

An Empirical Foundation for a Self Psychology of Dreaming

Harry Fiss

University of Connecticut, School of Medicine

While the impact of sleep research on clinical practice has been nothing short of spectacular, the influence dream research has had on clinical practice has been negligible. Consequently, a wide gap exists today between the dream researcher and the dream interpreter. The reason for this gap is that dream researchers have by and large been over-emphasizing the biological underpinnings of dreaming sleep and have paid insufficient attention to dreaming as a subjective experience. In this chapter, results will be presented which are not only scientifically sound and rigorous, but which also address themselves to the interests of the practitioner. Findings will be discussed from the perspective of Kohut's self psychology, with which they are strikingly consistent. Laboratory evidence will be presented demonstrating that dreaming serves three primary functions: (1) the maintenance of self-cohesiveness, (2) the restoration of a crumbling or fragmenting self, and (3) the development of new psychic structures. Examples will also be presented to indicate how future research can further advance a clinically relevant experimental self psychology of dreaming.

In an earlier publication (Fiss, 1984), I referred to the "enormously wide gap" existing today between the dream researcher and the dream interpreter. More than 30 years of sleep and dream research, so auspiciously begun after the discovery of REM sleep in the early fifties, appear to have made virtually no impact on the practicing clinician. As a result, present day practitioners have remained largely oblivious to this plethora of new laboratory findings, and instead continue to cling tenaciously to experimentally untested and outdated ideas. Thus, for example, Blum (1976) states that "Freud's masterful conceptions and insights into the dream have been so rich and complete that new additions to dream theory have been very limited" (p. 315). One cannot help but come to the conclusion that despite the sleep laboratory evidence in support of a mastery-adaptive model of dream function, and the fact that this model is significantly different from that of drive discharge, the classical models continue to be reiterated in direct opposition to the newer ones (Fosshage, 1983).

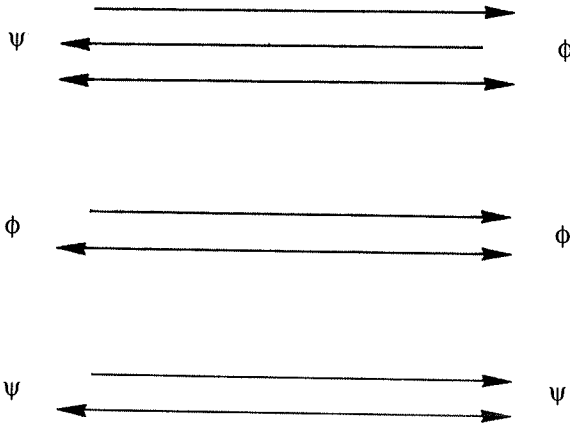


Figure 1: Types of ψ - ϕ relationships in sleep and dream research [ϕ =physiological; ψ =psychological].

In this paper I will attempt to bridge this gap between sleep laboratory findings and their clinical application by demonstrating that the clinical relevance of sleep laboratory data becomes most apparent when examined in the light of Kohut's Self Psychology, and that the results of modern sleep research have already provided us with the necessary empirical basis for validating a self-psychological conception of dreaming. By thus laying the groundwork for an experimental self psychology of dreaming I also hope to be making a contribution to the advancement of self psychology in general.

Mind-Body Relationships in Sleep and Dream Research

Before proceeding any further it might be helpful to clarify certain distinctions among the principal experimental strategies that have produced the data base for this new psychology of dreaming. Elsewhere (Fiss, 1984) I have argued for an experimental strategy that allows us to study dreams (1) *phenomenologically*, as cognitive-affective events in their own right, independent of their underlying physiology, and (2) *causally*, as agents of change and transformation. I still consider such a strategy to be particularly promising. For the present purpose, however, it appears best not to single out any particular modus operandi and instead to present a more complete overview of methodological possibilities. These are summarized in Figure 1. Note that arrows pointing one way signify causal relationships, while arrows pointing in two directions signify correlational relationships or correspondences. In all,

we can distinguish seven different relationships between classes of sleep and dream variables.

Studies of Psychophysiological Parallelism

Although our primary concern will be with cause and effect relationships or interactions, we shall begin by considering mind-body correspondences, especially of the $\psi \leftrightarrow \phi$ and $\psi \leftrightarrow \psi$ variety, since the search for such correspondences or "isomorphisms" has been greatly emphasized in the recent sleep research literature (Hartmann, 1980; Hobson and McCarley, 1977). Isomorphism implies that models in the physiological sphere are consistent with models of psychological activity. As Hartmann (1980) proposes, the study of conscious experience is valuable principally because it is an "indicator" of a person's "central," that is, biological state. Thus, the dream becomes a "window" for observing the concurrent biochemical events in the cortex (Hartmann, 1973).

This search for correspondences is not without merit. In the first place, it is concerned with the formal properties of dreaming, with the very nature of sleep mentation. When Dement and Kleitman (1957a, 1957b) first reported that approximately 90% of REM awakenings were followed by reports of dreaming, they quite naturally thought that these dream reports were the only existing kind of nocturnal mental activity. However, this conception soon turned out to be simplistic when other investigators, notably Foulkes (1962), reported an almost equally high incidence of mental activity accompanying NonREM (NREM) sleep stages. There were, however, discriminable qualitative differences between REM and NREM dream reports. These have been described by Rechtschaffen (1978) in terms similar to Rapaport's concept of "ego passivity" (Rapaport, 1967), by which is meant the ego's uncritical acceptance of bizarre and highly uncommon events. It appears that the sleeping ego is more "passive" during REM than it is during NREM sleep. Attention deployment has also been found to differ in REM and NREM, with the REM dreamer manifesting a peculiar inability to pursue more than one train of thought. There are other formal differences between REM and NREM related mental activity as well. The point here is that the search for correspondences between eye movement activity during sleep and associated mental content has helped us come to the realization that some form of mental activity occurs throughout all sleep stages, not just during REM sleep, but that the thought properties associated with each sleep state (REM, NREM) are nevertheless unique in quality.

A second important contribution which the study of mind-body parallelism has made concerns the reality of the dream experience: is the dream experience and its subsequent report identical or is the dream report, as Snyder (1969)

and Rechtschaffen (1967) have conjectured, a construction or confabulation developed in the course of awakening and falsely attributed to the preceding REM period (REMP)?

The bulk of the research carried out with this question in mind suggests that dreaming is indeed a valid phenomenon. Thus, it has been demonstrated (1) that dream narratives are approximately as long as their corresponding REMPs (Dement and Wolpert, 1958); (2) that REMPs containing a great deal of eye movement activity (REM "density") are associated with active dreams, while REMPs characterized by relative ocular quiescence are associated with inactive dreams (Dement and Wolpert, 1958); and (3) that the directionality of eye movement activity can be predicted on the basis of dream reports elicited from the same REMP (Roffwarg, Dement, Muzio, and Fisher, 1962). A particularly ingenious study by Arkin, Hastey, and Reiser (1966) perhaps comes closer than any other study to validating the dream as a real event. Unlike the aforementioned studies which are all of the $\psi \leftrightarrow \phi$ variety, this investigation can be classified as $\psi \leftrightarrow \psi$, insofar as it focuses exclusively on content variables. Arkin gave his subjects, who were all sleep talkers, hypnotizable, and good recallers, the post hypnotic suggestion to talk in their sleep, without awakening, only when they were having a dream, and to describe the dream while it was in progress. Following these sleep speech episodes, the subjects were awakened and instructed to report the dream they had just had. Arkin compared the content of the sleep speech episodes with the content of the dream reports. The results were astounding: the correspondence rate between dream content and sleep speech content was of the magnitude of 87%! Arkin probably came very close to observing a dream while it was unfolding.

