On the Relationship of Dream Content, Trauma, and Mind

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A View from Inside Out or Outside In?

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Dreams have long enjoyed a privileged position in psychoanalytic theory and clinical process. In recent times the "royal road" provided by dreams leads not only toward the dynamic unconscious, but also toward memories of actual traumatic events. Over and over, clinical experience appears to teach us that the past, especially a disruptive past, may be viewed, often quite literally, through a window in certain dreams. Strikingly realistic, repetitive, and anxiety provoking (Huizenga, 1990), these dreams are held to the side both clinically and conceptually, away from ordinary dreams. We call them *traumatic dreams.* Broad-reaching anecdotal clinical evidence has given this class of dreams a kind of conceptual independence which tempts therapists to think at times that we have found a transparent dream window through which a past material reality may be seen clearly.

The traumatic dream, a product of the collision of elemental forces—trauma from material reality, dreams from psychic reality—reveals in high relief the relative power and influence of the inner and outer worlds. What forms does trauma impose on dreams? Is trauma represented literally and accurately? If so, under what conditions? What forms do dreams impose on trauma? What transformations occur between trauma and dream? What resemblance to the foregoing trauma does the dream bear? An assessment of the way in which trauma affects dreams[1] and dreams affect trauma can be generated by reviewing empirical efforts to influence dream content and by examining literature reports of dreams paired with known trauma.

The concept of a traumatic dream asserts a connection between a real (known or unknown) event and the manifest content of a dream. The connection is in the nature of a *homomorphism*, that is, a similarity in outward appearance between the dream and the "event." This event leaves not only tracks, but tracks which follow a pattern homologous to the event. In conceptually setting aside such a group of dreams, we presume some very specific and potentially unique operations of the dream process. The

general and ordinary process of dream formation involves subjecting internally and externally generated images to a series of transformations which are integrated and assembled to form the manifest dream. This set of transformations includes Freud's (1900) displacement, symbolization, condensation, and secondary elaboration. In a traumatic dream, images associated with a potent real event may be unaffected by this broader set of transformations or, more precisely in line with my definition, may be affected only by a restricted set of limited, literal transformations which preserve the original, or a clearly homologous form, of the material stimuli.

THE ISOMORPHIC TRAUMATIC DREAM

In principle there exists a special case in which the trauma and the dream are isomorphic, or absolutely identical. This unique psychic phenomenon deserves a close look.

The above depiction of the dream process as the interpolation of a set of transformations between some form of initial images or experiences and the dream product grossly simplifies matters. There is seldom such a thing—in any isolated or objective form—as an initial image. Beyond this, one must also include the level of arousal or stress which exists in an individual throughout the period of dream production. The period of dream production (rather than a REM interval) is referred to because the processes which are integral to the final production of a dream must include wide-ranging perceptions and memory storage which long predate the actual interval of dreaming. Recall of such stored material as well as the final fashioning of the dream and the verbal communication of the dream to a second party are also sub-processes in the formation of what is called, finally, a dream.

We have enumerated perception, memory, recall, fashioning, and communication as phases in the production of a dream. Each of these junctures, or complex subphases, are open to the interpolation of transformations. The concept of an isomorphic traumatic dream asserts that such "complexly motivated psychic products" (Renik, 1981, p. 177) may be generated which *completely* bypass transformative processes to yield a faithful reproduction of the traumatic event. These transformative processes must be bypassed at *every* phase or juncture of dream production—perception, memory storage and retrieval, fashioning, and communication. In addition, this must be accomplished under conditions of extreme stress or arousal, circumstances we believe increase rather than diminish the impact of such personal

transformations. In short, the existence of an isomorphic dream requires camera-like objectivity at every processing phase from an individual in a state of extreme distress and peril.

