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*What is dreaming for, if anything?*

One of the charges leveled against adaptationism (most famously by Gould and Lewontin, 1979, in their attack on “just-so stories”) is that we adaptationists jump to our “panglossian” hypotheses without due consideration, let alone testing, of alternative explanations of the phenomena under discussion. The charge is not without merit, but I have always viewed it as pointing to a foible of adaptationists, not a fundamental flaw in adaptationism. So as a devout adaptationist, one of my duties is to police the brethren for just such lapses. Allan Hobson provides a nice instance, since he is cautious and circumspect in his consideration of the claim that dreaming has an important function to perform, and then he *still* overlooks or underplays alternatives. First, I will note what Hobson has to say about the (apparent) function of dreaming. Then I will list just a few alternative hypotheses, to illustrate my point, and ask whether Hobson has given us any evidence that rules them out. According to Hobson:

It makes good sense to prepare the brain for subsequent waking and the physiology of REM sleep manifests abundant signs of an activation state favoring the massive and parallel connectivity essential to the binding of the multiple cognitive processes that are required to explain the extraordinary unity of waking consciousness. For this reason, I refer to REM sleep dreaming as a proto-conscious state. (p6)

It does indeed “make good sense” but that is not enough. We need to see that disrupting/removing REM sleep has a deleterious effect, and even showing that would not be a slam dunk for function, since however we suppress REM, it may be a side-effect of suppression, rather than the lack of REM, that causes whatever decrement in cognitive competence we observe. What we really need is an account of just what REM sleep does to “integrate” the

brain, and that could only be speculative at this time. It is certainly tempting to suppose, as Hobson does, that

REM sleep constitutes an elaborate program for sensorimotor integration, emotion evocation, and scenario construction. It may be hard to prove but it is hard to believe that these features are not in the service of waking consciousness. The fact that this state recurs every night of our lives underscores that assertion. (p68)

It underscores the assertion, but leaves plenty of room for alternatives. For instance:

A. Dreaming in infancy has a function, but dreaming in adulthood is simply a vestige of a phenomenon that did indeed play a crucial organizing role in the early days of every infant's (or fledgling's) neural development. What function? REM in the womb is (roughly) what Hobson says REM is in the adult: the spontaneous, endogenous activity that shapes functional structures in the absence of current sensory input, a sort of practice perception off-line that helps prepare the neophyte brain for the real world. But once the brain has a regular diet of sensory input to structure it, the off-line activation becomes obsolete but is harmless and so not worth suppressing. It recedes in duration to only 1.5 hours a day on average (p70), a fraction of its duration in infancy. On this hypothesis, adult dreaming is rather like adult thumbsucking, a functionless habit that was itself a byproduct of an infantile imperative of considerable functional importance.

B. Same as A, except that REM is not in fact so functional during infancy and gestation. It is simply that the brain gets "turned on" in development before it has anything to work with, so it idles vigorously, not doing any harm, but also not doing much if any pre-birth organization, having so little to go on, aside from quite a lot of auditory, tactile and vestibular input.

C. REM could also, as Hobson suggests, be a byproduct of some neural process involved in thermoregulation. The fact that it has evolved twice is an important datum, but we should be cautious about leaping beyond “byproduct” to “function.” Again, we’d want to know *how* REM supported thermoregulation before taking this giant step.

We also need to be cautious about back-extrapolating our connotations of adult dreaming onto the infant and fetal phenomena—a sort of intraspecific anthropocentric bias! Just because we human adults report dreams that are brimming with fascinating content is not a particularly good reason to infer that infants (or birds) are “enjoying the show” during their REM periods. But what grounds, other than bloody-minded philosophical skepticism (more on that below), would lead us to reserve judgment about infant *experience* during their REM periods? For one thing, the existence of a feedback loop between (adult) human communication and REM, nicely established by Hobson. As he notes, it is quite possible to train yourself to have lucid dreams, or to wake up and write down dream narratives when they occur. This loop is of course entirely absent in dogs and birds and other languageless REMsters, including pre-linguistic human infants. How could this capacity to be trained have arisen in prehistory and how could it have shaped the phenomenon of dreaming in turn? Here is one way in which dreaming (with content, with narratives, as a proto-conscious experience) could have evolved:

In phase one, there is REM sleep, as described in A or B, and it has some interesting side effects in our ancestors once they begin to develop language: youngsters occasionally blurt out words or longer fragments of speech on awakening (or they talk in their sleep) and their parents respond with interest (curiosity and concern) and this creates the feedback loop that encourages

further such blurting, which elaborates and crystallizes over time into dream reportage. There might be a long period (phase two) when only a few people ever exhibit these symptoms even though they all have REM sleep, and during this phase there would not be a word for “dream” or a concept of dreaming, and it would be a bit of a stretch to say that dreaming was, already, a phenomenon in this early human world, not just because they didn’t have a word for it, but because the feedback loop was not yet well enough elaborated to generate anything worth calling dreams. In a similar spirit, we can envisage a time when our ancestors had not yet managed to invent/discover the phenomena of *homesickness* or *fame* or *war* or *pornography*.

From this perspective, which could be fleshed out in a variety of ways, there is a significant amount of content shaping by the demand characteristics of parental (and then self-) curiosity, not unlike the *folie à deux* elaborations of what used to be called Multiple Personality Disorder but is now officially known as Dissociative Identity Disorder (Humphrey and Dennett, 1989). The reward (to put it crudely) of attention can, as Hobson shows, reach down beneath the surface of verbal expression and begin to modulate the processes that feed verbal expression, opening the floodgates to more and more *tellable* dreams. So we would have something of a continuum between REM episodes with no organized content at all, REM episodes that create vague content-laden hunches, emotional squalls of one flavor or another, for instance, and on to fully ripened dream experiences. The capacity to “recollect” dreams would thus be an artifact of cultural conditioning rather than a functional enhancement of an underlying functional process. Dreams wouldn’t have to be *for* anything—except for telling, and that activity could be a culturally infectious habit, harmless and even entertaining, and hence hard to extinguish.

It would be true on any of these hypotheses that children in learning to speak also are learning to dream, a process in which the opportunity/task of recalling their dreams when awake plays an encouraging role. Then cultural evolution or contagion could take over, and we're on the yellow brick road to seers and shamans, prophets and interpreters, Jung and Freud.

This brings us close to Hobson's challenge to me to clarify my position on Norman Malcolm's notorious hypothesis about dreams. A re-reading of my 1975 paper "Are Dreams Experiences?" shows that I never defended Norman Malcolm's "hypothesis that dream reports reflect mental activity associated with the awakening process rather than antecedent REM or NREM sleep physiology." (Hobson, personal communication) Rather, I used Malcolm's outrageous but ingenious proposal to expose some of the otherwise tacit and underappreciated assumptions that must be taken on board by dream researchers—assumptions that Hobson and others have indeed committed to, without, perhaps, recognizing that they subtly undermine some "common sense" ideas about dreams and indeed all conscious experience.

Chief among these, no doubt, is the quite standard image of dreams as experiences that occur in strict narrative sequence, quite like a movie running in the head while the sleeper has REM. The fact that on awakening dreamers *report* such putative episodes is undeniable, but not as conclusive as some would suppose. There are, for instance, temporal anomalies (from the point of view of this standard image), and these appear paradoxical *until* you abandon the standard image and acknowledge that the temporal properties of neural events and the temporal properties *represented* by neural events are entirely independent, in principle, no matter how closely yoked they are *in waking life* --aside from such interesting and telltale cases as *color phi*,

*metacontrast* and the *cutaneous rabbit* (Dennett, 1991). The basic physics of living in the world, with events occurring not just in sequence, but continuously, without major hiatuses or leaps in time and space, disciplines our everyday waking perception by imposing deadlines for behavioral control. This is a major feature of conscious experience, and dream processes, occurring under a more relaxed regime, need not obey these constraints. These processes still must reside in the evolved, trained machinery of the perceptual systems of the brain, and here Hobson's model of a partly chaotic, noise-driven (instead of information-driven) elaboration of normal perceptual analysis processes is a nice confirmation and detailed elaboration of my sketchier version, in the prelude, "How are Hallucinations Possible?" to *Consciousness Explained* (Dennett, 1991, esp. pp.10-16.)