The $\phi \leftrightarrow \phi$ type study has also contributed to our understanding of the sleep process, but is of less interest to us in the present context, as it pertains primarily to biological mechanisms of sleep and dreaming. For example, the observation that penile erections regularly accompany REM sleep falls into this category. This finding has proven invaluable in the diagnosis of male impotence (Williams and Karacan, 1978), but has failed to demonstrate the sexual basis of dreaming.

In summary, studies of correspondences, especially of the $\psi \leftrightarrow \phi$ and $\psi \leftrightarrow \psi$ type, have given us invaluable insight into the nature and origins of dreaming; however, as we shall shortly see, it is to explorations of cause and effect relationships to which we must turn our attention if we are to deepen our understanding of the *function* of dreaming and the role of the dream in the structuring of the self. As Foulkes (1980) states, "psychophysiological correlational research now appears to offer such a low rate of return as not to be a wise place for dream psychology to continue to commit its limited resources. . . . Dreaming is a mental process and it must be studied as we now study

other mental processes. Whatever brain events *accompany* dreaming, what the dream *is* is a mental act" (pp. 249-250). Before continuing, however, we must clarify an important distinction between objective and subjective indicators of dreaming, i.e., between REM sleep and dream content.

Studies of Psychophysiological Interactions

At first glance this distinction between objective (ϕ) and subjective (ψ) dream indicators may appear to be gratuitous; however, anyone familiar with the literature on sleep and dreaming will quickly come to the conclusion that the distinction is frequently blurred, resulting in confusion, when for example, REM sleep is viewed as isomorphic to dreaming, as it so often is. The experimental literature abounds in misleading references to "dream time," "dream suppression," "dream deficit," and so on. Even Dement's (1960) classic study on the effects of REM deprivation is erroneously entitled "The Effect of Dream Deprivation." REM sleep and dreaming do tend to occur together, but they are hardly identical processes. Neither epistemologically nor empirically is it justifiable to define dreaming as REM sleep. This was clearly shown by Fiss, Klein, and Bokert (1966) who found that T.A.T. stories obtained immediately after awakenings from REMs were significantly more dreamlike than T.A.T. stories told after NREM awakenings. While REM related stories tended to be bizarre, emotionally charged, dramatic, and perceptually vivid, NREM related stories tended to be realistic, affectless, unimaginative, and thoughtlike. Thus it appears that the distinguishing properties of REM sleep mentation, far from being automatically switched off upon awakening, tend to persist or "carry over" into the waking state. To put it differently: mental activity normally associated with REM sleep may occur not only during NREM sleep, as Foulkes and Vogel (1974) and Slap (1977) have shown, but may occur outside of sleep altogether. Cartwright (1966) has likewise demonstrated that REM-dreamlike mentation may occur in the waking state. She found striking and consistent similarities between REM dreams and drug induced waking hallucinations—both were highly visual, rapidly forgotten, symbolic in content, and lacking in attentional control. It is important to keep this point in mind, since an experimental self *psychology* of dreaming is possible only if the dream state and its functional role can legitimately be studied in and of itself without reference to its neurophysiological correlates. Nonetheless, because of the high degree of correspondence between REM sleep and dreaming, REM sleep characteristics can legitimately be used as *indirect* indicators of dreaming. For example, when we deprive a subject of REM sleep, chances are ninety in a hundred that we are also depriving him or her of dreaming. Thus, unlike $\psi \rightarrow \psi$ relationships, $\phi \rightarrow \phi$, $\phi \rightarrow \psi$, and $\psi \rightarrow \phi$ relationships all involve indirect indicators of dreaming. In what follows, I

will attempt to show how studies of these various interactions have contributed to a self-psychological theory of dream function. First, I will present indirect evidence that dreaming serves a vital function by discussing data resulting from three principal research strategies: REM deprivation, REM interruption, and presleep manipulations. I will then present more direct evidence of the self-integrative value of dreaming by describing the results of two other paradigms—dream “enhancement” and dream incorporation. As I hope to demonstrate, these will emerge as the experimental prototype for a self-psychological approach to dreaming.

Effects of Dream Deprivation

The effects of dream deprivation were first demonstrated in a classical experiment by Dement (1960), who awakened his subjects at the onset of every REM period for 5 consecutive nights. A control group was awakened an equivalent number of times during NREM sleep. The result of this procedure was the now well known “rebound” effect: a compensatory increase in REM time during a subsequent recovery night observed only in the experimental group. This rebound was and still is considered strong evidence of a biological need for REM sleep and, presumably, dreaming, and has since been sufficiently replicated to become a firmly established phenomenon (Berger and Maier, 1966; Jouvett, Vilmonet, Delorme, and Jouvett, 1964; Khazan and Sawyer, 1963; Siegel and Gordon, 1965).

Of particular relevance to self psychology are the effects of REM deprivation on waking behavior. Subjects who are REM deprived, both human and animal, tend to give evidence of drive dominated behavior: increased anxiety and irritability, increased appetite, heightened sexual and aggressive behavior, and regressive behavior (Clemes and Dement, 1967; Dement, 1960; Dement and Fisher, 1963; Dement, Henry, Cohen, and Ferguson, 1967; Morden, Mitchell, Conner, Dement, and Levine, 1968). Concomitant to these manifestations of drive intensification, REM deprivation has also been noted to result in impaired adaptability. Thus, REM deprived subjects show difficulty in concentrating, show signs of confusion, demonstrate loss of memory, and exhibit learning decrements (Agnew, Webb, and Williams, 1967; Cartwright, Lloyd, Butters, Weiner, McCarthy, and Hancock, 1975; Fishbein, McGaugh, and Swartz, 1971; Grieser, Greenberg, and Harrison, 1972; Pearlman, 1971). One study, by Greenberg, Pillard, and Pearlman (1972), indicates that REM deprivation interferes with subjects’ ability to adapt to anxiety provoking stimuli. Thus, when we look at the effects of REM deprivation on waking behavior ($\phi \rightarrow \psi$ effects), we begin to understand why REM sleep is so important that subjects need to “make up for it” when it is absent ($\phi \rightarrow \phi$ effect). REM sleep, and again presumably dreaming, appear to play

an integral role in drive regulation, memory consolidation, learning and information processing, and adaptation to stress.

Effects of Presleep Manipulations on Dreaming

Findings of this nature (see previous section) are usually the product of $\psi \rightarrow \phi$ types of investigations: the presleep environment is altered in a way that presents the subject with a challenging or stressful adaptive task to be mastered, and the effects of this experimental manipulation on sleep are then assessed. For instance: when subjects wear prismatic glasses which reverse the visual field, they manifest a marked increase in the percent of time they spend in REM sleep; however, once the subjects habituate to the prisms and their surroundings appear normal, REM time drops back to normal (Zimmerman, Stoyva, and Metcalfe, 1970). REM time has also been found to increase when aphasic patients begin to regain their language function following rehabilitation training (Greenberg and Dewan, 1969); and, more recently, English speaking Canadian students who took an intensive crash course in French showed marked elevations in REM sleep, but only when their learning activity was effective (De Koninck, Proulx, King, and Poitras, 1978). Animal studies have likewise indicated that REM time increases as a function of new learning. This relationship has been shown to hold up for a wide variety of species and tasks, including the learning of mazes, discriminatory responses, and avoidance behavior (Fishbein, Kastaniotis, and Chattman, 1974; Greenberg, Kelty, and Dewan, 1969; Lecas, 1976; Leconte, Hennevin, and Bloch, 1973; Lucero, 1970; McGinty, 1969; Smith, Kitahama, Valatx, and Jouvét, 1974). This observed relationship between environmental changes and REM sleep characteristics presents a challenge to the prevailing tendency to reduce psychological processes to underlying neurophysiological ones. A case in point is the currently popular theory that the primary instigators of dreaming and primary determinants of dream content consist of neural discharges originating in cholinergic cells located in the hindbrain (Hobson and McCarley, 1977). Such a unidirectional view of mind-body interaction could never account for the observation, for example, that an emotional regression in a psychoanalytic session may result in significant changes in REM latency and REM time (Greenberg and Pearlman, 1975). Much more consistent with this type of $\psi \rightarrow \phi$ effect is the formulation by Sperry according to which "neurophysiology controls mental effects and mental properties in turn control neurophysiology" (Sperry, 1969, p. 543). For Sperry, consciousness is "a direct, integral and emergent dynamic property of brain activity having causal influence on the flow pattern of neural excitation" (1970, p. 588). In this view, mental phenomena and physical brain processes are both conceptualized as being causal agents with "neither being primary or ultimate to the exclusion

