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Conceptual Colonialism in the Golden Age of Neurocryptoptography: on the Scientific Prediction of Dream Narratives[1]

Kolonializm pojęciowy w złotym wieku neurokryptografii: naukowe przepowiednie dotyczące treści marzeń sennych

INTRODUCTION

Everybody knows that the memory one has of a dream upon waking fades quickly. Though some aspects of the dream narrative usually begin to be called into doubt during this process of fading, we do not question whether we have *actually* dreamed those parts of the dream narrative that we clearly recall. Some philosophers, however, have had a very interesting discussion in the last decades about the possibility of checking the extent to which an account of a dream *corresponds* to the dream in question. This discussion was at its height once Norman Malcolm proposed in 1959 the following criterion of dreaming:

> If someone tells a dream or says he had one he is not making a 'subjective' report which may or may not agree with 'objective' fact. His waking impression is what establishes that he had a dream, and his account of his dream establishes what the content of his dream was[2].

Charles S. Chihara remarked that maybe most people do not know what would establish for certain that someone actually dreamt what he says he dreamt; nevertheless, they use the term 'dream' in such a way that dream reports are taken as 'subjective' reports which may or may not agree with 'objective' facts. But

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[2] N. Malcolm, *Dreaming*, Routledge & Kegan Paul, London 1959, p. 89.

bearing in mind that this is the actual use of our ordinary concept of dreaming, Malcolm seems to suggest that anyone who used the term 'dream' in the *ordinary* way would have to be confused[3]. To shed light on this paradox, it should be expected that scientists confirm whether it is possible to prove objectively that a dream narrative corresponds to the dream in question. At first sight, it seems to be evident that scientists should have the last word here. Yet I think philosophers have many important things to say about what seems to be an exclusively scientific problem. In fact, Daniel C. Dennett imagined our scientists of the future predicting dream narratives in great detail by translating nervous-system activity into dream contents, so that the dream-amnesiac might be cured[4]. In this essay, which should be a new example of the way in which philosophers can contribute to the clarification of conceptual problems in neuroscientific researches[5], I will analyze not only whether the fulfilment of Dennett's prediction would allow to reveal what we have actually dreamt, but also whether such fulfilment would constitute a case of 'persuasion' in Wittgenstein's sense[6].

DENNETT'S PREDICTION

At the beginning of his well-known monograph *Dreaming*, Malcolm made reference to a traditional approach to dreaming. According to this approach, dreams are experiences – sensations, thoughts, impressions, etc. – and are usually composed into coherent narratives. The view that dreams are conscious mental states present during sleep has been endorsed by Aristotle, Descartes, Kant, Russell, Moore, and Freud among others. Yet this 'received view' was shared by many philosophers and psychologists who have presupposed not only that dream reports describe experiences which took place during sleep, but also that the connection between these reports and the dream is just contingent, so that reports may or may not accurately reflect dream content[7]. Nevertheless, Malcolm argued that dreams are not what many philosophers and psychologists have thought and still think they are, i.e. a series of thoughts, sensations and impressions occurring in sleep. From his point of view, there is an incompatibility between a sleeping state and occurring mental activity: while we are asleep, there is no room for mental activity –

[3] C.S. Chihara, "What Dreams Are Made On", [in:] C.E.M. Dunlop (ed.), *Philosophical Essays on Dreaming*, Cornell University Press, Ithaca 1977, p. 262.

[4] See D.C. Dennett, "Are Dreams Experiences?", [in:] *ibidem*, pp. 229–230.

[5] I have in mind here M.R. Bennett and P.M.S. Hacker, *Philosophical foundations of neuroscience*, Blackwell, Oxford 2003, as well as D. Moyal-Sharrock, "Wittgenstein and the memory debate", *New Ideas in Psychology*, 27, 2009, pp. 213–227.

[6] Cf. L. Wittgenstein, *On Certainty*, Blackwell, Oxford 1997, §§ 262, 612. (Henceforth *OC*).