Whatever weight is carried by these considerations could be lessened by the presentation of a counterexample. Can we find an isomorphic trauma and manifest dream pairing? A careful review of the literature leads to a surprising conclusion: statements of equivalence are made by researchers and clinicians, but actual dream texts are almost never presented. Bonaparte (1947), Renik (1981), van der Kolk et al. (1984), and Terr (1979, 1990) make explicit reference to dreams which are "exact replicas" (van der Kolk et al., 1984) of a trauma, or "accurately [repeat them] in faithful detail" (Renik, 1981). The only quoted texts are to be found in Terr's (1979) study of children abducted and buried for hours in a dimly lit truck trailer at Chowchilla, California. One (of two cited) "exact repeat playback dreams" (p. 589) reads in its entirety: "I dream when the man gets on—when we get on the vans." Impressively, van der Kolk et al. based their "exact replica" conclusion on the dreamers' statements of equivalence without collecting *any* accounts of dreams (Hartmann, personal communication, 1993).

In addition, there is no research evidence that discrete images or experiences may be literally transposed into manifest dream content. As reported by Freud (1900), Maury applied a variety of stimuli (tickling with a feather, smelling cologne, pinching lightly, etc.) to a sleeping subject. While each of the stimuli seems to have had a discernable impact on the ensuing dream, the form of that impact was never identical to the stimulus.

In contrast to this informal research, the same question has been pursued more carefully by Fisher and Paul (1959). Subjects were presented subliminally with either a double profile or clock image, following which their dreams during REM sleep were recorded. Experienced dream researchers serving as judges were given a pair of dreams—one from each stimulus—and asked to assign each member of the pair to a pre-dream stimulus. Seven of ten judges performed at better than chance, suggesting that something about the pre-dream stimulus was visible in the manifest content. The test is weakened, however, by three factors: the paired assignment design, the judges' prior knowledge of the experimental stimuli, and the tepid quality' of the pre-dream stimuli.

Witkin and Lewis (1965) offer a much more elaborate and scrupulously constructed experiment

that permits us to explore carefully the question of whether highly charged pre-sleep stimuli find expression in subsequent dreams, and, more informally, whether the pre-sleep stimuli can be derived from the dreams. Subjects were shown movies with explicit and charged bodily and sexual implications, and then they reported dreams from later REM awakenings.

Let us approach the latter question first by providing some of the dream imagery without indicating its likely source: (1) a troop-carrier plane with parachutists jumping out of it; (2) a hot closet; and (3) white gloves on a girl's arms (pp. 829-830). These images were culled by the authors from many dream reports as among the most vivid and clear-cut representations of aspects of a pre-sleep film. It is *not* obvious, unless one knows the film, that all refer to a vivid birth scene. The authors suggest that the troop carrier is derived from the pregnant woman, the closet from the vagina, and the white gloves from the obstetrician's bloody gloves.

There is no doubt that film images find expression in the dreams, but it is impressive that there are *no* literal transpositions of any of the pre-sleep films into the manifest dreams. Witkin and Lewis conclude that "the identification of an element in a dream as related to a pre-sleep stimulus relies on the intuitive interpretation of a symbolic or metaphoric dream translation" (p. 829). The body is replaced by "congruently structured and functioning mechanical objects" (p. 835). These transformations are highly personal and often focus on peripheral details, or central details which omit significant portions of the films' latent meanings. Not only can we not divine the film from the dream alone, but also , having seen the films, we could not predict the dream images, which are apparent only once one knows the film.

In an even more dramatic study, DeKoninck and Koulack (1975) showed subjects a film about industrial accidents in which a worker is impaled by a board and dies. Even this level of intense stimulation did not result in a single exact reproduction of a film element in any dream from any subject.

Nonetheless, some clinical evidence indicates that, under specific conditions, literal dream incorporation of traumatic experience occasionally occurs (Bonaparte, 1947; Rapaport, 1968; Wilmer, 1982, 1986;Lisman-Pieczanski, 1990; Chasseguet-Smirgel, 1992; Siegel, 1992).

