

Benjamin Libet's *Mind and Time: The Temporal Factor in Consciousness*, Harvard University Press, Cambridge 2004
Reviewed by Steven R. Bayne (www.hist-analytic.org;
baynesrb@yahoo.com) (May 2008)

There is a growing literature on the work of the late Benjamin Libet. Semantical approaches to the mind-body problem have been, largely, exhausted and there is a renewed willingness inspired by Libet and others to consider more empirical approaches to this ancient problem. Libet's empirical approach is more than "empirical"; it is experimental, and this distinguishes it from that of Descartes and others in the philosophical tradition, although there have been philosophers with a traditional perspective who have seriously considered the evidence from neurology, philosophers such as C. D. Broad and Evander McGilvary. In the following review, I consider in some detail not only the experiments Libet conducted, or proposed, I view Libet from this more traditional point of view. This is a philosophical review as it must be, given my limited familiarity with the current state of neurology. There has been some confusion as to Libet's exact position on the free-will issue in particular. If I can help clarify what he felt was at stake for philosophers, the effort will be justified.

Libet wants to show that the mind-body problem can be addressed by the science of neurology. To this end he provides an interpretation of some of his own experimental results. Here and elsewhere he has been critical of philosophers who have either denied or, deliberately, rejected, the belief that the problem is accessible to experimental science, and while he sometimes displays a certain naïveté with respect to the history and development of the problem, he demonstrates a clear and intuitive grasp of the connection between science and philosophy. He is inclined to identify materialism, determinism, and other views, such as epiphenomenalism, but the care he takes in stating his own views, based on the empirical facts, renders these, relatively, mild confusions unimportant to his principal objectives.

Whether he is right or wrong, his contribution to the discussion presents the same sort of challenge to recent philosophical positions and projects as did Einstein's theories of the last century. Seldom are empirical discoveries of philosophical significance. If Libet is right --and I think he is right on a number of issues -- advances in neurology are as important to the philosophical world view as the "new physics" initiated by Einstein, Lorentz, and Plank of an earlier time. Just as in the case of these discoveries, this sometimes creates uncertainty as to where science ends and philosophy begins, an indication of the vitality of both fields in the context of ongoing investigations. The relation of subjective experience to the brain can be compared in significance to the relation of experienced spatial relations and the objective world of physical space. However, unlike philosophical issues in physics, the methodology of neurology, where it involves an examination of conscious phenomena, cannot dispense with introspective and, therefore, subjective reports.

This fact has created some resistance both to Libet's methods and conclusions, but the experimental data is as clear as Pavlov's, albeit more subject to competing interpretation. That the reports are unrelated to emotions is a strength; that they depend on conscious awareness makes them, almost, unique to this science. Philosophers of a pragmatic disposition, infused with an admiration of the behaviorists "dialectic" will remain skeptical, but whether bred of a healthy empiricism or indicative of an anti-Cartesian prejudice, the fact remains that Libet and his co-workers have introduced new concerns free from the dogmatism of anti-subjectivist doctrines. Libet's interest is in consciousness, and at the end of the first chapter, which provides interesting details on the development of the early stages of neuroscience, he announces that the rest of the book addresses one fundamental question: "How are nerve cell activities in the brain related to conscious subjective experience and to unconscious mental functions." (p. 32) The following

chapter (Chapter 2) describes experimental procedures undertaken by Libet and his colleagues in attempting to answer this question.

What Libet claims to have discovered is that conscious experience is not in fact contemporaneous with the stimuli that occasion it. The delay is of a duration of, approximately, .5 seconds. In a manner of speaking we live in the actual past but the experiential present. He will extend this claim to intentional action besides sensory awareness. Even prior to detailing his experimental methodology, Libet addresses one objection: if there is this delay of half a second, how is it possible to detect stimuli that endure for less than a half second? For example, how is it that we are able to detect by way of touch differences in vibratory stimulation amounting to only a few milliseconds? Here Libet introduces his first distinction, one that carries with it some philosophical baggage. We make sense of this fact by recognizing that there is a distinction between *detection* and *actual awareness*. This distinction philosophers have identified as the difference between unconscious and conscious awareness. The philosophical question is: Are both mental? Libet, as evidenced by subsequent discussion, appears to believe that only conscious awareness is mental. Our "detection" of frequency differences within the half second interval required for consciousness is, therefore, not conscious. This distinction is not the only important preliminary in Libet's discussion. There is one other, one that will be applied in expressing his experimental results with respect to time, but which also has a use in characterizing experienced spatial properties related to sensation.

When the cerebral cortex is stimulated there is, often, an accompanying experience of a localized sensation, even though that is not the site of the stimulation. The brain "refers" the felt stimulus to a point at the body's sensory surface. This notion of referring is both interesting as a physiological phenomenon, but philosophically suggests the notion of an intentionality of sensation. I will not discuss this in this review but it is pertinent, inasmuch as intentionality and the mind have been, traditionally, linked as intimately as sensation and the mind. Indeed, the linkage has been more commonplace than is sometimes supposed since some philosophers have maintained that pain is, entirely, physical and, therefore lacking intentionality altogether. The first experiment Libet describes introduces two conditions. The first is where the stimulus falls just short of evoking a conscious response; the second is where the minimal threshold for such awareness is attained.

This experiment involved direct stimulation of the cortex with pulses of electrical current from 0.1 to 0.5 seconds in duration, repeated at the rate of 20 to 60 pulses per second. It was found that when the train of pulses was lengthened to 5 seconds a barely conscious sensation could be evoked, but the strength of the current had to be increased. As the train of stimulation was decreased from 5 seconds the strength of the sensation was unaffected. However, when the train of pulses was shortened to below .5 seconds, no sensation was reported. This barrier could be overcome to a limited degree but only by increasing the current to levels uncommon in the course of the normal operations of the brain. (p. 39) However, this limit of .5 seconds could not be breached by increasing the frequency of the pulses, even though such an increase in frequency resulted in less current being required. But, even when the frequency was increased, this did not affect the threshold of .5 seconds duration of train stimulation required in order to yield conscious awareness. This was not the only interesting result.

In addition to the onset timing of conscious awareness, Libet discovered that the pulses required had to be of some duration. Conscious awareness would not result from single pulse stimulation, even when the current was significantly increased. Libet does not linger to discuss this phenomenon, nor shall I. But there may be implications for the neurologically minded philosopher interested in causation, particularly, insofar as there has been a long standing debate in philosophical quarters as to the whether processes or events are more fundamental in discussing the nature of causation. Most discussions of causation involve event-event causation, where one event is said to cause another. It may, however, turn out that processes can be in causal relation. Libet's result may be significant in this regard to the extent that causation enters the picture as philosophically relevant. This durational requirement placed on cortical stimulation is not evident, however, in the case of direct stimulation of the skin, a fact of considerable interest that required

some explanation.

