Reflections on Insight

A Reply to Lana Kühle

Ursula Voss

In this reply to Kühle, I will respond to her comments on the role of insight in lucid dreaming, especially regarding the question of whether it may be knowledge-based or instead express a sensorial experience. My answer rests on experimental findings, acknowledging Kühle's remarks, and taking her methodological challenges into account. I will challenge her proposal that insight might be called a state, opting for a definition of a transient thought atypically embedded within the state of dreaming, which may suffice to retrospectively call a REM dream lucid, but which will not satisfy the assumptions underlying the existence of a state.

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1 Introduction

The commentary by Kühle reminds me of a remark made by a distinguished and renowned Swiss sleep researcher who asked me recently, during a lengthy discussion of our work on lucid dreaming, "how can you be sure that what you call a dream really exists". In other words, he wanted to know how we could prove that dream narratives were memories of REM-sleep mental activity instead of, say, fantasies occurring during the process of awakening or memories of hypnagogic hallucinations, etc. It struck me then that I had neglected to openly postulate the key assumption that our work rested upon, namely that dreams really exist. So I still owe him a detailed response and Kühle's commentary provides me now with the opportunity to generate an adequate reply. In the following, I will focus on Kühle's main argument, which seems to circle around the definition of "insight" and the question of whether it represents an epistemological statement or a phenomenological experience. I will shortly enter into discussion of whether it is justified to define insight as a state, as this assumption is not to be deduced from our work but certainly points to a need for clarification. While interesting, I will refrain from commenting on her speculations on whether insight may or may not be an ability

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except for proclaiming that in my view, insight represents nothing but a result of neurobiological processes we still know far too little about. However, it is a fact that entering the state of lucid dreaming can be trained. Can insight per se be trained? I doubt it. Can the ability to generate insight be trained? According to recent studies on gamma-band activity in the developing and mature brain (see references in the main text), it is at least a possibility.

2 The role of insight in lucid dreaming

In her commentary, Kühle claims that the way we use the term "insight" leaves many—mostly philosophical—questions unanswered. While I certainly agree in principle that solving one question often generates many others, I also believe that there is some need for clarification regarding terminology. It seems that the discussion of what insight is and what it isn't reveals one of the key methodological differences between our disciplines. Whereas philosophy of mind is mainly involved in meta-theory and the conceptualization of psychological theories, the focus of experimental psychology lies on the testing of hypotheses, albeit neither foci apply exclusively. By definition, however, experimental psychology aims at identifying cause-and-effect relationships between observable phenomena by applying experimental methods to induce controlled manipulations of so-called "independent variables", leading to reproducible changes in "dependent variables". Although experiments are hypothesis-based, testing specific (confirmatory) or unspecific predictions (exploratory) derived from theory, progress is often made when such an experiment leads to an unpredicted result. Such was the case in the construction of our LuCiD scale.

In the set of lucid and non-lucid dreams investigated and reported on by our group (Voss et al. 2013), we identified a factorial structure in which eight item clusters (which differed from the theoretically predicted ones) showed sufficient common variability to consider the items within each cluster related. These eight factors accounted for a large portion of variance in dream consciousness as defined a priori, and based on theoretical considerations. The items in the item pool statistically identified as the single factor we referred to as "insight" pertained to the verbal communication that one *knew* one was dreaming while the dream continued. As such, insight would have to be regarded (in an epistemological sense) as understanding that at a particular moment within the dream, the dreamer acquired knowledge about his or her state of consciousness, which would be the hybrid state of lucid dreaming.

As Kühle correctly points out, this may or may not be true, however. It is just as possible that a dreamer who states upon his or her awakening: "I *knew* it was a dream while the dream continued" only thought that he or she knew, while in truth, he or she may have *sensed, felt, or experienced* that the ongoing dream action was not real. This would then pertain to a phenomenological experience similar to what Duncker (1947) refers to as "conscious participation" (p. 505), describing the sensorial experience that one is, at a particular moment, consciously aware of (pp. 508–509). On the other hand, even if we really experienced insight in a phenomenological sense, how can we be sure that this experience was not the result of the epistemological recognition of some sort of incongruence within the dream at some particular point in time? To me, this line of thought resembles that revolving around the question of whether we can be certain that a dream is really a dream and not something else. Philosophically, this is of course fascinating. But to experimental psychologists, such a discussion is unsettling because it is so difficult to translate into testable, i.e., operationalizable, hypotheses. Our admittedly very pragmatic approach is to define underlying assumptions such as *"we assume that dream reports generated from REM sleep awakenings are mentations generated during REM sleep and (fractionally) remembered (at least) until questioning" or "we assume that verbal accounts are reliable and valid".* These assumptions can then again be challenged by separate experimental studies. In the case of doubting the existence of REM sleep dreams, an experiment

could be set up, for example, interrupting different states of arousal such as meditation, daydreaming, NREM sleep, or REM sleep and questioning the subject with respect to immediate recollections of mental activity. A comparison would lead to the conclusion that reports from REM sleep awakenings differ fundamentally from reports gathered from other states of arousal. This has, of course, been successfully achieved and repeated many times. However, the question is still not solved. It is doubtful, for example, whether an arousal from REM sleep enables as accurate a report as an arousal from the meditative state. Similarly, we cannot exclude the possibility that REM sleep alters mnemonic processes in a different way to NREM sleep, so that obvious discrepancies in NREM and REM reports are due to state-dependent retrieval and filtering processes and not at all related to different fantasies generated during the particular state.