Hobson stresses, and I concur, that the line between conscious and proto-conscious or non-conscious is not to be drawn in a principled way. That *in itself* is such a departure from everyday thinking about consciousness and experience that Malcolm stands almost vindicated, if we interpret him as defending the thesis that dreams are not experiences *in the ordinary sense of the term*. (Remember, he was an Ordinary Language philosopher writing in 1959.) I do not want to defend Malcolm's antique view, since the last half century of research, especially by Hobson, has deepened our understanding tremendously, and Malcolm was blinkered by his verificationism. As I noted in 1975, Malcolm hugely underestimated the power of models and theories. My brand of verificationism is, I think, more supple, and more attuned to the demands of actual science: we must be cautious when the urge arises to export conclusions *couched in ordinary language* from scientific investigations. Hobson *is* cautious; he recognizes that he has a considerable diplomatic task confronting him, clearing away the rubbish of several obsolete

creeds that still impede communication: the “functional vs. organic” dichotomy, the anti-neurophysiological bias of many psychologists and therapists, and the granddaddy of them all: Freud. I applaud his polemics against all these prejudices, but I do wonder sometimes whether he has outlived his adversaries. Are there really influential Freudians still out there dragging their heels? Since in the field I know from the inside, philosophy of mind, I see Hobson sometimes pounding on an open door, I have some grounds for this suspicion. Brain-mind unification has pretty well gone to fixation among philosophers, with dualism now the renegade position, the outlier—which means, I fear, that a few young philosophers are tempted to endorse it just to be naughty and notorious (such is our field, alas).

In general, Hobson’s philosophical views on the nature of the mind and consciousness would be welcomed as reassuringly mainstream by my fellow philosophers. They ought to be discomfited, however, by a few signs in Hobson’s essay of what I think of as overgenerous applications of the principle of charity. In several instances Hobson takes himself to be addressing philosophers’ concerns when in fact his comments, sound in themselves, don’t reach any targets in philosophy land, only because philosophers are not talking about anything as interesting as the topic he is discussing. They are talking about a trivial artifactual puzzle of their own devising. For instance, Hobson’s “Hard Problem” is not the philosophers’ Hard Problem, thank goodness. The philosophers’ Hard Problem is couched in such a way that no amount of brilliant theory about how the brain accomplishes one cognitive competence or another even *approaches* it. (Roughly, any problem you can solve is, by definition, one of the easy problems! The philosophers’ Hard Problem systematically eludes all of cognitive neuroscience. Enough said.) Another instance that makes me cringe is his remark about “Dennett’s zombie country”

(p82). No, philosophers' zombies are *not* like “automatons” as Hobson imagines—those are the zombies of folklore. Philosophers' zombies are a much sillier idea: folks who are excellent company, lively, creative, lovable, as knowledgeable and sensitive as you could want—but *there's nobody home*. (This is well nigh impossible to imagine, but many philosophers have persuaded themselves that they can imagine it, and that their ability to do this feat of imagination is a Major Problem for the sciences of the mind.) When I inveigh against the Zombic Hunch (Dennett, 2005) I am not criticizing the idea of automaton-like elements in our brains; I actually support that idea in detail (cf. Christof Koch's proposals on this score). Hobson doesn't in fact have anything to say about philosophers' zombies, I'm happy to report, since the topic is too embarrassing to merit consideration.

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