[7] N. Malcolm, *Dreaming*, pp. 1–4.

e.g. making assertions and judgments[8]. Since Malcolm denies there are states of consciousness in sleep, he concludes that dream reports cannot be descriptions of experiences[9]. This leads him to think that the concept of dreaming is derived not from dreaming, but from dream-telling. In fact, he says that "the criterion of someone having had a dream is that upon awaking he tells the dream"[10]. This entails that what one has dreamed is logically determined by what one says he has dreamed, so that the question whether what one says he has dreamed is what he has dreamed or not cannot arise. Although the account of a dream is not the dream, there is no sense to asking whether an account *corresponds* to the dream in question. In other words, "the notion of a dream as an occurrence 'in its own right', logically independent of [one's] waking impression [thereof], and to which the latter may or may not 'correspond'", is senseless[11]. It is true we speak of 'remembering' a dream, but there is nothing outside of one's account of a dream to determine that his account is right or wrong[12]. Our memory-claims are incorrigible in the case of dreams, as there is no difference between remembering correctly and thinking that one remembers. It is important to emphasize that the criterion of dreaming, according to Malcolm, is not dream-remembering, but dream-telling. This author adds that the adoption of a new criterion of dreaming would necessarily introduce a new concept of dreaming. In Malcolm's opinion, scientists were proposing a new criterion and, by extension, a new concept of dreaming, by referring to "a new concept in which the notions of location and duration in physical time and the subjective/objective distinction will all have a place"[13]. By measuring the lenght of rapid-eye-movement (REM) sleep, psychologists drew conclusions about the lenght of dreams – after all, we ordinarily talk of being woken *during* a dream, or having a dream just *before* wakening. Yet Malcolm denies that our ordinary language-game of dreaming attaches real significance to the temporal words. In fact, he insists that if dream reports were entirely abandoned in favor of a physiological criterion, a different concept of dreaming would be involved.

Dennett found 'scandalous' Malcolm's conclusion that contemporary dream research was conceptually confused and simply irrelevant to dreaming[14]. To justify his opinion that researchers are neither the perpetrators nor the victims of a conceptual crime, Dennett invites us to suppose that the researcher's concept of dreaming is the true and unconfused concept of dreaming. In fact, Dennett

[8] To give some examples, the person who is sound asleep can neither *decide* to do anything nor *find out* anything, but can only *dream* that he decides or finds out something.

[9] N. Malcolm, *Dreaming*, pp. 5–7.

[10] *Ibidem*, p. 49.

[11] *Ibidem*, pp. 55, 83.

[12] *Ibidem*, pp. 56–57.

[13] *Ibidem*, p. 80.

[14] D.C. Dennett, *op. cit*., p. 228.

suggests that REM researchers might be so succesful that science would reach a 'Golden Age of neurocryptography':

> A neurophysiological model of dreaming would plausibly construe these REMs as relatively gross and peripheral effects of a more determinate content-relative process deeper in the brain, which we might hope some day to *translate*, in this sense: we might be able to *predict* from certain physiological events observed during sleep that the subsequent dream report would allude to, for example, fear, falling from a height, eating something cold, even (in the Golden Age of neurocryptography) buying a train ticket to New Haven for $12.65 and then forgetting which pocket it was in. The prospect of a *generalized* capacity to predict dream narratives in such detail would be vanishing small in the absence of a highly systematic and well-entrenched theory of representation in the brain, but let us suppose for the nonce that such a theory is not only in principle possible, but the natural culmination of the research strategies that are already achieving modest success in "translating" relatively gross and peripheral nervous-system activity[15].

Dennett points out that common experience shows a gradation in people's capacities to recall dreams and other items. Basing himself on common experience and the received view, Dennett imagines

> our scientists of the future isolating the memory mechanisms responsible for dream recall, and finding ways of chemically facilitating or inhibiting them. This is surely plausible; reseach into the chemistry of memory already suggests which chemicals might have these powers. We would expect that the scientists' claim to a theory of the dream-recall mechanism would be buttressed by systematic ties to a theory of memory mechanisms in general and by results, such as, perhaps, their ability to cure the dream-amnesiac[16].

