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Stable Instabilities in the Study of Consciousness

A Potentially Integrative Prologue?

The purpose of this special issue and the conference that inspired it was to address the issue of conceptual integration in a science of consciousness. We felt this to be important, for while current efforts to scientifically investigate consciousness are taking place in an interdisciplinary context, it often seems as though the very terms being used to sustain a sense of interdisciplinary cooperation are working against it. This is because it is this very array of common concepts that generates a sense of unity among consciousness researchers, despite the fact the concepts mean different things in different disciplines. These *Concepts of Consciousness* include the following*: realism, representation, intentionality, information, control, memory* and *self*. Given this list, we believed we could best approach the issue of potential conceptual integration by addressing each concept from different perspectives and asking the following: (1) how do uses of the concept differ, (2) must these meanings be synthesized in order for there to be a unified science of consciousness, (3) is a unified conceptual scheme necessary to establish an independent science of consciousness, (4) is a unified conceptual scheme possible, (5) if it is not possible, why not, and (6) if it is possible, what might it look like? To this end we invited, for each concept, two scholars who made extensive use of the identified concept in their work. The papers entailed in this special issue constitute the outcome of this effort, and in what follows we offer a brief examination of possible forms of integration the papers seem to collectively suggest.

Instead of addressing scientific integration in terms of how the papers in the present collection can be brought together within a

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common empirical framework, we begin by focusing on why such a framework seems so hard to achieve. Oddly enough, the notion of *stability*, and how it is used and/or implied in empirical work regarding consciousness, seems to afford a fruitful means of divvying up the field. This is because scholars often describe consciousness in ways that express both *explicit* and *implicit* assumptions about the stability of consciousness, and these assumptions entail conceptual commitments that constrain their views on what they think consciousness is and how it relates to science.

In the *implicit*-assumption camp are those who conceptualize consciousness via terms such as *states* and *representations* (in what follows we will simply refer to this as the *state* approach). This way of conceptualizing consciousness entails *implicit* assumptions about the stability of consciousness because it focuses on conscious phenomena (e.g., memories, intentions, qualia and thoughts) that persist long enough to be considered individual conscious events entailing both *content* (i.e., the phenomenal 'feel' of a memory, intention or thought — see Bailey's contribution) and *causal efficacy* (i.e., the ability of memories, intentions and thoughts to make things happen in one's cognitive architecture). If one accepts the notion of phenomenal, causal states (and representations), it then seems appropriate to develop a science of consciousness around the idea of devising controlled experiments meant to reveal the causal role such structures play in cognition, perception and action (see van Orden & Holden, 2002, for a thorough application of this idea to the field of cognitive science in general). McBride, for example, gives a thorough description of how memory researchers devise experiments meant to reveal the causal properties of conscious and unconscious memory states. In this research participants complete memory tasks, and their responses are used as a means of revealing the nature of the cognitive architecture that makes such performance possible. Hommel describes experiments that are meant to address the role that conscious planning states (i.e., will) play in action control, and much like Wegner (2002) finds little empirical evidence for the common assumption that conscious intentions *cause* behaviours. Sebanz examines states of self-consciousness (i.e., agency), and proposes that such states emerge out of the need of individuals to engage in cooperative action with others. Barresi focuses on the development of mental states and our ability to have mental states about our own mental states, as well as those of others. Common to all of these researchers is the use of a state approach to consciousness and its implicit assumption regarding the stability of consciousness. Again, this assumption is scientifically useful because

it allows researchers to address both the content and causality of conscious states and the role such states play in one's cognitive architecture.

In contrast to the implicit-assumption camp, those in the *explicit*-assumption camp approach the issue of conscious stability *directly*. That is, their research focuses on the temporal dynamics by which conscious phenomena such as memories, intentions and thoughts come to be stable. They do this because they believe there is something to be learned about consciousness by studying the 'real-time' dynamics that underlie it. Spivey and Cargill, for example, distinguish reportable and non-reportable conscious experiences in terms of continuously changing trajectory locations within an attractor landscape entailed in what they refer to as the *universal medium*. Van Leeuwen conceptualizes consciousness as an evolutionary by-product of the need to dynamically synchronize neural processes taking place in diverse brain areas. In this framework, the research focus is on the temporal dynamics by which these coherent neural synchronies come to be. Jordan and Ghin conceptualize consciousness as the embodied 'aboutness' inherent to self-sustaining systems as they work to maintain coherent relationships in *proximal*-, *distal*- and *virtual*-event space. And Albertazzi addresses consciousness in terms of its dynamic structure and the multi-scale context-dependent nature of the phenomenal structures (i.e., presentations) that emerge within it in real-time.

