reply might be this: in a case in which there are relevant differences between rival options, the simple fact that one gets the impression that she has no preferences between the two does not prove that one does not have any effective (namely, able to affect the choice) preference between the two. For example, one might say that Ralph ultimately decides to go to New York because he is the kind of man that, at that time in his life, would prefer to follow his career ambitions in New York rather than to live a tranquil life in Mayberry, even though he does not consciously recognize which set of reasons is stronger.

It is plausible to admit that big decisions in life are strongly oriented by not fully rationalized motives (e.g. the kind of persons we are), or by more contingent factors that are not completely acknowledged (e.g. our present mood), but this is not a proof that these choices are made unconsciously as long as part of the choice-making process consists in rationally assessing the different reasons we have. In other words, it is possible that the motives we have orient us far beyond our conscious ability to understand their effect over our subsequent conduct: one might be acting freely also if she is not totally aware of the weight the single motives have on the balance of her own mental life. If Ralph consciously realizes the unlikelihood of him fulfilling his dreams as a football player in New York, this simple realization would probably have relevant consequences on his subsequent choices.

To sum up, recognizing that our choices are partially made unconsciously does not bring us, *by itself* (e.g. in the absence of a deterministic scenario), to conclude that they are made unfreely.⁵⁶

Nonetheless, there might be some side effects we have not considered yet.

Conclusion: Striving for balance

In the previous paragraph, we tended to dismiss the claim that self-awareness is a reliable guide for identifying freely chosen courses of action. There are many ways to undermine the relationship between self-awareness and agency. One might appeal to the *naiveté* of folk psychology or, as we already did, to the Spinozian theme of the *opacity* of introspection,⁵⁷ to sustain that we are likely to be (systematically?) mistaken about the sources of our mental states, and that we tend to produce *ex post* explanations of our choices on the basis of the environment. On a similar vein, social psychologists have stressed that many alleged fully self-directed acts are determined or strongly oriented by apparently extraneous factors, implicit prejudices, or psychological biases we are not aware of – and that we would probably reject as motivating causes of our conscious behaviour.⁵⁸

Progressively subtracting a role to self-awareness might boomerang on some of the most promising theories of agency and moral responsibility, which are deeply grounded on the subject's ability to implement the mental states she identifies with and she is aware of – well-known examples are the theories of agency and responsibility provided by Harry Frankfurt, Gary Watson, and Michael Bratman.⁵⁹ In particular – a point that is made by John Doris⁶⁰ –, if the ability to implement one's own set of mental states is part of what makes us morally responsible, then the acknowledgement of our impoverished self-awareness might play a significant role in undermining our trust in strong accountability and in full-fledged agency. It might be the case that, for any single instance of agency, an explanation that does not make any reference to self-direction is the right one. Once this possibility is granted, skepticism inevitably looms.

Generally speaking, the empirical lines of evidence sketched in the present paper tend to increase the level of our skepticism, leading us to entertain the plausible belief that

complete authorship and self-direction are to be considered the illusory results of an inflated and unrealistic conception of agency. It might be even possible that, in the future, neuroscientific data will allow the falsification of the deterministic or indeterministic hypothesis about how our brain mechanisms work. However, it remains questionable if this result might be grounded in the neuroscientific data we actually have.

Even conceding that neuroscientific data are not referred only to very simple desires and urges, they may cast some light exclusively on the embryonic stages of choice-making processes. It seems hard to warrant the conclusion that the identification and subsequent implementation of one's mental states cannot be a good basis for a theory of free will and moral responsibility. However – if the connection between brain events and conscious behaviour is to be understood as something like a causal relationship –, nothing excludes that, in the next few years, much more complex studies will be able to map the physical processes underlying conscious intentions and subsequent actions. For example, as suggested by Roskies, some recent experimental work on the neural basis of decision-making in Rhesus macaques⁶¹ is likely to better elucidate which processes in the nervous system represent propositional content:

Once we can conceive of the neural representation of abstract propositions, it is but a small step to think of them as representing reasons or considerations for action, and their relative firing rates as reflecting the weight given to reasons for decision or action.⁶²

If also human decision-making is to be thought in these terms, we might question popular theories of free will and moral responsibility relying on our ability to assess different reasons for action. Quoting Neil Levy, it is even possible that the philosophers who criticize Libet and Wegner «have won this battle», but «will lose the war: con-

sciousness does not, in fact, play the kind of role in action that Libet and Wegner believe to be required in order for us to be morally responsible».⁶³

For now, a full understanding of how choice-making processes work remains an elusive task – and a task that requires a scientific, and not merely a philosophical, approach. To conclude, my inclination is to agree with those that have argued that the Libet-like line of research easily goes wrong if it claims to have already given an answer to the core philosophical problems concerning how free will, moral responsibility and agency must be unfolded. Needless to say, a quick dismissal is also to be considered undesirable. To emphasize the belief that free will is not something that could be simply discovered or revealed is compatible with the idea that we will especially owe to experimental data if, in the next future, we are likely to know more and more about the mechanisms that regulate our decision-making processes.