of the other" (Sperry, 1970, p. 588). Incidentally, examples of such mind-body unity are abundant not only in the sleep research literature, which has often been named as being on the "mind-brain frontier" (Foulkes, 1980). A patient learns to inhibit seizures, for example, by merely thinking of an aroma, (Wright, 1981). The mere sight of a male mouse's courting behavior has been shown to increase the oviduct weight of female mice (Beach, 1982). It should be obvious, therefore, that only a balanced bilateral model of mind-body interaction will ever make it fully possible to understand such phenomena of consciousness as dreaming.

Effects of Dream Interruption

In line with the notion that products of consciousness can exert a causative influence on neurophysiological mechanisms is a study by Fiss and Ellman (1973) which demonstrates that psychological factors help shape sleep patterns ($\psi \rightarrow \phi$ effect). For two consecutive nights, subjects of this investigation were awakened during every REMP after approximately 10 minutes of REM sleep by a shrill loud noise; they were then asked difficult IQ type questions which they could not answer. No dream reports were collected. The idea behind this frustrating awakening procedure was to make the awakening so unpleasant for subjects that they would be motivated to learn to avoid it. During the two nights of awakenings, subjects remained in the laboratory long enough to accumulate normal amounts of REM sleep. They were thus not REM deprived. The two interruption nights were preceded by four to five baseline nights and followed by two recovery nights, throughout which the subjects slept without interruptions. Results confirmed that following the interruption nights, all subjects continued to have shorter than normal REMPs (of approximately ten minutes duration) during their first recovery night. These experimentally shortened REMPs even occurred at a time of night when REMPs normally become longer, i.e., during early morning hours. By the second recovery night, however, the interruption effect had worn off and the sleep cycle had stabilized itself, suggesting that sleep is a "gentle tyrant" (Webb, 1975). Subjects had obviously learned, i.e., had been conditioned, to have significantly shorter than normal REMPs, presumably to escape the unpleasant awakenings.

We next asked what the effects of such repeated REMP interruptions would be on dream content: if dreaming did indeed serve an adaptive function that requires completion (see Fiss, 1969), would subjects now learn to accelerate or intensify their dreams, to "cram" more and more dreaming activity into the attenuated REMPs? This time (Fiss, Klein, and Shollar, 1974) each subject spent fifteen consecutive nights in the laboratory: six baseline nights of uninterrupted sleep, four nights during which every REMP was interrupted

as in the 1973 study (interruption nights), four nights during which the awakenings occurred close to the end of each REMP (completion nights), and one recovery night. Again, we controlled for REM deprivation effects by requiring each subject to remain in the laboratory long enough to accumulate normal amounts of REM sleep. Unlike the previous investigation, however, subjects were pleasantly awakened by hearing their names called and were instructed to report their dreams after each awakening. Each dream report was blindly scored by two independent judges for length, dreamlikeness, and conflictful content. To determine the latter, subjects were given indepth clinical interviews and administered projective tests. The results confirmed the hypothesis that sustained REMP interruptions would bring about a compensatory intensification of the dream process ($\phi \rightarrow \psi$ effect): the interruption night reports were significantly more dreamlike (more vivid and emotional) and more openly conflictual than the completion night reports. The interruption night reports were also equal in length to the completion night reports, even though the former originated from much shorter REMPs. Furthermore, the interrupted REMPs contained significantly more eye movement activity (REM "density") yet fewer signs of arousal, such as alpha, body movements and K-complexes, suggesting that the more active, vivid, emotional, and conflictful the dream, the more soundly the subjects slept while having it, as though concentrating on what was preoccupying them and perhaps even working out a solution. "Maybe," as Greenson (1970, p. 521) states, "sleep is necessary to safeguard our need to dream," and not the other way around.

A demonstration of a different kind, concerning the dream's adaptive value, also of the $\phi \rightarrow \psi$ variety, makes use of REMP interruptions, but instead of REM awakenings utilizes the "carry-over" phenomenon first described by Fiss et al. (1966). This time, however, instead of obtaining post-REM and post-NREM stories, we redesigned the experiment in such a way that narratives were elicited in the following three conditions, each condition being the equivalent of one night: at the very beginning of a REMP, in the middle of a REMP, and at the end of a REMP. Instead of comparing REM and NREM carry-over effects, as in Fiss et al. (1966), we now compared carry-over effects resulting from REM interruption, REM completion, and REM prevention (Fiss, Ellman, and Klein, 1969). The results of this experiment demonstrated unequivocally the existence of a need to complete a dream again quite independent of any need to REM: the carry-over of REM-related mental activity was strongest in the REM interruption condition, i.e., the tendency for dreamlike mentation to persist into the waking state was greatest when subjects were awakened in the middle of an already ongoing dream experience and not when they were being prevented from having a dream. This clearly indicates that the need to complete a dream is psychologically more important

than sheer amount of dreaming or REMming. A second finding lends additional support to this conclusion: stories obtained after interrupted REMP's contained the greatest amount of projected anger, hostility, and frustration. Apparently, our subjects must have felt more disturbed when awakened in the middle of a dream than they did when awakened at the onset of a dream. Being prevented from completing a dream must have been more disruptive than not being allowed to dream at all. These results clearly support a conception of dreaming not in quantitative, energetic terms, but in qualitative, structural terms; not as forces pressing for discharge, but as meaningful, organized, and integrating experiences. We are now ready to turn our attention to studies of the $\psi \rightarrow \psi$ variety, in which the self-integrative function of dreaming is more directly demonstrable.

Dream "Enhancement" Effects

Instead of being deprived of their dreams or having their dreams interrupted, subjects in this type of investigation are asked to focus their attention on them. Rather than being interfered with, dreams are being highlighted. The advantage of this approach over the others which have been described is that it goes beyond merely demonstrating that dreams serve a vital function: by treating dreams as causal phenomenological agents that actively influence, transform or change the individual, we are able to discover more precisely what the functions of dreaming are. Cartwright, Tipton, and Wicklund (1980), for example, were able to demonstrate that dreaming serves an adaptive or self-integrating function by showing that patients trained in attending to their REM dreams remained longer in treatment and made better progress than patients trained in attending to their NREM dreams. In a related study, Fiss and Litchman (1976) found that focusing on REM dreams resulted in significantly greater symptom relief and in significantly higher levels of self-awareness than did focusing on NREM dreams. The Fiss and Litchman experiment was like a "crash program," literally designed to immerse subjects in their dream content. It maximized dream recall by inducing positive dream sets, making positive dream suggestions, having subjects listen attentively to the dreams recorded in the laboratory the night before, and encouraging them to reflect on the meaning and problem solving potential of these dreams during waking hours. Utilizing four commonly used clinical scales—the SCL90, the Beck Depression Inventory, the State Trait Anxiety Inventory, and Target Complaints—the authors found that on all measures, subjects experienced significantly less symptom distress following three nights of REM-dream enhancement than after three nights of NREM-dream enhancement. On the EXPeriencing Scale (Klein, Mathiew, Gendlin, and Kiesler, 1970), subjects showed maximal insightfulness only during REM-dream enhancement.

