

Nightmares from the Id

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“Monsters, John! Monsters from the id”

Last words of Lt. “Doc” Ostrow – *Forbidden Planet*

In the 1956 science fiction film, *Forbidden Planet*, for many SF fans one of the best of the 1950s, a mysterious and incomprehensibly powerful entity has all but exterminated a human colony on the planet Altaira. The mystery is solved by “Doc” Ostrow with the help a brain boost from the “educator,” a device of the long defunct race of the Krell, the original inhabitants of the planet. Ostrow’s dying revelation is initially not very enlightening for his comrade, Commander John Adams, as the term “id” does not appear to have much currency at the end of the 21st Century. Adams is forced to turn to the scholarly Morbius to ask: “What is the id?” Morbius answers, somewhat agitatedly: “Id - id - id. It’s . . . it’s an obsolete term. I’m afraid once used to describe the elementary basis of the subconscious mind.” The id in question turns out to be that of Morbius’s own unconscious, which is attempting to prevent anyone from leaving the planet. In true psychoanalytic tradition, the id is the repository of instinctive selfish, lustful, and violent urges (Well, selfish and violent anyway; 1950’s Hollywood was not yet ready for unsublimated lust).

The Id Brain

The notion and the name (Latin “id” = English “it” = German “Es”) are most closely associated with the name of Sigmund Freud and with his quaint theory of personality. Freud, however, quite explicitly, and with due acknowledgement, took the term from Georg Groddeck’s “Das Buch vom Es.” Even before Groddeck, Nietzsche had used the term to refer to the most basic level of human nature. By the time Freud appropriated the term, he had abandoned his quest for a scientific (i.e., neurologically-based) psychology, and hence did not speculate where in the brain the hypothetical id might be found. Recently, however, we have acquired a fairly detailed understanding of the location of something very like the Nietzschean id, and one without the quirky psychoanalytic baggage.

The id has its center deep within the temporal lobes of the brain. Its nucleus is a small structure called the amygdala and includes a number of associated brain structures (such as the basal nucleus of Meynert, the bed nucleus of the stria terminalis, and the anterior cingulate cortex). We might think of these structures, collectively, as constituting the core of an “id brain.” We are also gaining an understanding of the nature and function of this neurological id. Interestingly, this modern version of the id turns out to be, metaphorically speaking, at least as terrified as it is terrifying and more threatened than threatening. This is likely a reflection of the fact that our early ancestors were as likely to have been prey as predators – and, as predators, their own favorite prey.

Neuroimaging studies have shown that the amygdala is particularly responsive to fearful faces, even those presented subliminally, that is, without any evidence of people being conscious of having seen the faces. Thus, signs of danger are processed by the unconscious id well before they enter consciousness. This is possible because the amygdala receives sensory inputs independent of, and more directly than, “higher” cortical centres. Moreover, the amygdala is a very well-connected structure that receives information from many, if not all, sensory systems (vision, hearing, bodily sensations, etc.) and, in addition, sends out information to a staggering number of centers throughout the brain. Thus, it is not surprising that the amygdala is implicated in many emotional disorders, including depression, phobias, and post traumatic stress disorder (PTSD). For example, brain imaging studies have shown that the amygdalae of PTSD patients are more responsive to fearful faces than are control subjects.

The amygdala is, however, not the immediate source of fearful feelings. The structures responsible for the subjective feeling of fear are likely further downstream (i.e., involving later processing), consistent with the common experience of reacting to an emergency driving situation and feeling the fear only later. Growing evidence suggests that the most immediate and direct function of the amygdala is to prepare the higher cortical centres to *attend to* and *analyze* emergency situations, via a kind of threat-activate vigilance system (TAVS). The TAVS is very sensitive to threat cues, responding even when such cues are presented so briefly that they do not register in consciousness. The id brain, however, does not have the analytic power for a fine-grained analysis of sensory input. Detailed perceptual analysis can be achieved only by recruiting the vastly more powerful, if somewhat more sluggish, cortex. This recruitment is achieved by infecting the rest of brain with its own paranoid bias, directing us to consciously interpret formerly innocuous events as threatening. In a sense, the entire brain becomes temporarily paranoid under the influence of the amygdala. Hence, once the TAVS has been activated, the cortex becomes more sensitive to subsequent threat cues.