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Notes

¹ Examples include the following: S. SMILANSKY, *Free Will and Illusion*, Oxford University Press, New York 2000; B.N. WALLER, *Against Moral Responsibility*, MIT Press, Cambridge (MA) 2011;

D. PEREBOOM, *Living without Free Will*, Cambridge University Press, Cambridge (MA) 2001; D. PEREBOOM, *Free Will, Agency and Meaning in Life*, Oxford University Press, Oxford 2014; G. STRAWSON, *Freedom and Belief*, Oxford University Press, Oxford 1986; R. DOUBLE, *The Non-Reality of Free Will*, Oxford University Press, Oxford 1991.

² Examples include the following: N. LEVY, *Neuroethics*, Cambridge University Press, Cambridge 2007; S. SPENCE, *Free Will in the Light of Neuropsychiatry*, in: «Philosophy, Psychiatry and Psychology», vol. III, n. 2, 1996, pp. 75-90; S. POCKETT, *Does Consciousness Cause Behaviour?*, in: «Journal of Consciousness Studies», vol. XI, n. 2, 2004, pp. 23-40; O. FLANAGAN, *Neuroscience, Agency, the Meaning of Life*, in: O. FLANAGAN (ed.), *Self-Expressions: Mind, Morals, the Meaning of Life*, Oxford University Press, New York 1996, pp. 53-64; J. ZHU, *Locating Volition*, in: «Consciousness and Cognition», vol. XIII, n. 2, 2004, pp. 302-322; P. HAGGARD, B. LIBET, *Conscious Intention and Brain Activity*, in: «Journal of Consciousness Studies», vol. VIII, n. 11, 2001, pp. 47-63; M.S. GAZZANIGA, *Who's in Charge? Free Will and the Science of the Brain*, Ecco, New York 2012; M.S. GAZZANIGA, *The Ethical Brain*, Dana Press, New York 2005.

³ See C.S. SOON, M. BRASS, H.J. HEINZE, J.-D. HAYNES, *Unconscious Determinants of Free Decisions in the Human Brain*, in: «Nature Neuroscience», vol. XI, n. 5, 2008, pp. 543-545; C.S. SOON, A.H. HE, S. BODE, J.-D. HAYNES, *Predicting Free Choices for Abstract Intentions*, in: «Proceedings of the National Academy of Sciences USA», vol. CX, n. 5, 2013, pp. 6217-6222; W.P. BANKS, E.A. ISHAM, *We Infer Rather than Perceive the Moment we Decided to Act*, in: «Psychological Science», vol. XX, n. 1, 2009, pp. 17-21; P. HAGGARD, M. EIMER, *On the Relation Between Brain Potentials and the Awareness of Voluntary Movements*, in: «Experimental Brain Research», vol. CXXVI, n. 1, 1999, pp. 128-133; J.G. MILLER, J.A. TREVENA, *Cortical Movement Preparation and Conscious Decisions: Averaging Artifacts and Timing Biases*, in: «Consciousness and Cognition», vol. XI, n. 2, 2002, pp. 308-313; D. RIGONI, M. BRASS, G. SARTORI, *Post-Action Determinants of the Reported Time of Conscious Intentions*, in: «Frontiers in Human Neuroscience», vol. XIV, 2010, pp. 4-38.

⁴ See B. LIBET, C.A. GLEASON, E.W., JR WRIGHT, D.K. PEARL, *Time of Conscious Intention to Act in*

Relation to Onset of Cerebral Activity (Readiness-Potential): The Unconscious Initiation of a Freely Voluntary Act, in: «Brain», vol. CVI, n. 3, 1983, pp. 623-642; B. LIBET, *Do we Have Free Will?*, in: «Journal of Consciousness Studies», vol. VI, n. 8-9, 1999, pp. 47-57.

⁵ K.E. STANOVICH, *The Robot's Rebellion: Finding Meaning in the Age of Darwin*, University of Chicago Press, Chicago 2004.

⁶ J.J. BENSON, T. A. KELLEY, X. ZHANG, J. WANG, G.R. MANGUN, *Spontaneous Neural Fluctuations Predict Decisions to Attend*, in: «Journal of Cognitive Neuroscience», vol. XXVI, n. 11, 2014, pp. 2578-2584.

