Dreaming, Vol. 5, No. 3, 1995

Dreams and Feeling Realization

Don Kuiken[1]

Among three different types of impactful dreams (transcendent dreams, anxiety dreams, and existential dreams), existential dreams most frequently prompt reports of deepened self-perception (Kuiken & Sikora, 1993). To understand this effect, it is useful to consider three separate aspects of dream experience, each mediated by a different component of dream psychobiology. First, in impactful dreams generally, narrative discontinuities mark mnemonic transformations that present progressively non-prototypic personal meanings. Second, in impactful dreams generally, a heightened sense of "reality" emerges from accentuation of the dreamer's felt engagement in vividly present dream situations. Third, in existential dreams particularly, the disruption of smooth engagement in dream actions initiates the realization of feelings that are tinged with sadness and that uproot superficiality. The interplay of these aspects of dream experience is required to understand how existential dreams deepen self-perception.

KEY WORDS: aesthetic experience; dream function; phasic events; self-perception.

INTRODUCTION

Dream feelings usually are understandable reactions to events in the dream situation (e.g., irritation in response to an insult, fear in response to a threat). However, sometimes dreamers report feelings that seem spontaneously generated rather than responsive to impinging events. Consider the following example:

> I dream that I am climbing a stair, coming to a landing. There are windows on both sides [and] high walls. It's very bright. Four people are there, and one person in particular is . . .interacting with me. He hands me a box that is gift-wrapped and . . .about shoe size.
>
> I start opening the box and then I [see it has] a cover [with] snakes [on it] . . .Obviously there is a feeling of friendship between us or a feeling of comfortable joking . . .and I ask, "Oh, you wouldn't dare, would you?"
>
> And, he said, "Well, you'll have to open it and find out."
>
> So I open the box and, when I open the box, this multitude, this large number of snakes come out of the box. They are very thin, and they're long like ribbons. They're black, shiny, with yellow heads. They all wrap around my lower right leg like a cuff . . ..

[1]Correspondence should be directed to Don Kuiken, Department of Psychology, P-220 Biological Sciences Building, University of Alberta, Edmonton, AB, Canada, T6G 2E9.

1053-0797/95/0900-0129$07.50/1

> I'm trying to push them away, to kick them off, feeling panicky, trying to . . .pry them off. And the more I try, the more I'm getting nowhere [and] the tighter they are wrapping themselves—until I suddenly calm down and start looking at them and see how they fit together and how they are not dangerous snakes . . .I start looking at them and I notice the color of their backs and how they seem to be so quiet and peaceful.
>
> So, I start touching them gently and, as I'm touching them, I'm talking to them. And, eventually I say, "OK, now you have to leave," and they do leave . . .When the snakes did leave, I felt like I was light, I was lighter in weight, but there was also a sense of release . . ."

Several features of this exceptional dream provide a useful introduction to the following discussion. First, the dreamer's transition from panic to calm occurs spontaneously, rather than in response to changes in the dream environment ("I suddenly calm down"). Second, the shift in feeling is embedded within a new understanding of the dream situation. Previously considered "dangerous," the snakes become "quiet and peaceful." Third, the changes in dream feeling and perspective deepen the dream's personal significance in a way that lingers after awakening. As the dreamer indicated afterwards, she was transported beyond her familiar habit of "looking without seeing." A spontaneous transformation of feeling and understanding had provided what Jones (1970) referred to as "self-perception in depth" (p. 187).

In what follows, I will try to articulate how some dreams bring about such personally significant changes. In doing so, it is important to challenge three familiar and potentially misleading assumptions. First, theories of how dreams influence waking thoughts and feelings usually are stated as though all dreams uniformly serve some specified function. For example, Kramer's (1993) theory that dreaming regulates mood is presented as though all dreaming serves this function to some degree. Unless the dream is recalled and there are additional effects due to waking reflection, dreaming attenuates emotion. Such generalizations are not inherently wrong, but proceeding as though dreaming uniformly serves this (or any other) function may obscure the distinct effects of different types of dreaming.[2] Accordingly, when considering how dreams deepen self-perception, the present discussion will allow that some types of dreams—rather than dreams in general—serve that function.

Second, theories of how dreams deepen self-perception usually are stated as though dream telling and interpretation have this effect. Especially in Europe and North America, there is a well established tradition of dream telling and interpretation within insight-oriented psychotherapeutic practices (Dombeck, 1991). That tradition has been extended to deprofessionalized self-exploratory groups (cf. Ullman & Zimmerman, 1979) and informally into popular culture. In this tradition, specialized forms of waking reflection (e.g., interpretation, free association, psychodrama) enliven the meanings that dreams either implicitly or unconsciously have. However, it seems worthwhile to consider whether dreaming *per se* can bring about self-perceptual depth, perhaps because mnemonic and affective transformations oc-

[2]Of course, Kramer (1993) does suggest that not all dreams "successfully" attenuate their "emotional charge," as indicated by spontaneous awakenings from REM sleep and by the relatively intense emotions associated with spontaneously recalled dreams. But, such qualified "success" does not alter his generalization that *all* dreaming *tends* to attenuate emotion. Moreover, Kramer's proposal that reflecting on spontaneously recalled dreams has additional mood regulating effects seems guided by an analogous assumption, i.e., he does not attribute different effects to reflection on different types of dreams.

curring during dreaming occasionally effect such changes.[3] For that reason, the present discussion will allow that dreams sometimes deepen self-understanding independently of their telling or interpretation.

Third, the notion that dreams deepen self-perception is easily confused with the more utilitarian proposal that dreams solve personal problems. For example, Baylor and Deslauriers (1987) proposed that dreams (a) reflect familiar problem-solving patterns, (b) present "deviations" from such patterns, and (c) allow "rehearsal" of new behaviors that better regulate the dreamer's "organismic state." Such language links the psychodynamic thesis that dreams are diagnostic of personal problems with the optimistic proposal that dreams *per se* can solve such problems. However, the instrumental language that describes personal problem solving may obscure how dreams deepen self-understanding. The "depth" of personal understanding that dreams facilitate may be more like the "depth" that is nurtured in experiences of art. A significant dream, like aesthetic experience, may involve the expression of feelings, the facilitation of subtle recognitions, the realization of multileveled meanings, etc.

DREAMS AND AESTHETIC EXPERIENCE[4]

The possibility that some types of dreams have a deeply expressive rather than utilitarian function can be underscored by referring to a remarkable parallel between the preceding dream (hereafter referred to as the Snake Dream) and Coleridge's (1963/1817) "The Rime of the Ancient Mariner." Drawing this parallel does not mean that the dream is art in the same sense as Coleridge's poem. Rather the dream and the poem share forms of thought and feeling that traditionally have been regarded as characteristic of aesthetic experience (cf. Dufrenne, 1970/1953). In the poem, the protagonist (and the engaged reader) realize an unusual depth of feeling; in the dream, the dream-protagonist (and the dreamer per se) also realize an unusual depth of feeling. Articulating the commonalities in these expressive moments may reveal how self-perception sometimes is deepened in both domains.

Recall that, in Coleridge's poem, the Mariner is on a ship sailing from England, driven by storms toward the South Pole. Strange fauna inhabit an icy seascape—until the arrival of a familiar albatross, which the Mariner inexplicably kills. Subsequently the Mariner and his doomed shipmates are becalmed in a sea that

[3]Although attempts to determine the functions of dreaming *per se* are not new, the more specific suggestion that self-perceptual depth can be brought about by dreaming has not been systematically studied. Studies concerned with the psychological functions of dreaming independent of the psychobiological functions of REM sleep have assessed Rorschach movement responses (cf. Cartwright & Ratzel, 1972), affective intensity in fantasy (cf. Fiss, Klein, & Bokert, 1966), etc., but *not* explicit changes in self-perceptual depth. And, studies that have more directly assessed self-perceptual depth (cf. Cartwright, Tipton, & Wicklund, 1980; Fiss, 1991; Kuiken & Smith, 1991) uniformly have done so *after* explicit directives for waking dream reflection. Thus, the effect of dreaming *per se* on self-perceptual depth remains largely unexplored.

[4]I want to express my appreciation to David Miall for conversations and encouragement that have been invaluable during development of the ideas in this and other sections of the paper.

holds "a thousand thousand slimy things" (1. 238), an abundance of sea snakes that is reminiscent of the "multitude" of seemingly "dangerous" snakes in the sample dream. In the disturbing presence of the sea snakes, the Mariner "looked upon the rotting sea, and drew [his] eyes away" (1. 240-241), which seems comparable to the dreamer's attempts to remove the snakes before, as she indicates a moment later, "looking at them" more receptively. Then, without instigation, the Mariner began to watch the sea snakes' "rich attire" and how they "coiled and swam" (1. 276-278), much as the dreamer suddenly began to "notice the color of [the snakes'] backs" and how they "fit together." In contemplation of these living forms, a "spring of love gushed from [the Mariner's] heart" and he "blessed them unaware" (1. 284-285); similarly, as the dreamer became calmly attentive, she "gently" touched the snakes and began talking to them. Through his transformation, the Mariner became able to pray (1. 288) and the dead albatross fell from his neck; similarly, through her transformation, the dreamer felt "light in weight" with a "sense of release."

By describing these commonalities more abstractly, it is possible to suggest the forms of thought by which the poem and the dream realize their unusual expressive depth. First, the snakes become known in a manner that goes beyond their visual appearance to their felt presence as subjectivities. The intimacy of kinesthetic ("they coiled and swam") and tactile ("touching them gently") qualities enlivens the snakes' presence so that they become keenly sensed as separate subjectivities. Their subjectivity is affirmed when forms of address usually directed toward humans (blessing, talking) are directed toward them as well. Second, the protagonists show courage in their reactions to these enlivened figures. Initially the (slimy, dangerous) snakes are repulsive and disturbing, but the Mariner and the dreamer eventually overcome aversion and address the snakes with openness and compassion. Third, through their actions, the protagonists are uprooted from "those habits which are the embodiment of the superficial self" (Dufrenne, 1970/1953, p. 408). The Mariner is uprooted from spiritual conventionalities that had left his "heart as dry as dust" (1. 247), and the dreamer is uprooted from her habit of "looking without seeing." Beyond superficiality is a new outlook that allows the Mariner rejuvenating prayer and the dreamer a "sense of release."