The utility of having a suspicious, paranoid id brain, specialized to detect signs of danger, working below consciousness makes very good functional sense in a variety of critical circumstance. In the absence of signs of danger, the majority of the brain’s analytic resources are free to be deployed on life’s many other demands, unless and until alerted by the id. Whereas chronic paranoia is wasteful of our energy and damaging to our social relationships, temporary paranoia in truly threatening circumstances is obviously functional. At least, this would be the case when the TAVS is activated by real-world threats. What if, however, the id suddenly and spontaneously spread its paranoia independently of any external event?

. . .

Early in the *Forbidden Planet* we are informed that Morbius and his daughter had long ago mysteriously survived the destruction of the rest of the colony of settlers on Altaira. Morbius continues to be untouched by the monster and is “bothered only in his dreams” by the strange and destructive force. At one point Commander Adams and his crew battle

a seemingly indestructible monster, one that Doc Ostrow concludes must be renewing itself “microsecond by microsecond” and it appears that the crew is doomed.

Cut to Morbius’s study.

Morbius sleeps, but is awakened by his daughter, who, appropriately enough, reports that she has had a nightmare.

Cut back to the battle

In the midst of battle, the monster suddenly and mysteriously fades and disappears. The crew is saved. We now know that the monster was clearly a creation of Morbius’s dream, its power enhanced by his own brain boost from the “educator” of the Krell and his id’s connection to a massive computer beneath the planet.

. . .

In the absence of such brain boosts and wireless connections to enormous sources of power enabled by Krell technology, our id brains can directly terrorize only ourselves in our dreams, something they can, however, do quite effectively

Nightmares from the Id

In all of us, even in good men, there is a lawless wild-beast nature, which peers out in sleep.

Plato – The Republic, Book IX

I sleep—for a while—two or three hours—then a dream—no—a nightmare seizes me in its grip, I know full well that I am lying down and that I am asleep . . . I sense it and I know it . . . and I am also aware that somebody is coming up to me, looking at me, running his fingers over me, climbing onto my bed, kneeling on my chest, taking me by the throat and squeezing . . . squeezing . . . with all its might, trying to strangle me.

I struggle, but I am tied down by that dreadful feeling of helplessness that paralyzes us in our dreams. I want to cry out—but I can't. I want to move—I can't do it. I try, making terrible, strenuous efforts, gasping for breath, to turn on my side, to throw off this creature who is crushing me and choking me—but I can't!

Then, suddenly, I wake up, panic-stricken, covered in sweat. I light a candle. I am alone.
- Guy de Maupassant, *Le Horla*, 1887

The forgoing account vividly and accurately captures the horror of a distinctive kind of nightmare. Maupassant describes his protagonist’s experience with a literary eloquence available only to a gifted stylist but also with an authenticity of someone who clearly has himself experienced the hypnagogic nightmare, that is, a nightmare occurring on the borderland of waking and sleeping, and having as its setting the very bedroom of

the sleeper.¹ It is clear from reading early scholarly accounts that the term “nightmare” referred not simply to bad dreams, but specifically to the kind of experience described by Maupassant. Over the course of the 20th century, the nightmare became vaguely applied to any bad dreams. Discussions of the highly specific experiences of the hypnagogic nightmare virtually disappeared from the scientific and scholarly literature as well as from the public sphere.

