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# Theories of Consciousness Should Not Be Afraid of Dreams

MICHAL KLINCEWICZ

This paper reviews some reasons for us believing that dreams are phenomenally conscious experiences. I point out that if dreams would be such then one should be able to draw analogies between them and waking conscious experiences at the level of folk psychology, behavior, and neuroanatomy. Instead, we find disanalogies at all these levels, so while we may have no strong reason to accept that dreams are unconscious, we have good reason to think they are different from conscious experiences. A safer bet is to think that they form a distinct *sui generis* psychological category. Sleep science should wait for consciousness science and until then treat its subject matter as distinct.

## 1. Introduction

We all seemingly know what conscious experiences are like and for those that do not there is a quip from Ned Block: ‘if you got to ask, you ain’t never gonna get to know’ (Block 1978, 281). Unfortunately, a general theory of consciousness is not around the corner. It is also far from settled which neural state or network is a necessary or sufficient condition for conscious experience (Giacino et al., 2014; Baars et al., 2003). We also do not have a settled criterion for detecting consciousness behaviorally (Seth et al 2005; Seth 2009). Verbal reports remain the gold standard and probably will remain in this role for the foreseeable future. This might be some consolation to cognitivist theorists of consciousness, for whom conscious experience is tied closely to subjective reports and thus to cognitive access (Cohen and Dennett 2011, Rosenthal 2007, Brown 2012). Conversely, this would be unsatisfactory to anyone that emphasizes the ineffability of aspects of conscious experience or puts a lot of stock in phenomenology (Block 2007; Block

2011). In other words, what one takes to be evidence of consciousness in dreams often depends on one's theoretical commitments (Sebastián 2014).

One such claim is the claim that dreams are phenomenally conscious experiences (Windt and Noreika 2010). The best philosophical argument for this claim, is that shortly after dreamers are woken up they can report about them (Windt 2013). There has been considerable debate since that argument was presented, but not outside the theoretical context of consciousness studies. When we take the argument outside of that context what we are left with are mere analogies. This is where we take the issue up.

This paper offers a challenge to thinking that there are *analogies* between dreams and waking conscious experience at the level of folk psychology, behavior, and brain activity. It also offers support for the view that it is best to taxonomize them as belonging to a *sui generis* category rather than as being in the same category as waking conscious experiences. Section 2 lays out the folk-psychologically framed analogy between conscious experiences and dreams and the challenge to it. Section 3 focuses on observed behavioral analogies between waking and dream states. Section 4 challenges the purported isomorphisms between brain activity during wakefulness and dreaming. Section 5 addresses lucid dreams. Finally, it briefly offers an alternative view based on Melanie Rosen's narrative fabrication theory of dream recall (Rosen 2013), which is supported by the disanalogies uncovered in Sections 2, 3, and 4. Section 6 addresses two objections.

## 2. Folk-psychological analogy between dreams and conscious experiences

The claim that dreams are phenomenally conscious has been widely discussed in philosophy<sup>1</sup> and it reached foundational status with Descartes' *Meditations*. Descartes tells us that 'as I think about it more carefully, I see plainly that there are *never* any sure signs by means of which being awake can be distinguished from

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<sup>1</sup> Arguably, this assumption starts at least with Plato, when Socrates asks Theaetetus 'what proof you could give if anyone should ask us now, at the present moment, whether we are asleep and our thoughts are a dream, or whether we are awake and talking with each other in a waking condition' Plato (1921) *Theaetetus*, Cambridge: Harvard. To which Theaetetus replies that indeed there is no way of knowing and that 'the likeness between the one talk [in reality] and the other [in a dream] is remarkable' *ibid*. Theaetetus thinks that he might as well be dreaming of having that very conversation with Socrates.

being asleep' (Descartes 2008, 13; my italics). In this certainty begins Descartes' doubt about knowledge arrived at by the senses—in the purportedly obvious truth that being awake and being asleep are subjectively indistinguishable. The idea that this is obvious continues, even today in sophisticated recent treatments of the issue (Windt, Nielsen, and Thompson 2016).