Moreover, Dennett suggests that future dream theory will posit three largely separable processes – presentation, memory-loading and composition – that will be distinguished in the layman's version of the received view as well as in fancier theories. First, neural events during sleep systematically represent the events occurring in the dream. Second, these events can be recalled on waking when the memory process works. And last but not least, there is a composition of what is presented and recorded, so that the conclusions from the reliving of the dream incidents are then expressed as our recollections[17]. Yet Dennett's imagination does not stop here:

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[15] *Ibidem*, p. 229. When Dennett referred to the research strategies that were already achieving modest success in *translating* nervous-system activity at that time, he had in mind David H. Hubel and Torsten Wiesel's translation of optic nerve signals in the cat. See particularly D.H. Hubel and T.N. Wiesel, "Receptive fields of single neurones in the cat's striate cortex", *Journal of Neurophysiology*, 148, 1959, pp. 574–591; *Idem*, "Receptive fields, binocular interaction and functional architecture in the cat's visual cortex", *Journal of Neurophysiology*, 160, 1962, pp. 106–154; *Idem*, "Shape arrangement of columns in cat's striate cortex", *Journal of Neurophysiology*, 165, 1963, pp. 559–568.

[16] D.C. Dennett, *op. cit.*, p. 230.

[17] *Ibidem*, pp. 230–231.

Studying these three processes will require tampering with them, and we can imagine that the researchers will acquire the technological virtuosity to be able to influence, direct, or alter the composition process, to stop, restart, or even transpose the presentation process as it occurs, to prevent or distort the recording process. We can even imagine that they will be able to obliterate the "veridical" dream memory and substitute for it an undreamed narrative. This eventuality would produce a strange result indeed. Our dreamer would wake up and report her dream, only to be assured by the researcher that she never dreamed *that* dream, but rather another, which they proceed to relate to her[18].

Given the state of the art of dream research when Dennett wrote his paper, it goes without saying that one's utter skepticism would be warranted, if someone were to contradict his clear recollection of what he had just dreamed. Yet Dennett warns that 'the science-fictional situation' he envisaged would provide us with a quite different scenario:

Not only would the researchers have proved their powers by correctly predicting dream recollections on numerous occasions, but they would have a theory that explained their successes[19].

Though Dennett admits this is a strange story, he remarks that it does not exhibit the conceptual chaos Malcolm suggests[20]. Yet I think Dennett is wrong in saying so. Let us see why.

THE DREAM CATCHER

If we pay attention to the current scientific attempts to display the graphic content of our dreams, we will realize how far away we are still from the Golden Age of Neurocryptography. On the one hand, a research team at the ATR Institute, based in Kyoto, has created the first step toward a device to identify the oneiric stuff of subjects' mental images and dreams. These researchers attempt to reproduce exactly what the subject sees by placing him in a magnetic resonance imaging (MRI) machine and scanning his visual cortex while he looks at still images representing simple geometrical shapes in monochrome. By analysing the brain signals when volunteers are seeing an image, the computer program reproduces the figures and letters that the volunteers had seen, albeit more blurry than the originals. The machine is limited to reproducing images that have been shown to subjects before, so that the MRI machine is actually matching electrical patterns on the visual cortex with a finite library of pre-programmed shapes[21]. On the other

[18] *Ibidem*, p. 233.

[19] *Ibidem*, p. 234.

[20] *Ibidem*. Dennett adds that this strange story would not evoke in the layman the nausea of incomprehension either.

[21] Y. Miyawaki, H. Uchida, O. Yamashita, M. Sato, Y. Morito, H.C. Tanabe, N. Sadato, Y. Kamitani, "Visual Image Reconstruction from Human Brain Activity using a Combination of

hand, Moran Cerf and his team at UCLA announced six months ago that they have developed a brain-machine interface capable of recording higher level brain activity[22]. Cerf, the lead scientist, pointed out that the eventual aim of his project is to develop a system that would enable psychologists to corroborate people's recollections of their dream with an electronic visualization of their brain activity. This research team carried out an initial study that suggests that the activity of individual brain cells, or neurons, is associated with specific objects or concepts. By showing volunteers a series of images, Cerf and his team identified neurons for a wide range of objects and concepts which they used to build up a database for each patient. When an individual thinks about these images, the neurons light up, and, if they are hooked up to the brain-machine interface, can call up a specific image on a computer screen. Cerf adds that he 'read the subjects' minds' by observing which brain cell lit up and when. Yet he recognizes that there is still a very long way to go before this simple observation can be translated into a device to record dreams[23].