Sleep Paralysis and Hypnagogic Experiences

In 1876, about the same time Maupassant was describing his nightmare experiences, an American Civil War surgeon, neurologist, and writer of historical fiction, Silas Weir Mitchell reported a curious malady, which he called “night palsy,” during which soldiers reported a temporary but terrifying nocturnal paralysis. Although the phenomenon was subsequently reported in the medical literature under a number of different labels, the term coined in 1928 by Samuel Wilson, “sleep paralysis,” finally stuck. Sleep paralysis is now generally understood to be a dissociated version of the paralysis that normally accompanies rapid-eye-movement (REM) sleep, that is, that phase of sleep during which many of our most vivid dreams occur. The REM-related paralysis is thought to have the function of preventing us from acting out our dreams, the obvious dangers of which, oneself and for sleeping partners, are illustrated by failures to do so in something called REM-behavior disorder. In the 1960s and 70s, in studies of narcolepsy patients, William Dement and his colleagues in the US and Yasuo Hishikawa and his colleagues in Japan began to describe the frightening experiences that sometimes accompanied sleep. In 1967, a psychiatrist, Sim Liddon, observed that sleep paralysis with hypnagogic experiences or hallucinations appeared to be the same phenomenon as was described as the nightmare by writers in the 18th, 19th, and early 20th century. Liddon also drew parallels between sleep paralysis with hypnagogic experiences and world-wide accounts, in traditional cultures, of witch, demon, and spirit attacks during sleep. Still later, in the 1970s and 1980s, anthropological and folkloric studies of David Hufford, Robert Ness, and others noted specific similarities between the nocturnal “old hag” attacks of Newfoundland, as well as numerous accounts of “spirit” and “ghost” attacks from around the world, and the emerging medical and psychological literature on sleep paralysis with hypnagogic experiences. Later, a number of surveys established that these experiences associated with sleep paralysis are also common in modern industrialized societies. Indeed, by the 1980’s sleep paralysis had become a leading skeptical explanation for the then popular anomalous experiences described as alien abductions. By

¹ I refer to this sort of experience as a hypnagogic nightmare to contrast it to the conventional nightmare or “bad dream,” as well as from traumatic nightmares associated with posttraumatic stress syndrome. The term hypnagogic hallucinations refer to hallucinations occurring as one is falling asleep. A distinction is often made between hypnagogic and hypnopompic hallucinations, that is, those that occur just as one is waking. Our research suggests that hypnopompic hallucinations are just as common as hypnagogic hallucinations, although the distinction is not always easy, or possible, to make in practice. In any case, as hypnagogic is a sufficient mouthful, I will use hypnagogic to cover both hypnagogic and hypnopompic hallucinations.

the early 1990s, physiological studies in Japan by Kazuhiko Fukuda, Tomoka Takeuchi, and their colleagues had corroborated the presence of REM states during sleep paralysis and its associated nightmare experiences.

Although by the 1990s a few investigators had collected narrative accounts and a few surveys had probed for certain specific experiences, no systematic quantitative analysis of a significant range of experiences had been undertaken. Thus, in 1996, a number of graduate students and I began an extensive survey, with detailed probes concerning a range of sensory, motor, and affective hypnagogic experiences during sleep paralysis. Our findings soon revealed that the nature and organization of hypnagogic experiences were remarkably consistent with what we knew about intrinsic REM neurophysiology. What was also clear was that, although many people certainly do report elaborate narrative scenarios of threatening intruders and violent assault, much more common are fragmented sensations with no obvious narrative organization. Most experients report only 1-3 specific sensations in a single episode and many report none at all. Thus, in many if not most cases, paralysis may be accompanied by no more than a few odd sounds, perhaps buzzing or humming, or whispering voices, or simply a strong feeling of something present in the room. A listing of the more common sensations is provided in Table 1 along with proportions of people reporting each sensation. As the list reveals, a wide variety of sensations and feelings are reported during sleep paralysis. The apparently random assortment of sensations is quite consistent with the general features of activation-synthesis theory of REM-related dreaming proposed in the 1970's by Allan Hobson and Robert McCarley and still a leading, though controversial, physiological theory of dreams. That is, the seemingly haphazard array of hypnagogic sensations is entirely consistent with the quasi-random bursts of activation from the brainstem during REM specified by activation-synthesis theory to stimulate dreams. The second phase or component of the theory, synthesis, refers to the integration and interpretation of the larger, over-all meaning by the "higher" brain centres. Now it should be noted that such synthesizing is what the brain does every waking minute of every day. The synthesizing challenge is, however, much greater during REM than during waking consciousness as the latter is pre-organized by the external world through the various sensory systems whereas the bombardment of the cortex by activity originating in the brainstem during REM provides little or no organization to assist the brain in its sense-making efforts. Hence, dreams are typically bizarre, disjointed, and incoherent. They are also highly emotional, consistent with neuroimaging studies reporting activation of the id brain during REM states. The most emotional dreams are nightmares and, particularly, the hypnagogic nightmares accompanying sleep paralysis. When we attempt to assess the level of fear experienced during hypnagogic experiences accompanying SP, many people tell us that fear is simply inadequate to describe their feelings – nothing in their waking lives or even conventional nightmares approaches the abject terror associated with these experiences.