The question of the difference between onset timing of consciousness in the case of direct cortical stimulation and peripheral stimulation then became: mightn't it be the case that, even though the stimulus applied to the skin was a single pulse, at the site of the cortex a train of pulses of a half-second is required to elicit conscious awareness? That there is a train of such activations was known from studies of "evoked potentials." But the question remained as to whether in the case of peripheral stimulation there was, as in the case of direct cortical stimulation, a half-second delay required for consciousness. As it turns out, the cortex responds to the signal elicited by stimulation at the surface of the skin by producing activations that eventuate in conscious awareness, but only if these activations are in excess of the half-second required in cases where the cortex is directly stimulated. The onset timing of consciousness remains at about a half-second. Thus there is no difference in onset timing as between direct stimulation of motor areas of the cortex and stimulation of the sensory cortex indirectly by way of surface stimulation of the skin! In, yet, another pair of experiments it was found that if, following stimulation of the skin with a single impulse stimulus, another impulse was applied to the sensory cortex that, depending on the size of the electrode employed, the experienced sensation could either be masked or enhanced. This was possible within the range of within the half-second following the second stimulation of the skin surface. (p. 53) The stimulation of the skin was with the same current at an interval of five seconds. The first served as a control. The patient was to compare the intensity of the second sensation with the first, where in the case of the second cortical stimulation was applied at least .50 msec. after the second skin stimulation. The result was this: the second sensation associated with stimulation of the skin was experienced as stronger. Let us be clear as to what has been shown, minimally, to be the case on the basis of this second series of experiments. The sensation can be "retroactively modified" (ibid) by a second impulse, when that second impulse occurs within a half-second of the first. At this point, Libet raises the following question: How is it that a half-second of "neuronal activity" leads to awareness? It is at this point that philosophy overtly enters the picture.

Let's quote the Libet, because his precise way of putting matters illuminates his philosophical perspective.

Clearly, *awareness* itself is a mental phenomenon separated from the content of a mental event. Content of an event can be detected by the brain unconsciously, without awareness of it. (p. 56)

The idea 'mental event' has a history. Among scientists who write on topics related to philosophy there is a tendency to believe that, while philosophers understand little about science, all that is needed to make a philosophical point is a few arm chair reflections, the very thing scientists, including Libet have accused philosophers of doing. So we need to get clear on what Libet is talking about. For example, what does he mean by "content"? Does he mean a phenomenal content, such as a pain or a quality; does he mean the object of the mental event; or, does he mean, as did Twardowski, something existing in addition to the act's object or the act itself or does he distinguish the event from the content? Does he maintain a special relation between act and content? What is mental? A special kind of physical event, or something else? Is content mental? If so, then, since an awareness, presumably, is mental what kind of relations relate these two mental occurrences? Libet never clarifies these matters and this will engender apprehension on the part of some philosophers. There is, however, another concern of more immediate significance.

Libet assumes throughout, or so it seems, that content is something we can "detect" without our being aware of it; but this dismisses a lot of philosophy without argument; that is, philosophical positions that maintain that there is no reason to believe that what is mental is essentially something conscious; and, if we can "detect" content then doesn't this have implications for whether contents can be mental? If contents can't be mental, then are they additional brain events or impulses? Part of the difficulty these questions raise is owing to the fact that we need

some conceptual framework in order to provide an interpretation of our experimental results. We don't get results and then decide what the meaning of the terms we used in formulating the hypothesis to be tested. Such considerations, at least, appear to run against the spirit of Libet's concept of philosophy. Certainly, Libet can dismiss the philosophy, but if his conclusions are at most of clinical interest and of no concern to philosophers or in most cases readers who are not physicians or who are free from neurological disorders. Clearly, Libet wants to say something about what the philosophers have been talking about, and to this end he must, up to a point, do some philosophy outside the laboratory. Nor can philosophers be "let off the hook." Arrogant *a priorist* arguments are threatened by contradicting the empirical reality. "Doing things with words" will not suffice to illuminate the important philosophical questions. If one thing positive, alone, were to be said on behalf of Libet it would be that he has pointed us in direction that is intuitively rewarding, free from the morass of "go nowhere" arguments circumscribed by fashionable but unrewarding semantical discussion, discussion that has crippled the philosophical enterprise in philosophy of mind for more than a third of a century.

A recurring concern for Libet is the requirement of a train of stimulation for consciousness. A train of stimuli at a, relatively, low intensity evokes a conscious response, whereas a single stimulus forty times greater will have no conscious effect. (p. 56) This creates something of a mystery. Libet offers a, tentative, solution: the train constitutes a "neuronal code" without which the door of consciousness cannot be opened. (p. 59) But there is another possibility, one which this reviewer has considered out of a wider interest in causation as it applies to human agents. It may be the case that a "train" of stimuli is required because the causation at issue is not simply the relation of two events. It may be that processes interact causally, and that for this to occur a "process" or "train" of stimulation is required. Consider a quite possibly related fact. Philosophers in the past who have based their metaphysical speculation on intuitive rather than "discursive" facts have, sometimes, remarked on the fact that the "present" is specious. That is, it is not instantaneous. The present as experienced is durational. Intuitively, the duration of the specious present appears to this writer as enduring for roughly a half second. Thus, the specious present may require a duration accommodating that of causation, where that causation is a matter of process rather than a single event. This, of course, is speculation, but so, too, is Libet's conjecture. Libet is philosophically ambiguous as to what he means by 'consciousness'. This may ramify through both the interpretation of his results and some of the theories he advances in regard to its nature.

In his discussion of memory, he tends to favor the idea that memory is not necessary for consciousness. (p. 66) But he ignores a distinction, for no apparent reason, that Aristotle drew between awareness (sensation) and experience. To be a person of "experience" requires memory, but to be a sentient individual does not. The loss of very short term memory might, therefore, affect one's ability to acquire new "experiences," in one sense, but not affect one's capacity for awareness. While introducing some interesting possible philosophical consequences, by far the most important conclusions Libet draws are from the fact that there is a delay of .5 seconds in order for awareness to take place, even though there is no awareness of the delay, itself.

If Libet is right, we are never aware of the present; the present is "specious" not only in having duration, but in being something of an appearance, rather than a reality. One question is, "How does this appearance come to be?" The situation is not unlike one discussed by epistemologists who argued on behalf of "sense-data": I may be aware of a light in the sky, but the source of that light, a star, may no longer exist. What, then, are we aware of if not a purely subjective phenomenon? Libet makes the point that if it were not for this delay, there could be no "modulation" of the data given to experience, such as when a sight is so ghastly it does not rise to awareness. The world we live in is not, actually, the present but something unique to the individual. Libet in principle might have made a much bolder claim: he might have said that this delay actually allows for the possibility of subjectivity. The confluence of past experiences which may be responsible for the manner in which awareness becomes "modulated" may account for more than the character of certain subjective experiences; it may allow for a distinction between what is subjective and what is "private." One might, even, speculate that "privacy" is most directly

applicable to sensations, whereas what is “subjective” are experiences relating to the person and not, merely, the person’s body. It might be further speculated that subjectivity’s element of privacy is owing to its sensational component, being something entirely physiological and not related to “external” facts such as linguistic conventions or logical consistency. Pursuing this would be an unnecessary digression but it is worth mentioning since the relation of the mental to the subjective and/or private is difficult to experimentally examine, notwithstanding Libet’s sometime insistence on objective methodologies.