Both scientific projects reveal that the view that dreams are experiences occurring during sleep is still their view, as all these scientists presuppose that they will be able sooner or later to record what we have really dreamed, so that it should be then possible to check whether dreamers' recollections tally with what they have actually dreamed. Moreover, both research teams at the ATR Institute and UCLA do not even consider whether they are beginning to establish the foundations of a conceptual change: far from it, they plan to electronically record 'dreams' – in our *current* sense of the word. Isn't it perhaps a coherent and amazing project that scientists attempt to monitor our neural activity during sleep, so that they record the very dreams this neural activity leads to? And as Dennett imagined, mightn't scientists of the future cure the dream-amnesiac then? In order to shed some light on the presuppositions and conceptual problems which underlie these questions, let us imagine now the best scenario for Dennett's fantasy. Let us imagine not only that scientists have already been able to create the 'Dream Catcher', that is, the device that allows them to record our dreams in great detail, but also that most people recognized that they had *really* dreamt what the Dream Catcher reproduces. As a matter of fact, it might even be possible that many people admitted that the reproductions of the Catcher allowed them to remember numerous dreams they had already forgotten. Therefore, it would be possible to prove that someone had dreamed last night, though he was convinced that he had not dreamed. As Wittgenstein pointed out:

Multiscale Local Image Decoders", *Neuron*, 60 (5), 2008, pp. 915–929. This means that the mind reading isn't limited to a selection of existing images, but could potentially be used to 'read off' anything that someone was thinking of, without prior knowledge of what that might be.

[22] M. Cerf, N. Thiruvengadam, F. Mormann, A. Kraskov, R.Q. Quiroga, C. Koch, I. Fried, "On-line, voluntary control of human temporal lobe neurons", *Nature*, 467, 2010, pp. 1104–1108.

[23] See http://www.bbc.co.uk/news/science-environment-11635625.

If I say I did *not* dream last night, still I must know where to look for a dream; that is, the proposition 'I dreamt', applied to this actual situation, may be false, but mustn't be senseless[24].

The Dream Catcher should help us to look for and find forgotten dreams, so that the expression 'I dreamt' might be either true or false when applied to situations in which we do not *remember* any dream. In this case, we would have a new criterion which would allow us to check whether we have *misremembered* a dream:

The question whether the dreamer's memory deceives him when he reports the dream after waking cannot arise, unless indeed we introduce a completely new criterion for the report's 'agreeing' with the dream, a criterion which gives us a concept of 'truth' as distinct from 'truthfulness' here[25].

Our recollections of dreams are merely truthful, yet the Dream Catcher might lead us to introduce a new criterion according to which dream reports may be rightly or wrongly remembered. Hence, we might say that an epistemic gap had been opened then between the dreamer and his dream. For instance, someone might remark upon waking: 'I know I have dreamt *A* last night because the Catcher confirms it'. But would such a scenario have proved that the Dream Catcher reproduces what we have *really* dreamed? In my opinion, the answer to this question is negative. Let us see why. When Yang Dan and his team at the University of California at Berkeley wired a computer to a cat's brain to capture movies of how it views the world around it, they compared the reconstructed images with the scenes that played out before the cat's eyes[26]. In the same vein, researchers at the ATR Institute attempted to reproduce exactly what the subject saw by scanning his visual cortex *while* he looked at still images representing simple geometrical shapes. This entails that both research teams knew what cats or subjects *should* see, that is, they knew which object or figure *should* appear in the field of view of the cat or the subject. If the reproduced image did not correspond – albeit more or less blurry – to the image the cat or the subject should be seeing, researchers would look for a technical mistake in the recording process, because they knew which is the image they *should* obtain. Yet a dream content is in principle completely unpredictable, so that researchers cannot know which dream content *should* be recorded in a given case. The only thing we can say is that researchers would reproduce a dream content that may or may not tally with the dreamers' recollection. Though the images reproduced by the Dream Catcher tallied with dreamers' recollections not from time to time, but very often, that would not constitute an evidence of the Catcher's reliability, as the dream – from

[24] L. Wittgenstein, *Philosophical Investigations*, Blackwell, Oxford, 2001, § 448 (Henceforth *PI*).