Thus, during sleep paralysis, the id brain rules.

The Structure of the Hypnagogic Nightmare

When referring to the often fragmentary experiences of SP, I qualified my descriptions as “seemingly” or ‘apparently’ random. There is, in fact, a thematic organization imposed by the id brain. In fact, even when not experienced as full blown nightmares of demonic assault as described by Maupassant, we have found, using mathematical techniques such as structural equation modeling and path analysis, that the experiences reveal very clear structural patterning. The majority of sleep paralysis experiences fall into three major groups, or factors, which we have characterized as: Intruder, Incubus, and Vestibular-Motor factors. The three-factor structure has been found repeatedly in several large samples varying in age and a variety of demographic variables. In Table 1, the different experience types are organized according to their membership in the different groupings.

Intruder experiences involve a sense or *feeling of a presence* in the room and an assortment of sensory (visual, auditory, and tactile) experiences consistent with the feeling of presence. The felt presence during SP is an utterly compelling sense of something dreadful and uncanny in the immediate environment consistent with the activation of the id brain. People typically describe a feeling of being intently watched by someone or something with deeply malevolent intentions. The presence is itself distinct from sensory experiences, yet is strongly associated with them and serves to imbue them with a sense of alien agency. The accompanying visual experiences vary in specificity from vague shadows to caped figures and ugly trolls. Auditory experiences range in specificity from humming, buzzing, and whirring sounds through slamming doors and approaching footsteps to sinister whispering and demonic gibberish. Tactile sensations include both touching and forceful grabbing of different body parts as well as pulling at bed covers.

Incubus experiences include breathing difficulties, feelings of suffocation or choking, sensations of pressure (typically on the chest), pain, and explicit thoughts of death. The Incubus experiences will sometimes be accompanied by elements of the Vestibular-Motor experiences, that is, feeling one’s body is undergoing various kinds of motion, which would contribute to the sense of being roughly handled and even violently tossed about by the apparent assailant. These sensations may also occur as isolated sensations or as elaborate and violent assault scenarios in which the experient is roughly restrained while being physically and sometimes sexually assaulted (including painful sensations of anal or vaginal penetration). Intruder and Incubus factors are typically moderately correlated with one another and with intense fear. Thus, the two types of experiences, Intruder and Incubus, can co-occur and, when they are sufficiently elaborated, are jointly interpreted as threat and assault, respectively, by an external agent.

The Paranoia of the Id Brain

Theoretical interpretations of, and predictions concerning, the Intruder and Incubus experiences are based on the idea that sleep paralysis is produced by defective

coordination of sleep-wake and REM mechanisms associated with structural and neurochemical anomalies in the brain-stem, allowing REM to intrude into the waking state. We have proposed that the combination of REM and waking consciousness while paralyzed, helpless, and in the dark activates the TAVS beyond its normal level of activity during REM. Note that, because the TAVS is internally and spontaneously activated, there is no objective threat present and, importantly, no possible objective resolution of the source of the feelings of threat. Such uncertainty under conditions of unresolved threat is itself extremely aversive and its reduction highly motivated. Interpretation of the spontaneous cortical activation of the TAVS during REM will be biased just as interpretation of environmental events is biased under threat conditions. Sensory imagery associated with REM will therefore often assume sinister and frightening forms consistent with threatened or actual assault. Given that most basic motivational states have their own distinctive subjective experience or feeling-state, we have argued that intrinsic activation of the TAVS during sleep paralysis is most often experienced as a sense of the presence of unseen threatening agents.