⁷ See B. LIBET, *Do we Have Free Will?*, cit.

⁸ See B. BROWNE, *A Solution to the Problem of Moral Luck*, in: «The Philosophical Quarterly», vol. XLII, n. 168, 1992, pp. 345-358.

⁹ M. MCKENNA, *Compatibilism*, in: E.N. ZALTA (ed.), *The Stanford Encyclopedia of Philosophy*, Winter 2009 Edition, URL = <<http://plato.stanford.edu/archives/win2009/entries/compatibilism/>>.

¹⁰ L. DEECKE, *The Bereitschaftspotential as an Electrophysiological Tool for Studying the Cortical Organization of Human Voluntary Action*, in: «Supplements to Clinical Neurophysiology», vol. LIII, 2000, pp. 199-206.

¹¹ B. LIBET, E.W., JR WRIGHT, C.A. GLEASON, *Readiness-potentials Preceding Unrestricted "Spontaneous" vs Pre-planned Voluntary Acts*, in: «Electroencephalography and Clinical Neurophysiology», vol. LIV, n. 3, 1982, pp. 322-335.

¹² B. LIBET, *Mind Time: The Temporal Factor in Consciousness (Perspectives in Cognitive Neuroscience)*, Harvard University Press, Boston 2005, p. 141.

¹³ See S.S. OBHI, P. HAGGARD, *Free Will and Free Won't*, in: «American Scientist», vol. XCII, 2004, pp. 358-365.

¹⁴ B. LIBET, *Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action*, in: «Behavioral and Brain Sciences», vol. VIII, 1985, pp. 529-566, here p. 529.

¹⁵ See M. BRASS, P. HAGGARD, *To Do or Not to Do: The Neural Signature of Self-control*, in: «The Journal of Neuroscience», vol. XXVII, n. 34, 2007, pp. 9141-9145; S. KÜHN, P. HAGGARD, M. BRASS, *Intentional Inhibition: How the "Veto-area" Exerts Control*, in: «Human Brain Mapping», vol. XXX, n. 9, 2009, pp. 2834-2843.

¹⁶ See C. S. SOON, M. BRASS, H.J. HEINZE, J.-D. HAYNES, *Unconscious Determinants of Free Decisions in the Human Brain*, cit.

¹⁷ See I. FRIED, R. MUKAMEL, G. KREIMAN, *Internally Generated Preactivation of Single Neurons in Human Medial Frontal Cortex Predicts Volition*, in: «Neuron», vol. LXIX, n. 3, 2011, pp. 548-562.

¹⁸ See C.S. SOON, M. BRASS, H.J. HEINZE, J.-D. HAYNES, *Unconscious Determinants of Free Decisions in the Human Brain*, cit.

¹⁹ G. STRAWSON, *Freedom and Belief*, cit., pp. 28-29.

²⁰ D. PEREBOOM, *Living without Free Will*, cit., pp. 110-117.

²¹ J.A. BARGH, M.J. FERGUSON, *Beyond Behaviorism: On the Automaticity of Higher Mental Processes*, in: «Psychological Bulletin», vol. CXXVI, n. 6, 2000, pp. 925-945.

²² J.R. SEARLE, *How to Study Consciousness Scientifically*, in: «Philosophical Transactions B», vol. CCCLIII, n. 1377, 1998, pp. 1935-1942, here p. 1941.

²³ A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, in: «Annual Review of Neuroscience», vol. XXXIII; 2010, pp. 109-130, here p. 112.

²⁴ See A. LAVAZZA, M. DE CARO, *Not so Fast. On Some Bold Neuroscientific Claims Concerning Human Agency*, in: «Neuroethics», vol. III, n. 1, 2010, pp. 23-41; A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit.; E. NAHMIA, *Is Free Will an Illusion? Confronting Challenges from the Modern Mind Sciences*, in: W. SINNOTT-ARMSTRONG (ed.), *Moral Psychology. Vol. IV. Freedom and Responsibility*, MIT Press, Cambridge (MA) 2014, pp. 1-26.

²⁵ See I. FRIED, R. MUKAMEL, G. KREIMAN, *Internally Generated Preactivation of Single Neurons in Human Medial Frontal Cortex Predicts Volition*, cit.

²⁶ See A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit.

²⁷ B. LIBET, *Do we Have Free Will?*, cit., p. 52.

²⁸ A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit., p. 17.

²⁹ J. KIM, *Supervenience, Emergence, Realization, Reduction*, in: M.J. LOUX, D.W. ZIMMERMAN (eds.), *The Oxford Handbook of Metaphysics*, Oxford University Press, New York 2003, pp. 556-584.