Subjective back dating of awareness of sensation was the subject of another, particularly, dramatic experiment. An area of the cortex received stimulation for .5 seconds. But at 200 milliseconds following the initial cortical stimulation a comparable stimulus was applied to the skin. Given what has been said about the .5 second requirement for awareness, one would expect the felt stimulation of the skin to occur at 700 milliseconds after the initial cortical stimulation. However, this expectation was not fulfilled; instead, the felt sensation occurred before that resulting from the cortical stimulation. It was only after the skin stimulation was administered a full .5 seconds following cortical stimulation that both sensations were felt. In fact, under these circumstances, they were felt to occur simultaneously! Consider the following possibility. The “present” is durational, not instantaneous. The requirement of a half-second delay is related to the necessity of there being a “present,” as I earlier suggested. There is nothing in physics corresponding to the present, according to some physical theories. Indeed, this fact was pointed out on one occasion to Karl Popper by Einstein. It may be the case that the present is subjective and that the continual backdating, modulo .5 seconds, represents the durational requirement not so much for experience, *per se*, but in order that there be a present available to the psychological subject. Moreover, such an interval may allow the sensation to become interpreted as experience, further linking the sensation, physiologically construed, with the psychological “agent,” living in the “present.” But this is only speculation suggested by Libet’s enterprising experimental undertaking. The idea of subjective referral, Libet points out (p. 79) is not restricted to timing.

Subjective referral is, perhaps, more obvious in the case of space. The arrangement of neurons is not the arrangement of locations constitutive of the form of perceived objects. Also, when the sensory cortex is, directly, stimulated a patient may report a sensation in the hand, rather than the brain. Libet maintains that in the case of objects perceived to be in space the referral is projection into actual space, just as the place of sensation is projected to a physical surface on, say, the hand. But is the space into which the projection is made actual space, or is it, too, something, psychological? Why should it be that the image of a physical object projected is mental, but the space itself is not? This raises philosophical questions about the relation of “private space” and physical space. If there is a distinction to be made, it may turn out that there is not so much projection into space, but, rather, a construction of space containing properties associated with experienced objects. This possibility cannot be ruled out *ab initio*. Subjective referral in spatial cases has long been known to be a sort of error correction necessitated by “neuronal distortions.” Eye glasses that invert the visual image, at first, force a consciousness of such inversion, but later the wearer *learns* to suppress awareness of the effect. What becomes, at this stage, of Libet’s exposition is that there is no reason for thinking that, even were our knowledge of neurology complete we could, thereby, know anything about subjective experience. (p. 85) In particular, neurology cannot, if Libet is right, account for the kind of subjective referral we have been discussing.

While neurology is said to be unable to account, entirely, for the mental, this is not to say the mental is not dependent on the physical. Libet’s philosophical position on the so called “mind-body” problem is that the mental (functions) are emergent properties of the brain. While he cites Roger Sperry in this regard, he might as well have cited someone like C. D. Broad or, even, Bergson. According to Libet a half-second is required for conscious awareness, following the receipt by the brain of sensory stimulation. But what about those, frequent, occasions where time of such a duration is unavailable to the reactive agent, such as when a driver brakes to avoid hitting a child, when that braking action takes place within, say, 125 milliseconds after the child’s

appearance?

The conclusion to be drawn (p. 91) is that this is an unconscious reaction at the time it takes place, although back-dating will make it appear present .5 milliseconds later. This situation, however, presents a problem. Perhaps it is, merely, semantic, but maybe it is something a bit deeper. If I am unaware of the child at the time of his appearance, then why do I break? How can I react to something of which I am not aware? To say that there is unconscious awareness ("detection") is to acknowledge that the concept of awareness may apply to something besides mental events! Libet skirts the issue to some degree, concluding that the difference between conscious and unconscious awareness is that in the latter case there is no "reportable awareness." But I'm not so sure this ends the matter. What is it that makes an awareness "reportable"? Either we are talking about two very different notions of awareness or we are talking about "higher order" awareness. Neither path is desirable. If, as Libet says, the "prime feature" of consciousness is awareness, then any unconscious awareness appears to be something like "unaware awareness." This may relate only to how we "do things with words" (Austin), but more needs to be said. Here the attempt to do so will not be made. Even though Libet is willing to acknowledge unconscious phenomena having mental "features" (p. 92) he appears reluctant to admit to unconscious mental events. His reasons, although never explicit, are consistent with Sartre's skepticism with respect to unconscious mental events in psychoanalysis: if we aren't *aware* of them, how can we single them out for repression? Libet is quick to point out that classical conditioning can be achieved using a conditioned stimulus of which the subject is unaware, nothing as lofty as the Freudian unconscious being at issue. Still, it can be argued that this sort of phenomenon is not in fact mental.

Notwithstanding the room for skepticism with respect to conditioned reflexes, the evidence Libet cites is overwhelmingly convincing that there are unconscious mental processes. The issues surrounding the relation of awareness to consciousness must not be confused with those of the relation of awareness to the mental. Libet is unequivocal in stating his belief in unconscious mental events. (p. 100) Having accepted this, he moves into fresher and, perhaps, deeper waters from which a new question emerges: What explains the transition from unconscious to conscious mental processes? In answering this question, Libet introduces a new theory, the "Time-On" theory. The theory contains two parts. First, the experimentally confirmed hypothesis that the duration of cerebral activity required for consciousness is .5 seconds; and, second, the idea that between the time of stimulation and the time at which awareness of stimulation takes place the brain is producing an unconscious mental events which later become conscious. There is one implication to this that Libet does not discuss, namely, that awareness does not affect the content of the mental act, only its presentation. "Time-On" (or duration) is a "controlling factor" and not a factor that introduces new elements into what it is that is controlled, at least that is one inference that can be drawn from the "Time-On" theory as stated. There remains a critical question, one I don't believe Libet has sufficiently addressed, although he does raise it (p. 102): Only some time-*ons* (durations) are sufficiently long for awareness, so what is the difference between those that remain unconscious and those which surface to awareness? Libet's answer is disconcerting to those familiar, at least, with earlier theories of the mind, theories which long abandoned are regaining some credibility – and here I mean the views of those under the influence of Wm. James.

What makes a conscious experience out of an unconscious experience is the "focusing of attention" on an unconscious mental process or event. I have two concerns with this approach, although the status of attention in any complete theory of mental activity is unimpeachable. First, there is a volitional component to our common understanding of what attention is. If attention is volitional, then since it precedes "consent" or control over whether to execute an act, free-will cannot be identified with such control but, rather, with the selection of what it is to which we unconsciously attend. What becomes conscious would be something *decided* and I think this may present difficulties for Libet's views in subsequent chapters. Second, attention which is not itself a form of awareness is a difficult conception to understand, given that attention is commonly thought of as directed awareness. Libet may be right in some unspecified sense, but I will not

pursue the matter. However, Libet performed another experiment with striking results, where the results suggested awareness without consciousness.