Our analyses consistently reveal that the felt presence is at the very core of the hypnagogic nightmare. First, it is among the most commonly reported experiences during sleep paralysis (See Table 1). Interestingly, the felt presence is not, strictly speaking, a hallucination. Although definitions of hallucinations vary, they inevitably and most obviously make reference to *sensory* experience. The felt presence being specifically nonsensory cannot by definition be a hallucination but rather is consistent with the notion of a delusion of an unsubstantiated threat; namely, a temporary but intense paranoid delusion. The awareness of the presence is not a judgment based on sensory evidence but an immediate and compelling intuition. Therefore the interpretations of the sensory experiences of sleep paralysis are shaped by the paranoid delusion of threatening presence to be themselves threatening and frightening. Thus, auditory experiences are often sinister whispering, demonic gibberish, and sometimes obscene verbal threats. Visual experiences are of grim reaper figures, ugly hags, ogres, demons and the like. These conditions mimic psychotic symptoms consistent with arguments from the Greeks to the present that dreams more generally mimic, or even are, psychotic states. Hence, it is not surprising that experiencing such dreams while awake, as in SP, often leads people to feel that they are “going crazy.” Such characteristics are also consistent with the occasional misdiagnosis of people reporting hypnagogic nightmares as schizophrenic.

Fear Proneness

At this point one might well ask: “Why are these hypnagogic experiences so often and so intensely terrifying, and so much more so than conventional dreams, even conventional “bad-dream” nightmares. PTSD patients sometimes report sleep paralysis episodes immediately upon awakening from their traumatic nightmares. They describe the subsequent hypnagogic nightmares as being even more terrifying than the traumatic nightmares that awakened them. One possible answer is that people who have hypnagogic nightmares have hyperactive id brains as suggested by the observation that they are more likely to suffer from phobias, anxiety, depression, and post traumatic stress syndrome. Tore Nielsen at the University of Montreal has recently made this argument,

specifically focusing on social anxiety because of the pivotal role of the felt presence. Nielsen and his colleagues report that people who experience sleep paralysis with a felt presence score higher on a measure of social anxiety than people who report sleep paralysis without the felt presence. This would seem to support the notion that people who experience the felt presence during sleep paralysis have hyperactive id brains. When both groups were compared to a control group of people who reported neither sleep paralysis nor felt presence, however, those who reported sleep paralysis with felt presence had social anxiety scores that were virtually identical to the control group. Surprisingly, people who experienced sleep paralysis without felt presence had lower scores in social anxiety than either of the other two groups. This result might be taken to suggest that *not* experiencing the felt presence during sleep paralysis requires a particularly non-reactive amygdala!