[25] *PI*, p. 189.

[26] G.B. Stanley, F.F. Li, Y. Dan, "Reconstruction of Natural Scenes from Ensemble Responses in the Lateral Geniculate Nucleus", *The Journal of Neuroscience*, 19 (18), 1999, pp. 8036–8042.

a scientific standpoint – would not be logically determined by the recollection. Far from it, researchers would consider the dream content logically dependent of neural activity. This entails that the question whether a given neural activity corresponds to a specific dream content or not cannot arise. If a physiological criterion for dreaming – e.g. the neural activity translated by the Catcher – were adopted, discrepancies between recollections and reproduced narratives would lead researchers to conclude, for instance, that we had misremembered our dreams, that there must exist some kind of unknown process that may cause a distorted recollection upon waking, or even that we were lying.

Now I wish to tackle the following question: would the use of the Catcher require a 'radical conceptual change'? To answer this question, I will begin by considering Malcolm's opinion about the introduction of a physiological criterion for dreaming. According to Malcolm, the use of scientific methods of determining the occurrence and duration of dreams would require a new criterion of dreaming, which would be tantamount to creating a 'new concept under an old label'[27], and indeed, one which 'only remotely resembled the old one'[28]. To be precise, Malcolm referred to four radical conceptual changes which would take place if we adopted a physiological criterion of dreaming. Firstly, a person could wake up thinking he had dreamed when, as a matter of fact, he had not. Secondly, 'people would have to be *informed* on waking up that they had dreamt or not – instead of their informing us, as it now is'[29]. The way I see it, Malcolm is right. To clarify this point, I quote Malcolm's words:

> What I am trying to show is that *if* one thinks that a man's account of his dream is related to his dream just as my account of yesterday's happenings is related to them, one is in a hopeless difficulty: for then it *would* appear that our ostensible remembering that we dreamt such-and-such could be mistaken, not just once but all the time. If the report of the dream is "externally" related to the dream, then it may be that we are always only under the *illusion* of having had a dream, an illusion that comes to us as we awake. [...]
>
> We get out of this impasse only by realizing that there is nothing to be proved[30].

In the same vein, if we adopted the output of the Catcher as a criterion for dreaming, people could *always* be wrong when they thought they had dreamed, so that they should be informed on waking up whether they had really dreamed. And I would like to add that they should be informed of the *content* of their dreams too. All these things should be proved by the Catcher, yet there is no trace of such a kind of proofs in our current language-game of dream-telling.

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[27] N. Malcolm, *Dreaming*, p. 79.

[28] *Ibidem*, p. 81.

[29] *Ibidem*, p. 80.

[30] N. Malcolm, "Dreaming and Skepticism", [in:] C.E.M. Dunlop (ed.), *op. cit.*, p. 121.

The third conceptual change Malcolm refers to is the possibility for there to be a tribe of people who never told dreams but dreamed every night[31]. I think this is just the high price Malcolm has to pay for staunchly clinging to the dream recollection as the criterion for dreaming. After all, we could ask people of this tribe whether they had woken up sometime when they were convinced to be experiencing such-and-such. And if they answered in the affirmative, wouldn't we then conclude that they had dreamed?

Regarding the fourth conceptual change, Malcolm emphasizes how differently a child would have to be taught, as 'to teach him the new concept of dreaming we should have to explain the physiological experiment that provides the new criterion'[32]. To illustrate that a child could first learn what dreams are as we now do and later learn how scientists test dream reports, Chihara compares the learning of our current language-game of dream-telling with the case of a child acquiring the concept of distance. Though it is difficult to explain to a child complicated methods of measuring distances using precise optical instruments, and even more difficult to explain the methods by which scientists measure immense astronomical distances, says Chihara, the use of the term 'distance', where neither rod nor string is employed in measuring, would not spring from confusion and result in confusion[33]. However, I think that Chihara's comparison is wrong. It is true that the child could first learn to measure *short* distances with a ruler or a tape measure and later learn how scientists measure *immense* distances using sophisticated instruments. Moreover, the child could and *should* learn not only that every method is suitable for different distances, but also that these methods cannot contradict or interfere with each other. Yet if a child first learned our current language-game of dream-telling and later learned how scientists use the Catcher, he would have learned two different practices based on two different criteria, so that these practices might interfere with each other – e.g. when someone sincerely said he had dreamed *A* while the Catcher showed he had dreamed *B*. In the first case, the child would learn there are short as well as immense distances, so that a way of measuring will be more or less suitable depending on the distance. But in the second case, it would be expected that the child retorted: 'What is a 'dream'? Is a 'dream' either what the alleged dreamer says he has experienced during sleep, or what the Catcher shows?'

