HOW TO DEFINE CONSCIOUSNESS—AND HOW NOT TO DEFINE CONSCIOUSNESS

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Abstract. *Definitions of consciousness need to be sufficiently broad to include all examples of conscious states and sufficiently narrow to exclude entities, events and processes that are not conscious. Unfortunately, deviations from these simple principles are common in modern consciousness studies, with consequent confusion and internal division in the field. The present paper gives example of ways in which definitions of consciousness can be either too broad or too narrow. It also discusses some of the main ways in which pre-existing theoretical commitments (about the nature of consciousness, mind and world) have intruded into definitions. Similar problems can arise in the way a "conscious process" is defined, potentially obscuring the way that conscious phenomenology actually relates to its neural correlates and antecedent causes in the brain, body and external world. Once a definition of "consciousness" is firmly grounded in its phenomenology, investigations of its ontology and its relationships to entities, events and processes that are not conscious can begin, and this may in time transmute the meaning (or sense) of the term. As our scientific understanding of these relationships deepen, our understanding of what consciousness is will also deepen. A similar transmutation of meaning (with growth of knowledge) occurs with basic terms in physics such as "energy", and "time."*

Why is it difficult to define consciousness?

As George Miller wrote in 1962, "Consciousness is a word worn smooth by a million tongues." Almost 50 years later, little has changed. The term means many different things to many different people, and no universally agreed "core meaning" exists. This is odd, as we each have "psychological data" about what it is like to *be conscious* or to *have consciousness* to serve as the basis for an agreed definition.

This uncertainty about how to define consciousness is partly brought about by the way global theories about consciousness (or even about the nature of the universe) have intruded into definitions. In classical Indian writings such as the Upanishads, consciousness is thought to be the essence of Ātman, a primal, immanent self that is ultimately identified with Brāhman—a pure, transcendental, subject-object-less consciousness that underlies and provides the ground of being of both Man and Nature (Sen, 2008). In the classical Western tradition, "substance dualists" such as Plato and Descartes bifurcated the universe, believing it to consist of two fundamental kinds of stuff, material stuff and the stuff of consciousness (a substance associated with soul or spirit). Following the success of the brain sciences and related sciences, 20th Century theories of mind in the West became increasingly materialistic, assuming physical "stuff" to be basic, and consciousness in some way "supervenient" or dependent on the

existence of physical forms. For example, "property dualists" such as Sperry (1969) took consciousness to be a special kind of property that is itself non-physical, but which emerges from physical systems such as the brain once they attain a certain level of complexity. Taking materialism to its logical conclusion, "reductionists" such as Crick (1994) and Dennett (1991) argued consciousness to be nothing more than a state or function of the brain. Within cognitive psychology, there were many similar reductive proposals which identified consciousness with some aspect of human information processing, for example with working memory, focal attention, a central executive, or a "global workspace"(e.g. Baars, 1988).

It should be apparent that these wide-ranging disparities arise more from pre-existing theoretical commitments (about the nature of consciousness, mind and world) than from the everyday phenomenology of consciousness itself. In the modern literature, for example, Dennett provides a prominent example of the triumph of materialist theory over phenomenological evidence when he tried to deny the very existence of phenomenal qualities (as normally understood). He made this perfectly clear when he writes:

"Philosophers have adopted various names for the things in the beholder (or properties of the beholder) that have been supposed to provide a safe home for the colors and the rest of the properties that have been banished from the external world by the triumphs of physics: raw feels, phenomenal qualities, intrinsic properties of conscious experiences, the qualitative content of mental states, and, of course, qualia, the term I use. There are subtle differences in how these terms have been defined, but I am going to ride roughshod over them. *I deny that there are any such properties. But I agree wholeheartedly that there seem to be*." (Dennett, 1991, p372 - my italics)

Dennett arrives at this view by *presupposing* that information about brain and behaviour obtained from a third-person perspective is scientific and reliable, while first-person data about conscious experience tells us nothing about its ontology at all.[1] European phenomenology and classical Indian philosophy assume the opposite to be true. Accordingly, their investigations of consciousness have been *primarily* phenomenological.[2] Within modern consciousness studies there are also many intermediate theoretical positions with associated research paradigms that take *both* the existence of the material world and the existence of

[1] I have given a detailed critique of this aspect of Dennett's position that I do not have space to repeat here (see Velmans, 2001, 2007a, 2009 chapter 5); see also Zahavi (2007), Beenfeldt (2008).