Thus, the dream and the poem provide depth in three important respects: the enlivened presence of an "other," the protagonist's courage despite apprehension, and a transformation in which the protagonist abandons superficiality. Dufrenne (1970/1953) has argued that these qualities constitute the depth of aesthetic experience, and I am suggesting that some dream events also can attain such depth. This parallel between aesthetic experience and some dream events must be distinguished from the more familiar suggestion (cf. Sharpe, 1978/1937; Hall, 1953; States, 1988) that the tropes of literary art (e.g., metaphor, metonymy) have parallels in the forms of thought that contribute to dream formation (e.g., condensation, displacement). Whereas it is plausible, in my view, that dreaming in general depends upon trope-like thought, only occasionally do dreams provide the depth that is comparable to aesthetic experience. In what follows, I will discuss evidence that some

types of dreams, independently of specialized post-awakening reflection, compellingly attain such depth.[5]

TYPES OF IMPACTFUL DREAMS

Methodological obstacles seriously affect the prospects for systematic studies of how some kinds of dreams deepen self-perception. One obstacle is that we have not developed a particularly useful dream taxonomy (cf. Kuiken, 1991). If, as suggested earlier, only certain types of dreams effect self-perception in depth, how would we recognize them? Unfortunately, the vocabulary and methods usually used to distinguish among dream types is rather impoverished. Some researchers identify dream types by reference to one specific, noteworthy attribute; so, there are studies of nudity dreams, flying dreams, lucid dreams, etc. This is like classifying animals according to color: precise but arbitrary. Other researchers distinguish dream types by reference to broad, vaguely conceived attributes; so, nightmares can be nearly any emotionally unpleasant dream that awakens the dreamer from sleep late in the night. This is like classifying plants according to whether they grow quickly: imprecise although somewhat more suggestive of fundamental differentiating properties.

Neither of these approaches is very useful. As biological taxonomists have learned, useful taxonomies depend upon the identification of classes (e.g., species) that are distinguished by reference to numerous correlated attributes (sensory sensitivities, characteristic prey, etc.) across several levels of analysis (cell structure, skeletal structure, etc.). Recently, Kuiken and Sikora (1993) reported a classifactory study designed to pursue these objectives. During a four week period, each participant described her most impactful dream and then the first dream occurring at least four days later (regardless of impact). Impactful dreams were defined as those that continued to influence the dreamer's thoughts, feelings, or actions even after awakening. Using multivariate techniques, the dreams were sorted into classes according to similarities among their profiles of attributes involving sensory phenomena, movement characteristics, feelings and emotions, motives and goals, and dream endings.

These procedures provided four classes or types of dreams (see Table 1).[6] One type, mundane dreams, most of which were recalled four days after the impactful ones, were characterized by the absence of many of the qualities that defined the other three types. A second type, anxiety dreams (or nightmares; cf. Hartmann, 1984), were characterized by intense fear, harm avoidance, olfactory and auditory phenomena, and physical metamorphoses. A third type, called transcendent dreams

[5]To say that some types of dreams provide self-perception in depth independently of specialized post-awakening reflection means that the *pivotal* transformation of feeling and understanding occurs during the dream rather than during subsequent free association, psychodrama, etc. However, the continuing influence of such transformations on waking thoughts and feelings is almost certainly not independent of self-reflection. To date, dream researchers have not examined the psychological factors—including the forms of self-reflection—that enhance, maintain, or diminish dream-induced self-perception changes.

[6]We have recently replicated this study, obtaining very similar dream classes (Busink & Kuiken, submitted).

Table 1. Summary Descriptions of Four Dream Types

Mundane Dreams	Anxiety Dreams	Transcendent Dreams	Existential Dreams
—	Fear	Ecstasy	Agony
—	—	Ineffable Significance	Ineffable Significance
—	Harm Avoidance	Magical Success	Separation
—	Movement Inhibition (Passivity)	—	Movement Inhibition (Fatigue)
—	Olfactory and Auditory Phenomena	Extraordinary Light	Sensory Saturation and Contrast
—	Physical Metamorphoses	Visuo-spatial Shifts	Feeling Shifts
—	Visual Discontinuities	Visual Discontinuities	Visual Discontinuities
—	Lingering Fear and Vigilance	Transcendent Awareness	Self-perception in Depth

(comparable to archetypal dreams; cf. Kluger, 1975), were marked by ecstatic feelings, magical activities, extraordinary sources of light, and shifts in visuo-spatial orientation. A fourth type, existential dreams,[7] involved intense sadness, separation and loss, movement inhibition and fatigue, and the emergence of strong and clear bodily feelings.

Anxiety dreams, transcendent dreams, and existential dreams are all more "intense" than mundane dreams, but since "intensity" is such an abused term, it is important to be more precise. Specifically, all three of these dream types involved visual discontinuities (i.e., explicit "looking," visual anomalies, and sudden shifts in location); all three types involved relatively intense affect, especially at the end of the dream; and the imagery of all three types seemed "real" to their dreamers even after awakening. Despite such evidence of their shared "intensity," each type had quite different effects on subsequent waking thoughts and feelings. Upon awakening, the "intensity" of nightmares alerted dreamers to hints of environmental danger, the "intensity" of transcendent dreams increased dreamers' readiness to express

[7]There are passing similarities between existential dreams and what Hunt (1989), following Silberer (1917), refers to as titanic dreams. However, Hunt's taxonomy is based upon a close and extensive reading of the dream literature, rather than upon the kinds of systematic comparisons reported by Kuiken and Sikora (1993). Until Hunt's conception of titanic dreams is more concretely presented, comparisons seem premature.

their spiritual inclinations; and the "intensity" of existential dreams involved feeling transformations that somehow deepened self-perception.

To clarify how dreams sometimes deepen self-perception, it seemed useful to examine more closely the distinctive qualities of existential dreams. The first indication that existential dreams serve a unique expressive function was found in participants' descriptions of dream feelings. The emergence of strong and clear feelings in existential dreams was often reported in statements such as, "I was . . .overwhelmed by the sadness," "My abhorrence was building," etc. Those feelings typically emerged most powerfully just before the dream ended, and the endings quite frequently involved enactive expression of those feelings. For example, one dreamer noted that, in the dream, he was "really crying because nothing was working . . .and, when I woke up, I was really close to tears."

But the emergence and enactment of feelings does not constitute deepened self-perception. More direct evidence that existential dreams provide self-perceptual depth was that participants found them both agonizing *and* revealing. For example, one dreamer said afterwards that her dream "helped" her "become aware of feelings that [she] was not aware [she] was carrying." Moreover, a scale developed in previous studies was used to assess the extent to which the four types of dreams induced deepened self-perception.[8] This scale (see Table 2, Part A) included items asking whether the dream evoked past memories, personal recognitions, lingering mood changes, and commitments to live differently. Results indicated that existential dreams were more likely to be accompanied by deepened self-perception than were the other three dream types.[9]

Thus, existential dreams, more than mundane dreams, anxiety dreams, or transcendent dreams, deepen self-understanding. Such compelling dreams are not common: only about one in five young adults report such dreams more than three times per year (Kuiken and Sikora, 1993). Nonetheless, their infrequent occurrence seems

Table 2. Questionnaire Items Reflecting Deepened Self-Perception

A. Following existential dreams:
I feel sensitive to aspects of my life that I typically ignore.
My dream influenced my mood even after awakening.
My dream reminded me of events that occurred in my past.
My dream made me feel like changing the way I live.
B. Following self-reflection during wakefulness:
I can now see things that I was previously afraid to see.
I came face to face with feelings that I usually ignore.
I know my feelings better now but not how to solve my problems.

[8]In the presentation by Kuiken and Sikora (1993), this scale was referred to as the Affective Insight Scale. We now prefer the more inclusive connotations of Jones's (1970) phrase "self-perception in depth" for what this scale apparently measures.

[9]This relationship between existential dreams and deepened self-perception was also obtained in a replication of the Kuiken and Sikora study (Busink & Kuiken, submitted).

compensated by their considerable influence on waking thoughts and feelings. The following is a slightly abridged report of a prototypic existential dream:

> [I was in] a hotel in southern Alberta or someplace. I was traveling by myself, I think, and I remember worrying about rapists in the hall and this sort of thing. I remember thinking, "Well, I'll have to be brave because I'm by myself." So I took this room in a secluded area of the hotel . . . and anyway it seemed to work out.
>
> And then this hotel seemed to be in France. My family was with me, and we were all in a room together. We were packing to leave. I was very organized; I had all of my stuff ready to go . . . My family was very disorganized and I was having to help them. I didn't want to. I thought, "Well, they can do it themselves; I'm not responsible for their packing." But it was almost impossible not to help them because I needed another bag or two and I had things stored in a particular drawer and they had dumped all their stuff in there, too. So in order for me to get this packing done, I had to help them anyway . . .
>
> [Then I think I had gone off on my own for a while] and I came back [to the hotel again.] I got a phone call, an overseas phone call from my Dad . . .He had gotten a doctor's report, and the doctor said that he [had an ailment that] would never heal. And I had plans about my whole family moving to France . . . but he just told me how sick he was and that he would never heal. And there was some stupid person on the phone . . . some practical sounding person, who was sticking her nose in there. I kept telling her to shut up . . . and I was really upset and crying very hard. My Dad said that he wanted to talk to my Mom. So my Mom came to the phone [and she thought that it wasn't practical to live in France]. She seemed to think that it was better to stay in Canada. I was surprised by her ability to say what was best for me . . . and I remember trying to talk her into it. I was overwhelmed by the fact that my father would never heal. I couldn't be with him and also stay in France. I woke up crying. I was just really sad. I felt this sadness just coming out of the bottom of my soul, from way down deep some place.

Like the Snake Dream, this dream involves the enlivened presence of an "other," courage despite apprehension, and the abandonment of superficiality.[10] First, her father's subjective presence goes beyond visual appearance. The intimacy of his voice on the telephone evokes the dreamer's longing despite his physical absence from the dream situation. Second, the dreamer acts courageously to overcome intimidation. She resists the interference of "some practical sounding person," as well as her mother's judgment about what is "best" for her. Finally, through her expressive actions, the dreamer is uprooted from superficial distress by a form of sadness that comes from "the bottom of [her] soul." She reported afterwards that the dream prompted her to "face" a "long-standing" concern about her father's death that she would rather have "shut out."

How might this happen? By what dynamics do existential dreams effect such self-perceptual depth? It is difficult to imagine an answer without considering how feelings emerge and change during dreaming. One possibility is that feelings become accentuated during dreaming, that feelings guide initial formation of the dream narrative, and that somehow the dream narrative is transformed, deepening the sense of self that is represented in the dream. One version of this view has been presented by States (1988) in his characterization of how feelings guide dream formation and how "ironic" turns in dream narratives deepen their expression. The present formulation resembles his, although it highlights a type of dream that seems to specialize in "ironic" turns, depends upon a different range of evidence, and reaches somewhat different conclusions.

[10]The Snake Dream is not a prototypic existential dream; it includes aspects of all three types of impactful dreams. Nevertheless, it is an especially clear illustration of feeling realization in an impactful dream.