Two lights were placed before the subjects. Stimuli of varying strengths were administered while one of two lights was on, and subjects were to identify which light was on when they became aware of the stimulus. In a control no stimulus was given. If the subject was unaware of the sensation but suspected, in the absence of awareness, that the stimulus was being applied she indicated this. The subject, further, indicated the strength of the feeling that the stimulus was being applied by hitting one of three buttons: one button recorded a conscious awareness of the stimulus; the second recorded "an uncertain feeling," while the third was reserved for a mere guess whether the stimulus was being supplied. The most intriguing result was that in order to elevate the level of awareness, without modifying the content of the stimulus from one of uncertainty, or mere suspicion, an increase in duration of .4 seconds was sufficient, confirming the .5 second requirement for awareness. Not only was a distinction implied by these results between "unconscious detection" and "conscious awareness," but awareness was shown to be independent of the content of the awareness. (p. 106); that is, in order that a psychological function held constant become conscious all that was required was stimulation that approached .5 seconds in duration. In view of this, Libet elects to extend the "time-on" theory to mental phenomena besides sensory awareness.

The question is whether mental actions such as thoughts and emotional feelings are, likewise, initiated unconsciously. Despite the numerous experimental results Libet obtains, and the care taken in their acquisition, one sometimes has the impression that much is being inferred from limited data. Let's take a case in point. The time-out theory is extended to include thought (p. 107) as well as speech (p. 108). There is no suggestion that they are identical phenomena. In the case of speech, Libet correctly informs us that in rapid speech if there were a .5 second delay in each articulated sound speaking would be difficult or impossible. He, again, points out that many tasks demand on the time-out theory an unconscious production. A number of questions raise red flags concerning his conclusions. Suppose thought and speech are not one and the same. When are we *ever* conscious of our thoughts when they are not verbal, but receive verbal articulation? Is it the case that we are never aware of thoughts; or is it the case (and I take this to be a theory worth serious attention) that awareness of verbal articulation, even when such "speech" does not receive actual phonetic realization ("inner speech"), is a mechanism for knowing what it is we are thinking. Interestingly, in cases of inner speech there is rarely, if ever, need for deliberation – at least conscious deliberation – prior to ("inner") articulation. In the case of outward speech this is not the case; frequently, mid-sentence we will withhold further articulation and search for the "right word." If thinking, while not articulating, is like volition without action, and withholding is a manifestation of what Libet later in the book calls (p. 157) the "veto phenomenon" required for ascribing free-action, then *what* explains the latency in cases where we seek the right word and cases where we do not, if in both cases something like volition is mandatory? This is not to imply that some answer cannot be supplied on the time-out theory; the point is that thinking and speaking, supposing they differ, may require different treatments consistent with the time-out theory. Libet appears to extend, without sufficient examination, his theory to a much larger field of phenomena than his theory, as stated, permits. Similar considerations apply to the examples drawn from playing a musical instrument. He assimilates composition of poetry, for example, to playing the violin. But these are very different and without encountering the questions just raised regarding thought and inner speech, on the one hand, and articulation on the other they should be initially, at least, be treated as such. Further, the deliberation involved in the early stages of learning, say, piano is not the deliberation of composition for piano. A comprehensive theory must address such differences.

When Libet waxes philosophical, particularly, at those places where causation can become an issue, he appears to uncritically accept an inherited philosophical conception of cause and effect as a relation between events. But suppose, as we suggested earlier, that we take the notion of a process as fundamental (following Wesley Salmon and A. A. Robb before him). Then, in the case of speech (which we discussed) there may be this option: a thought, considered psychologically,

is a process; a sentence, considered as a set of articulatory actions (inner or outer) is, likewise, a process (or descriptive of a process). Now if it were the case that we first have the thought and, say, .5 seconds later we begin to have the thought which expresses it, the frequent occasions of mid-sentence emendation would be unmotivated in any simple way. But there is a simple alternative, which I think, can be made consistent with Libet's time-out theory: suppose there is parallel processing going on, and that one process is following another as something much like an "entrainment" process, rather than an "impulse" process relating two events, cause and effect. Elsewhere, I have discussed the event structure of entrainment in connection with such things as causal "forks." This might be an instance where applying the concept of entrainment has value at the neurological level. But if so this would tend to suggest that the time-out theory is either oversimplified, or that if it is to be extended to complex mental phenomena it must be revised. How is not immediately clear.

Indeed, if awareness "pops in rather suddenly" (p. 112) as a matter of necessity, the "requirement" of .5 seconds may necessitate the need to introduce mental processes in addition (at least) to mental events. Thinking in terms of events and not processes might explain Libet's unwarranted dismissal of James' notion of a "stream of consciousness" (*ibid*). In criticizing James (after acknowledging his greatness), Libet says that if each event begins only after a half-second delay then the series of conscious events would not be continuous. However, if what we are dealing with are processes, and not events, this might not be the case. It might be said in defense of Libet's account that if we had to wait upon processes and not just events the series (of processes) would be even more discontinuous. Here is one possible reply: if we reject events as fundamental then what is it that is in fact being delayed, when we await upon consciousness for a full half-second? Recall what I said earlier about the specious present. The durational present, on the view I propose to consider, is a process; and it is the present, regarded phenomenologically, which is that which comes into consciousness. When two events occur simultaneously are there, really, two instances of delay in our awareness of these events? One would think not. The best way to preserve the intent of Libet's theory is to revise it in such a manner as to accommodate processes, containing, perhaps, overlapping events by making the object of antedating a series of specious presents. This would afford us more ample justification for extending his theory from skin stimulation to contemplative thought. Subjective referral, then, applies to an entire present, not, merely, a single awareness in the "present"! This backward referral of the "present" on this account would be continuous. Any overlap to explain continuity would be a simpler process, inasmuch as overlapping "presents" would entail less activity than backward referral in time in the case of each experience. It would, also, provide a uniform account of successful backward reversal in the case of intentions and other endogenous processes where evoked potentials are absent, thereby providing some basis for the coherence of active thought processes and, concomitant, sensory awareness associated with continuous activity, such as untying a knot. Libet extends his experimental consideration of consciousness to intentional action in what is, perhaps, the most important single chapter of the book, chapter 4: "Intention to Act: Do We Have Free Will?"