[2] See Gallagher, 2007, Zahavi, 2007 for recent reviews of European phenomenological approaches. Note however that classical Indian conclusions about the nature of consciousness arise largely from altered conscious states consequent on prolonged periods of meditation, and this can be an additional source of confusion when comparing Eastern and Western understanding of *everyday* conscious phenomenology. The pure, contentless consciousness said to be experienced in such states is, in various writings, thought to underly all of Nature, which makes this a claim about what in the West is sometimes referred to as "the ground of being" or, in Kantian terms, "the thing in itself," rather than a claim about the forms of "phenomenal consciousness," that are more usually investigated in modern consciousness studies.

consciousness seriously, for example viewing first- and third-person investigations of the mind/brain as complementary sources of information about its nature.[3]

It should come as no surprise that such diverse assumptions about the nature of consciousness and how we can study it have created divisions between research communities that can be difficult to cross. There can, for example, be no point of convergence and certainly no consensus between researchers who take the existence of conscious phenomenology to be both self-evident and ontologically primary, with those who give no credence to that phenomenology at all.

Given this diversity, some consciousness researchers have doubted that a systematic study of "consciousness" as such, is even possible. Sloman (1991) for example argued that "people who discuss consciousness delude themselves in thinking that they know what they are talking about...it's not just one thing but many things muddled together"—rather like our "multifarious uses of 'energy' (intellectual energy, music with energy, high energy explosion, etc.)", and Stanovich (1991) complained that "the term "consciousness" fractionates into half a dozen or more different usages." For him, "consciousness" is a "botched concept"; a psychiatric institution is too good for it—and it deserves the "death penalty." Given this, they suggest that one can make no generalizations about it.

The obvious counterargument is that there is nothing to prevent discussion and organized research into aspects of "consciousness" denoted by a *given, specific usage* of that term. The multiple uses of the term "energy" in natural language have not in any way impeded a systematic study of energy in physics. Similarly, the flourishing of consciousness studies over the last 20 years has made it clear that, despite its diverse referents in natural language, a systematic study of "consciousness" is both possible and actual. For research to proceed, all one needs is a sufficiently well-specified use of the term for a community of researchers to agree that they are investigating the same thing.

To what does the term "consciousness" refer?

But where should we begin? As with any term that refers to something that one can observe or experience it is useful, if possible, to begin with an *ostensive definition*, i.e. to "point to" or "pick out" the *phenomena* to which the term refers and, by implication, what is *excluded*.

Normally we point to some *thing* that we observe or experience. The term "consciousness" however refers to experience itself. Rather than being exemplified by a particular thing that we observe or experience, it is exemplified by *all* the things that we observe or experience. Something *happens* when we are conscious that does not happen when we are not conscious—and something happens when we are conscious *of something* that does not happen when we are not conscious of that thing. We know what it is like to be conscious when we are awake as opposed to not being conscious when in dreamless sleep. We also know what it is like to be conscious *of* something (when awake or dreaming) as opposed to not being conscious of that thing.