ORIENTING ACTIVITY, DISCONTINUITIES, AND MEANING SHIFTS IN IMPACTFUL DREAMS

The sample existential dream (hereafter referred to as the Hotel Dream) suggests that deepened self-perception emerges through spontaneous shifts in the dream narrative. In three discontinuous but thematically related episodes, the dreamer is changed from an isolated traveler wary of rapists to an agonizingly sad traveler resisting intrusions into relations with her dying father. To understand this transformation, it is useful to consider the psychobiology of phasic events during sleep, especially REM sleep. In what follows, I will review evidence (a) that discontinuities in dream narratives are more prominent in impactful dreams generally; (b) that such discontinuities are mediated by phasic manifestations of the orienting response during sleep; and (c) that such discontinuities are not random but rather meaningful transformations from more to less prototypic meanings. This will represent the first step in articulation of how impactful dreams, including existential dreams, frequently transform narrative themes to provide non-prototypic variations on those themes. Thus, studies of narrative discontinuities provide a window on transformations that "reveal" typically ignored meanings, such as those that so deeply affected the traveler in the Hotel Dream.

Narrative Discontinuities Are More Prominent in Impactful Dreams

Narrative discontinuities in impactful dreams occur in several forms. The Snake Dream illustrates one form in which the meaning of a concrete dream situation is unexpectedly but not implausibly changed: the dreamer "start[s] looking at [the snakes] and see[s that] . . .they are not dangerous." A second form of discontinuity is illustrated in a dream in which the dreamer initially describes an image of "tomato plants . . .just covered with aphids," but when she begins to "look more closely" she sees "one plant [with] a spider . . .that's a little like a beetle." This inexplicable shift seems an unrealistic visual "intrusion"—even though the resemblance between the first and second plant/bug images is unmistakable. A third form of narrative discontinuity is illustrated in the Hotel Dream: the dreamer initially reports being in "a hotel in southern Alberta or someplace" but then she experiences an inexplicable shift to a "hotel [that] seemed to be in France." Something fundamental about the identity of the hotel has changed, and the claim that these hotels in some sense represent the "same" dream situation is not convincing.

Kuiken and Sikora (1993) found evidence that these kinds of narrative discontinuity are common in impactful dreams. Specifically, compared to mundane dreams, impactful dreams more frequently included explicit looking behaviors (e.g., looking more closely), visual intrusions (e.g., inexplicably appearing objects), and scene shifts (e.g., inexplicable changes in location). Given the frequent reference to explicit looking behaviors in these descriptions and given evidence that eye movements correspond to gaze adjustments in dream narratives (Herman, Erman, *et al.*, 1984), it seemed promising to examine the psychobiology of those phasic events that are temporally linked to eye movements during REM sleep. Although it is

clear that REM sleep is not uniquely associated with dreaming *per se* (cf. Foulkes, 1985), the psychobiology of those phasic events is nonetheless informative about dream narrative discontinuities.

Phasic Manifestations of the Orienting Response Mediate Narrative Discontinuities

For a number of years and in a variety of formulations, PGO spikes have been implicated in the mechanisms that regulate REM sleep and potentially influence dreaming. These formulations have persisted partly because the distribution of PGO spikes in animals is analogous in some respects to the distribution of "intense" dreaming in humans. First, PGO spikes are concentrated in REM sleep where dreaming is most intense (cf. Foulkes, 1966). Second, the frequency of PGO spikes increases within REM periods, as does the intensity of dreaming (cf. Czaya, Kramer, & Roth, 1973). Third, REM deprivation increases the density of PGO spiking within REM sleep, just as REM deprivation increases REM dream intensity (cf. Ingmundson & Cohen, 1981).

In studies of these relationships in humans, a cluster of peripheral events that seem to be triggered by a common PGO mechanism were identified, including transient EMG suppression, twitches of the limb and facial musculature, middle ear muscle activity (MEMAs), phasic integrated potentials (PIPs), and eye movements (EMs). Because peripheral modulation of PGO mechanisms has been underestimated (cf. Herman, 1992) and because dream "intensity" has been imprecisely conceived (Hauri, Rechtschaffen, & Sawyer, 1967), attempts to study the link between phasic events and various indicators of intensity produced a perplexing array of results (Pivik, 1978). On the other hand, these studies *have* provided consistent evidence for the more modest claim that peripheral manifestations of PGO activity in the auditory (MEMAs) and visual (PIPs) modalities are associated with one aspect of dreaming across both REM and NREM sleep: discontinuities in dream narratives (Bliwise & Rechtschaffen, 1978; Ogilvie, Hunt, *et al.*, 1982; Rechtschaffen, Watson, *et al.*, 1972; Watson, 1972; Watson, Bliwise, *et al.*, 1978).[11] This relationship is quite specific; other aspects of dreaming frequently associated with "intensity" (e.g., emotionality) are not consistently correlated with PIPs and MEMAs.

The psychological implications of this relationship have been crystallized by Morrison's (Morrison, 1979; Morrison & Bowker, 1975) proposal that PGO spikes are manifestations of the orienting response (OR), the psychobiological adjustment to stimulus change. Morrison's proposal is supported by several observations. First, during REM sleep, animals whose usual loss of muscle tone has been disrupted by lesions display a variety of overt investigative activities (e.g., staring, searching) that are accompanied by PGO spikes (Bowker & Morrison, 1976; Henley & Morrison, 1974). Second, PGO spikes induced by auditory or tactile stimulation during sleep decline in frequency and amplitude with repeated presentations (Ball, Morrison, & Ross, 1989), which is a defining feature of the OR (Sokolov, 1975). Third, during

[11]These citations assume that, while not all discontinuities are bizarre, bizarreness usually entails narrative discontinuity (cf. Hobson, Hoffman, Helfand, & Kostner, 1987; Ogilvie, *et al.*, 1982).

wakefulness, wave forms resembling PGO spikes in shape and amplitude accompany overt investigative activities and also habituate to repetitive stimulation (Bowker, 1980).

The OR is an adjustment to a discrepancy between a presented stimulus and the kind of stimulus for which the individual was prepared. When such a discrepancy occurs during wakefulness, the orienting process provides adjustments in working memory that prepare the individual for continued perception of the novel stimulus. During sleep, the orienting response is endogenously induced and no external stimuli actually are registered because of the sensory blockade associated with sleep. Nonetheless, the individual reacts *as though* stimulus change has occurred and adjustments in working memory are experienced as discontinuities in dream imagery. In humans, PIPs and MEMAs seem to reflect initiation of this mnemonic adjustment, whereas other phasic events (e.g., EMs, EMG suppression) reflect later, somewhat variable components of the OR.

One late component of the OR, sometimes dissociated from the initiation of mnemonic adjustments, is transient loss of muscle tone, primarily in the postural musculature. This component reflects the slight "freezing" that normally prepares the organism for attention reallocation, and is indicated in humans by phasic EMG suppression and H-reflex inhibition. A second late component of the OR, also dissociable from the initiation of mnemonic adjustments, involves the seemingly paradoxical activation of specific muscle systems. This component reflects the enhanced responsiveness of musculature that is related to the currently salient response modality: sniffing in response to novel olfactory stimulation, EMs in response to novel visual stimuli, etc. During sleep, when mnemonic adjustments are initiated and *both* peripheral components of the OR are intense, the pause-to-look pattern that frequently is reported in impactful dreams may occur (e.g., "I suddenly calm down and start to look at them").

On the other hand, during wakefulness covert attentional adjustments in working memory can occur independently of the EMs that constitute "looking." Similarly, mnemonic adjustments initiated in the absence of peripheral components of the OR (e.g., EMs) may result in dream discontinuities independently of simulated "looking." Although there is currently no evidence to substantiate this suggestion, it seems likely that covert attentional adjustments may be more common during impactful dreams—independently of peripheral manifestations of the OR. Thus, the pause-to-look pattern in impactful dreams may reflect especially intense phasic events that activate both the central and the peripheral components of the OR, but other—and perhaps subtler—discontinuities in impactful dreams may reflect covert components of the OR for which we have no available human measure.

Narrative Discontinuities Are Meaningful Transformations of Dream Themes

One account of how the OR updates working memory during sleep, especially during REM sleep, is that it temporarily introduces "chaotic" pontine-generated activation into the cerebral network in order to "clear" it of existing patterns and

enable transition to a "completely unrelated" output pattern (Mamelak and Hobson, 1989, p. 212).[12] By contrast, the present proposal is that pontine-generated discontinuities in dream narratives do *not* produce "completely unrelated" output patterns. Rather, they typically produce output patterns that are *conceptual neighbors* of those that precede PGO activation. What is "new" in those patterns is only partly new, a variation on an "old" theme (e.g., aphids become spiders, a hotel in Southern Alberta becomes a hotel in France, etc.).

Careful description of theme variations surrounding dream discontinuities may clarify this issue and improve our understanding of dream formation (cf. Rittenhouse, Stickgold, & Hobson, 1991, 1994; Sutton, Rittenhouse, *et al.*, 1994).[13] Recent developments in the study of categorical memory provide a framework for such a descriptive effort. It is now well established that categorical memory usually does not rely upon concepts definable by reference to necessary and sufficient attributes. Instead, concepts are understood in terms of numerous attributes that are probabilistically related to category membership. And, typical attributes often define a prototype against which other potential category members are judged. Lakoff (1987) has described how individuals develop category systems in which a variety of nonprototypic subcategories are related to a prototypic subcategory. For example, he analyzed the conventional concept of "mother" in North American culture. He found a prototypic subcategory that includes a mother who is female, gave birth to the child, supplied her half of the child's genes, nurtured the child, married the child's father, is one generation older than the child, and is the child's legal guardian. He also found that there is a radial structure of subcategories that are derivatives of the prototype. For instance, there is a derivative subcategory that includes a stepmother who did not give birth or supply genes, but is currently married to the child's father. Within the derivative subcategories, mothers are still mothers but in a different sense.

The shifts in meaning that characterize dream narrative discontinuities may involve subcategories of radial categories. Orienting activity, especially but not only during REM sleep, may introduce "chaotic" pontine-generated activation into the cerebral network in order to enable transition from a prototypic subcategory to another less prototypic subcategory. For example, a dream discontinuity may involve a shift from an instantiation of the prototypic "mother" to an instantiation of the

[12]The suggestion that the output of a neural network that has been influenced by "chaotic" inputs is "completely unrelated" is a quite unnecessary derivation of the family of connectionist models to which Mamelak and Hobson (1989) refer. It is possible to introduce noisy inputs into a connectionist network so that it temporarily wanders and settles into a "neighboring" rather than a "completely unrelated" state. The general unavailability of the results of actual simulations has obscured this possibility (Kuiken, 1994), and until very recently Hobson and his colleagues continued to regard "intraclass transformations" as evidence against "random brain activation" (Rittenhouse, Broadly, Stickgold, & Hobson, 1993). In their most recent presentation, however, Hobson and his colleagues (cf. Rittenhouse, Stickgold, & Hobson, 1994) have adjusted the activation-synthesis model so that it allows "intraclass transformations"—even though their theory of classes remains largely unarticulated.

