

The Timing of Conscious States

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LIBET'S RESULTS

Striking experimental results by Benjamin Libet and colleagues have had an important impact on much recent discussion of consciousness. Some investigators have sought to replicate or extend Libet's results (Haggard, 1999; Haggard & Eimer, 1999; Haggard, Newman, & Magno, 1999; Trevena & Miller, 2002), while others have focused on how to interpret those findings (e.g., Gomes, 1998, 1999, 2002; Pockett, 2002), which many have seen as conflicting with our commonsense picture of mental functioning.

Libet's experiments focus on the timing of two types of conscious mental occurrence. One has to do with subjects' conscious experiences of somatosensory stimulation. Libet's work shows that these conscious experiences can occur as much as 500 ms later than the stimulation, though subjects also automatically experience those stimulations as occurring earlier. This subjective referral of sensations backward in time results in the sensations' seeming to occur within 10 to 20 ms of the actual stimulus (Libet, 1981; see Libet, 1978; Libet, Wright, Feinstein, & Pearl, 1979).

Other experimental work seems to show that, when we consciously decide to do something, the neural event that initiates the action occurs prior to that conscious volition. This result seems to conflict with our commonsense idea that volitions cause voluntary actions. But Libet believes that a second finding diminishes somewhat that apparent conflict. Although the neural initiation of actions we consciously decide on occurs prior to our conscious decisions, subjects retain some ability consciously to call the action off. Conscious decisions to "veto" the action can occur after the nonconscious neural initiation and still prevent the nonconscious initiation from leading all the way to action.

Both results appear to conflict with our commonsense picture of how mental functioning interacts with bodily occurrences. As Susan Pockett puts it, Libet's results "seem to deny to consciousness any major role in the conduct of our day-to-day affairs" (2002). Our conscious experiences of bodily stimuli may, she suggests, occur too late to influence our voluntary reactions to those stimuli. And the conscious volitions we think determine voluntary actions actually occur after that behavior is initiated. Perhaps most striking, this second result seems to compromise our sense of

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free agency. It seems that voluntary actions cannot result from conscious volitions if neural initiating events occur prior to our conscious volitions. And, if voluntary actions are not due to conscious volitions, how can we regard ourselves as acting freely? (See, e.g., Libet, 1999, 2001.)

I have little to say in this brief note about Libet's experimental work. Rather, I'll confine my remarks to the apparent conflict with our commonsense picture about conscious mental occurrences. I argue that the appearance of conflict rests on a particular way of understanding what it is for mental occurrences to be conscious and that there is independent reason to reject that way of understanding consciousness. Accordingly, the apparent conflict of Libet's results with common sense in effect adds to the reasons we already have to reject the picture on which that conflict seems to arise.

THE CONFLICT WITH COMMON SENSE

I focus mainly here on the the temporal gap between initiating neural events and conscious volitions, though I occasionally also remark on how the argument applies to the temporal gap between somatosensory stimulation and conscious experience.

On our commonsense picture, conscious volitions cause actions, but how can that be if conscious volitions occur after the action is initiated? Subjects' ability consciously to call off an action even after neural initiation occurs might mitigate that conflict somewhat, but only if we have independent experimental evidence that this conscious veto does not itself occur after a nonconscious neural veto.

The volitions on which this apparent conflict focused are all conscious volitions; that is, they are volitions whose occurrence subjects are able to report, in what Libet calls W judgments (e.g., 1985, p. 534). But not all volition occurs consciously. As with other types of mental state, volitions sometimes occur without being in any way conscious. Our commonsense picture plainly accommodates such nonconscious volitions. Even when people are wholly unaware of having any volitions, the elaborate, flexible character of their actions sometimes makes it clear that those actions must have resulted from antecedent volitions. Many cognitive and clinical findings help confirm this point, though its commonsense standing has long been evident from novels and plays.