This everyday understanding of consciousness based on the presence or absence of *experienced phenomena* provides a simple place to start. A person, or other entity, is conscious if they experience *something*; conversely, if a person or entity experiences nothing

[3] See Velmans 1991b, 2007b for introductions to this form of "psychological complementarity", and readings in Varela & Shear (1999), Velmans (2000), Jack & Roepstorff (2003, 2004).

they are not conscious. Elaborating slightly, we can say that when consciousness is present, *phenomenal content* (consciousness of something) is present. Conversely, when phenomenal content is absent, consciousness is absent.[4]

This stays very close to everyday usage and it provides a simple place of departure on which widely diverging theories can agree.[5] It also makes sense to stay as close as possible to everyday, natural language usage for related terms. In common usage, the term "consciousness" is often synonymous with "awareness", "conscious awareness", and "experience". For example, It makes no difference in most contexts to claim that I am "conscious of" what I think, "aware of" what I think, "consciously aware" of what I think, or that I can "experience" what I think. Consequently, to minimise confusion, it is important not to load these terms with added meanings that are peculiar to a given theoretical position.[6] This applies equally to the "contents of consciousness". The "contents of consciousness" encompass all the phenomena that we are conscious of, aware of, or experience. These include not only experiences that we commonly associate with ourselves, such as thoughts, feelings, images, dreams, body sensations and so on, but also the experienced three-dimensional world (the phenomenal world) beyond the body surface.

Some important distinctions

However some terminological distinctions are important. In some older writings, for example in the work of Descartes, "consciousness" is not clearly differentiated from "mind." Given the extensive, current evidence for preconscious and unconscious mental processing[7], this usage is too broad. How phenomenal consciousness relates to preconscious and unconscious mental processing is now a major topic for psychological research. To avoid confusion, and to enable such research, it is important to reserve the term "mind" for psychological states and processes that may or may not be "conscious".

Descartes also famously believed *thought* to epitomise the nature of consciousness, and consequently defined it as a "substance that thinks" (*res cogitans*), which distinguishes it (in his view) from material substance that has extension in space (*res extensa*). Modern psychology accepts that verbal thoughts (in the form of phonemic imagery or 'inner speech') are amongst

[4] It is worth noting that Eastern philosophies refer to a state of "pure consciousness," without any phenomenal contents (Shear & Jevning, 1999, Shear, 2007), although many characterisations are nevertheless offered of this state, such as sat-chit-ananda (being-consciousness-bliss) in Hindu thought, or sunyata (emptiness) in Mahayana Buddhism (Fontana, 2007). As these possibilities do not have a direct bearing on the problems of defining consciousness within the Western discourse, we can safely leave them to one side for now, without dismissing them.

[5] Even eliminative/reductive theories such as Dennett's agree that that conscious phenomenology *seems* to exist, and this provides the point of departure for their attempts at phenomenal elimination/reduction.

[6] For example in some theories "awareness" is thought of as a form of low-level consciousness that is distinct from full consciousness. This is not a serious problem for the present proposal, provided that the situation described has some phenomenal content (for example where one is dimly aware of a stimulus). However serious confusions can arise in situations where the term "awareness" is applied to situations where there is no relevant phenomenal content, for example, when "awareness" refers to *preconscious information processing*, or worse, to the nonconscious information processing which *accompanies* consciousness (as proposed by Chalmers, 1995). In the present usage, being "aware of" nonconscious information processing is a contradiction in terms.

[7] See, for example, Dixon (1981), Kihlstrom (1987), Velmans (1991b), Reber (1993), Wilson (2002), Goodale & Milner (2004), Jeannerod (2007), Kihlstrom, Dorfman & Park (2007), Merikle (2007).

the contents of consciousness. However it does not accept that thoughts exemplify all conscious contents. Unlike thoughts, pains, tactile sensations, itches and other body experiences appear to have both spatial location and extension in different regions of the body, and the sights and sounds of the experienced external world (the phenomenal world) appear to have locations and extensions in a surrounding three-dimensional space.[8] These interoceptive and exteroceptive experiences also differ widely from each other and many descriptive systems have been developed for investigating their phenomenology (in studies of visual and auditory perception, emotion, pain, and so on). It should be evident that such developments in phenomenology are an essential first step in characterising what it is about consciousness that *needs to be explained*—and that restricting the phenomenology of "consciousness" to the phenomenology of "thought" is too narrow.

