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Dreams, Synchrony, and Synchronicity

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This essay presents the dreams of a long-term patient over the course of treatment in order to explore the transpersonal potential of the relational unconscious—those open channels of unconscious communication between people. At a key moment, the patient brings in the therapist's own childhood dream, serving to break a period of impasse and reset the therapy. Dreams and their interpretation reveal the essence of fractal consciousness, by which a sliver of experience can shed light on the whole of the psyche. A fractal model of understanding suggests open boundaries between self/other and self/world at multiple levels. The deep intimacy of ongoing therapy can capitalize on this openness by promoting shared states of physiological resonance between patient and therapist. Such conditions are ripe for facilitating and amplifying uncanny knowing, synchronicities, and other transpersonal experiences.

Keywords: *transference, dreams, relational unconscious, synchronicity, physiological synchrony, fractal consciousness, self-similar dynamics*

Dreams serve as powerful mirrors to the psyche through their holistic potential. Dreams emerge at the edges between conscious and unconscious processes to display fractal properties. A fractal epistemology posits boundary conditions as dynamic zones of transaction across different states and scales of existence. Rather than smooth and fixed like a cup cleanly separating inside from outside, fractal boundaries are semi-permeable and infinitely deep, at least in theory and on an endlessly iterating computer (Mandelbrot, 1977; Peitgen, 1986; Schroeder, 1991).

When examining a dream, we can use powers of conscious observation to illuminate self-similar patterns reflected within dream structure. Each time we revisit a dream, the opportunity exists to find another angle of meaning. Whenever working with dreams, the observer is inextricably and recursively linked to the observed, as dream structure is both discovered and created through the very act of looking. The process is infinitely deep in that endless opportunities exist to revisit any given dream. As with fractals, the closer we look at a dream, the more there is to discover.

In past writings (Marks-Tarlow, 2008, 2012, 2014), I suggested fractal consciousness, by which we perceive the whole in the parts of experience, represents the essence of therapeutic intuition. Through clinical intuition we implicitly sense the fine texture of experience during clinical interactions partly by linking patterns in those tiny "now" moments to self-similar patterns surrounding larger events and conceptualizations. Fractal consciousness is also useful as an explicit tool for self-exploration, allowing us to gain and retain perspective, again by appropriately linking small- and large-scale self-similar events into meaningful self-narratives.

Fractal consciousness is especially useful for approaching dream interpretation, where we often capture the essence of a dream by looking at any dream fragment, no matter how tiny, as if it reflects the *whole* of the psyche. Alongside illuminating the geography of attachment dynamics, this holistic perspective also applies to temporal dimensions. Especially because of their highly visual nature and spatial extension, dreams more than verbal narratives exist in a timeless realm. Here they can simultaneously capture past as well as the present dynamics, while simultaneously pointing towards the future.

Over history dreams have enjoyed a full range of interpretations (Van de Castle, 1994). Ancients honored them for their power to prognosticate disease and foreshadow important

events in history. One biblical example was Daniel's interpretation of King Nebuchadnezzar's dream. The Persian Magi as well as Indian yogis and fakirs established elaborate rituals to cultivate nonlocal awareness within dreams, while the Sumerians and Egyptians formalized 'sleep temples' towards the same end; by the 4th century BCE, the formalized linkage between dreams and nonlocal awareness was central to Greek religious life (Schwartz, 2018). Freud declared dreams the "royal road to the unconscious." In the history of science numerous discoveries have been attributed to dreams. One famous example is the benzene ring in chemistry, which emerged out of Fredrich Kekulé's dream of a ring of snakes, no, the snake was biting its own tail in Kekule's dream, like the Ouroboros. A second example of discovery through dreams was Carl Jung's notion of the collective unconscious, emerging from his nighttime reverie of descending to the subterranean floor of a house filled with the bones of ancient ancestors (Jung, 1961/1989).

The purpose of this paper is to use a fractal lens to approach the subject of dreams. If a fractal epistemology is to be useful for transpersonal psychology and consciousness studies more broadly, it should effectively model and integrate multiple levels of observation. In the pages ahead, I present a long-term psychotherapy case to highlight a patient's dream sequence. My purpose is to attend to two key fractal features: 1) Self-similarity as a connecting principle, whereby the pattern of the whole is reflected in the parts at multiple scales of observation; and 2) Paradoxical boundaries between self and other as well as self and world that are simultaneously open and closed, as well as observer dependent.

Meet Sabina

Sabina, who graciously gave me permission to write about our work together, is an East Indian woman who entered treatment in her mid-twenties, approximately 18 years ago. She continues to be my patient to this day. As a teenager in India, Sabina was sexually molested by her father while being blamed for the incest by her mother, who in addition, was physically and emotionally abusive. During her late teenage years Sabina's emotional pain grew so intolerable that she attempted suicide by drinking pesticide. Fortunately, she lived through the episode, although her kidneys remain vulnerable. Several years later, Sabina fled India in search of a better life in the United States.

Soon after arriving in the US with no money or social support, Sabina met and married an East Indian man. At the point of seeking psychotherapy, Sabina did not drive or work, though she was taking classes at a local college. Her impetus to seek treatment came from fear of a male teacher; yet the true source of her fears was physical abuse by her husband. Caught between current and past traumas, Sabina was so haunted by her feelings and nightmares that she regularly cowered in bed, literally afraid to set foot on the floor in the dark.

Through decades of intensive psychotherapy, Sabina became a US citizen, got a driver's license, completed a master's degree, and now teaches at the community college level. Over the past two years, she felt sufficiently healed and financially independent first to separate from her husband and then to request a divorce. As I write, Sabina is in the middle of nasty court proceedings, including a legal battle over custody of their 9-year-old daughter.

In the beginning of our work together, Sabina was highly emotionally dysregulated and so overwhelmed by a host of physical symptoms that she regularly wound up in one emergency room after another, sometimes multiple times in a week. Especially during the early years, Sabina brought more dreams into psychotherapy than any other patient I have seen in over 30 years of clinical practice. During early stages of treatment, most of Sabina's dreams were nightmares, from which she would awaken in a scream with her heart pounding. The content was horrifying. Sabina was either being raped, forced to witness lurid sexual acts, or chased by figures carrying knives or guns who would stab or shoot her, as often to the point of death as not.

