



# Synchronicity, Acausal Connection, and the Fractal Dynamics of Clinical Practice

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## ABSTRACT

Psychoanalysts have written about synchronicity, or meaningful coincidence, from the beginning of the field, yet the topic remains controversial and relegated to the edges of clinical work and research due to lack of a scientific framework. This paper presents a way to conceptualize resonant patterning between inner and outer processes derived from the mathematics of fractal geometry. Considered the “geometry of nature” since its inception, nonlinear fractal models, methods, and metaphors reach beyond reductionism, Cartesian dualism, and traditional linear notions of causality to accommodate porous, interpenetrating boundaries between inner and outer domains as well as self-similar relational patterns. A fractal epistemology is sturdy yet flexible enough to accommodate paradox, ambiguity, uncertainty plus other complex, fuzzy processes of the ordinary analytic experience. Clinical examples also illustrate that fractal framework applies more broadly to the occasional extra-ordinary experience of synchronicity and other “uncanny” nonlocal phenomena in clinical work.

## Introduction

This paper focuses on *synchronicity*, a term coined by Carl Jung (Jung & Pauli, 1952) to indicate meaningful coincidence, or acausal correlations between psychological and physical phenomena. By highlighting synchronicity within psychoanalysis, the authors focus on edges where inner and outer, subjective and objective processes converge. We believe that both psychoanalysis and neuroscience need to move beyond a Cartesian split between *Res cogitans* of the mind and *Res extensa* of the brain and wider physical reality, which can be achieved by introducing a more nuanced way to conceive boundary conditions. This approach is now possible with the advent of Benoit Mandelbrot’s (1977) discovery of *fractal patterns* that exists within the nonreductive realm of non-linear dynamics and allows for fuzzy edges and infinitely deep interpenetration between seemingly disparate domains.

Fractal patterns provide a holistic framework for understanding complex clinical processes and intersubjective interactions. Many psychoanalytic theorists highlight the significance of relational patterns, yet no systematic way exists to date for describing the nature of such patterning. We suggest that the self-referential, recursive fractal paradigm, including its hallmark qualities—*self-similarity* (the pattern of the whole repeating within the parts) and *scale invariance* (the pattern of the whole repeating on multiple size or time scales)—captures

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complex informational processes within the relational matrix of one mind/brain/body system as it interacts with another and extends into psychophysical reality. The recursive nature of fractals provides new models and metaphors for capturing analytic concepts, such as personal identity, transference-countertransference dynamics, repetition-compulsion, and intergenerational cycles.

This paper offers a *fractal epistemology* as a framework for modeling complex psychological boundaries between self/other and self/world that display seemingly paradoxical qualities of both separating and uniting these domains. We use clinical cases to highlight the value of fractals for modeling relational patterns, including unconscious sharing, before turning to a clinical example involving synchronicity. We introduce the term *transsubjective* to indicate a realm beyond subjectivity and intersubjectivity that transcends internal experience to include elements of the external world. Toward this end, we present a theory of *interobjectivity*—the *transsubjective* striving to share and understand material and informational realms of existence. We conclude by highlighting the role of acausal connections within fractal patterns of reality and experience.

## New metaphors emerging

How psychoanalysts conceive work with patients is intimately connected with the metaphors and models we use. As Daniel Stern (1985) suggested, central metaphors lurk at the narrative origins of understanding ourselves and others. Benjamin Wolstein (1995) asserted that central metaphors also underlie the narrative origins of clinical theory. Within the field of psychoanalysis Wolstein traced an evolution from one-person, intrapsychic metaphors to two-person, intersubjective ones; from the therapist functioning as blank screen, neutral interpreter—to *participant observer* and finally *co-participant* within the shared therapist/patient relationship.

Wilner (1998) warned against embracing static, reified metaphors that either bolster defensive operations or unduly constrain authentic encounters. Wolstein's progression of analytic metaphors gets increasingly dynamic, open-ended, and nonlinear, while moving ever closer to the participants' lived experience. Marks-Tarlow (2008) highlighted the inherently nonlinear nature of metaphor itself, for even the most reified metaphor does not comprise a single "line" of reasoning, instead remaining open to interpretation by fanning out in multiple directions. She asserted that the very process of creating metaphors is self-referential—ever shifting between pointing inwards toward the self as the imaginative author of experience and outwards toward the world as a primary source of creative inspiration. As we shall explain shortly, the recursive fractal patterns capture much of what surrounds us in nature, both outside and inside our bodies, whether in space or in time: the branching patterns of trees, rivers, blood vessels and synaptic connections in the brain; the fluffiness of clouds; jaggedness of coastlines; irregularities of the heartbeat; patterns of behavior and population growth; and the very nature of self-reflection and relational dynamics that shift flexibly with the perspective of the observer.

The importance of self-referential patterning in psychoanalytic theory was anticipated by Robert Stolorow (see Atwood & Stolorow, 1979/1993), an original proponent of intersubjectivity and nonlinear dynamics for modeling patient/therapist interactions. He first suggested that "the observer *is* the observed" in his doctoral thesis, *Faces in the Clouds*, which linked the theories of Sigmund Freud, Carl Jung, Alfred Adler, and Otto Rank to the

personal histories of these founding figures of psychoanalytic theory. While Stolorow did not use the term “self-reference,” he anticipated the recursive symmetry of fractal geometry by highlighting “the self-referential significance of inner resonances during innovation in creative giants” (Marks-Tarlow, 2008, p. 127).

Whether consciously or not, clinical metaphors are often borrowed from science (Draaisma, 2000; Marks-Tarlow, 2008, 2012). This paper concentrates on fractal metaphors and models for describing relational patterning, including their application to the “uncanny,” the term first introduced by Freud to describe “extrasensory” knowing in psychoanalysis, such as apparent telepathy and precognition in patient-therapist interaction. One goal of this paper is to bring “uncanny” and extrasensory forms of knowing out of the shadows and squarely into the domain of natural and clinical sciences, where they can be used to construct a nonreductive naturalistic framework with the potential to deepen and enrich the process of therapeutic interaction.