But Libet's results do not show that no volitions occur until after neural initiation, but at best only that no *conscious* volitions do. This is evident from his methodology, which fixes when volitions occur by subjects' spontaneous reports. And mental occurrences are spontaneously reportable just in case they are conscious. So Libet's methodological net can catch only conscious volitions and is blind to any nonconscious volitions that might occur. The methodology leaves it open, then, that nonconscious volitions might occur simultaneously with neural initiating events and might even be identical with such neural events. At most, Libet's work shows not that volitions do not initiate actions, but that *conscious* volitions do not.

The same considerations apply to the temporal gap between somatic stimulation and resulting conscious sensations and to subjects' referral of those conscious sensations backward in time. Compelling experimental evidence exists for the occurrence of sensations that are not conscious (Marcel, 1983; Weiskrantz, 1997), and there is

also strong reason to hold that our commonsense picture allows for nonconscious sensations (Rosenthal, 1991, 1999). So nonconscious somatic sensations may well occur simultaneously with the relevant neural events and, indeed, may then be identical with those neural events. Subjective referral backward in time would be the natural result of the nonconscious sensations' earlier occurrence.

Most theorists explicitly acknowledge the occurrence of nonconscious mental events. Still, a well-entrenched tendency persists to elide the distinction between conscious and nonconscious mental occurrences. Thus, discussions often sort events simply into the neural and the conscious, leaving no space for events that are mental but not conscious. This is standard in comments about Libet's work.

Doubtless methodological considerations encourage ignoring nonconscious mental states. Since subjects' reports typically have no bearing on nonconscious cases, it is a lot harder to test for them. But, if we want to fix the occurrence of the volitions that actually cause actions or the sensations that result from somatosensory stimulation, we must consider the nonconscious as well as conscious cases.

IS CONSCIOUSNESS AN ESSENTIAL PROPERTY?

Simply noting that Libet's experiments do not bear on the timing of volitions or sensations generally, but only on the timing of conscious volitions and sensations, does not by itself seem to dispel the sense of conflict with our commonsense picture. Even if one acknowledges the occurrence of nonconscious mental states, it may be tempting to hold that the volitions and sensations whose timing Libet fixes are the only ones that matter. One source of this temptation is, as just noted, the methodological difficulty of detecting nonconscious volitions and sensations. But there is a theoretical source as well.

Even if not all mental states are conscious, it is inviting to suppose that it is essential to conscious states that they are conscious. If so, no mental state could shift between being conscious and not being conscious. Any state that is conscious at one time would be conscious at every other time at which it occurs, similarly for those which are not.

Common sense tells us that, for every voluntary action, there is a single volition. Suppose, then, that we detect a conscious volition that is relevant to some particular action. And assume, for the moment, that the property of being conscious is essential to those mental states which are conscious, so that the conscious volition we have detected could not occur without being conscious. So, if a single volition is typically responsible for each particular action, once we find a conscious volition relevant to some action, we can rule out there also being a distinct, nonconscious volition that is relevant to that action.

This explains why it is tempting to suppose that, when Libet's subjects report conscious volitions, no other volitions are relevant to the actions under investigation. It seems we need not consider the possibility of a distinct, earlier volition. The only relevant volition seems to occur after neural initiation of the action.

Things are different if a mental state's being conscious is not an essential property of that state. In that case, an individual mental state might well be conscious at one moment but not another; states might start nonconsciously and only subsequently

become conscious. And then the volitions whose occurrence Libet fixes by way of subjects' reports might well have started prior to those reports, though without having been conscious before those reports. Those reports indicate when subjects become conscious of those volitions, that is, when the volitions come to be conscious.

If the volitions whose conscious occurrence Libet detects might have occurred earlier, but without yet being conscious, those volitions might have begun simultaneously with the neural initiating events he isolates. Similarly, the somatosensory sensations that Libet is concerned to time might also have begun earlier; the delay might not be in the occurrence of the sensations, but in their coming to be conscious. Somatosensory sensations would not then occur too late to influence behavior, though they might often affect behavior before becoming conscious, as sensations often do.