There is at least one important folk-psychologically framed analogy that may support this latter claim, outside of the philosophical debate about consciousness: dreams and conscious experiences are remembered and forgotten for roughly the same reasons. For future reference, let us call dreams that are or may be remembered *r-dreams* and those that are forgotten *f-dreams* and their waking counterparts *r-experiences* and *f-experiences*.<sup>2</sup> If the analogy were true, the folk could attribute r-dreams/f-dreams using the same folk taxonomy and conditions that they use to attribute r-experiences/f-experiences.

The analogy is relatively simple. First, co-occurrence of strong emotions typically correlates with r-experiences (Cahill and McGaugh 1998). Emotionally salient experiences function like attractors for other memories, which create clusters of episodes that can be recalled with more fidelity. By analogy, dreams that involve extraordinary content are also more likely to be remembered.

It is perhaps not even controversial that some of our conscious experiences are generic and forgettable—these are the f-experiences. Whatever is not salient does not grab our attention and does not warrant extra resources. The most economical solution for our brain is to render most experiences in a generic way as 'some of that stuff over there' instead of kicking it up to full-blown, memorable, r-experiences (see: Dennett 1991, 354-356). Presumably, a similar process is responsible for r-dreams.

However, there are reasons to think that f-dreams are significantly different than f-experiences, at the level of folk attributions, even if the underlying causes of r-dreams and r-experiences are similar. Frequency and quality of dream recall depends on the quality of sleep, time of awakening, and other factors that have nothing to do with content and emotional saliency (Eichenlaub et al 2018,

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<sup>2</sup> R-dreams are especially common in laboratory settings when participants are explicitly instructed to remember their dreams. In this context, the rate of recall can reach as high as 80% when participants are woken up during REM sleep and 50% when they are woken up during non-REM sleep: Nielsen T.A., Laberge L., Paquet J., et al. (2000), "Development of Disturbing Dreams During Adolescence and their Relation to Anxiety Symptoms", *Sleep* 23(6), 727-737. The distinction should also be distinguished from David Foulkes' notion of A- and B-dreams.

Giesbrecht and Merckelbach 2006). In other words, f-dreams correlate with factors that are different from those that correlate with f-experiences.

The second disanalogy between r-experiences and r-dreams is temporal. In scientific terms, normal verbal reports about r-experiences engage the contents of the sensory memory system in which representations decay rapidly. The special status of subjective verbal reports as criteria of conscious experience is connected to their engaging this aspect of the memory system. When r-experiences involve things that are significantly further in the past, they involve the long-term memory system and cannot play that particular role of criteria for consciousness ( Craik and Tulving 1975).

Verbal behavior during sleep is sometimes treated by us folk *as if* it was a clear indication of conscious experience. But it can equally be interpreted as merely mouthing words without any connection to conscious experience. What speaks to the latter interpretation is that we often cannot follow up verbal behavior during sleep with some questions to settle whether these are merely mouthings of words or genuine reports. Following up with questions can and has been done after the person wakes up. But here, unlike in the case of conscious experiences while awake, the report is not engaging short-term memory, but long-term memory systems, so we lose the relevant scientific connection to consciousness.

To sum up, we have at least two reasons to not take verbal reports about dreams in the same way that we take verbal reports about normal conscious experiences. First, the factors contributing to the occurrence of f-dreams and f-experience are different. Second, we do not follow up on verbal utterances made during sleep in the same way that we could with typical verbal reports. If the folk analogy between r-dreams and r-experiences is not strong, then it is not as obvious why—at the level of folk psychology—people like Descartes claim that they are indistinguishable.

### **3. Behavioral analogies between dreams and conscious experiences**

Another way to support the analogy between r-dreams and r-experiences is to argue that some behavior during sleep has a functional role similar enough to subjective verbal reports, even though in itself it is not actually a subjective verbal report itself. This role is what makes the two indistinguishable, in a Cartesian sense. For example, in the same way in which being in pain is manifested

differently across species or even individual humans, reporting on conscious experiences is manifested differently depending on whether it involves sleep or wakefulness.