Dream Incorporation Effects

In this paradigm, the functions of dreaming are investigated not by highlighting dream content but by influencing dream content in some particular way and then measuring the effects of this influence on post sleep behavior. Because it makes use of certain manipulations or situations as presleep stimuli, this procedure resembles the strategy employed by Zimmerman et al. (1970) and De Koninck et al. (1978), except that those studies focused exclusively on sleep physiology ($\psi - \phi$ type studies), while in the present instance the emphasis is on psychological and behavioral variables. A classic example of this type of investigation is a study by Cohen and Cox (1975), whose subjects underwent a stressful failure experience prior to sleep: they were given a difficult task to complete in a way that made them feel inadequate, i.e., they were treated impersonally and given no encouragement and no explanations of any sort. Those subjects who incorporated the negative presleep condition into their dream content felt better about the task the next day and were more willing to give it another try than those who did not incorporate it. Unfortunately, the results of the Cohen and Cox study have not been replicated. In a different context, Greenberg and Pearlman (1975) found that dreaming about a problem raised during a presleep psychoanalytic hour predictably influenced the degree of defensiveness ("defensive strain") evidenced by the analysis during a subsequent psychoanalytic session. Thus, there is some evidence which suggests that the quality of the dream experience, quite apart from REM physiology, has some bearing on how we cope with stress and defend against anxiety.

In an attempt to show that the dream *qua* dream serves a memory consolidating function, Fiss, Kremer, and Litchman (1977) attempted to answer the question whether incorporating a presleep stimulus into dream content would facilitate the subsequent recall of the stimulus in the waking state. The subjects in this investigation spent two consecutive nights each in the sleep laboratory and were awakened from every REM to report their dreams. The procedure for the two nights was identical except that on the second night, before going to bed, the subjects read a brief but vivid story about a sea monster attacking a sinking ship. The subjects were instructed to visualize the scene while falling asleep and to try to dream about it. The next morning, after their final dream report, subjects were asked, much to their surprise, to recall the bedtime story. A checklist was used to measure incorporation of story elements into the subjects' dreams. Self-ratings and sleep onset latency were used to measure how much the subjects thought about or rehearsed the story while awake. The analysis of the data revealed that dreams reported on nights preceded by the story contained significantly higher checklist incorporation scores than dreams reported during nights when no story was

read. This showed that the story did influence the subjects' dreams. The main result of the study was a significant correlation between dream incorporation and story recall, suggesting that dreaming about the story facilitated its recall, as predicted. On the other hand, no relationship was found between story recall on the one hand and story rehearsal on the other, nor was there any significant correlation between story recall and sleep latency. Thus, dream content predicted story recall while story rehearsal and sleep physiology did not. It is evident therefore, on the basis of these findings, that dreaming has a memory consolidating function analogous but not identical to the mnemonic function of REM sleep, as reported by Grieser et al. (1972) and Cartwright et al. (1975), who found that REM deprivation interfered with waking recall of verbal material.

A mood regulatory function of dreaming is suggested by the work of Kramer and Roth (1972), who investigated the relationship between pre- and postsleep changes in mood and intervening dream content variables. The Hall and Van de Castle dream content scoring system and the Clyde Mood Scale were used. The authors found that improvement in mood from pre- to postsleep was significantly related to specific dream content, in this case the number of dream characters: the more characters that appeared in subjects' dreams, the greater was the decrease in reported unhappiness from night to morning.

That study differs from studies such as those by Cohen and Cox (1975) or Fiss et al. (1977) in that it addresses itself to an existing rather than an induced state. While there is little doubt that pre-existing states (such as mood) and other conditions and concerns are easily incorporated into dream content (Cartwright, Lloyd, Knight, and Trenholme, 1984; Fiss, 1979), the question may be raised as to whether a study such as the one by Kramer and Roth can legitimately be considered an investigation of cause and effect relationships ($\psi \rightarrow \psi$) or rather of $\psi \leftrightarrow \psi$ correspondences. A case reported by French and Shapiro (1949) illustrates this dilemma: an old arthritic patient dreamed that she fell but was able to get up easily; the next morning her arthritis was greatly improved. As Haskell (1985) points out, the dream perhaps merely reflected the improvement in the patient's condition; on the other hand, it is also possible that the dream contributed to the patient's improvement by helping her resolve psychological conflicts that might have caused or at least exacerbated her illness. For the purposes of this presentation, the assumption of causality will be deemed justified only when it can be demonstrated (1) that a pre-existing state, condition or concern is unequivocally incorporated into dream content, and (2) that this incorporation predictably influences behavior in the waking state.

A study by Fiss (1980), which attempts to show that dreaming serves a drive regulatory function, was designed in a manner that comes close to fulfilling these criteria. In this study, 20 alcoholic inpatients, who had just completed

a week long detoxification program, were given a standardized dream interview for five consecutive mornings, after which they rated themselves on the Ludwig-Stark Craving Questionnaire (LSQ). A median split of the LSQ scores revealed that more than 80% of the high cravers dreamed about drinking, while of the low cravers only 30% dreamed about drinking—a difference significant at the .03 level. On the face of it, this result appeared to contradict a result reported earlier by Bokert (1968), who studied another intensified drive state: thirst. Bokert deprived his subjects of food and fluids and administered to them a salty meal before they went to sleep. Following a night of laboratory REM dream collection, subjects who dreamed about drinking and/or eating drank less water and rated themselves as less thirsty the following morning than did subjects whose dreams did not contain drinking or eating themes. However, a further qualitative analysis of the Fiss (1980) data revealed that the dreams of the low alcohol cravers all contained themes of drive gratification (e.g., having a good time while drinking), whereas the dreams of the high alcohol cravers all contained defensive or conflictual themes (e.g., loss of a love object as a consequence of being caught drinking). Since Bokert's incorporators all had gratifying dreams, the results of the two studies are comparable, even though they address themselves to very different drive states: alcoholism, which always involves psychological conflict, and thirstiness, which is a relatively conflict-free drive. Thus, the Fiss (1980) study underscores the importance of looking at the quality and not just at the quantity of incorporation: how we respond to an intensified drive state is determined not only by how much drive related material becomes incorporated into our dreams, but also, and perhaps more importantly, by *how* this material is incorporated.