[13]The rationale behind Globus's (1993) reply to Crick and Mitchison's (1986) connectionist model of dreaming is similar to the present argument concerning the meaningfulness of PGO-induced transformations. Both are dependent upon demonstration of coherence in the theme variations that are found in dreams. However, whereas Globus (1993) goes beyond the dream narrative to include associated memories in his search for meaningful theme variations, the present proposal is that the search be limited to the context of dream discontinuities.

non-prototypic "stepmother." Or, since dream meanings seem to reflect more concrete life-world categories, a better example might be the shift from an instantiation of a prototypic, plain, small town hotel (in Alberta) to a non-prototypic, luxury, urban hotel (in France). And, since concrete life-world categories are often individual rather than widely shared, dream discontinuities for an avid tomato grower might involve a shift from prototypic tomato plant bugs (aphids) to non-prototypic tomato plant bugs (spiders). Moreover, dream discontinuities may reflect individual categories of personal feelings, such as when a prototypic panicky attempt to resist and remove snakes becomes a non-prototypic attempt to calmly touch them and ask them to leave.

As the preceding examples reflect, the meanings transformed in dream discontinuities range widely, from affectively neutral categories (e.g., kinds of hotels) to the felt presence of others (e.g., kinds of bugs) to personal feelings (e.g., kinds of feelings toward snakes). In fact, Kuiken and Sikora (1993) found that each type of impactful dream tended to present transformations in a different domain. Anxiety dreams portrayed transformations of the physical identities of external objects or characters (e.g., a hovel becomes a house); transcendent dreams portrayed transformations in primary visuo-spatial perspective (e.g., looking ahead while walking becomes looking down while flying); and existential dreams portrayed transformations of personal feelings (e.g., loneliness becomes mournful sadness).[14] The domains of transformation characteristic of each dream type provide important clues to their functions and their effects.

In summary, spontaneous shifts in the meanings of dream situations may be mediated by orienting mechanisms that are endogenously generated by the pontine reticular system (especially during REM sleep) and peripherally marked by PIPs and MEMAs. When intense, prolonged, and recurrent, as may occur during impactful dreams, spontaneous adjustments in working memory become part of the process by which dreamers experience shifts from more to less prototypic meanings. Such shifts correspond roughly to what Globus (1993) described as the tendency for dreams to move toward "less probable memories" (p. 127) and what States (1988) described as dreams' tendency to take "the path of maximum intensity" (p. 152). By examining the transformative tendencies of different types of impactful dreams, it may be possible to better understand how they attain their characteristic intricacy and depth.

FELT ENGAGEMENT AND THE FELT PRESENCE OF OTHERS IN IMPACTFUL DREAMS

Kuiken and Sikora (1993) presented evidence that the distinctive transformative tendencies of existential dreams involve emotional feelings. In the Hotel Dream, for

[14]Merritt, Stickgold, Pace-Schott, Williams, and Hobson (1994) recently reported that the occurrence of a first emotion or of a shift in emotional valence was associated with the occurrence of dream bizarreness. Their findings are compatible with those of Kuiken and Sikora (1993), since feeling shifts and discontinuities (visual intrusions and inexplicable scene changes) both are prominent in existential dreams.

example, the dreamer's feelings are transformed in each of three successive episodes; progressively she is changed from a "brave" but quietly withdrawing traveler to a courageously resistant traveler who is "overwhelmed" by sadness. However, since Kuiken and Sikora (1993) found that feelings were prominent in all three types of impactful dreams, the emotional transformations of existential dreams in particular must be understood against that background. In this section, I will introduce conceptual distinctions between felt engagement, the felt presence of a dream situation, and felt emotion. Then I will review evidence that felt engagement and felt presence—but *not* felt emotion—are accentuated in dreams, especially in impactful dreams. That evidence includes studies indicating that: (a) the REM carry-over effect involves felt engagement and felt presence, but not felt emotion; (b) REM deprivation increases felt engagement and felt presence, but not felt emotion; and (c) a late and peripheral component of the OR (specifically EMs) mediates the accentuation of felt engagement and perhaps felt presence in REM dreams. Later, I will suggest that the distinctive emergence and transformation of *emotional* feelings in existential dreams involves *disruption* of the felt engagement that is otherwise so pronounced in impactful dreams.

Distinguishing Felt Engagement, Felt Emotion, and Felt Presence

To begin, it is important to present terminology that differentiates between personal feelings and the felt presence of a dream situation. *Personal feelings* involve the subjectively diffuse awareness of movements and postures warranting attributions such as, "I feel limp," "I feel sad," "I feel like I could scream," etc. As these examples suggest, personal feelings are grasped primarily as "inner" tactile-kinesthetic tension, sometimes related to body position but more often to actual or incipient movement. Such inner tension is independent of whether personal feelings have an object (e.g., feeling anger) or not (e.g., feeling restless). Also, the term personal feelings refers both to *felt emotion*, the experience of inner tensions related to the response-organizing activities of the basic emotions (e.g., fear, anger, sadness; cf. Panksepp, 1982) and *felt-engagement*, the experience of inner tensions related to positions and actions taken vis-a-vis the environment (e.g., the felt valence of a judgment, the felt exertion of an overt action).

Whereas personal feelings are experienced as "inner" tensions even when directed toward something "outer," outer objects themselves have perceptible tensions that contribute to what may be called their *felt presence*. In ways that are more direct than the terms projection or empathy allow, the tensions that constitute the presence of other objects, persons, and places can be directly felt. Consider the off-center circle in Figure 1a. Compared to the circle in Figure 1b, it does not seem "at rest"; rather it seems to be "drawn" toward the center (or perhaps the side) of the square. Such tension is localized "in" the figure and not "in" the viewer, perhaps because at least some aspects of an object's felt presence (e.g., the sense of its uprightness in relation to the gravitational field) depend upon the integration of visual, vestibular, and kinesthetic modalities in the very early stages of object perception (cf. Marandez, Stivalet, *et al.*, 1993; Murphy &

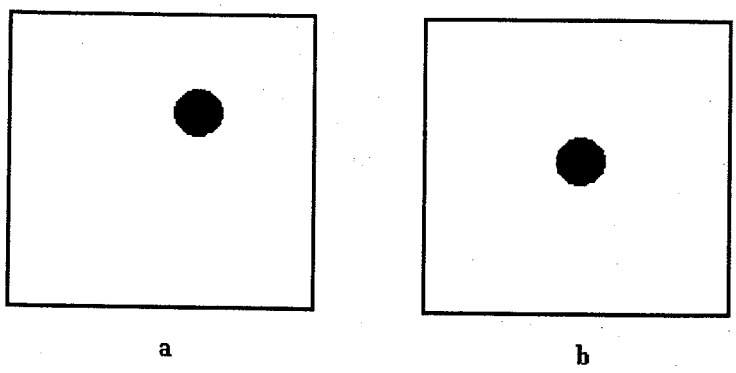

Fig. 1. An example of visual tension (adapted from Arnheim, 1974).

Zajonc, 1993).[15] Such phenomena probably play a significant role in experiences that accentuate the felt presence of objects, places and events: identifying the mood of a setting, discerning tensions in visual art (cf. Arnheim, 1974), recognizing feelings in music (cf. Meyer, 1956), etc.

To clarify how the felt presence of an object can be accentuated, consider the "presence" of a nearby object, e.g., a chair. By concretely describing what the object is and what it does, it is possible to accentuate its "feel." The chair that is facing me as I write is for sitting in (rather than on), its width seems stable and solid, its back would provide firm support, and yet, with its lounge chair style, it seems uninviting. As I describe that chair, its presence for me becomes enlivened. Its physical appearance becomes less static and more like a sentient being that "faces me", is "supportive," is "uninviting," etc. Moreover, this enlivened perception of the chair goes beyond the immediacy of object perception. Werner and Kaplan (1963) and, more recently, Lakoff (1987) have argued that kinesthetic connotations tacitly ground cognition generally, including abstract thought (Johnson, 1987) and poetic imagery (Lakoff & Turner, 1989). In the chair example, understanding use of the word "in" when I say that the chair is "for sitting in" tacitly depends upon a history of metaphoric derivatives from the sense of my body as a container. The sense of my body as a container with an "inside" is tacitly and metaphorically mapped onto the chair as a furniture "container" with an "inside" that can be sat "in." In this way, the boundary between perception of an object and felt engagement with an object begins to blur.

Available evidence favors the hypothesis that dreaming accentuates this usually tacit aspect of experience. More precisely, dreaming accentuates the "feel" of the

[15]Perhaps the only reason for invoking the language of empathy or projection in these circumstances is the traditional epistemic priority given to visual perception. We do not say that color is "projected" onto incoming light waves, although the band width of light to which we selectively respond suggests that in some sense that is what we do. But, we do say that tension is "projected" onto visual objects even though such tension may be as much a property of the object as its color.

postures and actions by which the dreamer engages a dream situation (felt engagement), and dreaming accentuates the "tensions" in objects that inhabit the dream situation (felt presence)—even though dreaming does *not* accentuate emotional feelings. Although the latter qualification may seem counterintuitive, the weight of evidence requires that the hypothesis be stated in this form.

REM Carry-over Effects Involve Felt Engagement and Felt Presence

It is now well established that some aspects of sleep mentation persist for about 15-25 minutes after awakening (Bertini & Violani, 1992). A few studies provide evidence that tactile-kinesthetic aspects of object perception are enhanced following REM awakenings—even in comparison with wakefulness. In one effort, Bertini, Violani, *et al.* (1984) found that, after awakenings from REM sleep, performance on a left-handed tactile-kinesthetic recognition task was better than either after NREM awakenings or during presleep wakefulness.[16] On the assumption that such variations in performance correspond to variations in pre-awakening dream experience, felt engagement during REM dreaming seems to be enhanced.

Moreover, there is evidence that tactile, kinesthetic, and vestibular aspects of motion perception are accentuated during REM dreaming. Lavie and Sutter (1975) found that, after awakenings from REM sleep, apparent motion (the phi phenomenon) was evident over a wider range of stimulus intervals than either after NREM awakenings or during presleep wakefulness.[17] Comparable differences between REM awakenings, NREM awakenings, and presleep wakefulness are *not* found for performance on *static* visual tasks (e.g., the enumeration of dot patterns; see Bertini, Violani, *et al.*, 1985). This suggests that the felt presence of objects—rather than their simply visual presence—is accentuated during REM dreaming.

