

Working Definitions of "Non-Conscious": Commentary on Baars on Contrastive Analysis

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Abstract: Baars ([1994](#)) contends that we must ask answerable questions about consciousness, and that to do so will require definitions of consciousness that permit "contrastive analysis". I endorse this general approach, but find several of Baars' claims of processing without consciousness, unconvincing. I show that a more cautious definition of "non-conscious" than Baars' need not impede experimentation and is more likely to enjoy universal agreement.

1.1 In his *A Thoroughly Empirical Approach to Consciousness*, Baars ([1994](#)) argues convincingly for accepting working definitions of consciousness that may be manipulated in the laboratory. Certainly, if experimental study of consciousness is to progress, some of its more mysterious aspects must be temporarily left to one side. Instead, experimentation must focus initially on more answerable questions, progressing from crude definitions of the object of study, to more refined ones. However, though I agree absolutely with Baars' diagnosis, I am concerned that some of his claimed examples of non-conscious processing will fail to convince many in psychology. This area of research desperately needs to gain respectability amongst those working in other fields; a cautious but pragmatic approach to empirical data will optimise its chances of doing so.

1.2 For "contrastive analysis" (comparison of conscious representations with closely related non-conscious ones), evidence of processing without consciousness is required, and Baars draws on a wide selection of empirical evidence in support of his approach. He considers four types of representations to be without consciousness: these are referred

to below as "unattended", "subliminal", "implicit" and "pre-perceptual" processes. Whether each of these types of processing may be productively considered "non-conscious", is now discussed.

2 Unattended Processing

2.1 Some experimental psychologists (e.g. Velmans, 1991) have been prepared to treat "unattended" processing as non-conscious and Baars is apparently prepared to make the same step. On the other hand, several authors including Crick (1994), see attention as simply "enriching" consciousness and believe that unattended stimuli may achieve some degree of conscious representation. This controversy does not appear to be reaching a conclusion, and it is difficult to see how it might do so, given that our current manipulations of both attention and consciousness are so very primitive. What is clear is that attention itself is rather poorly understood, and that equating "unattended" with "non-conscious" therefore promises to be a fruitless, possibly misleading exercise.

3 Subliminal Processing

3.1 When psychologists talk about "subliminal" processing, this is usually in reference to backward masking paradigms. When a word is flashed momentarily on a screen and an uninformative pattern superimposed upon it after a sufficiently short delay, subjects report being unaware of the presence of the stimulus and may not be able to guess above chance whether a word was presented or not. Under these conditions there is evidence that word meaning is still processed (e.g. Marcel, 1983). Theoretically however, masking may allow conscious perception but prevented registration of the word in sensory memory. Since at the moment we cannot know whether a masked stimulus was not seen, or simply not remembered, it is difficult to see how backward masking studies may have any direct bearing upon our understanding of subjective experience (see Holender, 1986 for a review).

4 Implicit Processing

4.1 Several claimed demonstrations of processing without consciousness involve complex rule learning (see Schacter, 1987 for a review). When presented with stimuli which conform to very complex rules, such as artificial grammars, subjects perform surprisingly well but insist that they were unaware that they had processed such rules. These paradigms do not require stimuli to be presented briefly and so it may be assured the subject has seen and attended to the experimental stimuli. However, many researchers remain to be convinced that the existence of implicit processing has been established (e.g. Perruchet & Pacteau, 1990) and particular concerns persist regarding the sensitivity of measures of conscious processing in such tasks. Even if this problem were to be solved, it is not clear that implicit learning studies can tell us anything we do not already know. For example, we are not aware of the complex rules that our visual system uses to provide us with an accurate idea of an object's lightness, but we do perceive the subtle conscious effects of these processes; enhanced performance in implicit rule learning tasks might

therefore simply be another example of consciousness reflecting the results of rule-processing, not the rules themselves. I conclude that equating "implicit" with "non-conscious" is unlikely to be informative at present.

5 Pre-Perceptual Processing

5.1 Probably the most promising approach to investigating conscious experience is the study of "pre-perceptual" processes. Our experience of visual phenomena seems to be modulated by aspects of perceptual set (Gilchrist, 1977) and in many cases only a subset of representations of a visual feature (e.g. motion) may correlate with what we see at any one time. Those representations which are not directly affecting visual experience may be considered as "pre-perceptual", and it is hoped that systematic study of when processes do and don't directly impinge upon subjective experience, may confine possible criteria for conscious representation. A simple, but convincing case (Logothetis & Schall, 1989), occurs when an upwardly moving grating is presented to one eye and a downwardly moving one to the other eye. In this case only downward or upward motion is seen by human observers, rather than a summation of the 2 signals. Only a subset of motion sensitive neurons in V5 of the rhesus monkey correspond to the monkeys experiences evidenced in its behaviours. Such approaches benefit greatly from the wealth of physiological and psychological data already available, and from the likelihood of easily interpretable results; they are already providing useful insights into the processes underlying subjective experience.

6 Conclusion

6.1 In conclusion, I am convinced that conscious experience may be studied productively by systematic comparison of "pre-perceptual" processes with their conscious counterparts. However, I have also voiced the concerns of psychologists regarding the validity of claims that backward masking, attention or implicit learning studies may be directly informative about our experience. The scientific community is with some reason still sceptical that consciousness may be studied experimentally; it therefore seems appropriate to use the most cautious working definitions of "conscious" and "non-conscious" which do not impede experimentation unnecessarily.

6.2 Our criteria for a working definition of "non-conscious" should aim to maximally satisfy both the goals of universal acceptability in the scientific community and of permitting experimental study. As I have argued above, criteria which treat "unattended", "masked" or "implicit" representations as "non-conscious" will not be universally acceptable, whereas any criterion framed in terms of intentionality or qualia clearly cannot satisfy the aim of allowing experimental study of consciousness. If a salient aspect of a stimulus does not appear in detailed, guided, verbal report, given unrestricted viewing by non- brain-damaged subjects, it may be universally agreed that this aspect is not conscious. Paradigms used to study pre-perceptual representations are both able to utilise this most cautious working criterion for "non-conscious" and yet provide workable paradigms for use in the laboratory. I suggest that this more cautious approach should

waylay the fears of those who see experimental study of consciousness as impossible, and yet it may still encourage progress to be made.

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