This completes our necessarily selective review of the dream research literature. I have indicated that investigations of psychophysiological parallelism ($\psi \leftrightarrow \phi$, $\psi \leftrightarrow \psi$, and $\phi \leftrightarrow \phi$ studies) tell us a great deal about dream formation, but relatively little about dream function. If we are interested mainly in the function of dreaming, regardless of what that may be, we need to look at psychophysiological interactions. Those of the $\phi \rightarrow \psi$, $\psi \rightarrow \phi$ and $\phi \rightarrow \phi$ variety provide evidence of the functional value of dreaming; however, they provide indirect evidence based on correlated phenomena: sleep stage and its associated dream quality. This evidence suggests that if we are deprived of dreaming, we compensate by "rebounding," i.e. by dreaming more, and that our waking behavior becomes drive dominated, regressive, and maladaptive. Conversely, increased dreaming facilitates adaptive and self-preserving behavior, as shown by the fact that dreaming sleep increases when subjects are required to master a stressful or challenging task. Indirect evidence of the dream's adaptational or self-integrative value also comes from studies of the effects of dream interruption. These have shown (1) that the dream ex-

perience is intensified in the absence of any sleep disruption when REM sleep is experimentally interrupted but not eliminated; and (2) that interrupting dreams results in greater frustration and efforts to continue dreaming than preventing the occurrence of dreams. More direct and more specific evidence of the self-consolidating function of dreaming comes from studies which either highlight the dream process or investigate the effects on waking behavior of incorporating existing or induced states or conditions into dream content. These studies, which tend to be of the $\psi \rightarrow \psi$ variety, have shown (1) that focusing on REM dreams is therapeutically more beneficial than focusing on NREM dreams; (2) that dreaming about what concerns us in the waking state helps us cope with it more adaptively; (3) that dreaming about a presleep stimulus facilitates its recall; and (4) that dreaming has both a mood and a drive regulatory function.

It is now possible to begin the task of linking dream research to self psychology; i.e., to show how dream research data can serve to advance self theory and how self theory can deepen our understanding of dream research data. To do that, however, it will be helpful first to consider briefly the contribution of ego psychology to modern dream theory.

Ego-Psychological Dream Theory as Precursor for a Self Psychology of Dreaming

What self psychology and ego psychology most share in common is their dissatisfaction with instinctual drive theory. Although self psychology goes much further and completely does away with the notion of drive as instinct-derived (Kohut, 1977), ego psychology has attempted to deal with this problem by attributing greater autonomy to ego structures (Hartmann, 1958). Klein (1954, 1967) has referred to these structures as need regulating ones which direct and channel drive energy. According to ego psychology these regulatory structures, along with drive components, play a critical role in the dream process (Trosman, 1963).

An important aspect of this role involves the ego's synthetic function (Nunberg, 1931). This clearly makes sense, since dreaming, according to most observers, is an organized experience of varying cohesiveness, and certainly not, as some would imply (e.g., Hobson and McCarley, 1977), a stream of fleeting and meaningless sensations randomly evoked by neural discharges originating in the pons. Sandler (1960) likens dreaming to an act of mastery, modifying incoming excitations through a qualitative organization of schemata.

Organization presupposes completion; consequently, the dream may be viewed as a task needing to be accomplished or consummated. This then brings us to the second role of the ego in dreaming: the completion of un-

finished business. Freud named this unfinished business "day residue," but instead of using the instinctual term *unbefriedigt*, meaning unfulfilled, he frequently used the expression *unerledigt*, meaning incomplete, as if in anticipation of Zeigarnik's historical experiments (Zeigarnik, 1927). Hartmann, Kris, and Loewenstein (1964) called our attention to the possibility that major psychic imbalances may occur as a result of frustrating this need. So does Spitz (1964), who believes that "a damaging influence is exerted through the consistent repeated interruption of action cycles prior to their consummation" (p. 763). It is for the explicit purpose of protecting the individual's psychic organization and adaptive capacity from such damage that dreaming occurs, according to Spitz. The study by Fiss et al. (1969), in which interrupting an ongoing dream was found to be more disruptive than preventing the occurrence of a dream, is certainly consistent with this notion. (In the same study, these authors also report that interrupted dreams are better recalled than completed ones—a Zeigarnik type of effect.)

Adaptation and integration is the third major contribution of the ego to dreaming, one that is actually difficult to differentiate from self-preservation. Cartwright (1977, p. 86), in fact, states that "the dream response is such as to preserve and protect the waking self" (see also Fiss and Litchman, 1976; Cartwright et al., 1980). This is essentially the view expressed by Erikson, who attributes an identity preserving function to dreaming (Erikson, 1954). Jones (1962) has even constructed a scoring manual for analyzing dream content according to Erikson's epigenetic formulations. Although the Jones method is far too complex to be put to practical use, the rationale upon which it is based has much to commend it. Many others have since shared the view that dreaming is not just the royal road to the unconscious, but a uniquely adaptive, even creative psychological process. Breger (1967) has approached the problem of ego integration in dreaming by focusing, like French and Fromm (1964), on the dream's conflict-solving function, and has proposed that dreams serve to assimilate conflict-related information into solutions embodied in existing memory systems. He suggests that associative processes are more fluid and that more memory programs are available during dreaming sleep than in the waking state. This gives the dream the opportunity for opening up memory systems, thus facilitating creative juxtapositions. Anecdotally it is well known that dreams can help produce great works of art and major scientific breakthroughs. These have been well documented by Krippner (1972), who lists more than a dozen such accomplishments in fields as diverse as musicology, philosophy, and archeology. Like Breger, Krippner maintains that dreams supply better insight into people and events than ordinary reality because they integrate current with past experiences. This creative potential of dreaming, of course, still awaits empirical verification. It is evident however that there has been a major shift, in recent years, from a simple reading of

the unconscious to find infantile sexual wishes to an attempt to understand the total personality and functioning of the individual (Bonime, 1962). Yet, as I have stated earlier, this new emphasis on adaptive functioning does not seem to have made the impact on the psychoanalytic establishment that one would have expected. Thus, we hear even from one of the foremost pioneers in dream research that the function of the dream remains essentially one of discharging instinctual drive tension and that dream research should contribute mainly to investigations of the id (Fisher, 1965, 1966). More recently, Hartmann (1980) has written that psychoanalytic concepts will turn out to be shorthand for many neurophysiological or biological statements. Will the rising popularity of self psychology make a difference? The answer is uncertain, but the prospects seem good.

Self Psychology and Dream Theory

It seems to be a paradox that although self psychology has the potential for advancing dream theory far beyond any other conceptual framework, it has thus far failed to come up with any systematic formulation consistent with modern dream research findings. Although Kohut makes extensive use of dream interpretation in his clinical material, he does so principally for the purpose of deepening our understanding of clinical cases. Unlike Freud, he was not a systematizer in the sense of using dreams to advance our knowledge of the dream process in general. Thus, we find very little in his writings that would lend itself to a construction of a self psychological dream theory. The closest he comes to theorizing about dreaming is the distinction he draws between two types of dreams, those attempting to resolve conflicts and those attempting to bind the tensions of traumatic states (Kohut, 1977). The latter, which Kohut calls "self-state" dreams, portray the "dreamer's dread vis-à-vis some uncontrollable tension increase or his dread of the dissolution of the self," and constitute "an attempt to deal with psychological danger by covering frightening nameless processes with namable visual imagery" (Kohut, 1977, p. 109).

More recently, Atwood and Stolorow (1984) have extended Kohut's formulation and have proposed that dream images symbolize a "concretizing effort" not only to maintain the organization of the self in the face of the threat of self-dissolution, but also to consolidate new structures of subjectivity. Thus, according to these authors, dream imagery serves not one but two functions: (1) to maintain the organization of a person's subjective world in situations in which already formed structures are breaking down, and (2) to stabilize new structures of subjectivity that are still unsteady and crystallizing.

Fosshage (1983) has expanded this model of dreaming to include, in addition to its maintenance or regulatory function, a developmental function.

From this perspective, dreaming serves not only to maintain psychic structures but also contributes to the development of newly emergent organizations. This view of dreaming as a developmental achievement is supported by recent longitudinal studies of children's dreams (Foulkes, 1982), studies that have profound implications for understanding the growth of the mind. It accords dreaming a role of greater import in psychic life than previously conceived. Rather than being a primitive and undeveloped mode of mentation, dreaming can now be seen as "a conceptual achievement of the first magnitude, central to the study of the mind" (Foulkes, 1978, p. 4).