The Lion Hunter's dreams are a classical example (Bonaparte, 1947). A professional ranger and hunter named W is on horseback when lion A approaches him from the front and attacks. W manages to

evade this lion, only to be snatched by a second lion, B. B grabs him by his shoulder and drags him off to the base of a tree. W unsheathes his knife and strikes B three times, wounding the lion and causing it to retreat. W climbs the tree and, to avoid falling, straps himself to the tree. Lion A returns and prowls around the tree. W's party hears his cries and finds him. Three days later, after much travail, W is attended by a physician and miraculously recovers.

One of the dreams reported by W, as best as can be determined by Bonaparte the dream most proximal to the trauma, is as follows: "I am out hunting lions, find a troop of them and fire at and hit one and it at once charges me. I fire again but the shot does not go off. I run to a tree close by, climb up it, and get out of reach of the lion whereupon a very big bull buffalo appears and starts butting the tree with his head. The tree sways to and fro and I fall. Then I waken to find it is only a dream for which I am terribly thankful" (p. 5).

This dream retains the core of the trauma—W is confronted by a lion and escapes to a tree from which he fears being dislodged—but is nonetheless remarkably altered. The knife becomes a gun, and the initial close encounter, a remote one. Lion A reappears as a bull buffalo who butts rather than prowls around the tree. Finally, in the trauma B attacks W and then W attacks B, whereas in the dream, this action sequence is reversed.

For a second example, a woman who lost her home in the 1991 Oakland fires dreamt that she was "suddenly watching a woman burn alive in a building. I was watching her. There was nothing I or anyone else could do. She was terrified as she clutched the front of the charred building— flames all around her" (Siegel, 1992, p. 5). The fire and its destructive implications for this helpless woman are literally portrayed. However, even here a substitution has been made: it is not her house that burns in the dream but another building and another woman. Significantly, when she was a child this woman's family home had been destroyed by fire.

In a similar fashion, Rappaport (1968) dreams about his concentration camp experience, and combat soldiers, about combat (Wilmer, 1982, 1986). In all of these situations, the dreamer was cognitively prepared for the trauma (because it was in the line of duty, had happened before, or was repeated), traumatized as an adult, and had access to memory of the trauma. As may be gauged by the

Lion Hunter's dreams, no observer could identify which dream elements were relatively untransformed without knowledge of the trauma.

In sum, there is no empirical evidence and only limited clinical evidence to support *any* isomorphic transposition of traumatic experience into dream content, except under the restricted conditions noted above. Even then, dream transformations are so encompassing that it is impossible, without knowing the trauma, to identify which dream components are isomorphic.

Freud's conclusion about Maury's experiments is equally applicable to the clinical and research evidence I have reviewed: "We may have a suspicion that the sensory stimuli which impinges on the sleeper plays only a modest part in generating his dreams and that other factors determine the choice of the mnemic images which are aroused in him" (1900, p. 29). Material reality is nearly always transformed. In those rare instances when it appears relatively untransformed, the dreamer's mind has been specifically prepared for the trauma.

THE HOMOMORPHIC TRAUMATIC DREAM

When we examine dream texts which can be paired with trauma texts, it becomes apparent that the relationship between them is homomorphic, not isomorphic.[2] A range of examples will make this clear.

Rappaport (1968) reports the following dream from a middle-aged Polish concentration camp survivor: "She and hundreds of other women were pulled high up in an open elevator and then all blood and fat was sucked out of the women and pumped through pipes into a big kettle" (p. 716). The dream leaves no doubt that the dreamer sees herself as an indistinguishable unit in the Nazis' bestial, inhuman rendering of fat.

An Israeli colonel, who as a child during World War II wandered through central Europe on his own, dreams recurrently that "I am on a conveyor belt moving relentlessly toward a metal compactor. Nothing I can do will stop that conveyor belt and I will be carried to my end, crushed to death" (Felman and Laub, 1992, p. 79). There is no mistaking this man's view of his helpless position against the Nazis' relentless, crushing power.