THE CERTAINTY OF HAVING HAD AN UPSETTING NIGHTMARE

As we have just seen, the adoption of the use of the Catcher as a criterion of dreaming would entail some conceptual changes. Now I hope to look into this

[31] See *Idem*, *Dreaming*, p. 80.
[32] *Idem*, "Dreaming and Skepticism", p. 81.
[33] C.S. Chihara, *op. cit.*, pp. 260–261.

problem from a different standpoint by considering not *criteria*, but *certainties*[34]. In principle, it seems just wrong to consider dream recollections as objective certainties. After all, we often compose dream recollections and usually amend and call them into doubt some hours – or even minutes – later. Yet I will concentrate now on a very specific kind of dream: I am referring to those upsetting nightmares that reach their highest degree of intensity and dramatism just when we wake up startled. For instance, I might dream that I was participating in a San Fermin *encierro*, so that I was running in front of a dozen of bulls together with many other people on a course of a sectioned-off subset of Pamplona's streets. Furthermore, I might dream that I tripped over someone at the entrance to Estafeta Street, rolled about on the floor, and woke up just when I saw how a bull with big horns was right about to jab me. I might amend my account of this dream slightly on a second telling. To give two examples, I might later realize that one of the buildings which in my dream appeared at Mercaderes Street was very different from the real one, and I might also have doubts later about the way I tripped and fell. It is true I may call into doubt these small details of the dream content, but I *can't* call into question that I have dreamed how a bull was right about to jab me, and above all, that I have had an upsetting nightmare. That is *objectively certain*. For what would be deemed as a mistake here and how could it be discovered? If I amended my recollection on a second telling and did not make the slightest reference to the *encierro*, but *told* that I had had a pleasant dream in which I was lying in hammock at a Caribbean beach, people would not think that my first recollection was wrong. Far from it, they would think either that I had completely forgotten the *encierro* dream, or that I was referring to a different one. Moreover, the fact that I might forget my *encierro* nightmare some hours or even minutes upon awaking does not entail that the main details of the recollection are – or were – not an objective certainty. In this vein, I might be objective certain of having got an acute pain in my back although I forgot it some hours or minutes later.

[34] In the face of a long-standing philosophical tradition which regarded knowledge as the highest attainable point on the continuum of certainty, Wittgenstein stated that "'[k]nowledge' and 'certainty' belong to different *categories*" (*OC*, § 308). This categorial distinction is based on the possibility of justification. As Wittgenstein remarked, one can only say "I know" when one is ready to give grounds that are surer than the assertion of what one believes (cf. *OC*, § 243). Since knowledge is necessarily grounded, it is conceptually linked to doubt – and by extension, to the possibility of a mistake. Certainty, on the other hand, is ungrounded, as many grounds could be given for it, "but none as certain as the very thing they were supposed to be grounds for" (*OC*, § 307). Hence, a certainty is an "attitude" (*OC*, § 404) for which the possibility of a mistake is "*logically* excluded" (*OC*, § 194). In the context of Wittgenstein's later work, this expression means, 'excluded from our *grammar*', so that the possibility of making a mistake about a certainty is not included in our language-games. It should be noted that Wittgenstein is referring here to 'objective certainty', not to 'subjective certainty' or the "complete conviction" we express, when we thereby merely try to convince other people (see *OC*, § 194).

Now the question is: might scientists *convince* me of not having had the *encierro* nightmare? If so, they should give me reasons more certain than my certainty of having had the nightmare in question. Yet there is no room for such reasons because, as we have seen before, 'there is nothing to be proved' here[35]. Wittgenstein's description of the language-game of dream-telling emphasizes that we recall dreams without carrying out any kind of revision process:

> People who on waking tell us certain incidents (that they have been in such-and-such places, etc.). Then we teach them the expression "I dreamt", which precedes the narrative. Afterwards I sometimes ask them "did you dream anything last night?" and am answered yes or no, sometimes with an account of a dream, sometimes not. That is the language-game[36].