A third major function that self psychologists have attributed to dreaming is a restorative one. Atwood and Stolorow (1984, p. 97) refer to the "reparative use of concretization." Fosshage (1983, p. 658) lists the "restoration of psychic processes, structures, and organizations" as being part of the supraordinate function of dreaming. From a self-psychological point of view, therefore, it is possible to discuss dreaming in terms of its contribution to the development, maintenance, and restoration of the self. This point of view provides us with a convenient schema for evaluating and interpreting dream laboratory data in self-psychological terms. I will now attempt to show how these data support the notion that dreams serve (1) to maintain, stabilize, consolidate, or strengthen crumbling or weak and insufficiently formed structures, (2) to help develop and form new emergent structures, and (3) to restore previously formed but now fragmented structures.

A Self-Psychological Interpretation of Dream Laboratory Findings

Dreaming and the Development of the Self

It is a known fact that the newborn spends at least twice as much of its total sleep time (50%) in REM than the average adult (Fiss, 1979). This high proportion of REM time decreases rapidly during the first year of life, stabilizing at approximately adult levels (20-25%) by age five. After that, REM time more or less remains at a plateau level until old age, when it declines slightly (to 18% or less). In contrast, NREM sleep shows no steep decline during early years of development: it remains relatively constant throughout life until it too declines with old age. The pattern is the same for most mammals: most young mammals, for instance, sleep considerably more than the adult and have a very high REM percentage. In utero and during the very early postnatal period, before sufficient exogenous stimulation becomes available to the central nervous system, the proportion of REM sleep is even higher, exceeding 50%. These observations have led to the speculation that REM sleep is a vitally needed source of endogenous stimulation during the early growth stages of

the organism, facilitating the structural differentiation and maturation of the central nervous system (Roffwarg, Muzio, and Dement, 1966).

But can the same be said about dreaming? Until now the answer would have been negative, for the neonate was not thought to possess the cognitive structures necessary for dreaming to occur. Consequently, the high percentage of REM sleep observed in the infant could not possibly be of any psychological consequence. However, recent infant research has proven otherwise: it shows that there are in fact pre-representational and pre-symbolic experiences in the first year, even in the first months of life, which form the basis for the emergence of the self and of psychic structure (Emde, 1981; Sander, 1983; Stern, 1977, 1983). According to Beebe (1985), these experiences (of matching, mirroring, and derailment) give rise not to separate representations of self and other pertaining to infant's actions and the caretaker's responses, but rather to representations of the entire dynamic interplay, of the total reciprocal adjustment process, between them. It is out of these early "interactive representations" that psychic structures evolve. And what enables infants to form these representations or "interiorized actions" are the infants' social capacities which are present virtually at birth. "The infant's innately organized patterns of behavior equip him to engage in a primary relatedness with a human partner from the beginning of life" (Beebe, 1985, p. 8). According to Beebe and other authors, the infant, *from birth on*, is a "complex creature" who can discriminate his/her mother's voice from a stranger's voice (DeCasper and Fifer, 1980), perceive temporal sequences, estimate time intervals, and develop expectations of future events (DeCasper and Carstens, 1980); and who has "*the capacity to remember his particular relatedness to the environment*" (Beebe, 1985, p. 10). If that is the case, and the evidence is rather convincing, then it is entirely conceivable that the infant's high percentage of REM time reflects an unusually high level of dream activity, presumably serving the purpose of forming new psychic structures at a time when such activity is most needed.

But it is not only during the first year of life that dreaming seems to play a critical role in the formation of the self and psychic structure. Development is a life long process, of course, and dreaming can be expected to facilitate growth at any stage of development, including adulthood. A case in point are the two studies mentioned earlier showing increases in REM sleep accompanying language acquisition, in a normal population (De Koninck et al., 1978), as well as in impaired individuals (Greenberg and Dewan, 1969). In fact, the learning of any new and difficult skill seems to result in heightened REM (and presumably dream) activity: the wearing of anisekonic prisms (Zimmerman et al., 1970), a challenging psychoanalytic hour (Greenberg and Pearlman, 1975), or even simple maze learning (Fishbein et al., 1974), have all resulted in heightened REM.

The view that dreaming serves the function of forming new psychic structures in the evolution of the self thus appears to be well grounded. Again it needs to be pointed out, however, that the empirical basis for this view would be greatly strengthened if it consisted of evidence which did not require the assumption that REM "equals" dreaming, i.e., if our evidence resulted from studies of the $\Psi \rightarrow \Psi$ and not of the $\Psi \rightarrow \Phi$ variety. Such work has yet to be undertaken and will be discussed in the concluding section. The mere fact that the line of reasoning proposed here opens up new avenues for investigation attests in and of itself to the heuristic value of conceptualizing dreaming in self-psychological terms.

Dreaming and the Maintenance of the Self

Since in contradistinction to traditional psychoanalysis it is the "self" and not "drive" which occupies a position of primacy in self psychology, a clear understanding of this distinction would seem to be required before any formulation can be advanced concerning the possible role of dreaming in the maintenance, consolidation, or strengthening of the self. Kohut is quite explicit about the importance he attributes to drives, the experience of which should be conceptualized as "a secondary rather than a primary phenomenon" (Kohut, 1984, p. 109). More specifically, drives should be regarded as breakdown or "disintegration products" of a fragmented or "fragmentation-prone" self (Kohut, 1977, p. 128). "From the beginning, the drive experience is subordinated to the child's experience of the relation between self and self-object" (Kohut, 1977, p. 80). Breakdown or fragmentation of the self occurs whenever parental lack of empathy reaches traumatic proportions. In that event, the "enfeebled" self of the child, in the attempt to reassure itself that it is alive or even exists, turns defensively toward pleasure aims through the stimulation of erogenic zones and "secondarily" brings about the ego's "enslavement to the drive aims" (Kohut, 1977, p. 76). Thus, whatever the feeling of "driveness"—be it oral, anal, oedipal, rageful or sadomasochistic—it is invariably a consequence and not a cause of self-depletion, and accounts for every form of psychopathology. "The abnormalities of the drives and of the ego are the symptomatic consequences of a central defect in the self" (Kohut, 1977, p. 82). Or, to put it differently, when "the primary psychological unit" or "self-selfobject matrix" breaks down, drive is enlisted to repair the self by pathological means (Kohut, 1977, p. 128).

We may now apply Kohut's model to dreaming as follows. If the assumption that dreaming serves to maintain self-cohesiveness is valid, then *any interference with the dream process, such as dream deprivation, should bring about an intensification of drive and an increase in psychopathological behavior.* This is precisely what studies of REM deprivation have indicated. The reader will