Many chase dreams early in therapy contained monsters who were either fantastical creatures or mythological figures attacking her in scary environments filled with creepy crawly spiders or maggots. As our work progressed, Sabina's assailants morphed more regularly into human beings. At first, those who chased and hurt

her tended to be male strangers, often dressed in white, the color of death in India, but also a symbol of spiritual purity. As therapy progressed, the villains transformed again, now into members of her own family, whether past or present.

Here is an example from the present:

> *My husband is a murderer actively hacking bodies to pieces and hanging the parts on the ceiling. I am watching with great discomfort. He receives money for his efforts. I feel scared about what is happening and urge him to return the money. But he refuses. I grow afraid people will come after us and suggest we run away. No sooner do we start running than people begin to chase us. Eventually, they discover me in a closet. I'm half naked. One of them puts a gun to my head. I wake up.*

As we continued to do trauma work, Sabina's father, who had been deceased for over a decade, frequently appeared in her dreams. In one nightmare, her father hit her again and again with the blade of an axe, blood spurting everywhere. In another, Sabina's father raped her. In a third, her father lay naked on a bed, the top of his penis exposed, as two Arabic women entered to make love to him.

But most of the nightmares with recognizable relatives involved Sabina's mother, the action often taking place in her childhood school where her uncle (father's brother) was the priest. In waking life, this uncle was all too publicly having an affair with Sabina's mother, employed both as headmaster and teacher at the school her uncle owned. In one nightmare, Sabina's mother stoned her. In another, her mother nearly cut off her head. In a third, her mother used a pressure hose to shoot water so hard that Sabina died.

Here is a particularly gruesome variation:

> *My mother and I enter a coffee shop. A blender is sitting on a counter top. My mother shoves my head into the blender. She turns it on, and my head gets fully minced. She doesn't stop there. She stuffs my whole body into the blender. When she turns it on again I see my body in pieces. There is blood everywhere; it is splattered all over the walls.*

Self-Similar Themes

A common way to interpret recurrent dreams is to look for external meaning. From this perspective, the need for repetition reflects identical or similar situations existing in waking life. A different way to understand recurrent dreams is to look for internal meaning, an approach that informs my own clinical style. I have speculated (Marks-Tarlow 2012, 2014) that repetitive dreams often reflect the earliest relational landscapes, constituting a kind of preverbal topography at the foundation of attachment dynamics.

In the case of Sabina, a prolonged history of emotional, physical, and sexual abuse reflected personal space and a sense of self repeatedly violated by the most significant people in her life. From the start of life, those who were supposed to have protected her were the very ones who endangered her, a recipe for a disorganized attachment. Child researcher Beatrice Beebe and colleagues (2010) conducted micro-analyses on babies at 4 months in search of the roots of disorganized mother-child attachment dynamics evident at 12 months. In these instances of intrusive, mis-attuned mothers, Beebe observed paradoxical binds in action—children felt drawn to approach their caregivers while simultaneously attempting to avoid them. At times the resulting behavior appeared downright bizarre. For instance, one baby approached its mother backwards. Another arched away while braying toward its mother.

Much like Beebe and colleagues' baby subjects, Sabina was a young child dependent upon abusive caregivers for her very survival. Equally caught in the approach-withdrawal dilemma of disorganized attachment dynamics, Sabina's best option was to run away, first in fantasy, then in real life. Yet, without the horrors of her youth fully processed, Sabina was forced to revisit horrific scenes at night. Through bringing this self-similar sequence of dreams into psychotherapy, we could begin to make meaning out of them by re-processing traumatic memories in an atmosphere of safety and trust.

The theme of being chased in service of being harmed and even killed reflected past traumas that reached deep into Sabrina's body, threatening her

health and even her life through a past suicide attempt and current somatic symptoms. Simultaneously, the progression of self-similar themes became a present-centered gauge of her ongoing transformation within psychotherapy towards ever greater safety and trust. Not only did Sabina's nightmares grow steadily less frequent, but also as Sabina began to calm down, the horrific monsters no longer chased, caught, or killed her as often, indicating that Sabina was feeling less haunted.

As the years went on, and Sabina's assailants took more human form, her defenses were growing less primitive and somatically lodged. The eventual direct appearance of Sabina's family members in her nightmares suggested an enhanced capacity for internal regulation, while being reminiscent of Mitchell's (1998) poignant notion of the transformation "from ghosts to ancestors," p. 825. As Sabina slowly stopped running in response to inner horrors, steadily she was less caught by the amygdala-driven, fight/flight impulses of trauma-based physiology. This change was apparent within the following dream (reported in Marks-Tarlow, 2008, p.13):

> *There is a werewolf in the middle of the road. It is dead, and its fur is ripped open to reveal lots of blood and guts. I feel disgusted. Yet, I feel drawn toward the beast anyway, struck by the sawtooth shape of its wound.*

When Sabina and I reflected on the meaning of this dream, she grew animated. She expressed feeling inspired by the jagged pattern of the wound. She could imagine herself artistically emblazoning a similar design onto a canvas to be painted in bold colors. To me, it was clear at this point that Sabina felt safe enough to be fully captivated by the path of self-reflection. Not just at conscious levels, but also unconsciously, Sabina now embraced the beauty of her own experience, no matter how scary or painful.

Dream Interpretation as Projection

Sabina's self-similar progression of dream themes—from monsters to strangers to the very humans who have hurt her—indicate increasing organization within her psyche, a progression that closely resembles Exner's (1969) classic system of Rorschach interpretation. For readers unfamiliar with the Rorschach, this projective style of psychological testing consists of a series of inkblots presented to a viewer who is asked to free associate, verbalize, and elaborate on what they "see" in the cards. Dreams resemble Rorschach cards in that both consist of ambiguous forms onto which meaning is projected.