In contrast, in a study involving a form of REM carry-over effect, Nielsen, Kuiken, and McGregor (1989) found evidence that emotional feelings are *not* accentuated during dreaming. After awakenings from REM sleep, emotions were actually less intense when dreamers were asked to reflect on their recalled dreams than when they were asked to reflect on fantasies constructed immediately after awakening. The attenuation of emotional feelings during dream reflection was associated with high levels of phasic EMG activity during the preceding REM period. These results are consistent with those of Perlis, Drummond, *et al.* (1991), who found an inverse relation between REM sleep EMs and concurrent EMG activity in facial muscles involved in emotional expression. These findings also are consistent with a study of REM dreams by Foulkes, Sullivan, *et al.* (1988), who found that, although emotional feelings usually were judged appropriate by waking standards,

[16]Reinsel and Antrobus (1992) have reported a failure to replicate the Bertini *et al.* (1984) results. The basis for this discrepancy remains unclear.

[17]In a study assessing the spiral after-effect, Lavie and Giora (1973) partly confirmed these findings, although their REM/NREM difference was reliable but the REM/waking difference was not.

a significant number of dream situations were missing emotional feelings that would have been expected during waking.

REM Deprivation Increases Felt Engagement and Felt Presence

Despite its checkered research history (cf. Ellman, Spielman, *et al.*, 1991), studies of REM deprivation provide evidence that feeling engagement and felt presence are increased further in *intense* dreams—again independently of felt emotion. In studies that used brief periods of deprivation to avoid confounds with stress and fatigue, there is consistent evidence that dreams intensified by REM deprivation seem more "real," as indicated by Foulkes' Dreamlike Fantasy Scale (Pivik & Foulkes, 1966), by self-reports of dream clarity (Ingmundson & Cohen, 1981), and by judges' ratings of how "real" dreamers found their dream experience (Weinstein, Schwartz, & Ellman, 1991).[18] These findings indicate that REM deprivation accentuates the felt presence of dream situations.[19]

Additional evidence is available from a second group of REM deprivation studies that measured post-awakening perception of movement in Rorschach figures. This evidence is indirect, depending upon the assumption that the felt presence of objects observed during post-deprivation wakefulness also would be manifest in post-deprivation dreams. Nevertheless, again considering studies that used brief periods of deprivation, results quite consistently indicate that perceived movement in ambiguous figures becomes more pronounced after REM deprivation. Lerner (1966) found greater post-awakening movement scores in an amphetamine-induced REM deprivation group than in a no treatment control. Also, using more traditional comparisons of REM and NREM deprivation, Feldstein (1972) and Cartwright and Ratzel (1972) replicated Lerner's findings, although Cartwright *et al.* found increases in perceived movement only among those whose dreaming seemed concentrated in REM sleep.

In contrast, neither Ingmundson and Cohen (1981) nor Weinstein *et al.* (1991) found that REM deprivation intensified emotional feelings. This confirms results from carry-over studies indicating that the accentuation of emotional feelings in intense dreams is mediated by processes other than those that influence felt engagement and felt presence.

[18]The report by Weinstein, Schwartz, & Ellman (1991) superficially contradicts the claim that REM deprivation increases dream "reality," since they found no reliable increases in ratings of how "real" dreamers found their dreams and no reliable increases in scores on the Dreamlike Fantasy Scale for *REM* dreams on recovery nights after REM deprivation. However, in other respects, their data substantiate the present claim. They did find increased scores on the Dreamlike Fantasy Scale for *NREM* dreams on recovery nights after REM deprivation. Furthermore, they found increases in ratings of how "real" dreamers found their phasic REM dreams on the first of their deprivation nights, a result that is directly comparable to the single night deprivation design used by Pivik and Foulkes (1966) and by Ingmundson and Cohen (1981).

[19]These studies directly suggest that REM deprivation accentuates the felt presence of the dream world, although indirectly they may support the notion that REM deprivation increases felt engagement as well. According to William James (1950/1890) and others, the sense of an object's "reality" depends upon engagement with that object through touch and movement. By implication, the particular "reality" of dreams intensified by REM deprivation may be due to increased levels of felt engagement (Nielsen, 1991).

Peripheral Components of the OR (EMs) Mediate Felt Engagement and Felt Presence

The psychobiological mediators of felt engagement and felt presence may be the processes surrounding generation of PGO spikes, which occur frequently during REM sleep and become even more frequent after REM deprivation. Although this suggestion again implicates the OR, the processes involved are differentiable from those that mediate the occurrence of dream discontinuities.

In studies with animals, PGO spikes, much like those occurring endogenously, can be induced experimentally by sensory stimulation, although the ease with which spikes are induced seems to depend upon sleep stage and sensory modality. Wu, Mallick, and Siegel (1989) found preliminary evidence that electrical stimulation of neck muscles during REM sleep produced PGO spikes more frequently than comparable stimulation either during NREM sleep or *during wakefulness*. (In contrast, PGO spikes in response to auditory stimuli were as frequent during wakefulness as during REM sleep). Thus, despite the general sensory blockade, somatosensory stimulation during REM sleep seems especially likely to induce OR-related attentional adjustments, perhaps enabling the experience of bodily felt engagement in a vividly present dream situation. This would explain why, in human studies, somatosensory stimulation during REM sleep increases EM density (Sauvageau, Nielsen, *et al.*, 1993) and produces higher rates of dream incorporation than other sensory modalities (cf. Koulack, 1969; Nielsen, 1993). Also, if phasic twitches of the limb musculature involve somatosensory stimulation, this would explain why there is a reliable correspondence between the site of such twitches and the locus of dream movement (Gardner, Grossman, *et al.*, 1975). Together these results would explain why motor imagery is more prevalent in reports of REM dreams than in reports of controlled waking experience (Porte, 1993).

Consistent with the REM carry-over and REM deprivation studies, the Wu *et al.* (1989) findings implicate REM sleep as the state during which PGO activity may be associated with felt engagement and felt presence in the dream. Thus, rather than the component of the OR that initiates *covert* attentional adjustments in *either* REM or NREM sleep (as indicated by studies of PIPs and MEMAs), felt engagement and felt presence may involve phasic activity that is associated with *overt* attentional adjustments *specific* to REM sleep (as indicated by EMs *per se*). This interpretation is consistent with several observations. First, during REM sleep but not during NREM sleep, PGO activity is quite unequivocally associated with EMs (Rechtschaffen, 1978a). Second, felt engagement (or "self-participation") is greater in dreams reported after awakenings from REM sleep with EMs than in dreams reported after awakenings from REM sleep without EMs (Bosineli, Cicogna, & Molinari, 1974; Weinstein, Schwartz, & Ellman, 1991), although there seems to be no difference between REM quiescent and NREM awakenings on this variable (Weinstein *et al.*, 1991). Third, there is some evidence (cf. Berger & Oswald, 1962), however qualified (cf. Firth & Oswald, 1975), of an association between EM density and level of activity within the dream. Fourth, felt engagement (or "felt bodily presence") is *not* correlated with a phasic indicator of the *inhibitory* component of the OR, specifically H-reflex inhibition (Pivik, 1971). Thus, the relationship between

phasic events and felt engagement is observed only in REM sleep and only for a late component of the OR that involves the activation of peripheral musculature involved in overt reorientation.

In sum, there is evidence that felt engagement and felt presence are accentuated in REM dreams compared to wakefulness,[20] that dreams intensified by REM deprivation further accentuate such feelings, and that these feeling qualities are associated with the EMs of REM sleep. Consistent with these findings, each type of impactful dream has its own form of felt engagement (Kuiken and Sikora, 1993). Transcendent dreams are laced with vigorous and graceful movements; anxiety dreams include repeated attempts to escape perceived dangers, and existential dreams involve keenly felt but ineffectual movement. Moreover, all three dream types are experienced as more "real" after awakening than are mundane dreams (Kuiken and Sikora, 1993). Given their lingering "reality," it is understandable that such intense dreams continue to influence waking thoughts and feelings (cf. Fiss, Klein, & Bokert, 1966; Kuiken & Smith, 1991).

However, the accentuation of felt engagement and felt presence in all three types of impactful dreams is insufficient to explain the distinctive transformation of *emotional* feelings in existential dreams. As discussed earlier, the discontinuities and transformations characteristic of impactful dreams generally also are insufficient to explain the particular expressive depth of existential dreams. Thus, while both the felt involvement and the narrative discontinuities of impactful dreams are important background, neither alone nor in combination do they provide an adequate account of how existential dreams transform feelings.

FEELING REALIZATION IN EXISTENTIAL DREAMS

Why would the transformation of *emotional* feelings be especially prominent in existential dreams? Some evidence suggests that, in existential dreams, familiar forms of felt engagement are disrupted, evoking emotional themes whose transformation facilitates the "realization" of usually unacknowledged personal feelings. In this section, I will: (a) introduce the concept of feeling realization; (b) articulate the sense of personal limitation and ineffectuality that anticipates feeling realization in existential dreams; and (c) present evidence that the peripheral inhibitory component of the OR (EMG suppression) mediates the disruption of felt engagement, the emergence of emotion, and the transformation of emotional feelings in existential dreams.

The Concept of Feeling Realization

It would be misleading to suggest that existential dreams simply are "expressive of feelings" in a sense that implies cathartic "release." That is, existential dreams

[20]The global comparison with wakefulness is almost certainly an oversimplification, given that waking experiences vary so much. Except for Porte's (1993) comparison of REM dreams with sensory isolated waking experience, the limited research currently available does not allow a more precise account.

do *not* portray energetically expressed feelings in a way that simply gets them "out" (rather than allowing them to remain "pent up" inside). Such an overly simple conception implies that personal feelings are already "known" (perhaps unconsciously) and "available" for expressive purposes; it ignores the extent to which feelings sometimes are vaguely and inexpressibly present, becoming expressible only through reflective effort. In order to distinguish such emergent expressibility from cathartic "release," the phrase "feeling realization" seems fitting.[21] Feeling realization may provide a crucial component of how existential dreams contribute to self-perceptual depth.

Feeling realization is more like finding the next line while writing a poem than it is like the release of suppressed personal feelings. In fact, much like Collingwood's (1958) characterization of artistic expression, Gendlin's (1962, 1991) phenomenological explication of feeling realization in psychotherapy alludes to how feelings are "carried forward" through successive expressive attempts. Roughly, Gendlin describes three moments that together constitute feeling realization. First, while reflecting on a particular situation, the person discerns clearly present but vaguely known bodily feelings. These personal feelings initially resist articulation in a manner analogous to the tip-of-the-tongue phenomenon, i.e., the person is able to sense—but not fully say—what those feelings are. Second, although successive expressive attempts initially seem to capture slightly *different* aspects of those vague feelings, eventually an expressive attempt emerges that seems to capture much *more*, resulting in a clear qualitative shift in feeling. Often such felt shifts are subtle amplifications (e.g., vaguely felt emptiness becomes keenly felt loneliness) and sometimes they are striking inversions (e.g., diffuse anger becomes sad longing for "something more" in a relationship).[22] Third, after a felt shift, the person is aware that these newly grasped feelings (e.g., the loneliness, the longing) were somehow already implicitly "there" but not fully realized before. The intricacy of the original, vaguely felt meaning is now more fully felt and recognized.