³⁰ A more specific issue is if neuroscientific results can be recruited to reject one of the options just mentioned. On emergentism and neurosciences, see M. DE CARO, *Is Emergentism Refuted by the Neurosciences?*, in: A. CORRADINI, T. O'CONNOR (eds.), *Emergence in Science and Philosophy*, Routledge, London 2010, pp. 190-203.

³¹ See R. ULRICH, J. NITSCHKE, T. RAMMSAYER,

Perceived Duration of Expected and Unexpected Stimuli, in: «Psychological Research», vol. LXX, n. 2, 2006, pp. 77-87; J.W. MOORE, D.M. WEGNER, P. HAGGARD, *Modulating the Sense of Agency with External Cues*, in: «Consciousness and Cognition», vol. XVIII, n. 4, 2009, pp. 1056-1064; A.R. MELE, *Effective Intentions. The Power of Conscious Will*, Oxford University Press, New York 2010.

³² See E. VUL, C. HARRIS, P. WINKIELMAN, H. PASHLER, *Puzzlingly High Correlations in fMRI Studies of Emotion, Personality, and Social Cognition*, in: «Perspectives on Psychological Science», vol. IV, n. 3, 2009, pp. 274-290.

³³ M. HALLETT, *Volitional Control of Movement: The Physiology of Free Will*, in: «Clinical Neurophysiology», vol. CXVIII, n. 6, 2007, pp. 1179-1192.

³⁴ B. LIBET, *Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action*, cit., p. 529.

³⁵ See M.S. MOORE, *Libet's Challenge(s) to Responsible Agency*, in: W. SINNOTT-ARMSTRONG, L. NADEL (eds.), *Conscious Will and Responsibility. A Tribute to Benjamin Libet*, Oxford University Press, New York 2010, pp. 207-234.

³⁶ See J.M. FISCHER, M. RAVIZZA, *Responsibility and Control: A Theory of Moral Responsibility*, Cambridge University Press, New York 1998.

³⁷ A.R. MELE, *Autonomous Agents*, Oxford University Press, New York 1995, p. 187.

³⁸ A.R. MELE, *Effective Intentions*, cit., pp. 84-85.

³⁹ «“Consciousness” refers to those states of sentience or awareness that typically begin when we wake from a dreamless sleep and continue through the day until we fall asleep again, die, go into a coma or otherwise become “unconscious”», J.R. SEARLE, *How to Study Consciousness Scientifically*, cit., p. 1936.

⁴⁰ A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit., p. 20.

⁴¹ See E. NAHMIA, *Is Free Will an Illusion? Confronting Challenges from the Modern Mind Sciences*, cit.; De Caro, *Is Emergentism Refuted by the Neurosciences*, cit.

⁴² See P. CARRUTHERS, *Mindreading the Self*, in: S. BARON-COHEN, H. TAGER-FLUSBERG, M. LOMBARDO (eds.), *Understanding Other Mind: Perspectives From Developmental Social Neuroscience*, Third Edition, Oxford University Press, New York 2013, pp. 467-486. See also, e.g., D.M. WEGNER, *The Illusion of Conscious Will*, MIT Press, Cambridge (MA) 2002; J. PRESTON, D.M. WEGNER, *Ideal Agency: On Perceiving the Self as*

an Origin of Action, in: A. TESSER, J. WOOD, D. STAPEL (eds.), *On Building, Defending, and Regulating the Self*, Psychology Press, Philadelphia 2005, pp. 103-125; M. MARRAFFA, A. PATERNOSTER, *Sentirsi esistere. Inconscio, coscienza, autocoscienza*, Laterza, Roma-Bari 2013; A. SCHNEIDER, *The Confabulating Mind: How the Brain Creates Reality*, Oxford University Press, Oxford 2008.

⁴³ M. DE CARO, *Is Emergentism Refuted by the Neurosciences?*, cit., p. 198.

⁴⁴ G. BJÖRNSSON, D. PEREBOOM, *Free Will Skepticism and Bypassing*, in: W. SINNOTT-ARMSTRONG (ed.), *Moral Psychology*, cit., pp. 27-35.

⁴⁵ D.M. WEGNER, *The Illusion of Conscious Will*, cit.; D.M. WEGNER, *Frequently Asked Questions about Conscious Will*, in: «Behavioral and Brain Sciences», vol. XXVII, n. 5, 2004, pp. 679-688; D.M. WEGNER, *Self Is Magic*, in: J. BAER, J. KAUFMAN, R. BAUMEISTER (eds.), *Are We Free? Psychology and Free Will*, Oxford University Press, New York 2008, pp. 226-247.