Rappaport, also a concentration camp survivor, after discussing many of his own dreams makes this observation: "I never dream about specific traumatic experiences in the camp such as . . . [recounts specific memory]" (p. 729).

These dreams resonate with instances of massive and repeated trauma. It is impossible to track the precise transformations which lead to the metaphoric renditions presented in the dreams. Circumscribed traumatic events permit this. Accompanied by his wife and others, Loewenstein's (1949) patient suffered a violent canoe accident in which he was separated from the others and swept away by a torrential current. Clinging desperately to his canoe for miles, he barely managed to hang on while he was pulled underwater through powerful rapids. He emerged "helpless and exhausted" near the rest of his party and was carried to shore.

Loewenstein writes that the night after the accident the patient had the following dream: "He is shut in the highest room of a tower. An elderly woman is trying to prevent him from escaping. He succeeds in diving through the floors, ceilings, and walls of the different rooms of the tower, one after the other. He arrives below in a yard, shut off by a large porte-cochere. He hesitates to ring for the concierge and dives through the door, turning outside to the right with a feeling of enormous relief" (pp. 449-450). The patient's dream *on the night of the accident* has so fully transformed the trauma that it is highly unlikely the trauma can be deciphered from the dream. Yet it so aptly conveys the trauma that once it is described, the homomorphism between trauma and dream is immediately obvious. The traumatic event has been simultaneously rendered and transformed beyond recognition into an almost mythic and fanciful escape.

A significant number of the dreams Terr (1979) reports from the abducted Chowchilla children have this same quality: an expressively apt metaphor which simultaneously personalizes and conceals the details of the original traumatic experience. Examples include: "I had a dream in a castle. I was a princess with a big giant catching me, grabbing me. He grabbed me by the shirt and ripped it off." "Someone will get me and take me away in the ocean. You'd go down and down with the fish. The shark would eat me" (pp. 589-590).

A final example is provided by the dream of an evacuee of the 1991 Oakland firestorm (Siegel,

1992). A man whose home was unexpectedly saved from destruction by an air-dropped fire retardant reported this dream: "In my house watching the flood waters rise. Soon I look out the window and the ocean waters are coming right up to the edge of the house . . . water starts leaking in.. . . Then as I watch out the window, the flood recedes like in the movie *The Ten Commandments*" (p. 6).

In all of these examples, no element from the preceding trauma is literally transposed into the manifest content. Heinous Nazi crimes become large-scale fat rendering, and their relentless power, an unstoppable conveyor belt moving toward a metal compactor. Being trapped in an engulfing river is depicted as being held captive by an elderly woman in a tower. A big giant replaces kidnappers, while the buried truck trailer is replaced by being down in the ocean with the fish. Receding waters reminiscent of biblical stories represent miraculously delivered fire retardant. At the same time that each element is transformed, the experience of the trauma is reassembled in such a way as to provide a highly personalized recapitulation of the experience.

ANALYSIS

If we represent an element of the original trauma by s and its corresponding dream component as s', we can trace out some implications from the above summary of traumatic dream transformations. First, the data do not offer much support for a literal transposition of s into s' where (s=s'). A significant amount of clinical and experimental evidence suggests that the process is of turning s into s', where s' represents a transformation of s. For example, the Lion Hunter's knife becomes a gun.

This formulation, however, is clearly incomplete, for our evidence indicates that an invisible middle step occurs in all transformations. The Lion Hunter's knife registers as a member of a class of objects which have some functional or structural similarity; that is, a class of homomorphic elements. If we call this class G, then it is apparent that s first maps into G, from which some other element may be withdrawn to yield s'. Thus, although s and s' belong to G, s' cannot be derived independently by an observer from G, nor can s be predicted from s', for they are only two of a multitude of homomorphic elements in G. Examples from the data abound: Loewenstein's canoeist represents two distinct aspects of the river in separate images—the river's gravity-driven dimension as a tower, and its grasping quality as an elderly woman who holds him captive. For the Israeli officer, crushing power is represented as a

metal compactor. Between the trauma and the dream representation must be an abstract class G of homomorphic elements.