People describe feeling realization during wakefulness in terms not unlike those they use to report the deepening of self-perception in existential dreams. Kuiken, Carey, and Nielsen (1987) presented instructions designed to encourage reflection on the felt meaning of personal problems or concerns. They identified four types of response to those instructions, and Table 2 (Part B) presents three questionnaire items that served to identify one type. These items emphasize the emerging awareness of feelings that previously had been ignored—just as did the items reflecting deepened self-perception after existential dreams (see Table 2 (Part A). These similarities suggest that feeling realization, as described by Gendlin, may be brought about through existential dreams.

At first glance, this seems implausible. What Rechtschaffen (1978b) called the "single-mindedness" of dreams does not support the subtle recollection and comparison that enables feeling exploration. Although dreamers regularly direct their attention toward *ongoing* thoughts and feelings, only infrequently do they remember

[21]I want to thank Ria Busink for helping to identify the appropriate terminology for this discussion.

[22]It is critical to understand these shifts in meaning as *felt* shifts; they are decidedly not revised explanations for one's feelings, and they are decidedly not new solutions to problems with which the feelings are associated. Rather, they are shifts in the manner in which the situation is experienced.

previous thoughts or feelings (Kahan, 1994). Consequently, the sense of present and past that supports deliberate self-reflection is rare. Thus, even though existential dreams include present-centered intimations of self-awareness more frequently than do mundane dreams (e.g., recognizing the strangeness of one's dream actions while dreaming; Kuiken & Sikora, 1993), there is no indication of sufficient attentional control to accomplish the form of self-reflection described in Gendlin's account of feeling realization.

However, existential dreams may bring about crucial aspects of feeling realization independently of reflection on previous thoughts and feelings. It may be sufficient that existential dreams disrupt a relatively unreflective sense of felt engagement and precipitate present-centered reflection on personal feelings. Under these circumstances, the neighboring conceptions on either side of OR-mediated discontinuities may bring about full realization of the qualities and intricacies of feelings about the dream situation. Such shifting conceptions might be usefully compared with the succession of expressive attempts that occur during intensive waking reflection (e.g., a series of images that emerge while reflecting on feelings related to a personal concern). In existential dreams, as during waking reflection, successive transformations increasingly move the dreamer from felt engagement to felt engagement *tinged with* emotion. Thus, if a tacit sense of felt engagement has been disrupted, prompting present-centered self-reflection, the nature of the dreamer's involvement in the dream situation may shift toward explicit emotional involvement. For example, a pause to look that shifts dream imagery from tiny aphids to beetle-like spiders may be experienced as a realization of some previously unarticulated feelings. What initially was the felt engagement of a gardener's familiar aphid condemnation is now complemented by an aversion toward beetle-spiders that goes beyond the pragmatics of garden care. Although such shifts in dream meaning occur without recollection of and comparison with previous thoughts and feelings, their self-perceptual import still may be personally significant.

Identifying Feeling Transformation in Dreams

The possibility of significant feeling transformations during dreaming is largely unexplored. There is some evidence that emotional feelings emerge in dream situations where they previously had been absent. In their study of REM dreams, Foulkes *et al.* (1988) found that emotional feelings judged appropriate by waking standards sometimes were absent early in dream narratives, usually becoming present later in those narratives. This pattern could be understood as evidence that felt emotions within a dream situation emerge after initially being inappropriately absent. Also, there is evidence that felt emotions qualitatively shift within the dream narrative. In a study of spontaneously recalled home dreams, Nielsen, Deslauriers, and Baylor (1991a, b) found that, within a dream scene, progressions from positive to negative emotional feelings were more common than progressions from negative to positive emotional feelings. Similarly, in a study of spontaneously recalled home dreams, Merritt, Stickgold, *et al.* (1994) found that felt emotions were more likely to be negative late within the dream narrative. This pattern could be understood

as evidence that, when felt emotions are present in the dream situation, they frequently *shift* in valence, usually from positive to negative.

The preceding studies clarify earlier evidence that felt emotions become more intense as dreams unfold (Czaya, Kramer, & Roth, 1973), but neither the Foulkes *et al.* (1988), the Nielsen *et al.* (1991) nor the Merritt *et al.* (1994) study assessed feeling realization *per se*. By definition, feeling realization occurs within reflection on a single situation, but neither Foulkes *et al.* nor Nielsen *et al.* specified whether the feeling changes that they identified were responses to the same (or even a similar) dream situation. The feeling changes that they described simply may have been different personal feelings in response to changing situations in the dream narrative.

More thorough examination of narrative structure is necessary to clarify how personal feelings within a single dream situation become suffused with felt emotion. Before presenting an example of the kind of analysis that is required, it is necessary to emphasize that feelings, in the broad sense that includes personal feelings (felt emotions, felt engagement) and felt presence, are patterned both synchronically and diachronically. Synchronically, they involve the interplay between personal feelings and the felt presence of an "other" (e.g., a person's attitude toward the mood of a setting). Diachronically, they emerge, unfold as sequences, and fade. Such coherently patterned feelings often occur in personally familiar forms that de Sousa (1987) calls paradigm scenarios and that Tomkins (1979) calls affective scripts.

To understand the following analysis of the Hotel Dream, it is important to consider the paradigm scenario that is being transformed. It includes three episodes separated by two rather abrupt discontinuities, one announced by the statement indicating that the hotel now seemed to be in France, and the other announced (more obscurely) by a gap in the narrative during which the dreamer thinks she was "off on [her] own for a while." Examined carefully, each episode involves a sequence of personal feelings beginning with lone resistance and ending in resignation. In the first scene, the dreamer was "brave" in "a secluded area of the hotel" and then "it seemed to work out"; in the second, she alone was "organized" and "didn't want to" help but then she "had to help them anyway"; in the third, she argued with the "practical sounding person" and her mother before being "overwhelmed" by her sadness. Also, in each scene, "others" have a felt presence that can be characterized as coercive: the "rapists" in the first scene, the family members in the second scene, and the "practical sounding person" and her mother in the third. Quite plausibly, this recurrent pattern of feelings is not only the paradigm scenario (or affective script) for this dream but for certain events in the dreamer's waking life as well. And, in the language used earlier, the two narrative discontinuities are preceded and followed by neighboring conceptions of this paradigm scenario.

How do the conceptions of that paradigm scenario change in this succession of episodes? First, the kind of separateness that the dreamer experiences is transformed. The imagery moves from physical separation ("I was traveling by myself," "I took this room in secluded area of the hotel") to social distinctiveness ("I was very organized," "My family was very *dis*organized") to a multi-leveled expression involving physical separation ("I got . . .an overseas phone call from my Dad"), social distinctiveness (resisting the "practical sounding person" and her mother), and immanent loss through death ("My father would never heal"). These transfor-

mations deepen expression by moving the dreamer from the negotiable limitations of physical separation and social distinctiveness toward the non-negotiable limitations imposed by mortality.

Second, the kind of resistance to coercion that the dreamer expresses is progressively changed. The narrative shifts from self-sufficient withdrawal ("I'll have to be brave because I am by myself"; "I took this room in a secluded area of the hotel") to deliberately selective acquiescence ("So in order for me to get this packing done, I had to help them anyway") to vocal but ineffectual argument ("I kept telling her to shut up"; "I remember trying to talk her into it," and yet "I couldn't be with him and also stay in France"). These transformations deepen expression by moving the dreamer toward more direct encounter with coercive others and by laying out the incommensurabilities that are the risks of such encounters.

Third, the kind of resignation that the dreamer experiences is progressively altered. In the first episode, the dreamer's personal feelings seem to be neutral acceptance ("It seemed to work out"). In the second, her acceptance is somewhat more grudging ("I had to help them anyway"). And, in the third, the dreamer's engagement with the limitations imposed by her father's mortality ("I was overwhelmed by the fact that [he] would never heal") and the risks inherent in direct encounter ("I couldn't be with him and also stay in France") prompt agonizing sadness ("I felt this sadness just coming out of the bottom of my soul"). These transformations deepen expression by moving the dreamer from muted acquiescence to the full sadness of mourning.

Some features of the transformations just described can be used to extend discussion of the distinctive characteristics of existential dreams. One is the emphasis on limitations, including the limits and risks of direct encounter ("I remember trying to talk her into it," and yet "I couldn't be with him and also stay in France") and the limits and loss of separation through death ("I was overwhelmed by the fact that [he] would never heal"). That existential dreams regularly emphasize such limitations is suggested by evidence that they involve the dreamer's inability to attain goals, often because of reported movement ineffectuality, awkwardness, or fatigue (Kuiken & Sikora, 1993). By emphasizing such limitations, existential dreams may prompt reflection on current personal feelings and set in motion the transformations that deepen self-perception. This possibility has been substantiated by studies indicating that individual differences in the reported frequency of dreams involving movement ineffectuality were correlated with differences in the frequency of dreams providing self-perception in depth (Kuiken, 1992).

Peripheral Components of the OR (EMG Suppression) Mediate Felt Limitations

Intensification of the inhibitory component of the OR may mediate the sense of limitations characteristic of existential dreams. Recall that the late components of the OR involve transient inhibition of the postural musculature, which is preparatory to attention reallocation, as well as transient activation of the peripheral musculature, which reflects overt orienting movements. While prolonged and re-

petitive peripheral activation (e.g., EMs) is associated with felt engagement and felt presence, simultaneous and intense inhibition (e.g., EMG suppression) may disrupt the flow of the dreamer's felt engagement in the dream situation. Such disruption need not be concrete (e.g., trying but being unable to walk); it also may be present as a vague sense of ineffectuality in less overt dream actions (e.g., unsuccessfully telling someone to "shut up").

Besides mediating the ineffectuality associated with existential dreaming, OR related inhibition may explain why existential dreams involve shifts toward present-centered self-reflection. During wakefulness, people usually are only tacitly aware of their bodies until something occurs to disrupt smooth movement execution (e.g., a surface irregularity disrupts balance). Such disruption prompts explicit awareness of bodily position and movement. Similarly, during existential dreams, OR-induced inhibition of proprioception may disrupt the sense of smooth and efficacious movement, prompting present-centered body awareness. This is consistent with the observation that, in existential dreams, there are frequent references to emerging self-awareness (e.g., "I felt myself moving outside of my body until I could see it as though I were a spectator"; Kuiken & Sikora, 1993). Thus, the limitations of dream movement may precipitate body-awareness and accentuate personal feelings in existential dreams.