Libet's most ambitious undertaking was to test whether it is the case that cerebral activity precedes conscious will associated with free-action, i.e., voluntary behavior. The methodology would have to take into account that subjective reports were essential and that, therefore, any action of reporting on the part of the subject would contribute to the activity of the brain, adding yet another voluntary action to the experiment and, therefore, complicating any interpretation of the results. To overcome this obstacle, reports of onset times for conscious awareness on the part of the subjects were given after each trial. Subjects would view a clock constructed in such a way that while it was divided into sixty marks, just like an ordinary clock, the second hand would complete a revolution in about 2.5 seconds. After each test the subject would identify the time of conscious intention to act. The accuracy of the method was tested against reports of skin stimulation of the sort we have already discussed. Libet built on earlier methods, in particular the discovery of "readiness potential" by Kornhuber and Deecke.

These researchers had discovered a change in the electronegativity of certain areas of the scalp

associated with voluntary action. This change in what is called “readiness potential” (RP) preceded bodily action by about .8 seconds. The interesting twist contributed by Libet was to raise the question whether consciousness of one’s intention to act was preceded by similar neurological activity. In the experimental setting just described, subjects were asked to perform a wrist movement at will. After the trial they would record the time, thus excluding the complication of a further act of will in making the report during the trial. The timing of the RP was, then, compared to the time reported for conscious intention to act (W). Forty trials per test subject were administered. Great attention was taken in regard to error correction and the reliability of methods. One consideration was that contrary to instructions some subject “preplanned” their free-acts. This departure from instructions, actually, provided useful knowledge.

Irrespective of their fidelity to the original instructions, subjects reported conscious awareness of intention to execute their actions at the same time, around .550 seconds prior to action. The inference drawn (p. 132) was that volition (what Libet called “act now”) took place within the same time frame regardless. This distinction between planning and execution had been acknowledged by psychologists around the time of Wm. James; it was the distinction between “resolve” and “volition.” Failure to take this into account, while it does not affect Libet’s interpretation of the results tends to weaken some of the criticisms directed against him. It should be noted in addition, however, that this planning is identified by Libet with deliberation, and that neither are identical with resolve. Resolve follows deliberation, on the classical James/Bradley model, and volition follows resolve. These subtleties escape Libet (and others) probably owing to a disregard, or ignorance, of the history of philosophy and psychology. In any case, if Libet’s results are to be trusted, the bottom line is this: initiation of “act now” antedates conscious awareness of our will to act by about .350 seconds! In other words: the brain begins the process leading to the voluntary action before the agent is, even, aware of his conscious will to act. (p. 134).

Haggard and Eimer, Libet observes, made the important point that the mere fact of precedence does not establish a cause and effect relation between what the RP indicates and the W (reports of the urge or intention to act). The needed experimentation to ensure covariance had not been made, nor is this reviewer aware of whether or not it has been. But there is a philosophical point to be made, especially if philosophical conclusions are to be drawn from this experimental enterprise. To a certain degree, the nature of causation, itself, may enter into considering how this is to be resolved. Similar questions can be raised in connection with the earlier sensory cases, and we have yet to consider the possibility that “agent causation” is not “event-event” causation, such as is arguably the likely causal process in the sensory cases. From this point on, philosophy becomes more important to Libet in evaluating the significance of his own experiments. One philosophical objection was raised by Searle, one that Libet’s doesn’t satisfactorily address.

Searle agrees, according to Libet (p. 136) that a conscious self is the agent of action and, as such, is the initiator of action based on prior deliberation. But, says Libet, the initiation of the “act now” process is unconscious, not conscious and, furthermore, choice making is “distinctly different” from the final “act now” process. Should we rest content with this riposte? In the first place, while “distinct” there is obviously *some* connection between choice and the urge to act. Libet does not provide any basis for this relationship. Also, while the urge to act component of the act-now process may be initiated unconsciously, a conscious self may provide the important link between choice and volition. Furthermore, if there are unconscious states of a person, there is no reason to believe that we are consciously aware of the self which does the choosing, even as that very choice is being made. The self, certainly, enters the picture as something equally important to the non-physical “mental field” which Libet will eventually introduce, and its functional role in action must be considered elemental to the process, or so it would appear. One other philosophical observation is worth making. Libet maintains that, because the brain unconsciously *initiates* the process leading to voluntary action, we can infer that the will is not the function of the agent in free-action. In view of our introduction of “resolve” and the “classical” theory of volition, a few brief remarks are in order concerning developments subsequent to Libet’s experiment. I offer them as a philosopher aware of the trappings of commenting on the scientific literature, but there is a

philosophical dimension that cannot be ignored.

Some have at one time or another (Chisholm (1966)) have proposed that physical events can be agent-caused by "undertaking" an action; that is, that in undertaking an action, X, a preceding action is caused. One illustration is that in undertaking to call LA I trip a switch in, say, Denver. The important point is that the undertaking has causal efficacy preceding a neurological event such as that indicated by RP.

It may turn out that "my undertaking to X" is not the cause of the neurological event resulting in a volitional act, X. It may be that the neurological event Libet associates with this undertaking (as reported by "W") is, in fact, a brain event causally related to bodily movement, instead, where bodily movement is not sufficient to constitute "action." The intentional content of "X" is no part of the report of subjects reporting a conscious desire to "act now," only the nonintentional content of a bodily movement, not unlike the fact that pain may be regarded as non-intentional mental content at the cognitive (rather than the volitional) level. This is consistent with observations made by C. S. Herrman, M. Pauen, Byoung-Kyong Min et al in "Analysis of a choice-reaction task yields a new interpretation of Libet's experiments," (*International Journal of Psychophysiology* 67 (2008) 151-158). Here the point is made that after the subjects are given instructions (corresponding to what I refer to above as the "intentional content" of my undertaking to X) the discretion they exercise concerns only *when* to act. If the undertaking to 'X' (and not just to raise one's arm, say) can be identified with "resolve" (Bradley, e.g. following Wm. James), then the, appropriate, unanswered question concerns the nature of the relation between this "resolve" and the volition (in one sense of the term) associated with the action, not so much that of the relation of volition (RP) and motor action. This distribution of emphasis receives encouragement from other albeit less recent work, such as that of I. Keller and H. Heckhausen ("Readiness Potentials preceding spontaneous motor acts: voluntary vs. involuntary control" in *Electroencephalography and Clinical Neurophysiology*, 1990, 76, 351-361. They provide experimental evidence implying that Libet's RPs occur in both *involuntary* as well as voluntary actions! If the will is located in the relation of "resolve" and volition and not the relation between volition (RP) and motor action then the latter relation may be a matter of physiological determination; but in free-action the source of the volition is a matter of intention. When it is, in the case of "resolve," the act is free, at least, in a sense in which acting as a causal consequence of a volition is not. One further philosophical comment is in order, although not one that immediately addresses these issues.

The notion of purposeful action, understood as implying a teleological component in any explanation of such behavior, is sometimes criticized because it suggests that present events may be caused by future events that have yet to take place. I think this may be a specious objection, but it has credence (see Wesley Salmon in *Scientific Explanation and the Causal Structure of the World*, Princeton 1984, pp. 163-164). Libet's theory that the mind refers action back in time, even if for only a half-second, weakens the force of the argument against teleology. From a, purely, subjective point of view - if Libet is right - we live in the past. Logically this makes it possible that our *subjectively* present intentions are in fact past. If so those intentions do not, actually, "point" towards the future; while they do subjectively, the reality is that they point towards the actual present. Since the intentional point is not in the future, the teleology while subjective is not logically challenged by the claim that the future causes present action.