The transformative process becomes even more complex when we add a reverse transformation. This interposes yet another step between s and s', for G, as a class, is replaced by "the opposite of G." Now we have the situation reflected, for example, in the transformation of naked bodies into elaborately clothed dream figures or bloody gloves into white gloves from Witkin's study. The Lion Hunter's close encounter becomes one at a distance. Siegel (1992) reports a number of dreams of growth, flowering, and pregnancy from the firestorm survivors.

Further still, if we include metonymy among our transformations, an incidental aspect of s may become the basis for the transformation. Metonymy appears in the dreamer's focus on a single element to represent a much more complex experience. Such an instance is a repetition of a dream image of "using hands" after viewing the obstetric film (Witkin and Lewis, 1965, p. 830).

Most of the transformations employed—symbolization, displacement, condensation—make use of the *substitution of functionally equivalent forms.* Beyond this, however, the process is made much more complex by transformations of reversal and metonymy. As was demonstrated above, these transformations may result in highly skewed or distorted dream representations of trauma.

To return to our analysis, if elements s and s' are psychically equivalent, one may wonder why a replacement item s' comes into play at all? In most cases the dreamer does not thereby minimize or attenuate his risk or peril in the traumatic dreams we have reviewed. Descriptively, what happens fits most closely with Piaget's (1968) concept of assimilation, by which perceptions are fitted into pre-existing mental schema. Traumatic experiences, as they are represented in dreams, then, reflect an almost instantaneous assimilation. We may surmise, however, that compromise formation as much as cognitive familiarity is involved. Several examples from above will be instructive. The abducted child who dreams of herself as a princess grabbed by a giant has probably assimilated the experience into a pre-existing oedipal fantasy. The canoeist assimilates his capture by the river into a fantasy of trying to escape from an elderly woman, a fantasy which Loewenstein tells us has highly personal meanings for the dreamer. The Lion Hunter renders his knife as a gun, perhaps reflecting both his greater professional

reliance on a gun, but also his wish for a more potent weapon which allows for strength to be wielded at a distance. Thus, *pre-existing* adaptive cognitive schema, fantasies, or compromise formations—all varieties of assimilation—may be called into play in the transformation of any given image.

The notion of assimilation illuminates the most striking example we have of a traumatic dream which most directly reveals its origins, namely, the Lion Hunter's dreams. One might argue that W's dreams are transformed, but because the risk of a lion's attack would be a daily professional possibility, the fantasy (or cognitive appreciation) of exactly such an occurrence precedes the attack. This would allow for what appears to be some literal transposition of the trauma into the dream: the category of experience to be assimilated already exists. A similar case might be made, for example, if a steeplejack fell or a policeman were shot and each dreamed directly about that. This idea is borne out in the firestorm survivor's dream of the woman burning alive, for this woman's childhood home had burned down. Destruction by fire was a pre-existing category with great weight.

Even though we can enumerate and describe the types of transformations interposed between specific experience and certain manifest dreams, we cannot predict what specific content may be subject to transformation by substitution or by reversal. We cannot even say what kind of content is most likely to be subjected to a particular type of transformation. Similarly, it is impossible at present to infer from any given dream content what type of transformation has been applied during the process of dreaming.

If we stop our analysis here, however, we miss the most significant observation: Whatever dream transformations are performed on the specifics of a traumatic experience, the resultant dream is an emotionally accurate metaphoric depiction of the experience as much as it is a distortion of specific experience. Individual transformations are subordinated to an overriding synthetic aim—to represent the experience in an affectively apt fashion. A dynamic emotional drama remains relatively invariant. For example, the Lion Hunter's dream portrays the idea "kill or be killed"; the Israeli colonel's, "I am doomed"; the man whose house is spared, "only a miracle will save us"; and the canoeist, "I am trapped and must escape." While this paradigm appears to be generally true, on occasion that higher-order representational aim produces an inverted dream. In these instances the trauma is reversed: destructive fire becomes fresh growth (Siegel, 1992), and naked bodies are elaborately clothed (Witkin and Lewis, 1965).

