Chapter 2
Fractal Geometry as a Bridge between Realms

Terry Marks-Tarlow
Private Practice, USA

ABSTRACT

This chapter describes fractal geometry as a bridge between the imaginary and the real, mind and matter, conscious and the unconscious. Fractals are multidimensional objects with self-similar detail across size and/or time scales. Jung conceived of number as the most primitive archetype of order, serving to link observers with the observed. Whereas Jung focused upon natural numbers as the foundation for order that is already conscious in the observer, I offer up the fractal geometry as the underpinnings for a dynamic unconscious destined never to become fully conscious. Throughout nature, fractals model the complex, recursively branching structures of self-organizing systems. When they serve at the edges of open systems, fractal boundaries articulate a paradoxical zone that simultaneously separates as it connects. When modeled by Spencer-Brown's mathematical notation, full interpenetration between inside and outside edges translates to a distinction that leads to no distinction. By occupying the infinitely deep "space between" dimensions and levels of existence, fractal boundaries contribute to the notion of intersubjectivity, where self and other become most entwined. They also exemplify reentry dynamics of Varela's autonomous systems, plus Hofstadter's ever-elusive "tangled hierarchy" between brain and mind.

INTRODUCTION

Any distinction is wholly eyemaginary, an act of creation, an act of the imagination. Each proof that convinces is a proof that uses imaginary values to reason to a true answer… Mathematics is about the consequence of making a distinction, as if there were such a thing as a distinction. It is all imaginary and only the imaginary is real!
— Louis Kauffman

The capacity to make distinctions between *this* and *that* lies at the base of human consciousness. Throughout the lifespan a key distinction involves discerning inner from outer processes. That is, we must distinguish products of imagination, memory

and dreams from outside objects, people and events in the environment. British psychoanalyst Donald Winnicott (1974) introduces the significance of childhood play for creating/discovering inner versus outer realms of experience, by speculating that symbol, self and culture all emerge in the "transitional space" between mother and child. Likewise Australian psychiatrist Russell Meares (2006) details developmental processes by which young children shuttle back and forth between incorporating outside objects into imaginary play, and breaking away from play to attend to goings on in the immediate environment. Through this shuttling of attention an ever moving boundary is established between the interior dialogue of a personal self and the exterior dialogue of a social self. Figure 1 illustrates the play of imagination as it exists between inner and outer realms.

Whereas children's inner focus dictates the perspective of the observer, their outer focus illuminates objects and territory under observation. We might assume clear distinctions exist between observers and observed, but this is not necessarily the case. When a schizophrenic can't tell the difference between an object hallucinated and one that exists in reality, fuzzy boundaries between

Figure 1. The play of imagination as it exists between inner and outer realms (Courtesy of the author)

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