In other, more modern writings, "consciousness" is sometimes taken to be synonymous with "self-consciousness". As one can be conscious of many things other than oneself (other people, the external world, etc.), this usage is also too narrow. To allow a clear distinction between consciousness of oneself and consciousness of things other than oneself, it makes more sense to reserve the term "self-consciousness" for a special form of *reflexive* consciousness in which the object of consciousness is the self or some aspect of the self.

The term "consciousness" is also commonly used to refer to a state of wakefulness. Being awake or asleep or in some other state such as coma clearly influences what one can be conscious of. However these global states have a complex relationship to phenomenal consciousness. When sleeping, for example, one can still have visual and auditory experiences in the form of dreams. Conversely, when awake there are many things at any given moment that one does *not* experience. So in a variety of contexts it is necessary to distinguish "consciousness" in the sense of "phenomenal consciousness" from wakefulness and other states of arousal, such as dream sleep, deep sleep, and coma.[9]

Finally, "consciousness" is sometimes used to mean "knowledge", in the sense that if one is conscious of something one also has knowledge of it. This is an important *feature* of consciousness (that I do not have space to examine here).[10] However, at any moment, much knowledge is unconscious, or implicit (for example, the knowledge gained over a lifetime, stored in long-term memory). So consciousness and knowledge cannot be co-extensive.

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[8] It is widely accepted that many experienced phenomena have apparent location. Whether there is also a sense in which such phenomena also have a real spatial location and extension (in the phenomenal body and external world outside the brain) is a fundamental, contested issue within current consciousness studies that goes beyond the scope of the present paper. Detailed evaluations of the competing arguments are given in Velmans (2008, 2009 chapter 7).

[9] It remains useful to distinguish the various global conditions for the *existence* of consciousness (for example the differences between being awake, in dream sleep, dreamless sleep, and deep coma) from the added conditions which determine its *varied phenomenal contents* (for example having visual rather than auditory experiences). However, for the purposes of finding an agreed, core definition of phenomenal consciousness from which investigations can proceed, it makes sense to retain the convention that unless one is conscious *of* something one is not conscious. Conversely if one is conscious *of* something (e.g. while dreaming) one *is* conscious.

[10] Phenomenal consciousness enables a special kind of knowledge: To be conscious of something is to know it in a way that makes it *subjectively real*. Bertrand Russell called this "knowledge by acquaintance", which he contrasted with the more abstract "knowledge by description" provided by verbal descriptions. This important, first-person function of phenomenal consciousness and its relation to the many proposed, third-person functions of consciousness is discussed in detail in Velmans (2009 chapters 12, 13, and 14).

The above, broad definitions and distinctions have been quite widely accepted in the contemporary scientific literature (see, for example, Farthing, 1992; readings in Velmans, 1996, Velmans & Schneider, 2007)—although by no means universally, as we will see below. Agreeing on definitions is important. Once a given reference for the term "consciousness" is fixed in its *phenomenology*, the investigation of its nature can begin.

How not to define consciousness

As noted above, reductionists and non-reductionists adopt fundamentally differing assumptions about the *ontology* of consciousness and there are many instances where these differing assumptions about ontology have intruded into how phenomenal consciousness has been defined. It is common for example for reductive physicalists and functionalists to take it for granted that an advanced form of brain science will ultimately demonstrate phenomenal consciousness to be nothing more than a state or function of the brain. If so, nothing would be lost by defining it in that way. However most theories of consciousness that resist a *reduction* of conscious phenomenology to brain states and/or functions fully accept that there is an *intimate relationship* between consciousness and brain. What is at stake is the *nature* of this intimate relationship. For example, physicalist, functionalist, naturalistic dualist and modern dual-aspect theories agree that, in humans, every distinct conscious experience is likely to be accompanied by distinct, correlated conditions in the brain (the neural correlates of consciousness or NCC), but naturalistic dualist, and dual-aspect theories resist the reduction of phenomenal consciousness to brain states. Dual-aspect theory for example suggests that conscious experiences and their correlated brain states are how the mind appears when viewed from respectively first- and third-person perspectives, and that these aspects of mind are complementary and mutually irreducible (see e.g. Velmans, 1991b, 2009 chapter 13). [11] If so, the discovery of the neural correlates of given experiences will not settle the fundamental differences amongst these theories. Nor would the discovery of antecedent neural causes settle these differences. To achieve a genuine reduction, conscious experiences would have to be shown to be ontologically identical to their neural causes and/or correlates. Discovery of the neural causes and or correlates would not achieve this for the simple reason that causation, correlation and ontological identity are fundamentally different relationships. [12]