Whichever form this pattern takes—direct or reverse—it is clear that these dream renditions are more poignant and evocative than literal replays of the traumas themselves. One might conclude that apt personal representation, not attenuation of the trauma, is the overriding feature of these dreams. Apt representation in itself, then, must reflect the highest form of attenuation and mastery: "I have taken this traumatic event and made it truly and uniquely my own." While the trauma dictates the terms of the event, as it were, the subject, in his or her dreams, dictates the forms in which the event is ultimately structured.

DISCUSSION

As we have seen with dreams and trauma, in shaping personal experience even the most massive events interact with a decisive partner, the mind. There is no such thing as an exact replica in the mind of even the most potent event. Even with cognitive preparation, there are no unmediated experiences. We can no more strip away our implicit biases than we can strip away our skeletal structure. The core of our experience is unavoidably and necessarily subjectively interpreted: each mind has a life of its own. But what does it mean to say that the mind has a life of its own? What does the phrase "apt personal representation" mean? Or the earlier phrase "higher-order aim?" Higher than what?

To pursue these questions, let us examine the transformations the canoeist's mind interposes between his accident and his dream. For example, although the force of gravity remains a constant, the horizontal dimension of the river becomes a vertical axis in the tower. The swollen river which held him captive is personified as an elderly woman trying to keep him from escaping. The event shifts from being helplessly swept away to diving intentionally from room to room and floor to floor: the passive mode becomes active. Finally, the treacherous enclosing rapids seem to be rendered as the enclosed yard opened only by a porte-cochere. Affect is unchanged: relief is clearly portrayed and desperation implied in the dream.

Some of these transformations convey a simple equivalence: the bodily experience of being pulled downstream in the river is reoriented to become diving down from a height. A similar direct parallel may seem to exist between the engulfing river and the enclosed yard with only a narrow opening as an escape. The directness of this transformation may be deceptive, however, for this imagery conveys not

only a measure of geometric congruence, but also the dangers of psychological entrapment. The personification of the river as an elderly woman reinforces this idea: women, like water, may entrap and leave one desperate to escape. And the dream escape, in contrast to the real-life experience, occurs through decisive, purposeful actions.

Clearly, the dream has assimilated (Piaget, 1968) the desperate experience in the river to some pre-existing mental schema. The structure of even simple transformative assimilations reflect complex cognitive operations. Powerful abstracting capabilities are needed to appreciate that the kinesthetic sensation of being pulled downstream is a sensorimotor equivalent to the sensation of falling downward. The mind, without conscious effort, abstracts this central parallel and selects a more familiar form for the internal representation of this bodily experience. Even more impressively complex is the transformation between the river and the elderly woman. In this instance a kinesthetic experience has been matched with an experience from an entirely different realm: the physically engulfing river becomes the physically and psychologically entrapping elderly woman. Additionally, by transforming a passive mode into an active one, initiative displaces helplessness and creates an adaptive opportunity where none existed.

What is most remarkable is that, however the particulars have been transformed, an essential gestalt has been not only retained but enhanced with personal meaning. The dreamer's kinesthetic experience remains unchanged—struggling against gravity; his goal is escape; his emotional state is life-and-death desperation. Yet even so, an impersonal event has been assimilated, piece by piece, into a vivid dream in highly personal terms. The dream has simultaneously transformed the trauma beyond recognition, beautifully preserved it in mythic, fanciful forms, and created a purposeful escape. The whole exceeds the sum of its parts. Like an artistic creation, it succeeds far beyond the mechanisms of any delineated set of transformations. As significant as those transformations may be, the product, in its ultimate shape, is determined by some higher- order aim.