## A nonreductive approach

We offer a *fractal epistemology* approach to counteract both the reductive position of ignoring the emergent complexity of higher psychological processes in favor of conservative neuroscience, and the equally reductive, anti-materialist trend of privileging subjectivity at the expense of external reality, which restricts clinical attention solely to the intersubjective matrix of transference-countertransference dynamics. While reductive neuroscience privileges “downward” reduction of mind to brain, exclusive focus on subjectivity in psychoanalysis perpetuates the “upward” reduction by omitting wider physiological and physical reality.

The steady infiltration of interpersonal neurobiology into the psychoanalytic field (e.g., Cozolino, 2017; Schore, 2012; Siegel, 1999, 2012) introduces the significance of integrating the material levels of brain and body in relational dynamics. Likewise, nonlinear dynamical applications (e.g., Galatzer-Levy, 2017; Marks-Tarlow, 2011; Seligman, 2005; Shapiro, 2014, 2015; Shapiro & Scott, 2018) highlight the centrality of systemic thinking within a unity of processes, from psychological to material and from micro- to macro-levels.

While the field model of Gestalt thinkers epitomized by Kurt Lewin (1939) and phenomenologists such as Merleau-Ponty (see Burkitt, 2003), offers an incipient framing for complex unity, this paper strives toward a more contemporary, integrative framework. Specifically, we suggest that the recursive patterns of fractal geometry are integral to “patterns of relatedness,” a phrase so commonly found within the psychoanalytic literature. An identification of self-similar themes facilitates deep work with core dynamics, central metaphors, and organizing schemas, facilitating insight and more adaptive choices in self-other relatedness. We suggest that the degree to which self-similar resonances fan out beyond the therapist/patient relationship and into the world at large may both manifest and facilitate readiness for change. Such mutative potential of fractal patterns directly relates to Donnel Stern’s (2015) notion of *relational freedom*—the most open state of the analytic relationship that allows for the emergence of new dimensions and templates of relatedness.

## Fractals arise in the spaces between

Contemporary psychoanalysis shifts attention away from exclusive intrapsychic realms, as if existing in a vacuum, to the *spaces between* people as zones of relational transaction. British Object Relations psychoanalyst D.W. Winnicott (1971) introduced the terms *transitional space/objects* to represent complex boundary zones negotiated through the joint projection of meaning. Transitional zones are paradoxical in nature, belonging to neither person but partaking of both participants within emergent spaces of creative potential. Psychoanalytic thinkers following in Winnicott's footsteps include Philip Bromberg (1998), who suggested the analyst must "stand in the spaces" between multiple self-states of consciousness for healing to occur; and Stuart Pizer (1992) who tackled the "negotiation of paradox in the analytic process."

Just as intersubjectivity self-organizes to emerge in the fertile, transitional space between people, fractal patterns self-organize to emerge in the infinite space between ordinary, finite Euclidean dimensions. Benoit Mandelbrot (1977) considered the bevy of recursively enfolded shapes as a centerfold of his fractal "geometry of nature," which has the capacity to describe natural phenomena previously considered too irregular, complex, or discontinuous to model successfully.

Marks-Tarlow (2008) illustrated how recursive properties of self-similarity and scale-invariance relate to transference dynamics in the clinical case of a middle-aged, divorced mother of two named Sue. One day, this ordinarily punctual patient forgot to turn on the light in the waiting room. Sue was left waiting until, upon a hunch, her therapist opened the door. As the two sat down, Marks-Tarlow inquired whether Sue was experiencing "invisibility" issues in a slightly ironic tone. Sue responded that while in the waiting room she had been musing upon a dream from the night before where she struggled mightily to catch the eye of her boss: a glass wall separated the two of them, and despite frantically waving in his direction and the boss turning toward her, he seemed to look "right through" Sue. As therapist and patient dug deeper into this issue of invisibility, they uncovered layer after layer of self-similar issues. Sue was the unseen child of a narcissistic mother and later the unseen wife of a narcissistic husband. Then, for decades following her divorce, her primary identity had rested lovingly upon caretaking her children. But her children were now older and recently "flown the nest," no longer needing her in the same way.

Sue's invisibility incident fanned out to include her boss, her children, her own sense of self, as well as transference dynamics with her therapist. Here we see the operation of scale-invariance in the way a core issue extends from a tiny scale—forgetting to flip a light switch—through the intermediate scale of a night's dream—to the life-long scale of personal identity across the patient's lifespan. Meanwhile, the here-and-now enactment within transference dynamics facilitated the uncovering of multiple levels of meaning, such that invisibility became the central metaphor illuminating the way forward for the duration of Sue's psychotherapy.

The case of Sue illustrates how clinical intuition dovetails with fractal dynamics. Marks-Tarlow (2008) initially hesitated to mention Sue's act of omission for fear of shaming her, since this patient was ordinarily perfectly on time and impeccably quaffed. It was also unusual for this therapist to begin a session, yet Marks-Tarlow sensed the significance of the moment, intuiting that Sue's instinct would be to quickly move on to hide any imperfections. The choice to speak out illustrates what she refers

to as *fractal consciousness* (2008, 2011, 2020): the capacity to intuitively detect patterns of the whole within brief slivers of relational experience.

Fractal consciousness may represent the essence of all intuitive response, whether of the ordinary or extraordinary variety, which may include “uncanny” experiences in the therapy setting and everyday life. Clinical intuition can be understood as an implicit, spontaneous, right-brain dominant mode of open awareness (see McGilchrist, 2009; Schore, 2012; Shapiro & Marks-Tarlow, 2021) that facilitates effortless perception of recursively enfolded, self-similar, scale-invariant patterning within ourselves, others, and the world at large. Psychodynamic clinicians are highly skilled at recognizing such implicit dynamics inherent in their patient’s patterns of feeling, thinking, and relating, including the transference-countertransference interplay that facilitates explicit awareness. Through fractal lenses we unconsciously sense the fine texture of experience during clinical interactions, partly by linking patterns in those tiny “now” moments with self-similar patterns surrounding larger events and conceptualizations. Fractal consciousness also underlies our sense of self-identity extended in time, allowing us to gain and retain perspective by linking small- and large-scale self-similar events of our lives into meaningful and cohesive self-narrative.