Interestingly, the very Rorschach card inkblots themselves take fractal form. According to a report (Abbot, 2017) based on the research of Taylor and colleagues (2017), there is a fractal "sweet spot" within each Rorschach card (see Figure 1) displaying a characteristic fractional dimensionality. Taylor's group hypothesized that the fractal dimension of the cards would mimic that of natural objects, such as clouds. However, the fractal dimensionality of a typical card turned out slightly less than that of most natural features. Apparently, this may be what maximizes the potential for projection of inner forms and meaning onto the outer shapes of the cards.

Figure 1. *Compared to the real inkblot (left), a form with no fractal features (right), or with too much fractal complexity, reduces our ability to perceive and project hidden images. (Reprinted from R.P. Taylor et al., 2017, with permission)*

The validity of the Rorschach as a projective device, where inner contents of consciousness get projected onto outer objects, may result partly from its fractal edges that provide open portals at the threshold between conscious and unconscious processes. This is exactly where dreams lie. The next section examines the neurobiology of dreams, where fractal neurodynamics amplify self-similar pattern, from the micro levels of brain cells to the macro levels of behavior and conscious awareness.

To dream, perchance to learn

Although dreams have been revered by some, they have also been maligned by others. The contemporary scientist Crick, co-discoverer of the DNA helix, is one such maligner who dismisses the significance of dreams, declaring their content meaningless. Crick and colleagues (1995) view REM states as a response to overload in the brain, mere epiphenomena of random neural firings that help bring the brain back to an open state by "unlearning" unnecessary patterns. Yet chaos theory informs us that even seemingly random events at the surface can carry deep fractal order within the structure of underlying strange attractors (see Figure 2). Kahn, Combs, and Krippner (1997) attempted to reconcile Crick's claims about random firings with the perspective of nonlinear science to integrate a theory of self-organization with the neurophysiology of dreams.

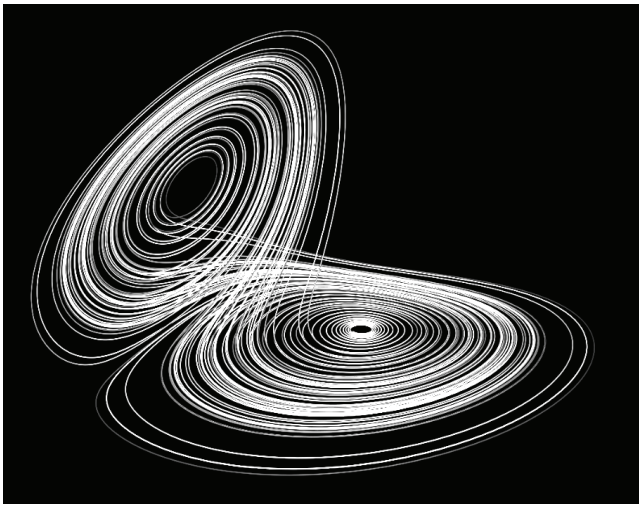

Figure 2. *An example of the first strange attractor discovered, called the Lorenz attractor after its discoverer. The Lorenz attractor models surface unpredictability of the weather (no wonder people make fun of weathermen!) while revealing underlying fractal order. (Public domain)*

At Harvard University, neuroscientist Anderson and colleagues (1998) studied neuronal firing patterns during REM sleep in fetal sheep. Anderson detected fractal pattern at the neurophysiological level, in the form of 1/f power law temporal distributions. Much like the dynamics of the stock market, when power laws operate, self-similar fluctuations become evident on multiple time scales, here detected within the random surface pattern of neural firings. From this data Anderson and colleagues speculated that dreams serve to integrate various levels of functioning, ranging from the neurophysiological underpinnings right up to the level of consciousness and behavior (Anderson & Mandell, 1996).

It is no wonder that fetuses and newborn babies spend most of their time in REM sleep. Nonlinear researcher Buzsáki (2006) has also made important links between micro and macro levels by studying single place cells of rats. These cells form a kind of grid in the hippocampus to fire whenever the rat enters a particular geographical area. Buzsáki compared the pattern of place cell firings when rats ran through a maze during the daytime with place cell firings during REM states at night. The result was remarkably identical patterns. This provided evidence that learning and memory get consolidated at night, especially during the dream phase of sleep. When Buzsáki exposed rats to two different mazes during the daytime, the subsequent pattern of place cell firings at night revealed a creative synthesis of the two maze patterns, which suggests an integrative function within the creative power of dreams.

In the rat hippocampus, place cells help the animal orient and navigate through the physical environment. In humans, the hippocampus has acquired an additional function. Because the human hippocampus is the seat of learning and memory, it helps us to orient and navigate through the social environment (Marks-Tarlow, 2012). Buzsáki's research reinforces Anderson's conclusions that processes at the micro level cascade into self-similar processes at the macro level, winding up in cognitive and behavioral changes.

Transference Dreams and the Relational Unconscious

From the beginning of our work together, Sabina had a series of transference dreams in which I, as her psychotherapist, was included. With interactive regulation the major tool for developing secure attachment during early development or

within psychotherapy, transference dreams become especially important indicators of therapeutic status and progress.

In an early transference dream, Sabina entered my office, also my home in her dreamscape, where she caught a glimpse of my daughter as well as of my "dirty laundry." This dream snippet emerged during initial stages when Sabina seemed to be testing me unconsciously. Although she desperately wanted and needed safety with me, this young woman had never known deep trust with anyone and had no implicit foundation for the experience of it. No wonder that she needed to check out my dirty laundry to ascertain whether my personal issues would prove trustworthy or too dangerous for self-revelation and exploration.

From the perspective of fractal consciousness, where even the smallest dream snippet potentially sheds light on the whole of things, many of Sabina's subsequent transference dreams shared the central feature of this initial one: either she entered my personal space or I entered hers. This held in dream after dream to follow, as in this slightly later version.