In short, no ontological view is automatically privileged by the likely advance of science, and, given the far-reaching consequences of reductionism and its alternatives it is important not to define phenomenal consciousness in a way that *presupposes* the outcome of this debate, or *finesses* it in favour of one outcome or another. Unfortunately, this practice is widespread both in common culture[13] and in the scientific and philosophical literature. Dennett, Searle,

[11] Chalmers (1996) provides a naturalistic dualist analysis of how conscious experiences relate to brain states that is similarly non-reductionist.

[12] If A is identical to B, then B is identical to A (symmetry) and all the properties of A and B must be identical (Leibniz's law). If A correlates with B, then B correlates with A (symmetry), but it does not follow that all the properties of A and B must be identical (correlation need not obey Leibniz's law). If A causes B, it neither follows that B causes A, nor that the properties of A and B are identical (neither symmetry, nor Leibniz's law)—for a fuller discussion see Velmans (1998, 2002, 2009 chapter 3).

[13] For example newspaper reports of PET or fMRI scans producing 'pictures of conscious thoughts', emotions etc. in the brain are ubiquitous, completely oblivious of the fact that these are actually indirect measures of activities that correlate with the experiences in question rather than pictures of the experiences themselves,

Block, and Baars provide a few prominent examples (amongst many). As noted above, Dennett simply declares first-person access to phenomenal qualities to have no place in third-person science, and, therefore, no ultimate place in an understanding of consciousness at all! Searle (2007), by contrast, fully accepts that conscious states have special phenomenal properties, for example that they are intentional (about something), subjective, and private (viewable only from a first-person perspective)—all characteristics that traditionally distinguish the mental from the physical. However he then simply *declares* such facts about consciousness to be 'objective *physical* facts' about the brain, thereby reducing the domain of the "mental" to a subclass of what is "physical" *by an act of redefinition*—but leaving the problem of how objects such as brains could produce such intentional, subjective, private states untouched. Block (1995) also entirely accepts the existence of phenomenal consciousness (with its special properties). However, he argues that there is another kind of consciousness, which he terms "access consciousness" that enables "information access" in the central nervous system, thereby giving consciousness a major role to play in the brain's activities. While this avoids reducing phenomenal consciousness to a function of the brain, this redefinition of information access as "access consciousness" risks *inflating* a brain function to a conscious status that it does not possess. Information access and information availability have been widely recognised aspects of human information processing since the advent of cognitive psychology in the 1960's, and it is true that information which enters phenomenal consciousness can be accessed, rehearsed, entered into long-term memory, used for the guidance of action and so on. However, the processes that actually enable information access, rehearsal, transfer to long-term memory and guidance of action are not themselves conscious (if they were there would be no need to subject such processes to detailed investigation within cognitive psychological research—see Velmans, 1991a). In short, "access consciousness" is not actually a form of consciousness. The conscious part of "access consciousness" is just phenomenal consciousness, and the processes that enable access to items in phenomenal consciousness are not conscious at all.

How to define a "conscious process"

For the purposes of definition, the importance of retaining an initial, clear distinction between information processing and the conscious experiences that may or may not accompany it becomes evident as soon as one reflects on the very different ways that the term "conscious process" has been used in the literature. In Velmans (1991a) I have argued that the psychological and philosophical literature confounds three distinct senses in which a process might be said to be "conscious." It might be conscious:

(a) in the sense that one is conscious *of* the process

(b) in the sense that the operation of the process is *accompanied* by consciousness (of its *results*) and

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and completely oblivious of the fact that the phenomenology of a subject's experiences cannot be viewed from a third-person perspective (the classical philosophical problem of "other minds").