Transformed pieces like the above are arranged not willy-nilly, but rather in a manner and form which is both creative and conservative: new experiences shaped by old forms to make something both old and familiar and new and unique. Basically, these higher-order psychic processes are large-scale organizing templates. This may be illustrated by analogy. Subatomic particles, elemental though they be,

exist in isolation only under the most extraordinary circumstances. They tend overwhelmingly to collect, not haphazardly, but in recurrent patterns. They seek affinities, sometimes with like, sometimes with unlike. More complex structures build up, not randomly, but rather because some pieces fit. These ordered collections tend to stay together; the ordering lends stability. These ordered collections also tend to exert and seek affinities of their own.

While entropy, or decay into randomness, may be a fundamental property of physical systems, its opposite, a move toward ordered forms, must be an equally fundamental property. Elements move toward more complexly ordered forms or coherencies because they are actually simplifications. An ordered collection contains more information because the structure itself codes information.

These same ideas about physical systems also apply to psychical systems. The mind optimizes mental activity by structuring psychic experience in such a way that the most information can be placed in the least space. Increasingly complex ordering, which subsumes content under structure, may be the way the mind accomplishes this.

The forms these organizing templates take are inclusive, varied, and yet precisely personal. As we have seen, they range from sensorimotor equivalence (canoeist), functional equivalence (viewers of obstetric film), cognitive familiarity (Lion Hunter), and psychodynamically structured fantasies (canoeist and Chowchilla children), to adaptive opportunities (Lion Hunter, canoeist). They pull raw psychic material into their orbit of influence, generating an amalgam of old orderings suffused with new material. They simultaneously conserve and create, and wed process to form.

One might somewhat fancifully describe these organizing forces as a kind of marvelous psychic topology. In mathematics, topology examines structural properties which are retained through particular deformations. Structures are called homomorphic (in topology, homeomorphic) if one can be turned into the other by certain transformations. It appears as if the mind functions topologically; that is, transforms immediate experience into pre-existing topologically homomorphic structures. These homomorphic structures are the overarching forces in psychic life. They exert force, not from the bottom up, so to speak, but from the top down. Complex, highly ordered, and stable, they compress the building blocks of immediate experience into precisely coded personal statements which constitute the heart of who we are

psychologically. Events are topologically transformed into a network of compact cognitive and affective allusion which preserves fundamental aspects of outer experience in precise personal terms.

From this vantage point, we are positioned squarely in the midst of what Sperry (1993) terms the "cognitive revolution." Lower-order (biochemical) mechanisms interact causally in a "reciprocal up-down paradigm" (p. 882) with higher-order (psychical) mechanisms. Neither is dominant, nor can one be reduced to the other: psychology forms biology as much as biology forms psychology. Sperry's "higher-level (yet-to- be-described) cognitive system of cerebral processing" (p. 882) has been described above, in a broad and preliminary fashion, as a system of psychic topology. "No longer written off as ineffectual epiphenomena nor reduced to micro-phenomena," this personal topology, in our terms, "becomes the most critically powerful force shaping today's civilized world" (p. 879). In potent measure, the outer world *is* what the inner world makes of it.

I began this chapter with the notion that the traumatic dream might provide a view from the inside out; that is, a view of material reality seen through a relatively transparent psychic window. I end with exactly the opposite impression. The most revealing perspective is from the outside in; that is, a view of the magnificent capacity of the human mind to create information-dense, stable, coherent templates of subjective meaning: the mind their architect and builder.

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Notes

1 The impact of trauma on formal dream properties has been much studied. Brenneis (1994) reviewed this literature and concluded that no formal dream properties were exclusive to dreams based on trauma.

2 See also Grinker and Spiegel (1945) and Kanzer (1949) for dream responses to war trauma; Levitan (1965), to shocking news; Horowitz (1986, pp. 2 17-226), to witnessing a suicide; Terr (1985), to a friend's rape and murder; Terr (1990), to accidental injury.