> *You enter my house (not really where I'm living now). There is a boxed black and white picture of my mother that is standing at a low angle shot from beneath in an unusual way. You comment on it, finding it interesting, especially because it has an iridescent shine to it. Together, we take it apart to reveal a picture behind the picture. This solves the mystery of the iridescence. Then the scene changes. I am 5 years old. You are my mother. You pat my hair very affectionately and play with my cheeks.*

In contrast to the scary figures that haunt and continue to traumatize Sabina, this dream indicates I have gained enough trust to help her understand her own "bad" mother from a safe distance (the picture is black and white, not color, and boxed in). In this role, I become the longed for, long lost "good mother" with whom she may regress to earlier emotional stages, which could then allow us access to primitive defenses surrounding dissociated and walled off, highly vulnerable, aspects of self. The last scene, where I expressed affection and kindness by patting Sabina's hair is especially poignant, given the contrast with her own biological mother. Many of Sabina's most painful memories around age 5 surround her mother pulling her hair in anger when brushing it, or at other times later in life, criticizing the looks of her hair.

Here is a particularly interesting iteration of this transference series:

> *You and I are at your house. We are in the kitchen. You are showing me how to make soap using a method that involves taking used bars and recycling them, by putting them together in a big pot. You say to me, "You're going to stay, aren't you?" I happily reply yes. We both know without speaking any words what this means—I will live with you forever.*

Sabina here appears to have reached full object constancy, such that I have become fully internalized and will live inside her forever. She also seems to feel "contained" enough by me emotionally to work under conditions of heat (high arousal) with old memories and feelings. Recall that Sabina's suicide attempt involved swallowing poisonous pesticide. In her dream, we work together to make soap, as if to wash clean any trace of previous toxins. We are in my kitchen, where I act as her guide in this hearth of the home, place of nourishment, both literally and figuratively. Sabina feels safe enough to melt old defenses and address core vulnerabilities. Symbolically, I help her "clean up her act" by teaching her how to recycle the old by integrating painful memories into something new. This view of the dream fits nicely with Lane et al.'s (2016) proposition that the universal indicator of change in effective psychotherapy is memory reconsolidation, by which previously unprocessed, traumatic memories are brought back up to consciousness where they may be re-consolidated in a more regulated, integrative fashion.

While cautious of universal symbolism, I do believe that the regular appearance of houses is often associated with foundational aspects of self. Consider Jung's dream previously mentioned. He descended through a house until he reached a hidden chamber in the basement where ancient bones were buried. This imagery inspired one of Jung's most important contributions to psychology, the notion of a collective

unconscious, a realm of images and symbolism believed universally present in the deepest levels of the psyche and archetypally shared. Whether arising at the level of culture or of personal dreams, Jung's concept of the collective unconscious is a transpersonal notion. Some contemporary scholars, such as Eenwyk (1991) and Harle (2010), conceived of Jung's archetypes in fractal terms as "strange" attractors that take self-similar form across various cultures and historical eras.

The Relational Unconscious in the Space Between Self and Other

Jung's notion of the collective unconscious bears an important relationship to what psychoanalysts Gerson (2004) and Sands (2011) refer to as the "relational unconscious." Here, open underground channels of communication exist beneath conscious levels of awareness, especially between people in close relationship. Much like the notion of the collective unconscious as being transpersonal, so too is that of the relational unconscious, although the latter is narrower in scope, being restricted to the intersubjective field shared between people with close ties.

To me, Sabina's transference dreams described above reflect a strong wish to be very close to me. They are the inverse of the boundary violations reflected by her horrific chase nightmares. Here, open boundaries lead to intimacy and enhanced life, rather than to torture and death. The open boundaries whereby Sabina enters my house, or I enter hers, seem to indicate ready access to each other's inner sanctums. Indeed, at this point in our work together, Sabina and I mostly felt close. I had earned the right to stand in as the "good" mother, and we were in an ideal position to address early relational damage by dredging up previously unprocessed trauma. As I write this chapter, two more transference dreams have emerged , back-to-back, during a very difficult period as Sabina goes through a painful and protracted divorce. In the first dream, I was again in Sabina's house, along with Sabina's daughter, being very emotionally supportive. In the second dream, I was literally holding Sabina as a baby, cradling her in a way that felt really good to her.

Important themes are reflected in the following transference dream (reported in Marks-Tarlow, 2008, p. 21).

> *You were underwater, waving your arms as if holding paintbrushes in both hands you used to create swirling shapes on pieces of paper, one for each hand. As each painting was completed, the papers floated upwards towards the surface. Suddenly among all the papers, the dead body of an adolescent boy also floated upwards. You kissed the back of his neck. The boy's eyes popped open and suddenly he came alive. I woke up. The dream was so scary. The images stayed with me for hours. I couldn't get back to sleep.*

Notice the opposite energetic pattern evident in this dream—rather than someone being killed, someone dead is being brought back to life. I have come to understand this dream as a concrete illustration of what Kestenberg (1995) called "dead spots" in the infant's subjective experience. What emerged from the dream, plus Sabina's associations to its images, was a new stirring inside that "brought alive" a realm of dissociated emotion connected to a sexual trauma that took place during Sabrina's adolescence. The incident, involving an adolescent boy, had not been repressed (it remained accessible within the recesses of Sabina's memory); rather, it had remained emotionally unprocessed until now.

Sabina's transference dreams appear to serve as an underground form of communication. Such communication, from unconscious to unconscious, has been especially important in this case because of the highly relational nature and focus of Sabina's psychotherapy with me. Together, we have undertaken the difficult challenge of shifting Sabina's attachment status from disorganized towards organized and earned-secure, which occurs when someone rises above harmful effects of childhood abuse and trauma to feel securely attached to another human being later in life. I would like to bring home the porous unconscious boundaries of our relationship by sharing one more transference dream that occurred years later and extends even further into transpersonal realms.

First, however, let me provide some background context. As opposed to the rich texture of previous stages in treatment, at this point the sessions felt stale. Compared with the highly dramatic, emotionally charged quality previously, we now seemed to be locked in a mutual stance of defensive disengagement. On Sabina's end, she talked repetitively about jealousy concerning insignificant and tangential women in her husband's life, in whom, from my perspective, her husband seemed to have little real interest. From my end, a low-level frustration was slowly building at the repetitive nature of the material. Clearly, we had reached an impasse.

Then one day everything changed with the appearance of a dream unlike any other (Reported in Marks-Tarlow, 2008, p. 43).