Yet let us suppose that a group of researchers, accordingly with Dennett's prediction, told me that they had obliterated my dream memory and substituted for it an undreamed narrative. So, I might report my *encierro* nightmare upon awaking, only to be assured by these researcher that I never dreamed that dream, but rather another, which they proceed to relate to me. Perhaps their technological virtuosity, their correctly predicting dream reports on numerous occasions, and the theory that explained their succesess wouldn't be suitable reasons to *convince* me of not having dreamt the *encierro* nightmare? The answer to this question is negative. Regardless of the degree of technological development achieved by neuroscientists, there is no room in our *current* language-game of dream-telling for proving whether our dream recollections are right or wrong. Nevertheless, they might *persuade* me by giving me not suitable reasons, but a different world picture[37]. From a scientific standpoint, these researchers would have only provided us with a deeper understanding of the origin of all our dreams by showing that they constitute translations of neural activity. But inasmuch as these translations can't be checked against what we might call the *dream itself*, the narratives offered by researchers could be neither right nor wrong[38]. Though these reports cannot even be proved to be right, this does not entail at all that they will necessarily be irrelevant, but just the opposite. If they were also accepted as direct translations of neural activity during sleep and moreover tallied very often with dreamers' own recollections, they *might* be assimilated as certainties after an adaptation

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[35] See footnote 30.

[36] *PI*, p. 157.

[37] Wittgenstein offers two examples of 'persuasion' in *On Certainty*. On the one hand, we might try to give our world-picture to a man who, after growing up under very special circumstances, had been taught that the Earth came into being 50 years ago, and hence believed it (cf. *OC*, § 262). On the other, Wittgenstein invites us to think about the way natives are converted by missionaries (cf. *OC*, § 612).

[38] We do not know what would count as a *wrong* output of the Catcher. Of course, a dreamer might recall a dream that did not tally with the Catcher's output, yet researchers might always reply that its output is *right* because it constitutes a translation of the dreamer's neural activity. However, the fact that the Catcher's output cannot be considered as *wrong* entails that it cannot be *right* either.

process so deep, that it would require us to modify our world picture. And from that moment on, narratives provided by researchers would be used to check if the dreamer's own recollections – including the recollections of those parts of the dreams which constitute objective certainties – are either right or wrong[39].

CONCLUSIONS

It might be objected that dreams of the kind of the *encierro* nightmare are not frequent, so that I should have illustrated alleged researchers' persuasion by referring to dreams whose content we call into question upon waking and forget quickly. But I have chosen the example of the *encierro* nightmare because it clearly illustrates the fact that scientific rigor may in some cases easily – though unintentionally – begin to mix with persuasion. For we do not carry out any kind of proof that we have rightly recalled a dream, whilst the scientists would consider the Catcher's output as the true content of a dream, because it would be strictly proved – and hence immune to doubt – due to its being a direct translation of our neural activity. From a scientific standpoint, we would dream not what we recall upon waking, but what the Catcher *dictates* completely regardless of whether its output tallies with our dream recollection. Hence, it would be possible that stories of Catchers and wrong nightmare reports did not necessarily evoke in the layman the nausea of incomprehension, yet I think that such stories may put some concepts of folk psychology in danger of incompatibilism, according to which some concepts of folk psychology will not live on in co-existence with neuroscientific progress. Yet is there really a gulf between the everyday and scientific concepts of dreaming? For instance, Hilary Putnam argued for the continuity of both concepts of dreaming, as he found natural to take the neuroscientist's work as a progressive unveiling of a hidden reality, while our criteria of identification might remain revisable and fluid[40]. From David Bloor's standpoint, what is at issue here is what these parties 'want to stress'. While Malcolm wants to stress the autonomy of commonsense language-games, because no one is required to follow the example of the scientist[41], Putnam wants to stress the authority of the scientist – that is why he slides from a description of scientific practice to a normative conclusion about its legitimacy[42]. As Bloor suggests, Malcolm and Putnam have different preferences, but unable to refute each other, they display authorities and affirm allegiances: whilst the authority of commonsense usage and daily practice lends credibility to Malcolm, the

[39] As Wittgenstein pointed out, our picture of the world is the inherited background against which we distinguish between true and false (*OC*, § 94).