The parasympathetically regulated inhibitory component of the OR may combine with the frustration and discouragement of disrupted action to guide existential dreaming toward a particular domain of emotional feeling: discouragement, sadness, and despair. The agonizing despair of these dreams contrasts most obviously with the ecstasy and awe of transcendent dreams, but also with the fear and apprehension that pervade anxiety dreams. Although similarly negative in valence, fear unlike sadness is regulated by the sympathetic component of the autonomic nervous system (cf. Panksepp, 1982), and may heighten external vigilance rather than accentuate body awareness and personal feelings. This would be consistent with evidence that anxiety dreams seldom include the intimations of present-centered self-awareness that are found in existential dreams (Kuiken & Sikora, 1993).

In sum, the distinctive accentuation of limitations in existential dreams may be mediated by a form of the OR that simultaneously involves intense activation of the peripheral musculature involved in overt reorienting movements and intense, prolonged, and repeated inhibition of the postural musculature. Under these circumstances the neighboring conceptions on either side of dream discontinuities spiral toward increasingly non-prototypic conceptions of dreamer limitations, inefficacy, and feelings of sadness and despair. As in the Hotel Dream, each successive transformation is analogous to a waking attempt to express the quality of the felt engagements and emotional feelings that constitute a paradigm scenario. And, as in that dream, the culminating expression in existential dreams involves deep sadness, often concerning lacks and limitations that are typically ignored.

CONCLUSIONS AND PROSPECTS

The transformation of personal feelings in existential dreams presents an apparent incongruity. Despite frustrating inefficacy and increasingly compelling sadness,

existential dreams are valued experiences. In spontaneous comments and on questionnaires (see Table 2, Part A), these dreamers indicate that, despite their distress, they become "sensitive to aspects of [their] lives that [they] typically ignore." These statements are compatible with the hypothesis that existential dreams deepened self-perception through feeling realization, but they are not readily reconciled with the suggestion by Perlis and Nielsen (1993) that dreams effect nocturnal desensitization. In contrast to their proposal that the inhibitory component of REM psychophysiology *attenuates* emotion, research reviewed here suggests that the inhibitory component of the OR during REM sleep disrupts felt engagement and progressively *accentuates* felt emotion. Moreover, in contrast to the suggestion that dreaming mimics the behavioral conceptions of desensitization hierarchies, reciprocal inhibition, flooding, etc., the present proposal is that distinctly oneiric cognitive transformations add emotional depth and intricacy to personal feelings in existential dreams. It would be misleading to regard this process as a "failure to maintain atonia during REM sleep" (p. 252), rather than as a natural and constructive dream accomplishment.

However, the sense in which existential dreams are "constructive" must not be confused with the notion that they 'solve problems." The mundane language of problem solving captures what existential dreams do about as well as it captures the outcome of the Ancient Mariner's voyage in Coleridge's poem. Simply put, it does so very poorly! That seems clear even though we have yet to develop a vocabulary that *is* appropriate for the rich array of transformations in impactful dreams. In existential dreams, for example, the bodily felt sense of limitation is successively transformed in a manner that moves toward non-negotiable human limitations and toward more explicit expression of sadness and despair. But these are only two aspects of the depth metaphor in the phrase "self-perception in depth." Other aspects need to be mapped and explored. For instance, in the Hotel Dream the shift toward increasingly explicit encounters with coercive others suggests the emergence of courage despite apprehension. And, the movement toward multi-leveled representation of separation (physical separation, social distinctiveness, and immanent loss through death) suggests that increased intricacy of feeling also may be the outcome of dream transformations. The nature of these transformations requires close reading of dream descriptions, perhaps especially those that are representative of a psychologically defined type (e.g., existential dreams) rather than those that are representative of a physiologically defined type (e.g., REM dreams). Such an effort might benefit from comparison with the "poetics of expression" outlined by Zholkovsky (1984), who, working within the tradition of Russian Formalist literary criticism, specified some of the transformations that deepen expression in literary texts. The sequences of transformations that he describes with promising clarity also may describe the progressively expressive course of existential dreams.

The preceding discussion is only a fragment of an explanation for the compelling realizations that occur through existential dreams. I have emphasized the local, psychobiological "mediators" of their distinctive effects. But there is considerable evidence that those mediators are quite dissociable parameters of the OR, strongly modulated by neocortical (i.e., experiential) factors. Identification of those factors will be necessary to clarify the contrasting forms of embodiment in different types of impactful dreams. We have only begun to place these dreams in the life-worlds

that make them possible and perhaps comprehensible. Although there is preliminary evidence that existential dreams accompany reactions to loss that are distinguishable from those reactions that predict anxiety dreams (Kuiken, 1993), we have barely begun to understand how such dreams provide lingering realizations, prompt personal memories, and perhaps motivate changes in how dreamers live their lives.

REFERENCES

Arnheim, R. (1974). *Art and visual perception: A psychology of the creative eye*. Berkeley: University of California Press.

Ball, W. A., Morrison, A. R., & Ross, R. J. (1989). The effects of tones on PGO waves in slow wave sleep and paradoxical sleep. *Experimental Neurology, 104*, 251-256.

Baylor, G. W., & Deslauriers, D. (1987). Dreams as problem solving: A method of study—Part II: The oral defense dream. *Imagination, Cognition, and Personality, 7*, 23-45.

Berger, R. J., & Oswald, I. (1962). Eye movements during active and passive dreams. *Science, 137*, 601.

Bertini, M., & Violani, C. (1992). The postawakening testing technique in the investigation of cognitive asymmetries during sleep. In J. S. Antrobus & M. Bertini (Eds.), *The Neuropsychology of sleep and dreaming*. Hillsdale, NJ: Lawrence Erlbaum, 47-62.

Bertini, M., Violani, C., Zoccolotti, P., Antonelli, A., & di Stefano, L. (1984). Right cerebral activation in REM sleep: Evidence from a unilateral tactile recognition test. *Psychophysiology, 21*, 418-423.

Bertini, M., Violani, C., Zoccolotti, P., Altomare, P., Doricchi, F., & Evangelist, L. (1985). Lateralization of verbal and configurational processing during waking and upon awakenings from REM and NREM. In W. Koella, E. Ruther, H. Schultz (Ed.), *Sleep 1984*. Stuttgart: G. Fischer Verlag, 358-370.

Bliwise, D., & Rechtschaffen, A. (1978). Phasic EMG in human sleep: III. Periorbital potentials and NREM mentation. *Sleep Research, 7*, 58 (abstract).

Bosinelli, M., Cicogna, P., & Molinari, S. (1974). The tonic-phasic model and the feeling of self-participation in different stages of sleep. *Giornale Italiano di Psychologia, 1*, 35-65.

Bowker, R. M. (1980). The awakening of the sleeping ponto-geniculo-ocipital wave. In W. Koella (Ed.) *Sleep 1980*. Basel: Karger, 304-306.

Bowker, R. M., & Morrison, A. R. (1976). The startle reflex and PGO spikes of sleep. *Brain Research, 102*, 185-190.

Cartwright, R. D., & Ratzel, R. W. (1972). Effects of dream loss on waking behaviors. *Archives of General psychiatry, 27*, 277-280.

Coleridge, S. T. (1963). The Rime of the Ancient Mariner. In J. Beer (Ed.), *Coleridge Poems*. London: Guernsey Press (original published in 1817).

Collingwood, R. G. (1958). *The principles of art*. London: Oxford University Press.

Crick, F., & Mitchison, G. (1986). REM sleep and neural nets. *Journal of Mind and Behavior, 7*, 229-250.

Czaya, J., Kramer, M., & Roth, T. (1973). Changes in dream quality as a function of time into REM. *Sleep Research, 2*, 122 (abstract).

de Sousa, R. (1987). *The rationality of emotion*. Cambridge, MA: MIT Press.

Dombeck, M. B. (1991). *Dreams and professional personhood*. Albany: State University of New York Press.

Dufrenne, M. (1970). *The phenomenology of aesthetic experience*. Evanston: Northwestern University Press (originally published in 1953).

Ellman, S. J., Spielman, A. J., Luck, D., Steiner, S. S., Halperin, R. (1991). REM deprivation: A review. In S. J. Ellman, J. S. Antrobus (Eds.), *The mind in sleep: Psychology and physiology* (2nd edition). New York: John Wiley, 329-395.

Feldstein, S. (1972). *REM deprivation: The effects on ink blot perception and fantasy processes*. Doctoral Dissertation, City University of New York.

Firth, H., & Oswald, I. (1975). Eye movements and visually active dreams. *Psychophysiology, 12*, 602-605.

Fiss, H., Klein, G. S., & Bokert, E. (1966). Waking fantasies following interruption of two different types of sleep. *Archives of General Psychiatry, 14*, 543-551.

Fiss, H. (1991). Experimental strategies for the study of the function of dreaming. In S. J. Ellman, J. S. Antrobus (Eds.), *The mind in sleep: Psychology and physiology* (2nd edition). New York: John Wiley, 308-326.

Foulkes, D. (1966). *The psychology of sleep*. New York: Charles Scribner and Sons.

Foulkes, D. (1985). *Dreaming: A cognitive-psychological analysis*. Hillsdale, NJ: Lawrence Erlbaum.