The apparent conflict with common sense, then, stems largely from adopting the view that a conscious state cannot also occur nonconsciously. Since we want to minimize conflict between experimental results and common sense, we can see Libet's results as providing evidence against that view.

We have, in any case, compelling independent reason to reject the idea that essentialist view of consciousness. No mental state counts as being conscious unless the individual who is in that state is conscious *of* the state. So it is a necessary condition for a state's being conscious that one be conscious of it. This connection is deeply entrenched in both traditional discussions and common sense. A satisfactory theory of consciousness, therefore, will in effect specify the exact way we are conscious of those of our mental states we count as conscious. (For one way of doing that, see Rosenthal 1986, 1997, forthcoming-a, -b, -c.)

But it is never an essential property of anything that we are conscious of that thing. Since a state's being conscious consists of one's being conscious in a suitable way of that state, a state's being conscious cannot be an essential property of it. Any particular mental state can occur at one time consciously and at another not.

CONSCIOUS VOLITION AND FREE WILL

Common sense tells us that there is normally just one volition relevant to the production of a particular action. But, if a volition can be conscious at one moment and not another, the conscious volitions subjects report might well also occur at the time of the neural initiating event, though without being conscious at that earlier time. Those very volitions could then figure in initiating the actions, though not in virtue of their being conscious.

There is another tack one might take; perhaps, after all, more than one volition does figure in initiating an action. One possibility is that an earlier volition simply prepares one to act, and a distinct, subsequent volition initiates the specific action. This matches Patrick Haggard's useful proposal that the Readiness Potential isolated by Libet corresponds to a generalized preparation to act, and a subsequent Lateralized Readiness Potential (LRP), whose occurrence Haggard and colleagues have fixed initiates specific motor behavior (Haggard & Eimer 1999; Haggard & Libet 2001, Section III). But this suggestion takes us only part way. Though the LRP occurs after the RP, it also occurs prior to reports of conscious volitions. Volition still will not initiate action unless we posit a nonconscious volition corresponding to the LRP.

Can such nonconscious volitions do justice to our commonsense picture of the way volitions figure in the production of our voluntary actions? We regard voluntary actions as reflecting a kind of freedom of agency, and it may seem that such free agency occurs only when volitions are conscious. Nonconscious volitions do not seem to figure in our acting freely.

It is sometimes said that an action's being free consists in its being uncaused. But that cannot be so, since we normally experience voluntary actions as caused by conscious volitions. Still, though we experience conscious volitions as causing voluntary actions, we typically experience those conscious volitions themselves as uncaused. Actions seem to be free because the volitions that cause them seem, in turn, to be uncaused.

Doubtless our conscious volitions are never actually uncaused, but rather result from many prior mental occurrences. But most of those antecedent mental causes are not themselves conscious. So we are seldom if ever conscious of the mental causes of our conscious volitions. And that results in those volitions seeming spontaneous and uncaused. Our sense of free agency is due to our not being conscious of the mental antecedents of our conscious volitions (Rosenthal, forthcoming-d).

None of this applies, however, to volitions that are not conscious. Even if we are not conscious of the mental antecedents of volitions that are not conscious, since we also are not conscious of those volitions, no sense of acting freely results. So nonconscious volitions seem irrelevant to the sense of free agency that we have in connection with our voluntary actions.

This difficulty is not specific to Libet's results, however, but results simply from countenancing volitions that are not conscious. Libet's results seem to be in tension with our commonsense picture only because they suggest positing volitions that initially are not conscious.

In any case, it is plain that there is no difference in respect of freedom between conscious and nonconscious volitions. In both cases volitions result from various antecedent mental occurrences of which we are largely unaware. Conscious volitions differ from those which are not conscious only in that we are conscious of them. Acting freely consists not in our volitions being uncaused, but in those volitions fitting comfortably within a conscious picture we have of ourselves and of the kinds of things we characteristically want and do.

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