### Fractal boundary conditions

During the past 100 years, as psychoanalysis has turned more fully toward a two-person perspective, clinical theory has also drawn more heavily upon nonlinear concepts of self-organization and emergence (Seligman, 2005; Shapiro, 2015; Shapiro & Scott, 2018). Nonlinear models wreak havoc on traditional notions of boundaries. In recent writings, the authors presented a fractal epistemology framework (Marks-Tarlow et al., 2020) for understanding the complex operation of psychological boundaries, including their paradoxical features of simultaneously separating and uniting adjacent domains.

Whereas the boundaries of human-made objects, like cups and tables, are clean and easily resolvable, the boundaries of fractal objects are rough, ambiguous, and infinitely deep. In *Descartes’ Error*, Antonio Damasio (1994) points out the fallacy of trying to draw clean boundaries to separate mind from body. Fractal boundaries capture the natural complexity of interpersonal edges, including semi-permeability between self-other, brain-mind, and inner-outer realms. One important feature of fractal boundaries highly relevant to clinical practice is the property of *observer dependence*, an idea anticipated by Mayer (2002, p. 97): “The subtlety of what we observe depends on the nature of the instrument through which we look.” In contrast to computer generated fractals, which have infinite depth, the edges of physical fractals existing in nature are finitely bounded by conditions of the material world. Yet, much like the computer-generated fractals, psychological boundaries between people remain functionally unbounded. As clinicians, we understand their potentially infinite depth through this simple, intuitive principle: *the closer we look at someone, the more there is to see*.

The same principle applies as readily to our relationship with ourselves as to our relationships with others. The same disorder will manifest differently in different patients and within different patient-therapist dyads (Shapiro, 2018). In therapy as in science, *how* we look influences *what* we see, rendering transference and countertransference inevitable. Whether consciously or unconsciously registered, the detection of self-similar patterns may extend from intuition’s more ordinary variety, based

on physical presence and concrete sensory experiences (*local-interactive channels*), to *extraordinary knowing*, where valid information becomes available through extra-sensory nonlocal-participatory sharing (Shapiro, 2020; Shapiro & Marks-Tarlow, 2021).

### **“Uncanny” information sharing**

The topic of extra-sensory information sharing at a distance, whether in space or across time, has been a subject of great interest to psychoanalysts. Many founding figures of psychoanalysis including Freud, Jung, Ferenczi, Fodor, and Ehrenwald reported instances of apparent *psi* phenomena<sup>1</sup> such as telepathy, precognition, and synchronicity in the past century of clinical work (Deveraux, 1953). Freud remained fascinated with the observations of telepathic “thought transference” throughout his career and argued for rigorous observational data to document it. He proposed an early model of telepathy as a form of unconscious communication at the threshold between the repressed and consciously accessible information (1921/1975). Using only a handful of cases, Freud was able to show that the manifest content of telepathically obtained information may not be veridical but instead follows the same processes of the dynamic unconscious that operate on manifest dream content.

The Kleinian concept of projective identification (Ogden, 1977) carried much of the explanatory weight for this issue in the early twentieth century. Theoretical innovation has moved beyond this framework, as addressed by the “intersubjective turn” in psychoanalysis (Stolorow et al., 1994) until at present virtually the entire field is grappling with the importance of unconscious participation. Interpersonal framings emphasize interaction but this sustains a separate-subject epistemology. The contemporary emphasis on field theory, both in Relational and Post-Bionian schools, represents a response to the paradox of separate players who at times appear without separate boundaries, which applies to instances both of ordinary and extraordinary knowing. Donnel Stern’s (2015) emphasis on emergence within the interpersonal field represents one important attempt to explain unconscious relational participation and sharing. However, the field metaphor itself is limiting because it suggests a physical medium of *information exchange*, which cannot hold in nonlocal knowing (Shapiro & Marks-Tarlow, 2021). We suggest that the model of *information sharing* is a better way to conceive these nonlocal phenomena.<sup>2</sup> Here we go beyond the traditional psychoanalytic use of the term “information”—as representation and presentation—to a more global meaning including psychophysical dimensions. Within

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<sup>1</sup>*Psi* or psychophysical phenomena relate to direct access to veridical information about objective or subjective events. It includes extra-sensory perception, (ESP) including telepathy, clairvoyance/remote awareness, and precognition; and direct intentionality, including psychokinesis (PK) and retrocausality. They are considered to be the subject of *parapsychology*, a term introduced by J. B. Rhine in 1937. More recently, Princeton physicists Robert Jahn and Brenda Dunne (2011) categorized psychophysical phenomena in informational terms, differentiating between *information extraction* (ESP) and *information insertion* (PK).

<sup>2</sup>Nonlocality refers to spacetime-independent correlations in entangled quantum systems, where one part of the system is instantaneously affected by the measurement of another part, irrespective of the physical distance between them. This violation of locality was the subject of Einstein-Podolsky-Rosen (EPR) paper, which referred to nonlocal effects as “spooky action at a distance.” Multiple experimental verifications have since demonstrated that our universe is fundamentally nonlocal, and entanglement can occur on molecular scale; however, it cannot be used to transmit information at superluminal speeds (Gisin, 2009).



quantum physics information appears to be more primary than either matter or energy, constituting a *prime substrate* out of which all else emerges (Bohm, 1990).