In the same way, it certainly is appropriate to wonder about the true nature of what we refer to as "insight". To psychologists, the explanation that a factor name is really only an attempt to describe a commonality between different but related observations is probably satisfactory. To philosophers, this will of course not be the case. However, with psychological pragmatism in mind, I would like to point to some empirical findings (and their immanent difficulties) regarding the question on how to further explore the nature of insight in lucid dreams: when we constructed the LuCiD scale (Voss et al. 2013), we started out with a set of 50 items that were selected on the basis of theoretical consideration. In a first step, these items were tested on a large sample of dreamers, leading to 158 dream narratives considered valid. These were then analyzed for factorial structure as well as for item reliability. Several items that might have been potentially informative regarding the question of epistemology vs. phenomenology proved either indistinct in differentiating between lucid and non-lucid dreams or they yielded too high statistical item difficulties so that they had to be eliminated from further evaluation. Some examples are:

- While dreaming my sensations were the same as when I imagine something or daydream during wakefulness
- While dreaming I was convinced that I was awake.
- I wasn't in the dream, I had no self.
- While dreaming I felt that I knew where I was sleeping.
- While dreaming I was more than one person.

This finding of no-difference is of course by no means sufficiently informative to consider the question of insight in dreaming solved or even solvable. The finding of high item difficulty in particular poses some problems: items are considered difficult if they do not yield a reasonable number of affirmative answers (Moosbrugger 2008; Schermelleh-Engel & Werner 2008). Thus, an item that is not often selected as true will be eliminated from analysis although it might contain valuable information, e.g., that the statement is considered false by the majority of participating subjects. Further, in the case of subjects awakened from sleep, they may not affirm an item although it is true, simply because they are not yet able to comprehend its content (sleep inertia). For example, the item "I wasn't in the dream, I had no self" was not often selected as true. Was this because in most cases, dreamers felt they did have a self or was it because they didn't understand what was asked of them? I hope that this example highlights some of the problems that arise when we try to subject philosophical theory to experimental testing. Perhaps a different design, opting for a specific comparison of questions addressing epistemology vs. phenomenology during a steady state of wakefulness (such as mind-wandering or meditation) might generate more concrete answers, avoiding sleep inertia effects should they exist. We look forward to such results.

3 Insight as a state of consciousness?

According to Kühle, our results suggest that insight may be considered a state. Moreover, she claims that the LuCiD scale does not allow for the identification of different lucidity

levels. These assumptions are not to be deduced from our research but must stem from a misconception or misunderstanding of the factorial structure of the LuCiD scale. Concerning this matter, we reported that dream consciousness can be described by eight factors, six of which are capable of distinguishing between lucid and non-lucid dreams: insight, control, dissociation, positive emotion, negative emotion, and memory. A person can have a range of scores in each factor, for example in insight, such that scores are graded and allow for varying degrees of lucidity. Furthermore, the factors identified are correlated, i.e., not independent (see Voss et al. 2013), which means that one factor alone may not be sufficient to define a lucid dream. Our results also suggest that a dream might be considered lucid even with low scores of insight! So the assumption that the state of lucid dreaming is equivalent to the proposed state of insight cannot be inferred from our data. Kühle's proposal reveals another problem, however, that we tried to address with our Space of Consciousness model (SoC), which is the definition of "state". What is the relationship between a state of arousal and a state of consciousness? In the case of insight, the recognition "I am dreaming" may be only a fleeting thought. But this thought is embedded in relatively enduring neurophysiological patterns such as regional changes in blood oxygen levels (see Dresler et al. 2012) and enhanced gamma activity in frontal regions (Voss et al. 2009; Voss et al. 2014). Our suggestion to situate lucid dreaming within the SoC attempts to incorporate theses observations. In my view, a state is comparable to background activity enabling or disabling certain transients such as thoughts or memories. It is courageous to consider a fleeting thought a state, and I think such definition would need more detailed specifications. Of course, one may ask whether a dream would be considered lucid even in the absence or perhaps following the thought "this is a dream". According to our model, this assumption would have to be affirmed. If the state of lucid dreaming is considered a neurophysiological state of sleep bordering wakefulness, enabling the mind to produce a transient thought (insightful thought), this thought may or may not be repeated several times within the state of lucid dreaming. The important factor is, as Kühle proposes, capability. During the state of lucid dreaming, the mind is able to be insightful. It is not the other way around, such that the mind is able to enter a lucid dream during the thought of insight. The importance of insightful thought thus does not lie in its being a state but in it being measurable! We cannot expect a subject to provide a truthful answer to the question "were your frontal lobes producing gamma band activity?" We can, though, ask about the quality of their thoughts and sensations. Finally, if, in spite of my objections, we define insight as a state of consciousness, how would this state be defined in terms of arousal (see the SoC model), or in terms of other determinants such as, for example, judging, sensing, or moving? Supposed insight were defined as a point in the SoC. Where would it be located? Within mindwandering, meditation, lucid dreaming, focused attention—or all of these?

4 Conclusion

While Kühle's comments are greatly appreciated, they show how important dialogue between the different disciplines involved in studying consciousness really is. Neuroscience, psychology, and philosophy are all connected in their quest for a better understanding of the true nature of consciousness and its underlying physiology. They depend on each other to formulate predictions based on theory, and to test and reappraise these on the grounds of cause-and-effect relationships established through experimental testing. Experimental research rests upon certain assumptions that may not or may only fractionally apply to philosophy. The most important assumptions of dream science are to consider it true that there exists a real world (1), that REM sleep dreams exist (2), that healthy awake humans are able to make valid statements about knowing and feeling (3), and that restrictions to this ability (e.g., sleep inertia) can be reliably identified (4).

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