There are, for Libet, unconscious brain activities but not unconscious mental activities. If there were, then, it is conceivable that unconscious mental events lead to the unconscious brain events that result in free-action. We cannot decide in advance on every occasion whether some hypothesis is testable; this does not mean we should eschew, presently untestable theories. We become motivated to devise ways of testing when doing so will facilitate an understanding of the empirical phenomenon, already, accepted. We cannot summarily dismiss the possibility of unconscious mental events having causal efficacy at the neurological level. This is not, it would appear, an option for Libet. Libet asks the question whether, since action is unconsciously initiated, there is a role for consciousness in willful behavior.

Someone skeptical of Libet's ambitious theory might care to argue that he is talking, not about

intentional acts but, rather, bodily movement. Both may be voluntary but in the case of bodily movement what constitutes the beginning, that is, the beginning of movement, is not prone to the same uncertainties as what constitutes the beginning of an intentional action. Is it the “resolve” to act? Is it the terminus of the deliberative process? Or, do we want to say that the beginning of the intentional act is the beginning of bodily movement? Identity conditions for intentional acts and bodily movements may differ. This issue must be addressed before any conclusions are drawn as to the role of consciousness in free-action. At least we can say that for Libet consciousness does play a role.

According to Libet, there is a place for consciousness in voluntary behavior. It enters as the power to veto an action before it begins within the last .150 seconds of the process. This idea of a veto is, strikingly, similar to the notion of “consent” we find in Wm James, what in complex actions, involving intentions and not just bodily movement, is commonly supposed to constitute the essence of voluntary action. (vide *Introduction to Psychology*, vol. II, p. 501). I will not pursue the parallels, but it is clear that there are connections to be made which are worth pursuing beyond historical curiosity. Libet was able to test for the ability to veto an action in the works. It is important to note that the testing was restricted to non-spontaneous acts, since there was in this circumstance there is no preceding activation of the muscles to be electronically recorded. This raises the question of whether intentional behavior, alone, is subject to veto by the conscious mind inasmuch as intentional behavior is to be distinguished from bodily movement, alone. In other words, it might be the case that the “text” of the intention provides a “handle” for canceling or vetoing the planned action. If Libet is right, conscious will while not an initiator of action exercises control over action as a potential “filter” on the output of what does do the initiating. This would be the locus of “free-will.” Moreover, if as Libet suggests (p. 139) initiatives to act “burble up” from the brain there remains a question as to what constitutes actual volition. A number of initiatives may “burble up,” and this may be part of the deliberative process, although “act now” processes are distinct from deliberative ones. (p. 149). Doty suggested to him the possibility of a large number of initiatives burbling up. How many is not, at present, ascertainable. But this is a crucial matter. Should it turn out that there is constant influx of initiatives (ibid), the line to be drawn between deliberation and volition would be unclear. The deliberative processes involved in planning may not be essential to volition; only the process of determining “consent” (to use James’ term) may be volitional, strictly. Should this be the case, then the critics of volition, such as Gilbert Ryle, who describes the usual view of the will as “executive,” would be compelled to alter the metaphor to the “judicial” will. The shift is subtle but significant: constraints are not initiators, nor are constraints “explosions” of the will so often associated with the classical view of volition.

Libet views vetoing as the vetoing of a volition. But, given what all he has said, it is difficult to distinguish this from the claim that volition *is* the action of consent (or lack of it) and that all else is the forming of an intention. Again there is uncertainty as to the relation of intention to volition. Clearly they differ: we may have an intention without a volition. The veto has, therefore, a causal role, one (as Libet points out) that is sometimes ignored. It is worth mentioning that a veto, like consent, is analogous, force dynamically (Talmy) to “withholding” and consent is much like “release.” This is not pursued and it may not be of much importance, but the parallels may suggest avenues of investigation so far unexplored. Libet resists the suggestion by some (citing Velmans) that the choice to veto may be unconscious. His objection is based on a presumption that responsibility entails consciousness of our choice to act. (p. 146) This is a bit more complicated than it may, at first, appear.

The assumption is that freedom entails responsibility and responsibility entails consciousness. It makes equal sense to say that responsibility entails freedom; in which case freedom is equivalent (not necessarily identical) to responsibility. There are reasons, I will not pursue, for doubting that freedom entails responsibility; and, therefore, that it entails conscious choice. This is not a scientific question. There is, also, the question whether we *should* require that an agent be conscious if he is ever to be absolved of illicit behavior. These are ethical questions beyond the purview of experimental science alone. Can there be an unconscious moral agent? I don’t see

why not. No sound arguments one way or the other have been produced to the best of my knowledge. To be sure there have been strong beliefs that if I didn't know I did something I can't be blamed for it; but this is something different. It is different from saying I can't be blamed for a *choice* I wasn't conscious of making. Again, the impossibility of such a scenario may be entirely contingent. There is in addition a need to determine whether 'responsibility' in the ethical domain is one and the same as in the ethically neutral domain. We may say: "He was responsible for spreading AIDS," without using 'responsible' in the way we might have said: "He was irresponsible in spreading AIDS." If Libet is using 'responsible' in this latter sense, then he begs the question, or so it seems. Libet is wrong to compare unconscious choice, if there be such, to obscene remarks of a patient with Tourette's syndrome. (p. 146) He is right, however, to say that it is possible that a conscious veto may not be preceded by an unconscious neurological event. (ibid) But, if so, what brings it about? This is as close to agent causation as we find in Libet. Occasionally, he introduces an ethical dimension to his science. Volition is a noteworthy case.

An interesting difference between Christian and Jewish tradition with respect to the Golden Rule is touched upon briefly. The power to veto is the faculty of free-action. But insofar as it is a sort of "filter" (my expression not Libet's) it is not a directive. It may exclude an action but it does not formulate an invocation to act a certain way. Libet finds an ethical advantage in this. He makes the point that in the rabbinical tradition (Maimonides etc) the Golden Rule tells us: "*Do not do to others what you would not have them do to you.*" (p. 150) As Libet interprets it: "Leave other people alone with tolerance." However, there is another side to the issue that suggests neither formulation, Christian or Jewish, is complete (as Libet states the alternatives). Part of Christian teaching is one's responsibility to do good works and not walk away from injustice, senseless torture, and murder, etc. It is not enough to walk away. In other words, the Christian view rules out as immoral the "Crime of Silence" where the Jewish formulation as understood by Libet remains silent. Christianity is pro-active; the Jewish tradition as codified in Libet's remarks is prohibitive. One other ethical issue is worth considering.