Hand-in-hand with quantum ideas, the introduction of nonlinear dynamical thinking into the field of psychoanalysis represents further progress in this ontological and epistemological discussion among psychoanalysts (e.g., Ghent, 2002; Spruiell, 1993; Thelen, 2005). By offering a fractal epistemology, we extend the inherently paradoxical framework of the microscopic world into the macroscopic realm of lived experience. To model how subjectivities can be conceived simultaneously as autonomous and interpenetrating represents a significant paradigm shift in our field. Fractal edges are dynamic shifting with the scale and the perspective of the observer, an understanding consistent with the postmodern emphasis on the relativity of observer and importance of context within psychoanalysis (Coburn, 2002).

Fractal edges that simultaneously separate and connect intertwined subjectivities within the intersubjective matrix may also help explain the nature of “uncanny” information sharing between therapist and patient so frequently experienced within the analytic literature (a non-exhaustive list includes Bass, 2001; de Peyer, 2016; Eshel, 2006; Farber, 2017; Kantrowitz, 2001; Mayer, 2007; Tennes, 2007). We introduce the next case vignette (from Marks-Tarlow (in print) written in first person form for ease of presentation) to exemplify how recursive relational and intergenerational patterns can combine with “uncanny” knowing.

### The case of Abe

*Abe is a young attorney in his early 30s who grew up in a tumultuous household with a billionaire father and much younger mother, 30 years his junior. Abe’s parents fought continually, as his father openly had multiple affairs. When Abe was in early grade school, his mother left his father but became so distraught as to take heavily to drink, becoming unpredictably emotionally and physically abusive. Meanwhile Abe’s father pretended the abuse wasn’t happening.*

*Abe began depth analysis nearly five years ago, as he transitioned from law school to work as a licensed attorney. He sought treatment out of distress surrounding a romance with a fellow law student. She had ruthlessly pursued him, even moving into Abe’s apartment without his consent. Psychotherapy addressed Abe’s violated boundaries again and again, but he remained too scared of his girlfriend’s temper and irrational, unpredictable style. As with his mother previously, Abe easily froze up, feeling unable to speak out or hold his ground. Things got so out of hand one evening, that his girlfriend attacked him physically outside a restaurant, to the point of blood running profusely down his white shirt. An alarmed bystander called the police; Abe’s girlfriend was arrested and charged with battery, and Abe hit a breaking point—he finally broke off their relationship.*

*Two years later, Abe pursued a job at a larger firm and immediately felt drawn to a fellow attorney named Stephanie. The two began talking more and more over time, often for hours on end. Despite their mutual attraction, neither dared to broach their relational landscape. One day during psychotherapy, Abe described a recent encounter of talking with Stephanie until 2:30 a.m. in the office without food or break.*

*Therapist: “Weren’t you hungry?”*

*Abe: “I didn’t think about it.”*

*Therapist: “Why didn’t you suggest continuing outside the office where you might get something to eat?”*

*Abe: “We were too engrossed; it didn’t come up.”*

*As Abe responded, a clear image formed itself in my imagination—an ostrich with its head in the sand. To me, the ostrich perfectly epitomized what was transpiring between the two young people, including how neither was addressing the emotional truth of these marathon encounters. I shared the image with Abe.*

*Without a beat, he responded, “That’s exactly what my father used to say about his own intimacy struggles with women—that he’s an ostrich!”*

*This proved an incredibly powerful clinical moment: for me, because the possibility of unconscious information sharing feels daunting and thrilling; for Abe, because the ostrich image hit his central dynamic on the head, capturing an intergenerational trend he inherited from his father, which until that moment had not been consciously formulated.*

*This was a change moment for Abe. That very day he garnered courage to ask Stephanie on a dinner date outside the office. They addressed complications of an office romance, and even transitioned toward physical intimacy. Stephanie shared feelings of interest and attraction to Abe but clarified she wanted him to take the lead. In weeks to follow, Abe continued to counteract his inner passivity. Meanwhile, psychotherapy fleshed out the ostrich as a guiding metaphor for hiding his head in the sand of an emotional universe. Only retrospectively did we both understand the remarkable, synchronistic timing of what had happened—merely 3 weeks after the ostrich appeared, Abe’s law office dispersed in lockdown mode due to the coronavirus pandemic. Several months later, while still sheltering in place, Stephanie left the firm. Had Abe not asked her out precisely when he did, their chances for an intimate relationship may have been postponed indefinitely.*

## **Paradoxical fractal boundaries**

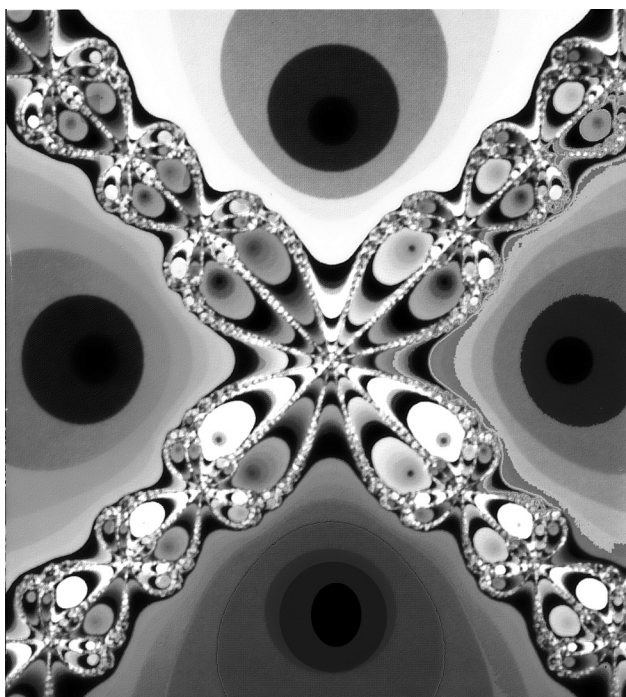
The case of Abe reveals self-similar, relational patterns in at least two ways, through the repetition of physical abuse by women who silenced, disgraced, and disregarded him (first mother, then a girlfriend); and through intergenerational patterns of excessive compliance and timidity with romantic partners (Abe’s father was so nonassertive as to squander much of his wealth on expensive houses for scores of young, opportunistic lovers). When Abe’s psychotherapist imagined an ostrich with its head in the sand, the appearance of unconscious information sharing seemed quite magical, by occurring in the first place and by facilitating immediate change in his self-self and self-other relations. The ostrich was both a central metaphor and organizing principle for Abe: it characterized his childhood traumas that brought him into therapy initially, and became currently activated by his romantic interest. We speculate that the more emotionally charged the issue is and the broader its matrix of self-similar resonances, both within and outside the therapeutic dyad, the more likely unconscious information sharing is to occur, and the greater its potential to usher in change. This assertion aligns with Koole and Tschacher’s (2016) interpersonal synchrony model; these researchers posit that the essence of the therapeutic alliance lies in coupled brain dynamics by which therapist and patient synchronize their minds, bodies, and brains at multiple, non-conscious levels of vocal pitch, bodily, movements and even physiological processes: “Inter-brain coupling may provide patient and therapist with access to another’s