> *I am back in my old house in India. The roof is knocked off. My mother is there. So is my daughter Maya (a two-year old toddler) who wanders off in search of a shoe. Suddenly I notice a tidal wave heading towards me. It's absolutely huge. The water is clear. I feel desperate to protect myself. I back up against the wall. From here I watch the wave approach. But while looking at this wave I don't realize there is another one coming from the opposite direction. The water is black, and this second wave sweeps over the house. Water fills the room and rises and rises. I'm struggling for my life. But somehow, I manage to make it through. Slowly the water recedes. Then I see my mother coming towards me. She's got Maya in her arms, holding her high in the air. Maya appears dead. Her body is limp. My mother thrusts my daughter towards me. She is snarling with an almost satisfied look of contempt on her face. I look on in horror.*

This nightmare terrified Sabina and was unlike any other she had dreamed. It certainly deviated from her typical theme of being chased by monsters, relatives, or other scary people. What I found remarkable about this dream is that the tidal wave imagery perfectly matches the recurrent theme that *I used to dream as a child*. To encounter huge tidal waves was by far the most frequent dream I used to have. I now understand this to be a classic anxiety dream. Within my own nighttime topography, sometimes a giant tsunami would approach and slowly and wash over me, occasionally occurring when I was backed against a wall. Sometimes the dream would start when I was already in the water, whether alone or with others. I never died in these dreams, and they were not always unpleasant. At times they were even comical, as when I dreamed of furniture floating all around me, alongside other people in the water, as if all were sharing a communal bath in the living room. These dreams peaked during middle childhood, when my parents were often out at night or traveling abroad for weeks at a time, making little or no contact with me while away.

The moment Sabina recounted her tidal wave dream, it touched and triggered my own memories in a deep and raw interior place that previously had been asleep for years. As I listened to Sabina's dream, sensory-based, full-body memories of feeling alone, abandoned, and scared suddenly swept over me. I had vivid images of how terrified I used to feel as a little girl, especially at night. I remembered sucking my thumb and rocking. I recalled my fear every time my parents went out that they would never come back. I was terrified at their advanced age (my mother was 40 when she had me, unusual for my generation). Over and over, I used to obsessively calculate how old I would be if I lost them at particular ages, plus imagining at what age I might feel safe if only I could make it there.

This highly charged, embodied, emotional experience triggered a sudden recognition in me regarding this case. Over these past several months I had been subtly aloof. I had disconnected from Sabina as she expressed jealousy towards other women in her husband's life. Meanwhile, my own father had had frequent affairs, including one that lasted 15 years with the mother of my best childhood friend. During our impasse, I had noticed my own mild irritation but had brushed off its significance. I had missed recognizing my own countertransference and the meaning of my dampened experience. I suddenly understood that Sabina was hitting upon a dissociated pocket of pain, betrayal, and terror within my own psyche.

I then recognized how my own insensitivities had been playing into the picture. By avoiding intense feelings and brushing off my own discomforts I was also brushing off Sabina's. My empathy had become blocked, which only exacerbated Sabina's experience of isolation and desperation.

Synchrony Through the Relational Unconscious

Psychoanalyst Susan Sands (2010) proposed that within psychotherapy, dreams sometimes "activate powerful forms of unconscious affective communication between patient and analyst, which crucially facilitate the transformation of dissociative mental structure" (p. 357). Sabina's dream appeared to emerge from what Gerson (2004) dubbed the relational unconscious to bring me into greater synchrony with her by seeking-and-finding deeper emotional congruence. We both came to view this dream as a transpersonal attempt to open wider channels of empathy. Indeed, Sabina's dream helped me attune to my role in our impasse.

Now I could *feel* where our interior worlds overlapped and where I had erected defenses against painful memories of betrayal and separation. Rather than the attuned behavior of the "good" mother, I had become the emotionally withholding, insensitive "bad" mother who was ignoring, shaming, and blaming her daughter for her failures. After all, I had recently called Sabina's attention to the fact that she had hardly mentioned her daughter in months. Yet simultaneously I had been enacting the child who was upset at her own mother's neglect. I now understood my mild irritation with Sabina as a defense against rousing my own underlying abandonment fears.

Sands (2010) suggested that implicit level dream communication is particularly likely to occur when overwhelming experience is dominating treatment. Indeed, Sabina's dream came just as major crisis was erupting involving her daughter who, at age three, was recently diagnosed with severe autism following my suggestion she be evaluated. In the weeks that followed a torrent of ruptures and re-solutions broke loose. This was a scary time. Extreme shame and suicidal feelings arose. Sabina even stopped eating at one point. She had grown utterly hopeless. Her life hung on a frayed line; bonds of trust stretched thin between us.

This transpersonal transmission functioned in dual fashion as a life threatener and life saver. By communicating primitive levels of panic and separation anxiety directly from one unconscious to another, Sabina's dream helped to restore my fuller experience of compassion. Although this period was excruciatingly painful for both of us, we proved able to withstand the massive waves of high arousal that followed. Once the torrent of intense emotion passed, we were brought to a new level of trust. In the process a greater level of complexity emerged in Sabina's internal organization. She felt less wounded and more compassionate towards the shortcomings of herself and others. A newfound sense of resilience eventually enabled Sabina to reconnect with her own very flawed mother, still in India, after many years of estrangement.

A Fractal Model of Biobehavioral Synchrony

One of the most valuable contributions a fractal epistemology could make to psychology broadly and to transpersonal psychology specifically is a mathematically rigorous way to model open, permeable boundaries between self and other. Many of us unconsciously hold a model of interpersonal relationships that presumes a Cartesian split, as if people are thoroughly encased within their bodies and cleanly separated from others by smooth boundaries. Especially in Western individualistic culture, the ideal of healthy adulthood promotes independence, such that it becomes easy to take for granted autonomous functioning. Yet, cross-cultural studies reveal this as only one perspective among many. Indigenous and collectivist cultures often envision porous psychological boundaries, not only between self and other but also between self and world. Open channels are apparent in phenomena such as spirit possession, shamanic travel and shapeshifting.