There are some straight-forward candidates for evidence of this commonality. If patterns of speech during sleep match the content of retrospective dream reports after the sleeper wakes up, that is an independent reason to suppose that speech behavior during sleep is functionally equivalent to a subjective report—it gives us evidence that the dreamer was consciously aware of their dreams. A person that screams about birds during sleep and then reports that they had a dream about birds can be said to engage in something like reporting on the contents of their conscious experience during sleep by screaming: “birds!” Non-pathological sleep talking is fairly common (66.8% in a sample of 1000 Norwegian adults) (Bjorvatn et al 2010), even though coherent speech patterns during sleep occur most often in people with neurodegenerative disorders (Tachibana et al 1997; Abe et al 1984).

Further examples along these lines can be found in people with REM sleep disorder, which is a disturbance or failure of sleep paralysis. Typically, REM sleep disorder results in a variety of non-verbal behaviors, some of which are reflections of dream content (Schenck et al 1986, Chen et al 2013, Borek et al 2007). For example, one may be swatting at the air during sleep. Swatting at the air is the sort of thing one would do, if one had a conscious experience of being attacked by birds. So, if the dreamer reports that they dreamed of being attacked by birds and they swatted at the air during sleep we have evidence that the dream was a conscious experience. The swatting was, functionally, like reporting.

Corroborating evidence lies in a number of studies that show how the content of dreams can be manipulated (Schredl 2010). For example, proper names presented during REM sleep cause the sleeper to incorporate them into their dream (Berger 1963). We can easily imagine how sitting by the shore, we find ourselves thinking about birds and then realize that the seagulls have been squawking around the whole time.

However suggestive, all this does not suffice to support the functional analogy. Examples of complex sleep behavior, verbal utterances, and content-influences are all coupled with retrospective reports—the golden standard for evidence of consciousness. Without these, we would not be in a position to pronounce in any way about the psychological nature of what happens when we

sleep. Verbal reports import the thing that is at stake, namely, conscious experience—being a gold standard and all.

Of course, the charge of begging the question can be made back against the claim that dreams are not conscious experiences. Proponents of the claim that dreams are conscious could argue that denying or minimizing the significance of the connection between complex sleep behavior and retrospective reports builds in the assumption that dreams are not conscious. And so it would seem that we end up in a stalemate, in a situation that Daniel Dennett characterized as an ‘open, and theoretical question whether dreams fall inside or outside the boundary of experience’ (Dennett 1976, 170-1). In other words, we have theoretical assumptions doing most of the work in the interpretation of the phenomenon.

What speaks against there being a stalemate is the magnitude of difference between admittedly complex dream behavior and the behavior typically associated with waking conscious experiences. First, people that are awake can answer questions giving further detail about their current state of mind and alter their behavior if asked to do so. This form of interaction does not often happen with people that are sleep-talking, sleepwalking, or experiencing night terrors. It does not help to say to a dreamer: “there are no birds attacking you, it is a dream.”

Second, in a related point, people that are asleep lack the kind of control over their behavior that accompanies normal waking conscious experience. We would expect dreamers to be able to at least sometimes retrospectively report that they were asked something and that they could not answer because they were paralyzed. Control is closely connected to the folk conception of intentional action and this is why violent behavior during sleep is not criminalized (Pressman 2007, Siclari et al 2010).

These limitations and differences contrast sharply with the wide range of complex behaviors available to people that are awake. They suggest that whatever is going on during episodes of complex behavior during sleep is significantly different from what happens during episodes of complex behavior when people are awake. In conclusion, the best explanation of the relationship between complex behaviors during sleep and subsequent retrospective reports cannot be that they are mediated by conscious experience. The better inference is to the claim that the mediator is something *other* than conscious experience.

#### **4. Analogies in brain activity**

The human brain undergoes significant changes as it enters the different stages of sleep (Nir et al 2011, Nir et al 2013; Gvilia 2010; Brown et al 2012). Nonetheless, during all stages the brain is active, including areas involved in sensory processing, spatial processing, and multisensory integration, among others (Hong et al 2009). It is taken for granted in sleep science that most dreaming occurs during rapid eye-movement (REM) sleep, when eye movements appear functionally similar to those we observe during wakefulness (Miyachi et al 2009, Leclair-Visonneau et al 2010). Eye-movements together with sensory brain activation parallels a coupling between the two processes that is observed during wakefulness.