internal states, which facilitates common understanding and emotional sharing. Over time, these interpersonal exchanges may improve patients' emotion-regulatory capacities and related therapeutic outcomes" (from the abstract).

Through unconscious sharing during charged moments, a fractal epistemology model illustrates how paradoxes presented by interpersonal boundaries—conceived as simultaneously open and closed at the edges—extend a postmodern understanding of clinical interaction. Consider [Figure 1](#) depicting Newton's method of approximation for finding multiple solutions to a quartic (4th root) equation. A close look at this image allows one to concretely visualize the fully interpenetrating nature of fractal boundaries. Four correct solutions exist to the mathematical equation pictured, represented by four dark circles at the center of four separate quadrants. While these solutions appear squarely *inside* each quadrant, the entire array is simultaneously repeated an endless number of times within fractal edges both separating and connecting each quadrant. All four quadrants interpenetrate within the very boundaries that separate them, resulting in the pattern of the whole reappearing again and again within their fractal edges.

The fractal epistemology model extends beyond paradoxical intersubjective dynamics to help us understand how an objective level of reality gets implicated. As a technique for solving equations, Newton's method of approximation involves mathematical intuition—one applies the formula by beginning with an "educated guess". If the guess is a good one, a correct solution is eventually found. If the guess is a bad one, one falls into the rabbit hole of a fractal boundary that rapidly oscillates through all possible solutions, yet never lands



**Figure 1.** Newton's method of approximation. (From Marks-Tarlow, 2008, p. 243. © 2008. Terry Marks-Tarlow. All Rights Reserved. Reproduced with permission).

upon any single one. Implications are striking. First, the parallel with clinical intuition is obvious. Accurate clinical guesses that resonate with a patient may be received “cleanly” and prove useful; poor clinical hunches get caught up in messy boundary negotiations of transference-countertransference dynamics, where it becomes impossible to find truth among the ambiguities, defenses, and projections.

Second, the interpenetration of separate domains across self-similar boundaries applies broadly to the intersection of mathematical intuition with *veridical reality* (wider reality that enables empirical validation of hypothetical solutions). The implicit representation of the entire solution space becomes evident in the spaces between, at the boundary zones, which suggests something very special about transition zones in nature.

The instances of “uncanny” sharing may be one of those boundary zones, since so much of interpersonal communication occurs automatically at unconscious, implicit levels (Schoore, 2008). Intuitive knowing and specifically *nonlocal intuition* relies on the irreducible complexity of the fractal boundary zones, where self-similar patterns can be seen to bridge, rather than separate, the subjectivities in question. The authors suggest such bridging may become apparent within the concept of *implicit relational knowing* (Lyons-Ruth et al., 1998; Stern et al., 1998), which can occur locally, utilizing the sensory milieu of here-and-now moments, as well as across time or space in cases of nonlocal-participatory knowing and synchronistic events (Shapiro & Marks-Tarlow, 2021).

### Shifting implicit focus from the center to the edges

When engaged in clinical work, whether in service of symptom reduction or deep transformation, a fractal epistemology suggests that *the most important action appears at the boundary zones, not in the apparent focus of complaint*. As any experienced clinician will attest, it is the process of presenting an issue and its implicit context, rather than the explicit elaboration of symptomatic complaints, that merits careful therapeutic exploration. The best way to work with traumatic affects is at the edges of their window of tolerance (Siegel, 1999), which parallels edge-of-chaos dynamics (see Marks-Tarlow, 2012; Schoore, 2012; Shapiro, 2015). Transition points into and out of various affective and self-states lend the best opportunities to glimpse wholistic process patterns, such as when exploring symbolic content at the edges of conscious awareness or during dream work. This same rule of thumb applies to the relational perspective of addressing transference-countertransference enactments, where relevant developmental templates constantly self-organize in the fluid here-and-now dynamics of the therapeutic interaction, rather than interpreting a retrospective event or dealing with homework, as commonly occurs in cognitive-behavioral therapy.

By acknowledging both local and nonlocal dimensions of intuitive knowing and “uncanny” experiences, our separateness as patient’s/therapist’s subjective selves is both real and illusory. We are alone within our subjectivities and yet inseparable from others, bringing to mind Donald Winnicott’s timeless quote: “There is no such thing as a baby, there is a baby and someone.” What is more, if boundary conditions between what is inside versus outside of subjective experience are fully interpenetrating at their edges, we can look inside to discover meaningful patterns “out there” in external reality, and vice versa; *what occurs within us bears fractal correspondence to what is happening in a wider world* because the inner and outer domains are in a self-similar relationship with each other.

## Interobjectivity and synchronicity

Within a fractal epistemology, outer and inner events are both separated and connected by fractal boundaries. When synchronicity occurs clinically, an event in the outside world correlates meaningfully with shared understanding between therapist and patient. When two or more people attempt to use shared subjective understanding to make sense of objective events, they operate in what Marks-Tarlow (2008) refers to as an *interobjective zone*, our collective striving to define objective reality based on its intersubjective representations. Infinite regress possible at the edges of two people's perspectives (or fractal boundaries) has led some post-modern thinkers to attempt do away with an objective level of external reality. They reason as follows: because we can never escape the bounds of our own subjectivity, we can never definitively capture the nature of a reality existing outside of us.