Having distinguished the deliberative process from that of vetoing an action, Libet makes mention of *Matthew 5:27-28*, where Jesus says that for a man who lusts without acting on his lust there is sin "in his heart." This Libet identifies with "original sin." Understood one way this is theologically incorrect; but in another it confuses sin "in one's heart" with actual sin. In the former case there is a certain *irrealis*, "absent in the other. Further, on Libet's view not having the temptation is no better than having it without acting on it. In other words, unlike the Christian position (and Kant, by the way, makes this a significant ethical fact) there is no moral evaluation of character, only of which action we perform or do not perform. There is much, else, to be said here that must be "passed over in silence." One must be very careful in drawing ethical conclusions from neurology. If, as Libet is wont to say, good theories are testable, still a good ethical theory is impervious to the pronouncements of science, which is, presumably, "value free." At the conclusion of Chapter IV, Libet makes very clear his belief that free-will is, at least, as consistent with contemporary science as its denial.

Chapter V addresses one of the most difficult problems in philosophy; that is, assuming that what is at issue is not what philosophers of the logical positivist vintage call a "pseudo-problem" brought on by linguistic or logical confusion. The question as posed by Libet is this: "How does the categorically different nonphysical phenomenon of subjective experience come from the physical activities of nerve cells?" Libet rejects a number of solutions because they are not testable. It is, by now, a familiar refrain: testability is the hallmark of a scientific theory, and it is clear that Libet believes he is offering a scientific theory that accounts for the mental while acknowledging that the mental and the physical are different. One question at the very onset is what testable phenomena attest the existence of the mental? If we accept as given, as he appears to do, the existence of the subjective life over and above the public and physical existence it encounters, if we are to take it as scientifically actual, there must be an experimental basis beyond subjective intuition for believing it is real. Otherwise, he is guilty of that of which he accuses others. Indeed, if as he suggests (p. 158, 160) the mental and the physical are "categorically different" then why should we be surprised if there is no empirically testable

relationship between them. But let's set this aside, since 'categorical' is a frequent term of abuse.

Subjective experience, we are told (p. 163), emerges from neurological activity. Unlike other emergents it is private in some fundamental sense. It is irreducible to physical events. The philosophically informed skeptic is left in a lurch as to whether it is consciousness or subjectivity that emerges. The latter is a property of properties; subjectivity is, for example, a property of consciousness, and consciousness is a property of brain functions. (p. 165) How a property of a property might be regarded as emergent is different from how that which is knowable only subjectively, as an "object" of consciousness (such as anger) might emerge. But if this is the case, since it is the subjectivity of awareness that necessitates on Libet's view a fundamental dualism, emergence, alone, is unlikely to provide a complete explanation. It may account for awareness but the subjectivity of awareness is, most likely, something different. There is no *a priori* reason for believing that awareness is, necessarily, subjective: there is no reason to believe that "co-consciousness" is unintelligible. But there is another matter of equal importance touched upon by Libet which, traditionally, has had a far more significant role than in recent discussion: the unity of experience.

Suppose within my awareness is a red patch to the left of another. There is no reason to suppose that there are corresponding neurological events underlying this experience which are such that one such event stands to the left of another. The unity of the experience is not recapitulated in the unity of the brain, at least in any way implying isomorphism. Libet is intrigued, as was Sherrington, by this fact. The question is: what brings these objects together in a spatial relationship, given that there is no neurological spatial correlative? There is a much larger question going back to Kant: what accounts for the unity of experiences of one self, and is it the same mechanism that accounts for the unity of the properties and relations of objects within a single, "private," experience? Libet never raises this question. Nor does he explore the relation of either application of 'unity' to the nature of the will, itself. The philosophical enterprise, in other words, is far more complex than Libet, apparently, believed. Can we resolve these questions in the laboratory? This reviewer remains doubtful.

The relation of subjective awareness to the will raises the question of whether mind and body are connected in a relation of "two sided interaction." (the expression comes from C. D. Broad) That is whether the mind acts on the body, or emerges from it, as the will is free to affect the body in certain ways concerning action; and, so, the dichotomy is between cognitive awareness and conscious will. Libet is, by no means, oblivious (much to his credit) to this question. (p. 167) There is, however, a certain asymmetry insofar as if the will is emergent, and therefore caused, there is, then, the question: in what sense can the will be undetermined; that is, free? Ostensibly, conscious will can act only on what is brought *before* consciousness. One possibility that has rarely, if ever, been mentioned is that the *function* of consciousness is to bring to the attention of the agent the reality available to be acted upon. Suppose this is not the case. Mightn't it be, reasonably, argued that an agent need not be conscious at all, as long as that agent is, for example, capable of moral behavior under the appropriate circumstances? It is one thing to account, neurologically, for the presence of consciousness, another to provide an explanation of what the function of consciousness is. Instead of addressing the relation of the consciousness to the will, Libet raises a similar and related question in regard to the interaction of mind and body, a question the answer to which leads him to make a striking proposal.

The issue of the relation of brain and action is approached by asking how, if at all, neurological activity (which may lead to action) is related to the mind. Libet introduces the notion of a "*conscious mental field*" (CMF) in answering this question. (p. 168) The CMF enables communication within the brain without benefit of any neurological or physical connection. Moreover, the CMF is said to mediate the relation of neurological and emergent conscious phenomena. We are not informed as to precisely what the connection is between these two functions, or its nature, but it does have the advantage, or so Libet maintains, of being testable – in a way we shall examine, shortly.

The CMF is an “entity” possessing two attributes: first, that of containing a unified subjective consciousness and, second, the “causal ability” (ibid) to affect neurological activity. Once again there appears to be a, potentially, confusing oversimplification. For now we have a number of functions. We have the CMF as a means of communication (intra-cerebral); we have the CMF as a cause of neurological activity; we have it as the basis of the unity of consciousness and, perhaps, much else besides. Clearly, there is a “stretch” here that even the metaphysically minded will find difficult to accept; not to mention the problems associated with experimental confirmation, which must be possible, given Libet’s experimentalist approach to philosophical problems. It is worth noting that just because the CMF is emergent this does not mean it lacks causal efficacy; emergent and epiphenomenal properties must be distinguished. That the CMF is an emergent “entity” (rather than a property) should raise a red flag among the philosophically initiated, not to mention those which may be raised by the proposal of an emergent entity which possesses emergent properties. Before proceeding a word on the nature of the CMF as having causal efficacy may provide insight, if not well deserved amusement, at this stage of our discussion.

We have, already mentioned Wesley Salmon who in a series of brilliant papers made use of a distinction (drawn from Reichenbach) between “pseudo-processes” and “causal processes.” (e.g. *Causality and Explanation*, Oxford 1998) The latter can carry a “mark” or a signal. Although there were emendations of this proposal (Dowe 1992), the intuitive need for some such distinction is, I believe, philosophically defensible. Salmon can’t be discussed in this review, but we can ask the following: are the processes associated with the CMF causal processes or pseudo-processes? Can a pseudo-process have causal efficacy without having the property of being able to conserve a property, such as the propagation of light conserves energy, say? I think the answer to this is yes; and if there is such a thing as a CMF it is a pseudo-process that is instrumental in carrying a signal; after all, according to Libet the CMF is a mechanism by which parts of the brain communicate. Elsewhere, I’ve covered the relation of mind and pseudo-processes more extensively. On this issue, I leave the reader with an invitation to consider the *nature* of causation and its various species, as alternative to emergent phenomena such as the CMF, turning instead to Libet’s proposal for an empirically testable theory of CMF.