recall that REM and presumably dream deprivation results not only in compensatory increases in dream time or "rebound" effects, but more importantly, in behavior dominated by increased sexuality, orality, and aggressiveness; anxiety, poor concentration, and confused thinking; impaired memory and learning; and reduced capacity to cope with stress. When the dream process is interrupted rather than aborted, as in the work of Fiss, Ellman, and Klein (1969) and Fiss, Klein, and Shollar (1974), the results are again in the same direction: there is an increased effort to make up for lost dreaming, this time by intensifying the dream process itself or by carrying dream-like mentation over into the waking state, and frustration, anger, and hostility are more openly expressed. The observed dream intensification effect suggests that drive intensification secondary to self-fragmentation may be observed in the sleeping as well as in the waking state. This idea certainly holds true for depressives, who manifest more REM and dream activity than normals (Gillin, Duncan, Pettigrew, Frankel, and Snyder, 1979; Kupfer, Shaw, Ulrich, Coble, and Spiker, 1982; Reynolds, Newton, Shaw, Coble, and Kupfer, 1982). Vogel (1979) has proposed that in the normal individual neural disinhibition during REM sleep modulates behavior in the waking state so that it does not become too drive-dominated. When neural disinhibition during REM sleep is excessive, as in depression, waking behavior becomes drive-deficient, resulting in dejected mood, loss of interest, etc. This, according to Vogel, is the reason why REM deprivation alleviates the symptoms of depression and why REM deprivation in normal subjects leads to drive-dominated behavior (Vogel, 1981; Vogel, Vogel, McAbee, and Thurmond, 1980). It is difficult, however, to apply this kind of biological model of the brain to the phenomenology of dreaming. In theorizing about the dream experience, a different level of discourse is called for, a framework couched in psychological concepts and terms. Kohut, for example, suggests that the self may become so depleted as a result of the traumatic absence of selfobject empathy that it may undertake "a depressive return to drive gratification" (Kohut, 1977, p. 80). Studies by Bokert (1968) and Fiss (1980), referred to earlier, showing that the manner in which a drive state is represented in a dream determines how "driven" the dreamer feels afterwards, are illustrative of the kinds of investigations which can carry a scientific phenomenology forward.

However, although the modulation of drive expression may be an inevitable consequence of psychic structure formation, the maintenance of stable structures is an important issue by itself, quite apart from considerations of drive regulation. When an individual successfully copes with a temporary setback or successfully recalls a stimulus after hearing it only once, then we are talking about the maintenance or consolidation of psychic structure without reference to drive theory. The dream incorporation studies by Cohen and Cox (1975) and Fiss et al. (1977) are examples of this type of investigation.

By demonstrating that dreaming about a failure experience facilitates one's subsequent adjustment to it, or that dreaming about a story read before sleep facilitates its recall in the morning, it becomes even more directly apparent that the dream process contributes to self-maintenance and self-regulation. More studies of this type are clearly needed and will be discussed in the concluding section.

Dreaming and the Restoration of the Self

If psychopathology is the product of a crumbling or fragmented self, then effective psychotherapy may be viewed as a process whose goal is the restoration of the self. The same may be said about dreaming. Jones (1970) likens effective dreaming to effective psychotherapy. He suggests that dreaming serves to "reorganize patterns of ego defense and ego synthesis in response to the disorganizing effects of waking life" (p. 168). Breger (1967), French and Fromm (1964), and Dewan (1969) have advanced similar formulations, the latter most explicitly. Dewan refers the question of dream function to the analogy of information processing and proposes that the purpose of dreaming is to reprogram the brain. One may assume, therefore, that just as dream deprivation, prevention or interruption leads to self-fragmentation, a procedure which highlights or accentuates dreaming, such as "dream enhancement" (Fiss and Litchman, 1976) or training patients to focus on their dreams (Cartwright et al., 1980), would have the opposite effect, i.e., it would help restore the self. It will be recalled that both Fiss, and independently, Cartwright, found that patients manifested significant improvement in psychotherapy when they attended to their dreams.

Directions for the Future: Further Development of a Self Psychology of Dreaming

It is important to emphasize at this point that none of the studies which have been reviewed and interpreted from a self-theoretical point of view have been designed for the explicit purpose of testing hypotheses derived from self psychology and for developing a self-theory of dreaming. It is, therefore, all the more surprising how well the research that has been described fits the framework of self psychology. Nonetheless, the explanations which have been offered are all by necessity *a posteriori*. The true test and value of a theory depends on its capacity to generate verifying experiments designed *a priori*. In this concluding section I will present a few examples of studies which, if carried out, would contribute substantially to the development of a self-psychological theory of dreaming. The reader will note that they are all of

the $\psi \rightarrow \psi$ variety, making unnecessary any assumptions regarding the concordance of REM sleep and dreaming.

A Study of Dream Content and Creativity

A study of dream content and creativity would entail the investigation of the phenomenology of dreaming as it relates to the formation of new psychic structure. As pointed out earlier, we have no evidence as yet that such a causal relationship exists. Thus, a study of this kind is very much needed. In order to undertake it, it would be mandatory to pay attention to the creative process. The very act of creation requires a restructuring or reorganization of experience. Although a formal review of the creative process is beyond the scope of this paper, most authors who have written on the subject of creativity will agree that creativity usually involves having an experience of sudden illumination which takes place when a new solution is found to a problem (Arieti, 1967): an old experience is restructured into a new experience in which two or more things which had been thought dissimilar or unrelated are now perceived as being similar or related, such as mobilized atoms colliding and entering into new combinations (Poincaré, 1913). The formulation is similar to that of the Gestalt school, according to which the creative process is initiated by a structurally unstable or unsatisfactory situation and is completed when a gap is filled and a better gestalt is formed, offering a solution to the situation (Wertheimer, 1945). Thus, all creative thinking involves regrouping, reorganization and restructuring.

A second aspect of the creative process generally considered to be a necessary ingredient, especially in artistic and poetic creativity, is concretization. Concretization or perceptualization (Arieti, 1967, p. 381) occurs when something which is difficult to objectify is transformed into concrete tangible symbols or images. Here then we have another instance of restructuring. It is exactly what transpires in dreams in which thoughts are characteristically transformed into visual images. In dreams, unexpected connections are also typical occurrences. And while I agree that "in spite of all these characteristics, dreams cannot be considered *products* of creativity" (Arieti, 1967, p. 330), dreams are unquestionably part and parcel of the creative *process* and can *lead* to products of creativity, as for example Coleridge's poem *Kubla Khan* or Kekule's discovery of the chemical formula for the benzene ring, both examples which allegedly originated in a dream (Krippner, 1972).

If dreams have creative potential, then creative people should be more active dreamers. A recent study of over 300 college students showed that those individuals majoring in art tended to report the most nightmares and vivid dreams, while students majoring in physical education had the fewest dreams (Belicky and Belicky, 1982). The converse also holds true: according to a re-

cent survey of nightmare sufferers, most of the subjects reporting frequent nightmares turned out to be musicians, painters, poets, writers, craftspeople, teachers and therapists (Hartmann, 1984). Hartmann lists the following among those known to have been famous nightmare sufferers: Robert Louis Stevenson; Mary Shelley; Bram Stoker; Samuel Taylor Coleridge; André Gide; Richard Wagner and his wife Cosima; Theodore Dreiser; Nathaniel Hawthorne; Mark Twain; the French poet Rimbaud; Dostoyevsky; Jack Kerouac; the painter Goya; Henry James; Edgar Allan Poe; Teter Ilyich Tchaikovsky; René Descartes; the French author Hippolyte Taine; the German philosopher Hebbel; the Swiss novelist Gottfried Keller; the playwright August Strindberg; and the composer Hugo Wolf. The list is obviously a long one. Hartmann speculates that dreams and nightmares among the artist population may be even more frequent than his data suggest. And although it is difficult to draw solid conclusions from these data, Hartmann nevertheless maintains that "a sizeable subgroup of creative artists frequently experience nightmares and that there is some relationship between nightmares and creativity" (Hartmann, 1984, p. 128)—a relationship having to do with what Hartmann refers to as "boundaries of the mind": artists who are vivid dreamers may be those whose art depends on "thin" boundaries, i.e., on sensitivity to their own inner worlds and to other people.