[40] See H. Putnam, "Dreaming and 'Depth Grammar'", [in:] R. Butler (ed.), *Analytical Philosophy* (1st series), Blackwell, Oxford, 1966, pp. 211–235.

[41] N. Malcolm, "Dreaming and Skepticism", p. 77.

[42] See H. Putnam, *op. cit.*, p. 223.

authority of sciences lends credibility to Putnam[43]. In my opinion, incompatibilism is not unavoidable in this case, so that there may be room for compatibilism. James C. Klagge stated that compatibilism between the concepts of folk psychology and the neuroscientific progress might happen in one of two ways. On the one hand, the conceptual influence of neuroscientific advances might be limited to the scientific practice of neuroscience, and not find its way into ordinary language. On the other hand, it might happen that neuroscientific progress influences ordinary thinking, not by supplanting folk psychology, but by supplementing it[44]. Regarding the dream concept, I consider unproblematic the first option, for the relationship between the neuroscientific and the ordinary concept of dreaming might resemble the relationship between contemporary physics and ordinary thinking with respect to the concepts of solidity, space and time. The second option might happen if both concepts would exist in each person, as Klagge says, for different purposes – rather like bilingualism[45]. Be that as it may, there are two things we should not forget. First of all, we must keep in mind that the output of the Catcher might even be considered as a certainty; but if so, it will be just because we have assimilated that output as a certainty in our language-games, not because it has been checked against what we have really dreamed. And above all, we should not forget that if we abandon the ordinary concept in favour of the neuroscientific one, we will have refused a part of the natural history of man.

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[43] D. Bloor, *Wittgenstein. A Social Theory of Knowledge*, Macmillan, Hampshire and London 1983, pp. 67–68.

[44] J.C. Klagge, "Wittgenstein and Neuroscience", *Synthese*, 78 (3), 1989, p. 334.

[45] *Ibidem*.

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RESUMEN

Hace algunas décadas, Daniel C. Dennett imaginó que nuestros científicos serían capaces en el futuro de predecir con gran detalle narraciones de sueños al traducir la actividad del sistema nervioso en contenidos de sueños. A pesar de los actuales intentos de los científicos por mostrar el contenido gráfico de nuestros sueños, en este artículo se mantiene que el cumplimiento de la predicción de Dennett no permitiría revelar qué es lo que realmente hemos soñado, pues dicho cumplimiento constituiría un caso de "persuasión" en el sentido propuesto por Wittgenstein.

Palabras claves: neurociencia, sueño, juego de lenguaje, certeza, compatibilismo, Wittgenstein, Dennett

SUMMARY

Some decades ago, Daniel C. Dennett imagined our scientists of the future predicating dream narratives in great detail by translating nervous-system activity into dream contents. In spite of current scientific attempts to display the graphic content of our dreams, in this paper it is argued that the fulfilment of Dennett's prediction would not allow to reveal what we have actually dreamt, for such fulfilment would constitute a case of 'persuasion' in Wittgenstein's sense.

Keywords: neuroscience, dream, language-game, certainty, compatibilism, Wittgenstein, Dennett

STRESZCZENIE

Kilkadziesiąt lat temu Daniel C. Denetti wyobrażał sobie, że nasi naukowcy będą w przyszłości w stanie opisać z detalami treść naszych snów, intepretując odpowiednio aktywność naszego układu nerwowego. Pomimo obecnych usiłowań naukowców zmierzających do zademonstrowania obrazowej zawartości tego, co śnimy, artykuł niniejszy podtrzymuje tezę, że w oparciu o przepowiednię Denettiego, nie można by określić, co było przedmiotem naszego snu, gdyż spełnienie tej przepowiedni stanowiłoby przypadek „perswazji", tak jak ją rozumie Wittgenstein.

Słowa kluczowe: neuronauka, sen, gry językowe, pewność, kompatybilność, Wittgenstein, Dennett