A fractal epistemology, however, allows us to depict how external reality can be approached *transsubjectively* (extending beyond subjective realms), through the self-similar, scale-invariant informational patterns bridging objective and intersubjective domains. According to this view, fractal dimensions of the parts (individual brain organization and subjective experience) reflect self-similar patterns of the whole (the physical world and other subjectivities within it), allowing for meaningful correlations between subjective and objective events. In utilizing the irreducible complexity of observer-dependent, fuzzy fractal boundaries, we can collectively grope toward interobjective knowing of "what is real."

While "uncanny" nonlocal knowing points to fluid, interpenetrating boundaries between seemingly separate subjectivities, *interobjectivity* within a fractal model of clinical work helps to reveal how synchronicity may crop up at relational edges between people and the world at large. As Jung and others (Connolly, 2015) have observed, synchronicity is especially likely to emerge during highly emotionally charged moments, such as within the analytic setting. Because highly charged moments occur in far from equilibrium conditions, i.e., close to the edge of chaos and near to transition points, they are more likely to reveal fractal seams—not only between self-and-other, but also between self-and-world at large. We next offer a detailed clinical case involving synchronicity of one of the authors (Marks-Tarlow; written in first-person form for ease of presentation). Our intention is to demonstrate entangled, interpenetrating boundaries between inner-outer and self-other realms within clinical work.

## Case of Samantha

*While preparing to co-write this paper, one morning, I queried internally, "Should we supply our own clinical examples or draw upon cases cited by other authors?" I next reassured myself, "Perhaps my own cases will offer up what we need." Within two hours of this internal exchange, synchronicities did indeed emerge in my office.*

*From the beginning of our work together, sessions with Sam (Samantha's preferred nickname), a single woman in her early 30s, were filled with synchronistic resonances, mutual identifications, and twinship countertransference. We both grew up idealizing our fathers and basking as their favorite child, while devaluing our mothers until after their deaths. Alongside incredible similarities came significant differences. My father was forthcoming about*

everything wrong with his marriage, encouraging me both explicitly and implicitly to run wild and free, while Sam's father presented himself, his marriage, and his family as perfect to the outside world, unmatched by anyone. This left Sam easily hung up by the faults and flaws existing in any potential mate. She never had a significant romance or lasting boyfriend; she was isolated by judgmental attitudes toward others and felt trapped by her rigid routines. From my perspective, a major thrust of our psychotherapy was to help Sam break open her closed boundaries while relaxing her needs to predict and control, and high internal defensiveness.

During the session in question, Sam had just come from a job interview. She reported having the opposite experience from expected. I seized upon the moment to expound upon the virtues of not trying to predict, asserting that not having to know what will happen next preserves true openness to discovering what can unfold spontaneously. I finished my mini-diatribes by declaring, "Sometimes what life brings winds up is even better than what our fantasies produce."

Sam responded, "You're going to love this story!"

A few days earlier, Sam had been sitting in a coffee shop, listening to an audio book written by her favorite female comedian, utterly captivated by her humorous style while heavily identifying with her self-description. She happened to glance through the window, and who did she see walking outside the cafe but the very author whose memoir she was reading. Sam jumped up, ran outside, and held her phone up to the author, leaving both of them astonished and delighted by the coincidence at hand—a clear case of life indeed being better than fantasy!

Following Sam's story, I introduced the word "synchronicity," explaining its meaning as shared coincidence. I further explained Jung's understanding that synchronicities arise most often when people become "stuck," having reached an inner impasse. Sam left the session intrigued by the concept. Several hours later she emailed me, having just read that the author had taken the very same trip by herself to Nicaragua over Christmas holidays that Sam had taken only five months before. Her trip represented a breakthrough, emblematic of newfound freedom to feel whole, both by and with herself.

While less of a therapeutic change point than in the case of Abe, the authors highlight these moments in the case of Samantha because of multiply embedded levels of synchronicity. The synchronicities in Sam's case symbolized difficult changes she struggled with while being clearly connected to her therapist's countertransference issues. The fact that the synchronicities occurred *outside* the office proved significant and self-similar—Sam went on to break out of her rigid routines by buying a condominium and finding a companion to assuage her loneliness. Yet, due to financial hardship, she also drifted away from therapy during the coronavirus pandemic. By contrast, the synchronistic timing of the ostrich's emergence in Abe's case proved to be not only life-changing but also deeply significant thereafter, both within his life and psychotherapy. Abe initiated a healthy new romance that may prove to be lifelong and could not have happened otherwise; meanwhile, the ostrich image has become an integral part of his inner world, continually prodding him to dig deeply into his psyche and express himself fully to others.

Roxburgh et al.'s (2016) survey of 226 clinicians reported that 44% had synchronistic experiences with patients. Beitman and Shaw (2009) suggest synchronicities are associated with periods of heightened emotional intensity and major life transitions, such as births, deaths and marriage. Hopcke (2009) and Ullman (2003) assert synchronicities arise when patients need to maintain a sense of connectedness to the therapist. These hypotheses all

surround high arousal boundary conditions in need of adjustment. As just demonstrated, it is precisely at the boundaries that fractal patterns surrounding the whole become evident. The shared occurrence of synchronicities is a *transsubjective event*, implicating interpersonal patterns that not only extend into the outside world, but also tap into what psychoanalyst Samuel Gerson (2004) refers to as the “relational unconscious.”