In many other respects, our brain wakes up during sleep, while our body remains inert (Siclari et al 2017). There is a return to rapid low voltage oscillations in EEG recordings during this time, which matches the features of recordings during wakefulness (Crunelli and Hughes 2009). In addition, the cortico-thalamic system that is online during wakefulness also comes online at this time (Saper et al 2001, Cohen 1974). Recordings of brain activity during REM sleep show patterns of activation similar to activity during wakefulness (Schwartz and Maquet 2002, Hobson and Pace-Schott 2002). Particularly active are sensory areas and areas correlated with imagery (Nir and Tononi 2010). Perhaps most compelling to that last claim is the line of research that shows how the content of retrospective reports about dream narratives can be predicted by software trained on patterns of brain activity recorded using fMRI scans of the visual cortex during sleep (Horikawa et al 2013). These are all powerful reasons to think that dreams are conscious—they have a similar neural signature, including complexity, as normal waking states. The only apparent difference is behavior, which may be explained by sleep paralysis.

Compared to the folk analogy between r-dreams/r-experiences or the functional analogies between verbal and non-verbal behavior in parasomnias, the similarities in brain activity may indeed make a more compelling case that dreams are conscious, especially to people that are committed to a particular theory of consciousness that comes with neuro-anatomical claims. However, when we look more closely at the areas of the brain that are *not* active during REM sleep, we get yet another disanalogy.

For one, the prefrontal cortex is typically disengaged during REM sleep, except during lucid dreams, more about which later (Maquet et al 1996, Muzur et



al 2002). This is significant, since areas of the prefrontal cortex are standardly thought to be the seat of complex cognition (Stuss and Knight 2013) and, on some views, subjective verbal reports (Lau and Passingham 2006). Some cognitivist theorists of consciousness also take the pre-frontal cortex to be a good candidate for the neural correlate of consciousness (Dehaene et al 2003, Baars et al 2003).

Another neural level analogy that may help with the claim that dreams are conscious channels the classic Tulving distinction between episodic, semantic, and implicit memory (Tulving and Schacter 1990, Tulving 1985a). Episodes, so those memories that we store in the episodic long-term memory system necessarily involve conscious experience, as Tulving's theory predicts. We would not be able to recall ourselves as dreaming without having stored them in that system. Without consciousness during dreams, there is no remembering them at all—or so it may appear to the folk.

The main problem with this argument is that there is a lot of evidence—some of it already mentioned above—that sophisticated processing can occur without awareness (e.g., Dehaene and Changeux 2011). There is even some evidence that we process the semantic meaning of objects without these objects *ever* being conscious (Sanguinetti et al 2013). The sum-total of this evidence suggests that the inference from an instance of remembering something to phenomenal consciousness is too quick. We process and store things without consciousness all the time, so why not during sleep?

Furthermore, Tulving's view is not the only game in town. There are alternative theories of narrative or episodic memory, which do not make auto-noetic consciousness a necessary component (Martin 2001, Nelson and Fivush 2004). The most theory-neutral interpretation of the connection between auto-noetic consciousness and episodic memory makes the relation between them contingent (Klein 2013). This leaves the possibility of retrospective reports that masquerade as genuine cases of remembering a conscious episode, so we are back to the start.

The wide range of neural evidence about the neural signature of consciousness should give one pause before drawing analogies between brain activity in and out of sleep. It is not enough that the brain is in many respects functioning just as it does during wakefulness. What matters is that the extra neural ingredient that results in phenomenal consciousness is also active at that time. And, as it turns out, scientists disagree about that.

## **5. Lucid dreams and their kind**

Some dreams are lucid, that is, they are accompanied by meta-cognitive awareness and a feeling of control over their content (Kahan and LaBerge 1994). It remains controversial what process lies behind them, but it is uncontroversial that they occur and that they appear to be phenomenally conscious. If the only thing missing in regular dreams is their lucidity, whatever that turns out to be, then we have an independent reason to think that regular dreams are also conscious.