Foulkes, D., Sullivan, B., Kerr, N. H., & Brown, L. (1988). Appropriateness of dream feelings to dream situations. *Cognition and Emotion, 2,* 29-39.
Gardner, R., Grossman, W., Roffwarg, H., & Weiner, H. (1975). The relationship of small limb movements during REM sleep to dreamed limb action. *Psychosomatic Medicine, 37,* 147-159.
Gendlin, E. T. (1962). *Experiencing and the creation of meaning.* Glencoe: Free Press.
Gendlin, E. T. (1991). Thinking beyond patterns: Body language, and situations. In B. den Ouden and M. Moen (Eds.), *The presence of feeling in thought.* New York: Peter Lang, 21-151.
Globus, G. G. (1993). Connectionism and sleep. In A. Moffitt, M. Kramer, and R. Hoffman (Eds.), *Functions of dreaming.* Albany: State University of New York Press, 119-138.
Hall, C. (1953). A cognitive theory of dream symbols. *Journal of General Psychology, 48,* 169-186.
Hartmann, E. (1984). *The nightmare.* New York: Basic Books.
Hauri, P., Sawyer, J., & Rechtschaffen, A. (1967). Dimensions of dreaming: A factor analytic scale for rating dream reports. *Journal of Abnormal Psychology, 72,* 16-22.
Henley, K., & Morrison, A. R. (1974). A re-evaluation of the effects of lesions of the pontine tegmentum and locus coeruleus on phenomena of paradoxical sleep in the cat. *Acta Neurobiologiae Experimentalis, 34,* 215-232.
Herman, J. H. (1992). Transmutative and reproductive properties of dreams: Evidence for cortical modulation of brain-stem generators. In J. S. Antrobus & M. Bertini (Eds.). *The neuropsychology of sleep and dreaming.* Hillsdale, NJ: Lawrence Erlbaum, 251-262.
Herman, J. H., Erman, M., Boys, R., Peiser, L., Taylor, M. E., & Roffwarg, H. (1984). Evidence for a directional correspondence between eye movements and dream imagery in REM sleep. *Sleep, 7,* 52-63.
Hobson, J. A., Hoffman, S. A., Helfand, R., & Kostner, D. (1987). Dream bizarreness and the activation-synthesis hypothesis. *Human Neurobiology, 6,* 157-164.
Hunt, H. (1989). *The multiplicity of dreams: Memory, imagination, and consciousness.* New Haven: Yale University Press.
Ingmundson, P., & Cohen, D. B. (1981). The effects of REM deprivation on dream mentation. *Sleep Research, 10,* 259 (abstract).
James, W. (1950). *The principles of psychology.* New York: Dover Publications (original published in 1890).
Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason.* Chicago: University of Chicago Press.
Jones, R. M. (1970). *The new psychology of dreaming.* New York: Grune and Stratton.
Kahan, T. L. (1994). measuring self-reflectiveness: A comparison of two different approaches. *Dreaming, 4,* 177-193.
Kluger, H. Y. (1975). Archetypal dreams and "everyday" dreams. *Israel Annals of Psychiatry, 13,* 6-47.
Koulack, D. (1969). Effects of somatosensory stimulation on dream content. *Archives of General Psychiatry, 20,* 178-725.
Kramer, M. (1993). The selective mood regulatory function of dreaming: An update and revision. In A. Moffitt, M. Kramer, and R. Hoffman (Eds.), *Functions of dreaming.* Albany: State University of New York Press, 139-195.
Kuiken, D. (1986). Dreams and self-knowledge. In J. Gackenbach (Ed.), *Sleep and dreams: A sourcebook.* New York: Garland, 225-250.
Kuiken, D. (1991). Interdisciplinary studies of dreams. In J. Gackenbach & A. A. Shiekh (Eds.), *Dream images: A call to mental arms.* Amityville, NY: Baywood, 185-202.
Kuiken, D. (1992). Dreams and feeling expression: a review. Paper presented at the Annual Conference of the Association for the Study of Dreams, Santa Cruz, CA, June.
Kuiken, D. (1993). Dreams and stress: Loss and dream impact. Paper presented at the Annual Conference of the Association for the Study of Dreams, Santa Fe, NM, June.
Kuiken, D. (1994). Dreams and connectionism: A critique. *Journal of Intelligent Systems, 4,* 263-278.
Kuiken, D., Carey, R., & Nielsen, T. A. (1987). Moments of affective insight: Their phenomenology and relations to selected individual differences. *Imagination, Personality, and cognition, 6,* 341-364.
Kuiken, D., & Sikora, S. (1993). The impact of dreams on waking thoughts and feelings. In A. Moffitt, M. Kramer, and R. Hoffman (Eds.), *Functions of dreaming.* Albany: State University of New York Press, 419-476.
Kuiken, D., & Smith, L. (1991). Impactful dreams and metaphor generation. *Dreaming, 1,* 135-145.
Lakoff, G. (1987). *Women, fire, and dangerous things.* Chicago: University of Chicago Press.
Lavie, P. & Sutter, D. (1975). Differential responding to the beta movement after waking from REM and nonREM sleep. *American Journal of Psychology, 88,* 595-603.
Lerner, B. (1966). Rorschach movements and dreams: A validation study using drug-induced dream deprivation. *Journal of Abnormal Psychology, 71,* 75-86.

Mamelak, A. N., & Hobson, J. A. (1989). Dream bizarreness as the cognitive correlate of altered neuronal behavior in REM sleep. *Journal of Cognitive Neuroscience, 1,* 201-222.

Marandez, C., Stivalet, P., Barraclough, L., & Walkowiac, P. (1993). Effect of gravitational clues in visual search for orientation. *Journal of Experimental Psychology: Human Perception and Performance, 19,* 1266-1277.

McCarley, R. W., & Hobson, J. A. (1979). The form of dreams and the biology of sleep. In B. Wolman (Ed.), *Handbook of dreams: Research, theories, and applications.* New York: Van Nostrand Reinhold, 76-130.

Merritt, J. M., Stickgold, R., Pace-Schott, E., Williams, J., & Hobson, J. A. (1994). Emotion profiles in the dreams of men and women. *Consciousness and Cognition, 3,* 46-60.

Meyer, L. B. (1956). *Emotion and meaning in music.* Chicago: University of Chicago Press.

Morrison, A. R. (1979). Brainstem regulation of behavior during sleep and wakefulness. In J. M. Sprague and A. W. Epstein (Eds.), *Psychobiology and psychophysiology.* New York: Academic Press, 91-131.

Morrison, A. R., & Bowker, R. M. (1975). The biological significance of PGO spikes in the sleeping cat. *Acta Neurobiologiae Experimentalis, 35,* 821-840.

Murphy, S. T., & Zajonc, R. B. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology, 64,* 723-739.

Nielsen, T. A. (1991). Reality dreams and their effects on spiritual belief: A revision of animism theory. In J. Gackenbach & A. A. Shiekh (Eds.), *Dream images: A call to mental arms.* Amityville, NY: Baywood, 233-264.

Nielsen, T. A. (1993). Changes in the kinesthetic content of dreams following somatosensory stimulation of leg muscles during REM sleep. *Dreaming, 3,* 99-113.

Nielsen, T. A., Deslauriers, D., & Baylor, G. W. (1991a). Emotions in dream and waking event reports. *Dreaming, 1,* 287-300.

Nielsen, T. A., Deslauriers, D., & Baylor, G. W. (1991b). Non-random positive and negative affect sequences in dream and waking event reports. *Sleep Research, 20,* 163 (abstract).

Olgilvie, R., Hunt, H., Sawicki, C., & Samanhalskyi, J. (1982). Psychological correlates of spontaneous middle ear muscle activity during sleep. *Sleep, 5,* 11-27.

Panksepp, J. (1982). Toward a general psychobiological theory of emotions. *Behavioral and Brain Sciences, 5,* 407-422.

Perlis, M. L., Drummond, S. P. A., Fleming, G. M., & Bootzin, R. R. (1991). The relationship between eye movements and facial muscle activity. *Sleep Research, 20,* 48 (abstract).

Perlis, M. L., & Nielsen, T. A. (1993). Mood regulation, dreaming, and nightmares: Evaluation of a desensitization function for REM sleep. *Dreaming, 3,* 243-257.

Pivik, T. (1971). *Mental activity and phasic events during sleep.* Doctoral Dissertation, Stanford University.

Pivik, T. (1978). Tonic states and phasic events in relation to sleep mentation. In A. M. Arkin, J. S. Antrobus, and S. J. Ellman (Eds.), *The mind in sleep: Psychology and physiology* (1st edition). Hillsdale, NJ: Lawrence Erlbaum, 245-271.

Pivik, T., & Foulkes, D. (1966). Dream deprivation: Effects on dream content. *Science, 153,* 1282-1284.

Porte, H. S. (1993). Motor imagery in reports of mentation during waking and during REM sleep. *Sleep Research, 22,* 122 (abstract).

Purcell, S., Mullington, J., Moffitt, A., Hoffman, R., & Pigeau, R. (1986). Dream self-reflectiveness as a learned cognitive skill. *Sleep, 9,* 423-437.

Rechtschaffen, A. (1978a). Phasic EMG in human sleep: I. Relation of EMG to brainstem events. *Sleep Research, 7,* 56 (abstract).

Rechtschaffen, A. (1978b). The single-mindedness and isolation of dreams. *Sleep, 1,* 97-109.

Rechtschaffen, A., Watson, R., Wincor, R., Molinari, S., & Barta, S. (1972). The relationship of phasic and tonic periorbital EMG activity to NREM mentation. *Sleep Research, 1,* 114 (abstract).

Rittenhouse, C. D., Broadly, D., Stickgold, R., & Hobson, J. A. (1993). Constraints upon object transformations in dream reports. *Sleep Research, 22,* 140 (abstract).

Rittenhouse, C. D., Stickgold, R., & Hobson, J. A. (1991). Dream discontinuity: Insertion, transformations, and removal. *Sleep Research, 20,* 149 (abstract).

Rittenhouse, C. D., Stickgold, R., & Hobson, J. A. (1994). Constraint on the transformation of characters, objects, and settings in dream reports. *Consciousness and Cognition, 3,* 100-113.

Sauvageau, A., Nielsen, T. A., Ouellet, L., & Montplasir, J. (1993). Eye movement density and amplitude after somatosensory stimulation during REM sleep: Effects on gymnasts and controls. *Sleep Research, 22,* 133 (abstract).

Sharpe, E. F. (1978). *Dream analysis.* New York: Brunner/Mazel (original published in 1937).

Silberer, H. (1917). *Hidden symbolism of alchemy and the occult arts* (J. E. Jelliffe, trans.) New York: Dover Publications.

Sokolov, E. N. (1975). The neural mechanisms of the orienting reflex. In E. N. Sokolov and O. S. Vinogradova (Eds.), *Neural mechanisms of the orienting reflex*. New York: Wiley, 217-235.
States, B. O. (1988). *The rhetoric of dreams*. Ithaca: Cornell University Press.
Sutton, J. P., Rittenhouse, C. D., Pace-Schott, E., Stickgold, R., & Hobson, J. A. (1994). A new approach to dream bizarreness: Graphing continuity and discontinuity of visual attention in narrative reports. *Consciousness and Cognition, 3*, 61-88.
Tomkins, S. S. (1979). Script theory: differential magnification effects. In H. E. Howland and R. A. Dienstbier (Eds.), *Nebraska symposium on motivation 1978: Human emotion* (vol. 26). Lincoln: University of Nebraska Press, 201-236.
Ullman, M., & Zimmerman, N. (1979). *Working with dreams*. New York: Delacorte.
Watson, R. (1972). Mental correlates of periorbital PIPs during REM sleep. *Sleep Research, 1*, 116 (abstract).
Watson, R., Bliwise, D., Friedman, L., Wax, D., & Rechtschaffen, A. (1978). Phasic EMG in human sleep: II. Periorbital potentials and REM mentation. *Sleep Research, 7*, 57 (abstract).
Weinstein, L. N., Schwartz, D. G., & Ellman, S. J. (1991). Sleep mentation as affected by REM deprivation: A new look. In S. J. Ellman, J. S. Antrobus (Eds.), *The mind in sleep: Psychology and physiology* (2nd edition). New York: John Wiley, 377-395.
Werner, H., & Kaplan, B. (1963). *Symbol formation*. New York: Wiley & Sons.
Wu, M-F., Mallick, B. N., Siegel, J. M. (1989). Lateral geniculate spikes, muscle atonia and startle response elicited by auditory stimuli as a function of stimulus parameters and arousal state. *Brain Research, 499*, 7-17.
Zholkovsky, A. K. (1984). *Themes and texts: Towards a poetics of expression*. Ithaca: Cornell University Press.