## Synchronicity and acausal connection

Synchronicity is evidence for *a-causality*, or *meaningful correlations* in nature, here conceived as the spontaneous, self-organizing tapestry of self-similar interobjective themes, such that subjective parts continually fill in the pattern of the whole surrounding and pervading us. We use the term *correlations* rather than “coincidences” to emphasize a parallel to information sharing (rather than information exchange) in Quantum and macroscopically entangled systems that may underlie “uncanny” extraordinary knowing.<sup>3</sup>

Carl Jung (1952/1973) understood “synchronicity” to arise from the *Unus Mundus* (single world), where inner and outer events are conceived to be two sides of the same psychophysical reality. Similarly, David Bohm (1990) suggested a shared substrate of *active information* that underlies both matter and mind phenomena. Accordingly, brain/mind can be seen as a unified quantum/classical system, transforming the apparent mind/matter duality into a unitary psychophysical construct. Jung (1961/1989) famously described synchronicities in his own life, such as an argument with Freud concerning whether a transpersonal realm exists, including paranormal phenomena. While arguing about the validity of these ideas for psychoanalysis, an odd sensation first arose in Jung’s gut, followed by a loud noise emanating from Freud’s bookcase. Jung declared the paranormal quality of the event; Freud disagreed; Jung predicted it would happen again, which it did. The matter was never discussed further.

Unlike telepathy and distant knowing, which can be understood in purely relational terms, synchronicity cannot. Meaningful correlations between subjective and objective events, as in Freud/Jung argument, implicate *both* the outside world and subjective reality. Many of us unconsciously hold a model of inner-outer borders that presumes a rigid Cartesian split between material *Res extensa* of the body/brain and immaterial *Res cogitans* of the mind. This contributes both to mind/brain dichotomy and to a perceived separation between “hard” sciences and “soft” sciences, such as physics and neuroscience versus psychology. By contrast, semi-permeable boundaries between subjective and objective events parallel the fundamental unity of the brain/mind system, establishing a joint *psycho-physical domain*. Here, mental and physical processes interpenetrate, at times producing “uncanny” phenomena eschewed by reductive and clinical sciences predicated upon Cartesian dualism. One invaluable contribution a fractal epistemology can make involves a mathematically rigorous way to model semi-permeable boundaries between self and world, bridging the Cartesian chasm with an *interobjective* informational domain.

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<sup>3</sup>Both quantum laws and special relativity forbid any usable information transmission via nonlocal routes. Entanglement is best conceptualized not as a transmitting/receiving process but as *nonlocal correlations* between discrete states of an entangled system, which transcend local-interactive dynamics in space-time. While in the classical macro-world such quantum properties have been largely ignored, it is becoming increasingly clear that a wide range of biological systems, including synaptic transmission, utilize quantum processes. The matter/mind distinction is only relevant in the classical macro-world, while informational processes span the quantum-classical boundary and underlie both neural network dynamics and experiential phenomenology of subjective experience.



Several contemporary theorists (Cambray, 2009; Combs & Holland, 1990; Hocoy, 2012) expand upon Jung's ideas about an extended psychophysical reality, where mind and matter are a-causally related through meaning. They examine synchronicity through the lens of contemporary nonlinear science and complexity theory, conceptualizing it as self-organizing, emergent order near the edges of chaos. Our fractal epistemology model (Marks-Tarlow et al., 2020) expands this position by demonstrating how fractal edges emerge in the space between spatiotemporal realms. Just as intersubjectivity and the “uncanny” are born of porous boundaries between self-and-other, interobjectivity and synchronicity implicates porous boundaries between self-and-world, based upon a common informational foundation beneath the level of classical reality. Here, fractal boundaries arise from structural coupling between self and its adaptive environment, such that self-similar patterns become evident at the interface between subjective and objective levels of reality.

Through the self-similarity of the whole manifested in the parts, synchronicity and “uncanny” experiences allow us to glimpse a universal meta-pattern, the *prime substrate* that underlies and permeates joint physical/psychological reality, inner and outer realms, mind and matter. Whether arising as a seemingly random choice, chance encounter, or serendipitous sequence of events, self-similar patterns often lurk underneath, governed by the same underlying dynamical fractal patterns. Such deep pattern formation not only fits well with the notion of a relational unconscious in clinical theory but also applies well to the fundamental informational nature of physical reality (Jahn & Dunne, 2011).