We are now at the point of outlining a study, using artists of known creative ability, such as painters or sculptors, to test the hypothesis that dreaming is instrumental in the development of a cohesive self and in the formation of new psychic structures. The overall method would consist of recording the dreams of artists over a period of several consecutive nights using the Dement-Kleitman REM-awakening technique and of keeping careful track of their daytime productivity, which would be evaluated by the subjects themselves and art critics. Using time-series analysis, it is hoped that an answer will be provided to the basic question whether or not a systematic relationship can be established between dream content and creative output during the day so that the former can actually be used to make certain predictions about the latter, for instance: is frequency of dreaming predictive of creative productivity? What are the qualitative dream determinants of daytime productivity? Is primary process dream content, in which events, objects, and persons appear in bizarre and unusual juxtapositions or in which there is an unusual amount of concrete symbolization and imagery, more likely to be followed by successful creative efforts than secondary process dream content, in which the events are more realistic and couched in more conceptual, thoughtlike, nonperceptual terms? Finally, would "dream enhancement" (Fiss and Litchman, 1976) enhance creativity, i.e., would maximizing dream recall and focusing on dream content result in a significant increase in the amount and quality of creative work? In a sense, this study would be testing the limits

as far as the function of dreaming is concerned, as positive results would show that dreaming contributes not only to self-development, but to the fullest possible realization of a person's potential, and that this influence results from experiences that are not only newly structured but also unique and unusual.

A Study of Dream Content and Self-Esteem

No study has as yet been undertaken for the specific purpose of relating dream content to the key personality dimension in self psychology: self-esteem. Such a study would be crucial to a test of the hypothesis that dreaming contributes to the maintenance and restoration of the self.

There are a number of ways in which one could go about pursuing this line of investigation. One that most readily comes to mind would involve some narcissistic injury, such as a failure or rejection experience. We would then look for the effects of such an experience on dream content and the effects of this incorporation on postsleep measures of self-esteem.

The aforementioned study by Cohen and Cox (1975) comes closest to this paradigm insofar as their subjects were subjected to a humiliating failure experience before sleep. As the reader will recall, dreaming about the experience positively affected their postsleep mood and their willingness to participate again. But subjects' self-esteem was not measured. Furthermore, other investigators (De Koninck and Koulack, 1975; Koulack, Prevost, and De Koninck, 1985) have reported data which contradict those reported by Cohen and Cox. Their subjects were *adversely* affected by dreaming about their stressful presleep experience. However, the experience (watching a gory film, for example) could not possibly have involved them on the same deep personal level. Thus, for these subjects, *not* dreaming about the stressful experience might have been more adaptive.

It will certainly behoove future investigators to pay more attention to the type of presleep condition in which subjects are to be involved. Ilene Wasserman and I are currently studying business executives who recently lost their jobs and college students who recently failed a major examination. We are interested in finding out whether and how dreaming about their recent setback will affect their self-esteem. The results of these studies should provide us with more definitive answers than we have now to the question concerning the self-restorative function of dreaming. We are also planning to apply the "dream enhancement" procedure to this population. Will making a special effort to focus on dreaming help these subjects regain their self-esteem? We suspect that it would.

Dream content and its relationship to self-esteem can also be studied *before* a stressful event. We are planning, for example, to study the dreams of college students previous to a major exam, in order to ascertain whether and

how dreaming about the impending examination will influence the subjects' feelings about it and possibly even their performance on it. Will dreaming about the exam have a self-integrative effect regardless of the manner in which the stressful event is incorporated, or will the effect depend on whether incorporation is positive (themes of mastery, active participation) or negative (themes of inadequacy, passivity)? It is entirely possible, as Cohen and Cox (1975) have shown, that dreaming about a stressful situation even in negative terms can be adaptive. For measuring self-esteem, it is possible here to use level of aspiration tasks: to ask subjects in the morning to estimate how well they expect to do on the examination. Will their estimates rise or fall, depending on the dream content the night before? Before-the-event studies, such as this one, probably tap the self-maintenance function of dreaming, while after-the-event studies, such as the study by Cohen and Cox (1975), are more apt to address themselves to the self-restorative function of dreaming.

Further Studies of Dream Content and Drive Regulation

A final illustration of the heuristic value of studying dream content as a determinant of self-consolidation and self-cohesiveness goes back to the issue of drive regulation. We have already seen that dream deprivation, prevention, and interruption all result in drive intensification, presumably as a consequence of self-fragmentation. Since there is no way of depriving a person of dreaming without also depriving him or her of REM sleep, such techniques for studying the effects of interfering with the dream process will inevitably confound dream phenomenology with dream physiology. It would be far more feasible, therefore, to approach this problem by enhancing the dream process rather than by interfering with it. For this purpose, substance abusers experiencing withdrawal represent a ready-made experimental analogue, since such subjects are from the very beginning in a state of intensified drive. It would be extremely worth while to investigate the effect of "dream enhancement" on this population. As will be recalled, Fiss (1980) found that dreaming about drinking in a sample of recovering alcoholics was found to be systematically related to craving. What would the effects of "dream enhancement" be on craving? If dream deprivation results in drive intensification, one may reasonably expect "dream enhancement" to result in drive reduction and in a better prognosis for abstinence.

Summary and Conclusion

This completes my attempt to present an empirical basis for a self psychology of dreaming. I have shown that while it is only indirectly possible to demonstrate that interference with the dream process leads to self-

fragmentation, it is directly possible to demonstrate that facilitation of the dream process leads to greater self-cohesiveness. I have further indicated that dreaming about a stressful or challenging task or situation helps us cope with it better and that dreaming about an internal state, such as a drive state, facilitates its modulation.

Next I pointed out that ego-psychology, by emphasizing ego-autonomy and regulatory structures, is more akin to self psychology than it is to Freudian instinct theory and also less "experience-distant" than Freudian theory from modern dream laboratory data. Three roles of the ego were discussed: its role in organizing experience, its role in completing action cycles, and its role in adaptation and integration. It is particularly the latter which brings ego psychology close to self psychology, which emphasizes self-regulation and self-consolidation as similar desirable end-goals. Mention was also made of the creative potential of ego functioning, which also is an important attribute of self-development.

I then looked at dream theory from a self-psychological perspective, and although unlike ego psychology, self psychology has not yet elaborated a comprehensive or systematic dream theory, the seeds from which such a self theory of dreaming can germinate are clearly present. These seeds are more evident in the writings of some of Kohut's followers than they are in the writings of Kohut himself and suggest a tripartite classification of dream function.

The first of these, which is *developmental*, finds empirical support in the ontogenesis of sleep, which shows that REM activity is at its peak right after birth, when the need for structuralization is greatest. In view of recent evidence from infant research attesting to the presence of representational thinking and psychic structures in the neonate, the possibility clearly exists that dreaming plays a major role in the early stages of self-development. The observation that REM activity increases when adult subjects are confronted with difficult and challenging new tasks suggests that dreaming is involved in structure formation throughout life.

The second function of dreaming which I reviewed is *self-maintaining* or *self-strengthening*, and is indirectly suggested by the drive intensifying effects known to result from REM deprivation, prevention, and interruption. These effects can be regarded as breakdown products of a self which is fragmenting as a result of interference with the dream process. It was shown that drive intensification resulting from such interference can occur in both waking and sleeping states, and may be beneficial to depressives, who lack drive while awake. Finally, "dream enhancement" was offered as the experimental prototype for studying the *self-restorative* function of dreaming.

I concluded this paper by proposing three directions which a future experimental self psychology of dreaming could take, directions mandated by the need to design experiments for the specific purpose of validating self-

psychological propositions about dreaming: (1) studies relating dream content to creativity, (2) studies relating dream content to self-esteem, and (3) studies of dream activity in a population of subjects who are in an intensified drive state. Having thus presented the broad outlines of an experimental self psychology of dreaming, it is my hope that I have succeeded in strengthening the empirical foundation of self psychology as a general theory of human behavior and in narrowing the gap that has separated the clinician from the researcher.

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