Individualistic, colonized lenses obscure the degree to which human beings, especially those in intimate relationships, operate in sync. We are deeply "wired" to be interconnected to each other via body, brain, and psyche. On the one hand, this

is little wonder, since most mammals, including human beings, are herd animals with social minds, bodies, and brains that have evolved to care for our young and live in groups (Cozolino, 2002, 2017). On the other hand, new frontiers are opening in science, which allow us to visualize and measure physiological coupling and neural synchrony with ever greater precision. Researchers such as Aftanas and colleagues (1998) have used nonlinear methods to capture overlap in brain and body processes otherwise invisible when purely linear methods are used. New scientific fields are emerging, such as interpersonal neurobiology that reveal neural correlates of how relationships shape the minds, bodies, and brains of self and others.

Ruth Feldman's (2011) study on physiological synchrony is illustrative. Mothers and their 3-month-old infants were observed during face-to-face interactions. Cardiac output was collected in both mother and baby, while the behavior of both was videotaped and micro-analyzed to mark episodes of mutual gaze, affect and vocal synchrony. Results revealed a concordance of mother and infant biological rhythms that increased significantly during episodes of mother-child affect and vocal synchrony, compared to non-synchronous moments. Feldman's research points to the openness of the autonomic nervous system to maternal social influences.

Feldman's (2011) approach builds on the work of others who have identified three main channels of nonverbal synchrony. Kaye and Fogel (1980) studied how gaze synchrony enhances social relatedness and cognitive growth. Cohn and Tronick (1988) studied the role affect synchrony plays in children's development of self-regulatory capacities. Jaffe and colleagues (2001) identified how vocal synchrony during "proto-conversations" (e.g., Trevarthan, 1989) between parent and child builds language skills and attachment security. These studies point to the importance of biobehavioral synchrony during development.

But what about adults? After the formative years, does the development of agency and autonomy signal the end of sync? The answer appears a resounding no. Structural coupling of affective, cognitive, and motor systems is as natural to adults as it is to children. We know this partly because brain imaging has advanced far enough to approach minute-to-minute embodied processes as they occur between people, within context. A particularly exciting line of research is a new form of brain imaging called hyperscanning (Babiloni & Astolfi, 2014; Dumas et al., 2010; Liu & Pelowski, 2014). Hyperscanning, which consists of simultaneous measurements of brains, was innovated to assist in parapsychology experiments and only later extended to ordinary social functioning (e.g., Bouten, Pantecouteau, & Debruille, 2015).

Riley et al. (2011) examined neural substrates of cooperative tasks between people. Whether involving turn-taking or simultaneous action, they concluded that movement systems in different actors become coupled to form low-dimensional reciprocally compensating synergies. Similar results extend beyond motor systems. Anders et al. (2011) identified a "mirror" representation of another person's affect in the perceiver's brain. Interbrain synchronization is especially strong in people who are emotionally engaged with one another versus detached observers (Dumas et al., 2010). Schilback et al. (2013) likened the remarkable progress made in social neuroscience, marking the beginnings of a two-person neuroscience, as comparable to the discovery of dark matter in physics.

It may seem controversial that interpersonal synergies span organisms by extending beyond boundaries of skin. Yet, from a neural perspective, there appears to be little difference between transmission of information between two areas within a single brain and transmission of information between two individuals (Hasson et al., 2012). This makes sense given how important neural synchrony is in the development of cortical networks within a single brain in the first place (Uhlhaas et al., 2009).

The science of hyperscanning is still in its infancy, yet results are remarkable in the degree of neural sync that crosses over the threshold of both physical and psychological boundaries. A ground-breaking paper by the lab of Princeton University neuroscientist Uri Hasson (Stephens, Silbert, & Hassan, 2010 solved previous difficulties with the noise and physical clumsiness of fMRI machinery

to simultaneously measure two brains during real-time communication. They tracked the electrical activity in the brain of a speaker telling a story along with the brain of a listener hearing it. What the scientists discovered was widespread neural resonance between the two brains that extended far beyond the parietal and premotor areas that contain mirror neurons (specialized to fire whether a person makes an action or watches someone else making the same action), as well as beyond cortical areas related to speech production and reception.

Moreover, the lab's results also suggested that the greater the understanding displayed by the listener, the greater the brain synchrony with the speaker. Most remarkably, listeners who displayed the greatest understanding of the story revealed areas of neural resonance that *anticipated* the brains of speakers. Apparently, during excellent communication, not only do we follow the words of another person, but we also hang on to every nuance such that we can forecast what is to come. Hasson et al. (2012) believe brain-to-brain coupling is the primary mechanism for creating and sharing social worlds.

Synchronicity and Acausal Connection

Whereas synchrony requires open emotional and physiological borders between self and other, synchronicity requires open emotional and physiological borders between self and world. Synchronicity is a term coined by Carl Jung to describe meaningful coincidence. Where we might expect only chance or a random sequence of events, synchronicity instead indicates meaningful patterning. Carl Jung (1973) believed synchronicity occurs when an emotionally charged complex is activated and material in the unconscious is blocked from conscious awareness. Because of this block, rather than to experience something internally within our own psyches, material is forced out into the world and then backwards into consciousness through physical rather than emotional channels. To Jung, synchronicity was evidence for the *Unus Munde*—the one world connecting mind and matter—with meaning serving as the thread between. Several contemporary theorists (e.g., Coleman, 2011; Hogenson, 2005, 2009; Main, 2007) have expanded upon Jung's ideas.

Modern day spiritual guru Deepak Chopra (1995) presents *The Way of the Wizard* as an opposing but related stance. Rather than the result of blocked consciousness, Chopra celebrates synchronicity as a kind of hyper-consciousness. He views synchronistic events as the manifestation of our spiritual intentions in the Universe. Synchronicity occurs when we both seek and catch glimpses of the fundamental interconnectedness between mind and matter during higher states of open consciousness rather than lower states of blocked consciousness.

I follow in the footsteps of Allan Combs (Combs & Holland, 1990) to examine synchronicity through the lenses of contemporary science. Whereas intersubjectivity is borne of open boundaries between self and other, what I have called interobjectivity (Marks-Tarlow, 2008) is borne of open boundaries between self and world. In the latter case, fractal boundaries arise from structural coupling between self and environment when self-similar patterns become evident at the interface between subjective and objective levels.