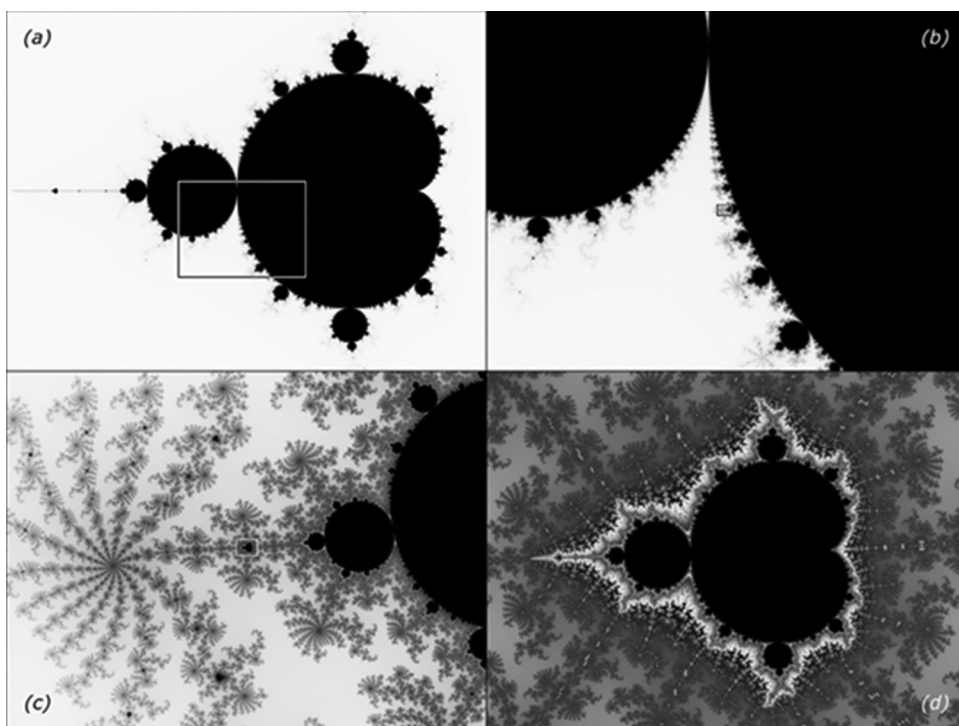
### Acausal connection

With fractal networks, the pattern of the whole is present in the pattern of the parts, such that the whole can never be removed from the parts. This implies that complex models of relatedness must necessarily include the notion of systemic emergence and acausal connection that represent a fractal overarching pattern among distinct but interconnected parts. Fractal elements connect with one another through resonances of self-similar symmetry whose meta-pattern of the prime substrate exists apart from any particular time or size scale. In this way, fractal patterning is both *immanent* (existing within various size or time scales) and *transcendent* (existing apart from any particular size or time scale).

When applied to psychological space, semi-isolated selves may show correlations with each other or their wider informational reality nonlocally. They may share information in a nonlocal-participatory mode rather than through local-interactive “information exchange.” When acausal connection takes the form of synchronicity, the identity of the whole serves to unify inner and outer worlds, mind and matter. Due to full interpenetration between realms, when two seemingly unconnected events happen simultaneously, we perceive them to be a-causally connected to one another through hidden self-similar channels of meaning.

Consider the Mandelbrot set, granddaddy of all fractals (Figure 2). Here we can see how self-similar representations of the whole keep recurring when the image is magnified within various areas of this mathematical set. Because fractal patterns occur not only in physical but also in psychological space, as well as across time, this diagram reveals how a synchronistic universe might operate, as islands of local order are interconnected and





**Figure 2.** The Mandelbrot set pictured here is endlessly deep and believed to be the most complex mathematical object in the universe. Black zones represent areas where the equation settles to a finite number, with white zones representing places where it runs off to infinity. The fractal edge consists of the dynamic boundary zone between these two areas, depicting endless complexity in the spaces between ordered and chaotic realms. In each of four quadrants (a, b, c, & d), self-similar patterns re-appear unpredictably over and over again, as small areas of the set are magnified, such that the shape of the whole is represented within the shape of the parts. (From Marks-Tarlow, 2008, p. 219. © 2008. Terry Marks-Tarlow. All Rights Reserved. Reproduced with permission).

reappear beneath broad expanses of apparent disorder.<sup>4</sup> We could picture psychobiological reality as a vast, 4-dimensional Mandelbrot set, where conscious subjectivities form an inseparable part of the reality they experience, and the iterations of matter/mind informational processes unfold in self-similar ways across spatial and temporal domains.

## Conclusion

This paper examined “uncanny” synchronistic information sharing across seemingly separate subjectivities across expanses in time and/or distances in space. A fractal epistemology suggests porous, observer-dependent psychophysical boundaries that simultaneously separate and connect spaces between self-and-other and self-and-world. The prime informational substrate of physical and psychological reality manifests as a fractal meta-pattern that permeates self-similar, scale-invariant

<sup>4</sup>For a more dynamic experience of a Mandelbrot set zoom, go to YouTube, where there are numerous examples, e.g., <https://www.youtube.com/watch?v=Ujvy-DEA-UM>.

psychophysical threads, from micro- and macro-domains of the physical world to subjective and intersubjective processes of mind.

The great Nobel-prize winning physicist, Richard Feynman (1965/2017) suggested that “Nature uses only the longest threads to weave her patterns, so that each small piece of her fabric reveals the organization of the entire tapestry” (p. 28). Our subjective experience stretches out into the world, only to fold upon itself again. Physical and psychological events unfold and re-fold recursively upon themselves, revealing self-similar patterns at multiple levels of organization.

Within psychotherapy, attention to a fractal epistemology opens new and deeper realms between seemingly separate subjectivities in the analytic space. In addition to verbal/nonverbal local-interactive information exchange that enables the intersubjective dialogue, infinitely deep fractal boundaries underlie nonlocal-participatory *information sharing*, both between the participants and within their wider physical reality. While fractal consciousness facilitates the operation of clinical intuition, fractal edges of the psyche enable the melding of two subjectivities within a dynamic, transjective interplay—intersubjectively with one another and interobjectively with the world at large.

Due to the self-similar, fully interpenetrating quality of fractal seams, people are best positioned to experience the deep meta-patterns of reality at the edges of chaos, in far-from-equilibrium arousal states. These holistic qualities may manifest in “uncanny” occurrences that involve psychophysical phenomena such as telepathic, clairvoyant, precognitive, and synchronistic events. Far from being “non-physical” or “unscientific,” these events may herald the emergence of a new nonreductive paradigm in natural and clinical sciences (Shapiro & Scott, 2019), which transcends the Cartesian dualism of mind versus material reality and puts subjective and objective phenomena on an equal informational ground.

As therapists, we believe it is invaluable to be mindful of intuitive knowing and “uncanny” experiences, especially when patients ripe for change hover at high arousal levels, at the edge of chaos. Precisely because as therapists we work with people in crisis and hone our use of fractal consciousness in clinical settings, we are uniquely positioned to glimpse underlying wholeness beneath surface fragmentation of physical and psychological reality.

Intuitive knowing and “uncanny” experiences remind us that we live in an *Unus Mundus* where subjective worlds of meaning continually interpenetrate with each other and with their wider informational reality to form a tapestry of self-similar connections across apparent divides of inner/outer, mind/matter, psychological/physical, and micro/macro domains. The relational paradigm can now expand into the physiological reality of body/brain and wider material world to facilitate a two-way dialogue with our patients. Our subjectivities form distinct, semi-isolated selves that only appear separate from each other and the world at large. We are all bound by the web of sensory local-interactive connections that underlie empathic and implicit relational knowing, and by extrasensory nonlocal-participatory sharing that manifests in “uncanny” and synchronistic experiences.

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