No Need for Occult Explanations

In summary, it is a reasonable claim that a basic understanding of the terror of the hypnagogic nightmare and its highly specific themes can be achieved by considering the circumstances of sleep paralysis along with known REM physiology and both universal and specific cultural beliefs about spirit beings. With regard to the physical circumstances of sleep paralysis; consider that, during sleep paralysis, the person is awake, in a vulnerable supine position, paralyzed, and suffocating. It can readily be seen that a positive feedback system between these conditions and the already internally REM-activated id brain will quickly generate extremely high levels of fear. In addition, an important causal factor in Incubus experiences is the REM-related motor paralysis experienced as a sense of restraint, and the resulting difficulty controlling breathing as suffocation, which simply reflects the reduced thoracic contribution to breathing during REM. Reduced blood oxygen, and constriction of airways also contribute to feelings of suffocation. Such physiological effects are strongly associated with the conviction that one is about to die. In addition, the inability to breathe voluntarily during sleep paralysis is frequently interpreted as being caused by a weight or object sitting on the chest. Feelings of pressure and restraint may also be experienced in other body parts when people struggle to move. Such feelings of restraint and pressure are also frequently accompanied by pain, possibly arising from the absence of the dampening effects of proprioceptive feedback following activation of cerebral motor programs associated with struggle. Many of these experiences, especially when accompanied by a felt presence, suggest assault by an external agent, which explains the positive correlation between the Intruder and Incubus factors, and all of these may readily be seen as enhancing the already substantial amygdalar activation. Thus the fundamental physiology of the REM state experienced in the waking state remarkably thoroughly explains why the threat and assault themes are cross-culturally universal in the hypnagogic experiences associated with sleep paralysis. When accompanied by erotic sensations, as these episodes sometime are, the assaults, become rape scenarios. The specific nature of the threatening and assaulting agents vary somewhat across cultures, but they are generally characterized as being of hideous and frightening aspect, and given that they evaporate instantly upon recovery from the paralysis, will seem to have been mysterious and insubstantial spirits.

This latter interpretation will corroborate, and be corroborated by, both generic and specific cultural spirit beliefs.

In our everyday experience, a basic distinction we make is between our experiences of the external world and those of our inner world of feelings, memories, and thoughts. Yet, as experience, what is outside and what is inside are both inside. Both are *in* experience. The brain has been described as an “emulator” or fabricator of our experience of reality, both external and internal. On this view, there is no fundamental difference between waking experience and dreaming (or hallucinating) experience, except that waking experience is usually modulated, or indirectly influenced, by the senses, which transform physical energies (e.g. electromagnetic and pressure waves) into neural impulses. It is now well known that the senses are capable of sampling only a very limited amount of information on-line – far too little to construct the apparently rich images of the external world we experience. Usually the emulator does a reasonable job of constructing our experience of the external world constrained by the limited information provided by the senses. When the senses provide false or misleading information we speak of illusions. When the emulator does so, we speak of hallucinations. Both are much more common than generally thought and are not necessarily symptoms of psychopathology. People often argue that their hallucinations cannot be hallucinations because they seem so real and may be offended by the suggestion that they may be mistaken. Yet, as experiences, illusions and hallucinations, as constructions of our experience can seem as authentic as any veridical experience – and it is possible for quite veridical experiences to seem strangely false as in cases of “derealization” in which all experience loses its sense of authenticity. Thus, it is possible to be deluded about both the reality of hallucinations and the inauthenticity of veridical experience.

It is not surprising, given the nature of the experiences and the intense emotions aroused, that many sleep paralysis experiences attract people with more occult interests and reinforce them in such beliefs. Interestingly, many mysticians, who hold that these experiences reveal a spirit world beyond the ken of science, argue that the consistent and specific themes of hypnagogic nightmares and their cross-cultural universality argue against naturalistic and physiological explanations. Ironically, as I hope is obvious from the foregoing, both the very nature of the sleep paralysis experiences and their cross-cultural universality are well explained by universal physiology along with the physical context of the experiences, and the presence of universal cultural belief systems, and may be taken as very strong arguments in favour of, rather than against, a naturalistic physiological explanation.

Table 1
 Percentages of Sleep Paralysis Experiences Reporting Different Hypnagogic (from
 Dreaming, 2003, 13, 163-179 and Consciousness and Cognition, 2007, 16, 959-974).

Common Experience Types	Lifetime	Single Episode
INTRUDER (THREAT)		
Felt presence	71	58
Visual	63	43
Auditory	63	45
Touch	47	30
Movement of Bed Covers	17	13
INCUBUS (ASSAULT)		
Death Thoughts	64	37
Pressure	62	53
Breathing	60	47
Choking/Suffocating	21	30
Pain	29	22
VESTIBULAR-MOTOR		
Movement	52	24
Floating	44	21
Out-of-Body Experiences	43	22
Falling	38	8
Flying	24	4
Autoscopy	23	13
EMOTIONS		
Fear	95	85
Bliss	13	12