Both camps constitute established approaches to the science of consciousness. Yet the differences in their focus (i.e., *states* versus *dynamics*) have lead the former to look for consciousness in stable conscious states, and the latter, in stability generating dynamics. This has lead to major disagreement over *where* to look for consciousness. S*tate* theorists tend to conceptualize conscious states in terms of functional modules. As a result, they search for clearly localizable 'places' in which conscious phenomena exist (i.e., neural centres and/or information structures, depending on whether one is a neuro-reductionist or a functionalist). *Dynamics* theorists on the other hand, have moved away from the notion of modularity to some extent, because a focus on real-time dynamics often reveals that multiple 'brain-centres' (van Leeuwen), 'properties' (Albertazzi), and 'scales of reality' (i.e., scales in the universal medium — see Spivey & Cargill; scales of event-control — see Jordan & Ghin; organism-environment coordinations — see Shaw & Kinsella-Shaw) share continuous reciprocal influence, thus making it difficult to localize consciousness in any one 'brain-centre', 'property', or 'scale-of-reality.'

Given that *state* and *dynamics* theorists disagree as to where to look for consciousness, it is not clear to what extent the two can be integrated. One solution might be to assume the matter will eventually be resolved empirically in the form of an experimental methodology that clearly proves one approach correct and the other false. There are other options, however. One might, for example, utilize the notion of ontological relativity mentioned in Atmanspacher's contribution. According to this framework, one makes ontological assumptions about phenomena at a lower level of scale (i.e., one assumes the phenomena at that level truly exist as described by science), so that one can use the entities at that level to make epistemological statements (i.e., statements based on observation) about phenomena at a higher level. For example, one might make ontological assumptions about chemistry in order to make epistemological statements about biology. A similar distinction is played out in Anderson's contribution which distinguishes between realist approaches that make claims about what is metaphysically real and antirealist approaches that make claims that are relativized to a particular epistemic perspective.

An advantage of these frameworks for a science of consciousness is that they provide researchers a means of shifting the levels of ontological-epistemological comparison in ways that allow one to be ontologically flexible. One can, for example, be ontological about individual neurons, neural networks, or the brain as a whole, and use these different levels of ontology as potential mediums for consciousness. Such ontological flexibility may, in turn lead researchers to recognize the ontological assumptions inherent in their own approach to consciousness and, as a result, be more tolerant of the ontological assumptions made by others.

To be sure, there are many other possible combinations of varieties of realism and beliefs about science and reality. The point here is not to advocate one, but to simply make the case that the differences between *state* and *dynamics* theorists are not necessarily problematic. One can, for example, make ontological assumptions about the dynamics approach (i.e., believe that consciousness ultimately *is* a temporally-grounded multi-scale phenomenon) while simultaneously being epistemic about the *state* approach (i.e., statements about what consciousness *is* are restricted, when speaking scientifically, to epistemologically accessible phenomena that can be measured). Being aware of one's ontological assumptions in this manner might help to stave off arguments about a science of consciousness that emerge from one's simultaneous belief in various forms of realism. If this approach were to take hold, an integrated science of

consciousness might ultimately come to be in which participants achieve an increased awareness of how their scientific assumptions play out in the varieties of realism.

Utilizing ontological-epistemological frameworks like those discussed by Atmanspacher and Anderson relies on the science of consciousness being embedded within the larger field of consciousness studies. We believe that if an integrated science comes to be, it will do so within this larger context. For it is in the larger context that the conversation shifts from the data to the relationship between the data, the concepts used to describe them, and the larger theoretical/philosophical context in which the concepts are embedded. According to Maasen's contribution, consciousness studies now constitutes a 'trading ground' in which these diverse levels of inquiry have a place to make contact and influence one another. Given that the *Journal of Consciousness Studies* is situated at the centre of this trading zone, we, the guest editors of this special issue, are delighted to have had the opportunity to contribute to its sustainment.

References

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