The fractal idea of the whole in the part is one scientific approach to synchronicity at the "joints" between mind and matter. Whether a branch in the road, a node of destiny, or a chance encounter, many encounters at the crossroads reveal self-similar pattern underneath. Fractal boundaries tend to occur when multiple basins of attraction are governed by the same underlying attractor (Schroeder, 1991). This notion of one underlying attractor governing the whole in each part of the universe fits well with concepts about indeterminate quantum waves and ideas about equipotentiality. Out of decades of deep and quiet contemplation of nature, physicist Bohm anticipated chaos theory partly by positing a single "attractor" in the form of a unified underlying order of the cosmos (Peat, 1997). Meanwhile, solid state physics was the first arena for discovering self-similar patterns in time in the form of long-range intercorrelations during chaotic phase transitions from one state to another. Bak (2013) brought this insight from microscopic to macroscopic levels when he perceived the unity in nature between physical and temporal fractals.

Ideas such as these from physics wreak havoc on linear conceptions of cause and effect, which dictate instead that one event will lead to the next, which leads to another, and so forth. When the pattern of the whole is present in its parts, we must embrace more complex models of causality and relatedness, including the notion of acausal connection. With acausal connection, the "glue" between parts is not based on a linear or temporal chain of events. Because fractal patterns exist outside of any particular time or size scale, fractal elements connect with one another instead through self-similar symmetry. In the case of fractals, acausal connection preserves fundamental identity of the underlying wholeness by permeating fractal parts. When acausal connection takes the form of synchronicity, the identity of the whole serves to unify inner and outer worlds, spirit and matter. When two seemingly un-connected things happen simultaneously, they can be acausally connected to one another through hidden self-similar channels of meaning.

At the most global, spiritual level, the very largest scale pattern for each one of us is our pattern of fate. Especially, when we look back at our life trajectories, I believe that patterns of fate tend to take fractal form. In my 2008 book, *Psyche's Veil*, which applies chaos and complexity theories and fractal geometry to clinical practice, I defined fate as the fractal residue of chance, using the Chaos Game invented by mathematician Michael Barnsley (1993) to illustrate this concept. The Chaos Game is simple to play. Create a 3-sided die to throw (impossible in real life). Get a sheet of paper and draw a triangle. Label the three corners, or vertices, A, B, and C. Pick a starting point (Z_0) anywhere within the triangle. Roll the die. Go to the vertex indicated and then halfway back. Mark this point (Z_1) as your new starting point. Repeat the process again and again, marking each new starting position with a dot.

After repeating the process over and over, what do you imagine the resulting pattern of dots to look like? One naturally might guess that the randomness of the die throws would result in a chaotic looking mess of dots. Instead the result is a well-known fractal, the Sierpinski triangle (see Figure 3).

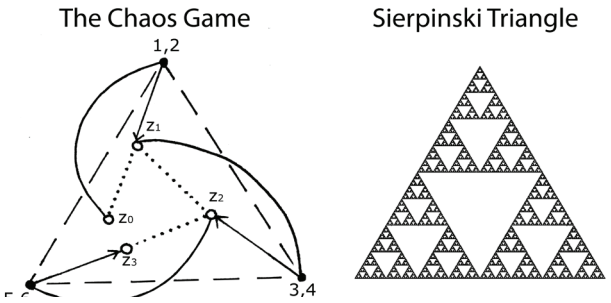

Figure 3. *To play the Chaos Game, start at Z_0. Roll and plot Z_1. Roll and plot Z_2. Roll and plot Z_3. Keep going until underlying pattern emerges. The result is the Sierpinski triangle. (Courtesy of Terry Marks-Tarlow)*

Fractal order appears under the randomness of the Chaos Game due to the consistent underlying seed algorithm. To extend this principle to people, imagine that each one of us has an underlying seed algorithm that is partly determined by genetics and partly determined by epigenetics (how the genes get turned on and off by environmental context, including patterns of nurture). Much like the chaos game, it would then take a certain amount of time for the underlying fractal attractor to reveal itself. Perhaps the Chaos Game helps us to understand why self-similar patterns of fate become most evident over the full course of our lives.

Synchronicity is evidence for acausality in nature, for the natural tendency to self-organize using self-similar threads, where wholes continually fill in the holes of our experience. Just like the Mandelbrot set, where self-similar representations of the whole keep popping up in unexpected places, in a synchronistic universe, islands of local order are interconnected beneath broad seas of disorder. As human experience stretches out into the world only to fold in again, events enfold recursively upon themselves to reveal self-similar pattern at multiple levels of organization.

My own belief in synchronicity represents for me the ideal blend of scientific with spiritual and professional sides. I see synchronicity as evidence for invisible channels of spiritual connection deep under the life's material surface, with self-similar flows governed by hidden attractors in a sea of quantum potentiality. By my account, synchronicity represents self-referential symmetry occurring

when spirit manifests physically such that outer events become animated with inner meaning. I suggest synchronicity is a form of temporal fractal most likely to occur during highly emotionally charged and chaotic phase transitions in life. If so, no wonder that full crisis plus surrender to the unknown can move us into fractal boundary zones, allowing new portals to open us into and out of old dilemmas.

Within psychotherapy I believe the presence of synchronicity often signals the melding of two psyches or the impending emergence of change. Even though we can never interpret the future meaning of a present event with certainty, we still should try to understand the symbolic significance of outer in addition to inner levels, albeit with doubt and humility. As a therapist I find it invaluable to stay open to synchronistic happenings, especially when people ripe for change find themselves hovering at edges of chaos.