Philosophical skeptics about dream consciousness, such as Norman Malcolm, Daniel Dennett, and Gilbert Ryle, argued that lucid dreams are not genuine cases of conscious experience on a priori grounds. The idea of lucid dreaming implies, on their view, something other than sleep, so lucid dreams fall under some other category than conscious experiences. While this sort of conceptual analysis may be a good way to defend the claim that lucid dreams are not conscious experience in the context of philosophy, we do not have to go that way ourselves here.

For one, lucid dreamers routinely report having control and display a good deal of control over their mental states. With appropriate training, people can even move their eyes as directed while lucid dreaming in a phenomenon called ‘lucid-control’ (Gackenbach 2009). These eye-movements function like subjective verbal reports about one’s conscious experience. Anti Revonsuo (Revonsuo, 1995) reviewed a great deal of similar empirical evidence that altogether strongly suggests that, contrary to a priori philosophical arguments, lucid dreams have all the signs of conscious experience, corroborated by classic studies on the issue (LaBerge 1988, LaBerge et al 1981, Worsley 1988, Schatzman et al 1988). Since 1995, that evidence has grown.

Indeed, this evidence is compelling: lucid dreams are probably conscious experiences. However, note that none of the disanalogies mentioned in sections 2, 3, and 4 hold either. People that are lucid dreaming are doing something significantly different from those that are non-lucid dreaming and significantly like what they are doing when they are awake.

This comes out in the neuroscientific evidence, too, speaking to the neural disanalogy. EEG recordings show significant increase of 40 Hz band oscillations and coherence at frontal brain regions during lucid dreams, as compared with REM sleep (Voss et al., 2009). This comports with the already mentioned decrease of neural activity or its complete absence in the dorsolateral pre-frontal cortex

during REM sleep (Muzur et al 2002). During lucid dreams, activity in that region is increased (Nofzinger et al 1997). Many other empirical findings can be brought up to make a similar point.

Neural activity in frontal regions and increased coherence of firings suggest that lucid dreaming involves a brain state that is a hybrid between sleep and wakefulness. Arguably, there are other hybrids of these states as well and a number of in-between states, such as the hypnogogic state or hypnogenic state (Vaitl et al 2005). In other words, lucid dreams may involve mental states that are distinct from both dreaming and regular waking conscious experiences. Non-lucid dreams may be an in-between state themselves, somewhere between unconscious states and lucid dreams.

So what is going on? Melanie Rosen has argued that the best way to interpret the process of dream recall is as a form of fabrication that mirrors our tendency to rationalize strange elements in waking reports. Subjects tend to leave out supernatural or bizarre elements when reporting waking memories of stories (...). Confabulation is exacerbated in dreams by rapid memory loss and bizarre dream content (Rosen 2013, 13).

Indeed, when we recall an episode of dreaming, we are able to impose the relevant causal structure on its content, very much like we do when we recall things of which we were not at all aware (Nisbett and Wilson 1977). We end up with a report that is ostensibly about a particular episodic memory, say, but could be based on the contents of other memory systems, partial memories, or just the innate need that our psychological system has to impose causal structure, full stop.

Confabulation is not uncommon, even with fully conscious people, such as those with Korsakoff's syndrome. These people routinely make what appear to be retrospective reports about episodes that never actually happened and stay convinced that they are right, even when confronted with evidence to the contrary (Kopelman et al 2009). We cannot infer anything about the state of mind of someone that confabulates. They could have been completely unconscious at the time or consciously experiencing something else.

In conclusion, if all of this is true, then it should be unclear what folk psychological category dreams belong to and it should be clear that it is probably not 'conscious experience.' We typically talk about unconscious mental states in contrast to conscious ones, with the sometimes tacit assumption that these unconscious states could at least in principle have become conscious (Searle 1991). The view presented here leaves dreams in some in-between category that

is neither phenomenally conscious nor unconscious in the sense of unconscious mental state.