⁴⁶ See D. DENNETT, *Freedom Evolves*, Penguin Books, London 2003; A. LAVAZZA, M. DE CARO, *Not so Fast*, cit.

⁴⁷ See S. Pockett, S. Purdy, *Are voluntary movements initiated preconsciously? The relationships between readiness potentials, urges and decisions*, in: W. SINNOTT-ARMSTRONG, L. NADEL (eds.), *Conscious Will and Responsibility: A Tribute to Benjamin Libet*, cit., pp. 34-46.

⁴⁸ E. PACHERIE, *Towards a Dynamic Theory of Intentions*, in: S. POKETT, W.P. BANKS, S. GALLAHER (eds.), *Does Consciousness Cause Behavior?*, MIT Press, Cambridge (MA) 2009, pp. 145-167.

⁴⁹ A.R. MELE, *Effective Intentions*, cit., p. 33.

⁵⁰ See, e.g., M. BRATMAN, *Structures of Agency: Essays*, Oxford University Press, Oxford 2007, p. 26.

⁵¹ See P. GOLLWITZER, *Implementation Intentions*, in: «American Psychologist», vol. LIV, 1999, pp. 493-503.

⁵² See M. DE CARO, *Is Emergentism Refuted by the Neurosciences?*, cit.

⁵³ A. LAVAZZA, M. DE CARO, *Not so Fast*, cit., p. 28. See also M. DE CARO, *Is Emergentism Refuted by the Neurosciences?*, cit., p. 199; A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit., p. 17; A.R. MELE, *Effective Intentions*, cit.; A.R. MELE, *Unconscious Decisions and Free Will*, in: «Philosophical Psychology», vol.

XXVI, n. 6, 2013, pp. 777-789.

⁵⁴ M. BALAGUER, *Free Will as an Open Scientific Problem*, MIT Press, Cambridge (MA) 2009, p. 71.

⁵⁵ M. BALAGUER, *A Coherent, Naturalistic, and Plausible Formulation of Libertarian Free Will*, in: «Noûs», vol. XXXVIII, n. 3, 2004, pp. 379-406, here p. 383.

⁵⁶ Needless to say, there could be other reasons (e.g. constitutive luck) for which we are ultimately willing to conclude that one's "torn decisions" are never freely made. The point at stake here is merely if the data provided by Libet-inspired experiments warrant this conclusion.

⁵⁷ See P. CARRUTHERS, *The Opacity of Mind: An Integrative Theory of Self-Knowledge*, Oxford University Press, Oxford 2011.

⁵⁸ See B.W. PELHAM, M.C. MIRENBERG, J.T. JONES, *Why Susie Sells Seashells by the Seashore: Implicit Egotism and Major Life Decisions*, in: «Journal of Personality and Social Psychology», vol. LXXXII, n. 4, 2002, pp. 469-487.

⁵⁹ Cf. H.G. FRANKFURT, *The Importance of What We Care About: Philosophical Essays*, Cambridge University Press, New York 1988; G. WATSON, *Agency and Answerability: Selected Essays*, Oxford University Press, Oxford 2004; M. BRATMAN, *Structures of Agency: Essays*, cit.

⁶⁰ J. DORIS, *Skepticism About Persons*, in: «Philosophical Issues», vol. XIX, n. 1, 2009, pp. 57-91.

⁶¹ See, e.g., M.N. SHADLEN, W.T. NEWSOME, *Neural Basis of a Perceptual Decision in the Parietal Cortex (area LIP) of the Rhesus Monkey*, in: «Journal of Neurophysiology», vol. LXXXVI, n. 4, 2001, pp. 1916-1936; A.C. HUK, M.N. SHADLEN, *Neural Activity in Macaque Parietal Cortex Reflects Temporal Integration of Visual Motion Signals During Perceptual Decision Making*, in: «Journal of Neurophysiology», vol. XXV, n. 45, 2005, pp. 10420-10436; T. YANG, M.N. SHADLEN, *Probabilistic Reasoning by Neurons*, in: «Nature», vol. CDXLVII, 2007, pp. 1075-1080.

⁶² A.L. ROSKIES, *How Does Neuroscience Affect Our Conception of Volition?*, cit., p. 119. See also A.L. ROSKIES, *Freedom, Neural Mechanism, and Consciousness*, in: R.F. BAUMEISTER, A.R. MELE, K.D. VOHS (eds.), *Free Will and Consciousness: How Might They Work?*, Oxford University Press, Oxford 2010, pp. 153-171.

⁶³ N. LEVY, *Neuroethics*, cit., p. 231.