A Final Dream of Sabina's

On the very day I had planned to ask Sabina permission to use her dreams in this chapter, she brought in the following dream:

> *I am with my mother on a deck (reminds me of the Titanic, which was one of my daughter's favorite movies and the last movie I watched with my mother the day before I left India). My mother (her current age of 70) stands with a railing behind her when she makes the announcement that she is pregnant. My father (aged 47, his age of death) then makes an appearance. He stands to the left of my mother, who rests her hand on his shoulder. I feel disgusted at the whole scene and walk up the stairs to a higher deck. I look at the two of them for a moment and then walk away.*

When asked what stood out to Sabina, she was struck by her parents being so "together" in this dream. This contrasted sharply from memories of their relationship as highly strained, conflictual, and distant. The dream seemed to resonate with Sabina's feelings of greater inner coherence and organization, that is, her more regulated internal landscape where her mother's "railing" stands behind her. Sabina observed that instead of feeling hate towards her parents in the dream, she felt disgust. Furthermore, no one was chasing her. She experienced enough freedom to climb to a higher level and then walk away of her own accord. These observations seem consistent with Sabina's "higher" level defenses (less somatization, enhanced ability to tolerate and process emotions using her conscious mind instead of her body) plus her greater sense of agency in the world. We both had the sense of this dream completing the previous chase dream series presented earlier.

On my end, I was rather stunned by the synchronicity of Sabina's bringing in this dream on the very day I intended to ask permission to use her dreams in my writing. This feeling was enhanced by the fact that she had not brought in a dream in months and months, given so much external drama surrounding her divorce proceedings. The sense of resolution surrounding this dream not only felt like a gift to Sabina for all her hard work in psychotherapy, but it also felt like a gift to me to complete this paper.

A Final Dream of Mine

A fractal vision of life filled with chance events, random occurrences, and fearful unpredictability is also a vision of life meaningfully ordered. Although chaos theory dictates that the specific events in our lives remain fundamentally unpredictable, the possibility of fractal borders between inner and outer worlds suggests that nothing is truly random. Especially when looking back, despite the occurrence of so many chance events, we can usually detect underlying attractors in the form of self-similar fractal pattern from the start.

I end this article with my own childhood dream, which similarly has structural qualities of being fractal, and in hindsight appears synchronistically prescient (Reported in Marks-Tarlow, 2008, p. 210).

> *I'm sitting in the dark, on my bed in South Orange, New Jersey, surveying the sea of lights and treetops outside my window, as I love to do before going to sleep. Suddenly above all else towers the silhouette of the Statue of Liberty,*

appearing as a giant figure in the distance, as she rapidly pursues me. Terrified, I place all my stuffed animals along my windowsill in a frantic effort to protect myself. After lining all the animals up, I dive under the covers. In the morning I awaken to the sound of the front doorbell. Alone in the house I go downstairs to answer the door. But when I look outside, no one is there. Instead, sitting atop the stone bench stoop to the left, is a miniature replica of the Statue of Liberty. Filled with delight I scoop her up and bring her into the house, shutting the door behind me.

This is one of the few dreams I remember from childhood and the only chase dream I ever recall having. I am currently aware of a lovely symmetry between mine and Sabina's dreamscapes, with us each having had one major dream akin to the internal landscape of the other. At various stages of life, I have returned to my own dream's scary but beloved images. Within my personal psychotherapy and during clinical training, I enlisted various therapists and supervisors to approach the dream from multiple perspectives and theoretical orientations.

I have understood my dream in various ways: in terms of conflicts with my mother; fear of my femininity; narcissistic wounds, including anxiety about being crushed under the enormity of important others; and terror surrounding my personal liberty and creative freedom. With each new iteration has come a new shade of meaning. No one interpretation seems more "correct" than any other. Each is observer-dependent, as seen through lenses of current relationships and states of being. The dream has reflected the whole of my psyche in different ways at different stages of my life.

Whereas Sabina's dream felt transpersonal through open self-other portals, this dream feels transpersonal in reflecting as well as presaging core themes yet to emerge. Symbolically, within the very structure of this dream, a fractal appeared as a gift from my unconscious, long before my conscious mind knew what fractals were. In fact, I had this dream in the 1960s, long before fractals were discovered/invented by Mandelbrot (1977).

The appearance of the Statue of Liberty on several size scales and multiple levels is a fractal image that presaged my current intellectual and therapeutic interests. In my dream the central symbol of the Statue of Liberty appeared explicitly at two size scales—giant and miniature. She also appeared implicitly on the third scale of her real-life manifestation in New York City, where my father worked. The City was an exciting but scary place for me to visit from my sheltered, suburban, New Jersey home. In my dream, scale reveals much about my internal conflicts as a child. The initial large-scale appearance of the Statue of Liberty suggested anxiety-provoking internal struggles that felt larger than life and too much to handle. Lining up my stuffed animals and then plunging myself under the covers, where I could no longer see what was happening, was a concrete enactment of my tendencies to use lines of reason (intellectualization) plus ducking and sleeping (denial) as central defenses. In the morning Liberty's reappearance in static and miniature form suggested eventual mastery of this central conflict, by my ability to titrate my fear and happily assimilate her female form on a manageable scale into my psyche at ground/grounded level.

When I first wrote about this dream for my 2008 book, I drew a fractal image to accompany the dream, which I dubbed "Liberty in Hand" (see Figure 4). Along with the central fractal image that presaged my own interest in fractals, this drawing also contains an eerie foreshadowing. The date that accompanies my signature is July, 2001—exactly two months before 9/11. Never had I drawn a city skyline before. At the time, I felt shaken to have captured the twin towers so soon before their destruction. As I gaze upon my drawing today, I see something I had not noticed before. The main figure looks quite angry, as if she understands the upcoming threat to America's democracy and freedoms. Her mouth seems to scowl, while her eyebrows are furled.

Perhaps the seeming magic of synchronicities such as this occurs less out of foresight and more out of archetypal resonance with the whole of things, that transcendent place where past, present

and future converge. Dreams emerge in the space between conscious and unconscious aspects, reflecting not just who we are in a present moment, but also what we might become in the future, in places where being shades into becoming, the individual into the collectivity. Successful dream

Figure 4. *Liberty in hand (Courtesy of Terry Marks-Tarlow)*

work carries the fractal feeling of detecting the whole of ourselves in the world in the pieces of nightly reverie. Thorough dream work can demonstrate how creative pattern formation during successive iterations of consciousness constitutes the essence of effective introspection.

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