The conditions for a testable theory involve testing for the possibility that an isolated portion of the brain can communicate with any other part of the brain. If, as we assume, it is isolated neurologically, then any communication will suffice to establish something, at least, like the CMF. (p. 172) Pharmacological isolation of the area to be tested would be difficult to achieve, owing to diffusion and other considerations. The procedure, he suggests, must be surgical. By making cuts just below the pial membrane, blood flow can be assured while communication through it would be impossible. By cutting beneath and around a segment of the cortex it could be disconnected from tissues that allow it to communicate with the rest of the brain. Adapting surgical procedures developed by Morrell and Sperry, undercutting would result in very minimal permanent damage.

Once an area has been isolated, using the above technique, the next step would be to administer stimuli to the area. If the patient issues a subjective report of sensation following stimulation to this area, then this would serve as confirmatory evidence of the CMF, as there would be no neurological basis for communication beyond the isolated area of the cortex. (p. 178) Again, if the results of such an experiment were positive, there would be evidence of “mental intervention” in the functioning of the cortex. It is important to note what such results would *not* be. They would not provide support for the theory of “agent-causation,” and would not, therefore, lend credence to belief in free-will where “free-will” entails initiation of an action by the mind.

The CMF, on Libet’s description, as a “bridge” over a physical impasse could be established by demonstrating its efficacy in a surgically created, controlled, situation. Supposing that the CMF theory is true, then what function can there be in the enormously complex mass of neuronal links between the various parts of the brain? Why can’t the mind do all the work, so to speak? Libet’s answer (p. 180) is that the CMF is involved only with “the phenomenon of conscious subjective

experience.” But there is a further question: Why must we understand the CMF to be mental.? Mightn’t it be case that, while the “bridge” between the isolated part of the brain and the rest of the brain is not obedient to the usual laws, there is some other mechanism at work? Perhaps another type of causation that emerges from the properties required for subjective awareness? Occasionally, Libet language in describing he CMF is bound to confuse philosophers. For example, while the CMF is “field,” it is also a “property” of an “emergent phenomenon.” (p. 182) It would appear that the CMF is, almost, certainly a phenomenon, but if so what is it for a phenomenon to be a *property*? This may not be cause for much concern, but for philosophers who base their thinking on language it may present some difficulty. Such awkwardness on the part of a neurologist is, probably, explained by a desire to avoid the Cartesian idea of mind as an independent substance, whence the point of introducing “emergence” and “properties of.” Still, there is said to be something like mind, something beyond the ordinary physical processes as the basis of the mind-body identity thesis as commonly stated.

Chapter 6 consists, in part, of an imaginary dialogue between Libet and Descartes. The overall impression is that it is designed to elucidate themes, already, discussed, but with an eye towards stating Libet’s work, clearly, for those who may not have followed some of the earlier more technical discussion. Occasionally, however, additionally insights, or questions, surface. One example is when Libet returns to those unconscious acts, such as dodging oncoming traffic, for which there is no time allowed for the half-second required for conscious action. Such actions, insofar as free-action depends on consciousness, are not, really, free. Libet’s examples are, typically, drawn from cases where deliberation does not enter, and the presumption (given the importance he places on consciousness) is that it cannot enter into such action, particularly since deliberation eventuating in action would require choice – where choice is understood as, itself, a free-action. But there is a class of cases he ignores: those cases of rapid fire debate between interlocutors where reactions take place under the half-second required for conscious choice. In rapid fire debate it would appear speakers may not be free in saying what they do. I see little alternative; but these cases ought not be lumped together with cases such as dodging traffic. Libet, himself, may be aware of difficulties for his theory. At least we can this much: he admits that the half-second delay “was thoroughly established only for bodily sensations.” (p. 199) With respect to our above question concerning free-action in rapid fire debate he *does* say (p. 200) that, like playing an instrument, words spoken in a “normal stream” are unconsciously produced. This is, perhaps, a fact (if it is a fact) of considerable importance. Elsewhere I have written on a question raised by the philosopher Wilfred Sellars in lecture – I don’t believe he discusses it in print. Sometimes in the middle of a sentence we halt, searching for the “right word.” Now this is consistent with Libet’s notion that we do have freedom to withhold or “veto” an action. But in deliberating for a period, over what would serve as the right word, we sometimes take far more than a half-second, and on these occasions we are not aware of conscious events leading up to the “right word.” We must distinguish the thought and the action that expresses that thought in producing suitable words. This raises the question of freedom, not only in connection with action but thought as well. Indeed, if philosophers such as James are right – and this is a philosopher with his own skeptical attitudes with respect to views held by his contemporaries on the nature of consciousness (outside it’s functional role) – thought which takes the form of attention may be at the core of how free-will should be understood. All along, Libet has insisted that conscious action is integral to responsibility (e. g. p. 202); but if this is so, then if we produce words expressing thoughts in “rapid fire” exchanges, unconsciously, then we are never responsible for what we say on such occasions. At best with respect to issues of freedom a “rapid fire” verbal exchange would, at best, be only as free as a series of Freudian ‘slips.” While Libet is quick to invoke the untestability of certain philosophical positions he is inclined to allow, perhaps, too many conclusions to follow from too little data.

Not only is the CMF an emergent property, so too is the self, the soul, and various other mental functions. Supposing this to be true there is little to be said from an experimentalist’s perspective as to the testability of such hypotheses. In other words, Libet makes convenient use of the importance of empirical data, while ignoring its importance elsewhere. The nature of the self, as understood by Libet is relevant here. The self, phenomenologically regarded, is, he says, “a

subjective feeling...of being our own person.” (p. 204) But what is this? Does this identify the self with consciousness of “unity” in the sense of earlier philosophers like Kant? In my own case, I am more inclined to identify it, phenomenologically, with consciousness of efficacy in appropriating the world in conformity with my intentions by in some way changing it, or reacting to it, as in discussion etc. Libet attempts too much, I fear, because he has a constricted view of the nature of philosophy brought about by his lack of familiarity with its twists and turns. Leaving everything more or less lost to discussion from Descartes to, say, Searle et al. Libet is correct on one particularly important philosophical matter (205-06): consciousness of my unity as a self is not consciousness of *who* I am. This latter notion is important, say, for semantic discussion having to do with referential opacity etc, but it is not at the core of philosophy of mind outside its “semanticized” formulations. It is much to Libet’s credit that he realized the import role of the self. His views, while largely uninformed about preceding philosophical discussion, nonetheless contain suggestions for constructive speculation.