The moral from these philosophical observations for dream science is that the concept of consciousness comes with difficulties and muddles that may be best set aside in the interest of making better empirical predictions and hypotheses. The only thing that you lose is the purported connection between the science of dreams and the science of consciousness, which can be brought back once we have a more theory-neutral grip on the neural correlates of conscious experience. Currently, the science of consciousness is not there to help, it is there to make things more difficult by adding an extra theory-laden variable.

## **6. Objections and replies**

*Malcolm redux objection.* In *On Dreaming* Norman Malcolm claims that subjective verbal reports are the only criteria we have for conscious experience (Malcolm 1956, Malcolm 1962) and concludes from this that a person that is asleep cannot be said to have any conscious experiences. The view presented here offers the same sort of argument, so it opens itself up to the same criticism that has been levelled against Malcolm.

Crucial to Malcolm's view is the notion of a criterion, which in Malcolm's usage is closely tied to confirmation. According to Malcolm, a declarative sentence that cannot be confirmed to be either true or false is unintelligible and senseless. Sentences that assert that dreams are conscious are hence unintelligible and senseless, since the only criteria that we have for conscious experience are subjective verbal reports, which happen to be impossible during sleep.

As a number of philosophers have pointed out, there are serious problems with Malcolm's idiosyncratic use of 'criterion' (Dunlop 1977, Chihara 1965). Most important of these is that the close connection between verbal reports and conscious experience that Malcolm exploits does not support the claim that dreams are unconscious. At best, it tells us something about the way that we often use words such as "consciousness" and "sleep" in non-scientific discourse (Putnam, 1962). This confuses the role of inductive inference in our regular language use with its role in scientific practice. On Malcolm's view science should allow only:

- (1) Conclusive verification based on the application of 'criteria', and (2)
- inductive inference in the most restricted possible sense: induction by simple

enumeration. But, as Mill remarked, no developed social science (or any other science, one might add) will ever be possible on this basis (Putnam 1962, 317).

So, the fact that we cannot report during sleep only shows that there is no way to settle the issue of whether dreams are conscious by reference to verbal reports alone. That does not mean that when scientists attempt to discover via experiment and probabilistic reasoning whether dreams are conscious, they are engaging in something unintelligible and senseless.

*Reply.* The position defended here does not demand that we adopt verbal reports as a criterion (in a Malcolmian sense) of conscious experience, just that such reports are currently a gold standard to be superseded once we have a suitable independent way of testing for phenomenal consciousness. What supports the view are empirically observed disanalogies and a folk psychological taxonomy that is open to revision, not a priori conceptual analysis.

*Ryle redux objection.* One may also object that the argument of this paper is a re-warmed serving of Gilbert Ryle. Similarly to Malcolm, Ryle argued that dreams are unconscious based on a priori reasoning. According to Ryle's view, dreams are unconscious because the concept <dream> contains a negation of the concept <waking experience> (Ryle 1954, 93-95). By analogy, just as we understand what a counterfeit coin is because we understand what a coin is, we understand what it means to be dreaming, because we understand what it means to have normal waking experiences. If Ryle is right, it is *by definition* impossible for dreams to be like waking conscious experiences.

One problem with Ryle's argument is that it conflates the distinction between creature and state/phenomenal consciousness (Manson 2000, Rosenthal 1986). Creature consciousness is a state of the organism, typically covering a whole range of processes and changes, that we categorize with general state terms, such as "sleep," "coma," or "minimally-conscious state." The type of consciousness that is at stake in the question of conscious dreams is state/phenomenal consciousness, which is at the heart of the so-called hard problem of consciousness (Chalmers 1995). State consciousness is a property of a mental state of the organism and not the whole organism. Sleep is a paradigmatic example of creature unconsciousness. We understand what it means to be sleeping (creature unconscious), because we understand what it means to be awake (creature conscious)—not because we understand what it means to have a

conscious mental state. So, this paper (like Ryle) is wrong in making the analogies/dis-analogies that it does—it is a sort of category mistake.

*Reply.* The dispute does not concern the concept <dream> and whether it contrasts in the Rylean sense with the concept <conscious experience>. If the dis-analogies presented here are good then we should treat them as evidence of a sui generis category for dreams, distinct from the concept of conscious experience, not as evidence that they are not conscious.

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