(c) in the sense that consciousness *enters into* or *causally influences* the process.

We do not have introspective access to how the preconscious cognitive processes that enable thinking produce individual, conscious thoughts in the form of "inner speech." However, the content of such thoughts and the sequence in which they appear does give some insight into the way the cognitive processes (of which they are manifestations) operate over time in problem solving, thinking, planning and so on. Consequently such cognitive processes are partly conscious in sense (a), but only in so far as their detailed operation is made explicit in conscious thoughts, thereby becoming accessible to introspection.

Many psychological processes are conscious in sense (b), but not in sense (a)—that is, we are not conscious of how the processes operate, but we are conscious of their *results*. This applies to perception in all sense modalities. When consciously reading this sentence for example you become aware of the printed text on the page, accompanied, perhaps, by inner speech (phonemic imagery) and a feeling of understanding (or not), but you have no introspective access to the processes which enable you to read. Nor does one have introspective access to the *details* of most other forms of cognitive functioning, for example to the detailed operations which enable "conscious" learning, remembering, engaging in conversations with others and so on.

Crucially, having an experience that gives some introspective access to a given process, or having the results of that process manifest in an experience, says nothing about whether that experience *carries out* that process. That is, whether a process is "conscious" in sense (a) or (b) needs to distinguished from whether it is conscious in sense (c). Indeed, it is not easy to envisage how the experience that makes a process conscious in sense (a) or (b) *could* make it conscious in sense (c). Consciousness *of* a physical process does not make consciousness responsible for the operation of that process (watching a kettle does not determine when it comes to the boil). So, how could consciousness *of* a mental process carry out the functions of that process? Alternatively, if conscious experience *results* from a mental process it arrives *too late* to carry out the functions of that process.

How not to define a "conscious process"

It is nevertheless common for theorists to contrast human information processing that is either accompanied or not accompanied by a conscious experience, and then attribute any functional differences in processing to the activities of consciousness. Indeed Baars & McGovern (1996) explicitly advocate this method (which they call "contrastive analysis") for determining the functions of consciousness. As they point out, the brain has hundreds of different types of *unconscious specialised processors* such as feature detectors for colours, line orientation and faces, which can act independently or in coalition with one another, thereby bypassing the limited capacity of consciousness. These processors are extremely efficient, but restricted to their dedicated tasks. The processors can also receive global messages and transmit them by 'posting' messages to a limited-capacity, *global workspace* whose architecture enables system-wide integration and dissemination of such information. Such communications allow new links to be formed between the processors, and the formation of novel expert 'coalitions' able to work on new or difficult problems. Once processes enter the global workspace they 'become conscious', and Baars & McGovern assume the functions of the global workspace to be the functions of consciousness. Within their model, the global workspace is essential for

organising novel, complex activities. Given this, it is not surprising that they find many things for phenomenal consciousness to do. For example:

1. By relating input to its context, consciousness defines input, removing its ambiguities in perception and understanding.

2. Consciousness is required for successful problem solving and learning, particularly where novelty is involved.

3. Making an event conscious raises its "access priority," increasing the chances of successful adaptation to that event.

4. Conscious goals can recruit subgoals and motor systems to carry out voluntary acts. Making choices conscious helps to recruit knowledge resources essential to arriving at an appropriate decision.

5. Conscious inner speech and imagery allow us to reflect on and, to an extent, control our conscious and unconscious functioning.

6. In facing unpredictable conditions, consciousness is indispensable in allowing flexible responses.

"In sum, consciousness appears to be the major way in which the central nervous system adapts to novel, challenging and informative events in the world" (Baars & McGovern, 1996, p92).

