WEEK 5 – ASK MARK, QUESTION 4

Let's get to the last question, it goes like this, I'd like to hear you speak about the function of dreams, some people recall them others don't. Some think they're critical to health mental functioning, others don't. I personally pay a great deal of attention to dreams and find them vastly informative but I'm in the minority amongst my friends and acquaintances.

In fact I suspect many people are disturbed by their dream imagery. Having listened to you discuss confabulation this week I think the way people distort their memory of dreams could be the most common example of confabulation I can produce. What do you think is the role of dreams in our lives?

Oh, again the mentors have chosen questions for me this week which are truly impossible to answer in the amount of time available! What do I think about dreams, well I've got news for you, I have researched the brain mechanisms of dreaming for 30 years. In fact the main thrust of my early scientific work was just that, the brain mechanisms of dreaming. So I can't possibly tell you everything I've learnt in the last 30 years and everything that I think about the part that dreams play in our mental lives.

But I'll just say this, when I came into this field in the mid 1980s the general belief among my scientific colleagues was that dreams are froth. That dreams are meaningless, that dreams are essentially, inherently, mindless meaningless phenomena. And the view was held by Alan Hobson at the time, he put it rather well, he said of course you can project meaning into dreams in the same way as you can project meaning into a Rorschach inkblot.

You look at this inkblot and you say, oh, I think it's a vagina. It makes me think of vaginas. That doesn't mean that the ink blot is a vagina or that there was any intention behind the person who made the inkblot to make a vagina. They were just squashing the ink between – folding the paper. It's in the observer, in the person who after the fact comes to the thing that they project meaning onto it. That was the view in the 1980s, that dreams were inherently meaningless and we project meaning onto them. Dreams are not themselves mental products that intrinsically convey a meaning or motivation.

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So that was in stark contrast to the views that had dominated in previous decades in the 20th century derived from the Freudian psychoanalytical and other psychological traditions. Why did Hobson and his lot think that? It's because they had identified a part of the brain that generates dreams in the Pons. It's called the mezzo-pontine techmentum, it's the source cells o f a neurotransmitter called the [unclear]00:03:09] which just randomly activates the whole brain automatically every 90 minutes during rapid eye movement or REM sleep.

And if dreams are generated by this automatic switch that just clicks on every 90 minutes and are generated by a brain structure which can't possibly be the correlate of the complicated motivational mental gymnastics that Freudians thought were the causes, the causal mechanisms of dreams then it's all nonsense, was the conclusion. The dreams are intrinsically meaningless, random firings of neurons generated by an intrinsically mindless part of the brain automatically and mechanistically.

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Now what my own research showed in the 1990s was that that part of the brain that generates REM sleep is not the part of the brain that generates dreams. I was able to show in patients with brain lesions, patients who had damage to the part of the brain that generates REM sleep that they didn't have REM sleep but they did have dreams. And conversely there were patients to higher brain structures who didn't have dreams but did have REM sleep. So that's called the doubled association, damage here leads to loss of dreaming and preservation of REM sleep, damage here leads to loss of REM sleep and preservation of dreaming therefore they're two different things.

And the question then became well what is the part of the brain that generates the dreams as opposed to the REM sleep and what does that teach us about dreams? Well the part of the brain, the core part of the brain that generates dreams, wait for it, is the seeking system. That dopaminogic motivational intentionality system that you learnt about last week. And there's all sorts of evidence for that. Single cell recordings show that those neurons fire at their most intensive rate during dreaming sleep. A method called micro dialysis shows that the release of dopamine at the terminals of those neurons is maximal during dreaming sleep.

And functional imaging studies show that that circuit is lit up like a Christmas tree during dreaming sleep. I told you about the lesion studies, damage to that system leads to a complete inability to dream. There are also pharmacological studies which show that if you increase dopamine levels you increase dreaming, if you block dopamine levels you block dreaming.

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So that's the essential basis of everything that I've since done and of my beliefs about dreams which is that they are intrinsically mental motivated and meaning seeking states. The most meaning making part of the brain that there is is the part of the brain that fundamentally generates dreams. Of course there's a lot more to be said but on the basis of just that I can tell you that I for one, on evidence based grounds, I for one think that there's every reason to believe just from the neuroscience that dreams are motivated meaningful mental states.

But I also know as a person who dreams himself and as a person who has worked with the dreams of others that from psychological evidence too dreams are extremely enlightening about what it is that makes us tick, what it is that's on our minds, what it is that matters to us. And that at least gives you a pointer as to where my thoughts would go if I were to be able to answer this question comprehensively. But do please Google my name and dreams or maybe Google Solms brain mechanisms of dreaming, and then you will get some articles which will give you some more information about this.

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All right, that's the end of week five, as always I've really enjoyed reading and thinking about and answering these questions so keep them coming. Thanks very much, bye until next week.