Global workspace theory provides one of the best, current models of brain functions closely associated with consciousness. Given this, why should an *identification* of consciousness with the operations of the global workspace present a problem? For Baars, a third-person account of consciousness in terms of information in a global workspace *is* an account of subjective experience—that is, it is an account of consciousness *as such* (Baars, 1994, 2007). But the difficulties of incorporating *first-person*, phenomenal consciousness within a *third-person* account of information processing in this way are well illustrated by Baars' many different attempts to grapple with this issue:

In his earlier writings, Baars (1991) equated consciousness with focal attention, arguing that they "covary so perfectly, we routinely infer in our everyday life that they reflect a single underlying reality." Later, however, Baars (1997a) modified his position to viewing attention as the "gatekeeper" for the global workspace and therefore the gatekeeper to consciousness. Thus, "attention creates access to consciousness", but "consciousness is needed to create access to unconscious processing resources", and "... we can create access to any part of the brain using consciousness." (Baars, 1997b, p296; see also Baars et al, 1997) In short, consciousness is now thought to carry out the many functions which require global access to unconscious processing resources such as system-wide integration and dissemination of information, the formation of new links between unconscious processors, and so on (and this remains his position, as noted above). Unfortunately, in his *summary* of his 1997b position, Baars once again shifts his position (to one different to that outlined in the body of his paper) now stressing that,

"In the view presented here, *global access* may be a necessary condition for consciousness; but in the nature of science we simply do not know at this time what would be the truly *sufficient* conditions." (p308)

If global access is a necessary (but not sufficient) condition for consciousness, then global access is *causally antecedent* to consciousness. However, if consciousness *creates* global access, then consciousness is causally antecedent to global access. Baars tries to have it both ways. Nor does he consider the three ways in which a process can be said to 'be conscious', with their very different consequences for the functions of consciousness. Such confusions illustrate the need to analyse the precise relation of conscious phenomenology to its associated information processing with care. Phenomenal consciousness in humans is unquestionably related to certain forms of information processing in humans. However *reductive redefinitions* of consciousness in terms of the processing with which it is associated impedes a clear analysis of how phenomenal consciousness actually relates to its associated processing, thereby obscuring rather than clarifying its role in the economy of mind.

Conclusion

There is far more to be said about consciousness and its characteristics (see e.g. Velmans, 2009). However this brief, introductory paper is intended merely to deal with some preliminary issues regarding how to approach and how not to approach its definition. Hopefully, the above makes it clear that consciousness understood as *phenomenal consciousness* provides a secure departure point for scientific and philosophical investigations of its nature. Conversely, theories of consciousness that do not in some way deal with its phenomenology are not theories of consciousness.

Maybe consciousness will ultimately be shown to be nothing more than a state or function of the brain—and maybe it won't. That is, after all, what much of the current debate is about. But it is a mistake to *define* consciousness in a way that begs this question. It is a mistake to claim that one is investigating phenomenal consciousness directly when one is investigating its neural causes and correlates. And it is similarly a mistake to presume phenomenal consciousness to be *identical* to the operations of some aspect of information processing with which it is *associated*, for example the operations of a "global workspace." The mistake in these instances is one of *premature closure.* If one makes up one's mind about the ontology of phenomenal consciousness before fully investigating how its phenomenology relates to processing in the brain and surrounding world, one precludes a deeper understanding of that ontology. Conversely, no research is impeded by remaining open. One can for example investigate the neural causal antecedents and correlates of given conscious states whether one is a physicalist, a naturalistic dualist or a dual-aspect theorist.

Once a given reference for the term "consciousness" is fixed in its *phenomenology*, the investigation of its nature can begin, and this may in time transmute the meaning (or sense) of the term. As Dewey (1910) noted, to grasp the meaning of a thing, an event or situation is to see it in its relations to other things—to note how it operates or functions, what consequences follow from it, what causes it, and what uses it can be put to. Thus, to understand what consciousness is, we need to understand what causes it, what its function(s) may be, how it

relates to nonconscious processing in the brain, and so on. As our scientific understanding of these matters deepens, our understanding of what consciousness *is* will also deepen. A similar transmutation of meaning (with growth of knowledge) occurs with basic terms in physics such as "energy", and "time."

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