

2003 Eleanor Clarke Slagle Lecture

## Chaotic Occupational Therapy: Collective Wisdom for a Complex Profession

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### The Telling of a Trip<sup>1</sup>

*Let's go on a trip with nary a dip, until we reach the tip of 2003.*

*The year of the she.*

*Don't let yourself flip and be a good pip, while I let myself quip. All of it free.*

*The year of the three. Habits of the mind, habits of the heart, and habits of the art.*

*The habit of three. Freedom within art, using daily actions of mind and heart.*

*Just do your part.*

*Engage in thee.*

In her Eleanor Clarke Slagle lecture, Brunyate (1957) quotes from Ms. Slagle's 1920 Presidential Address, stating, "this happens to be my turn" (p. 195). And so it is. I thank you for the honor. Sincere appreciation is extended to those among you, especially the American Occupational Therapy Foundation (AOTF), who have helped to raise this scholar, as well as to my dear friends and beloved family. As Cokie Roberts (2003) suggested in her opening ceremony address and in her book (1998), we are our mothers' daughters. In recognition of her supposition, please acknowledge my mother Harriet Schmudde Brasic Bound Pewitt. This telling is dedicated to the memories of Paula Flanders Amphlett and Robert Bing.

In order to get real, you have to be surreal.<sup>2</sup> Time is relative and wrinkled (Hawking, 1993). Nearly 100 years ago our foremothers formed the National Society for the Promotion of Occupational Therapy, the precursor of the American Occupational Therapy Association (AOTA). Ten years ago Florence Clark (1993) presented her Eleanor Clarke Slagle lecture (henceforth referred to as a Slagle), using "the genre of interpretative occupational science" that had implications for occupational therapy (p. 1067). It is only fitting that I take from something nearly 100 years ago, and from something 10 years ago, and using a space-time singularity—better known as a wormhole or a wrinkle in time (L'Engle, 1962)—wrinkle or fold them into equivalent and corresponding forms as a profession, occupational therapy,

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Originally published 2003 in *American Journal of Occupational Therapy*, 57, 609–624. Please note that there was no Eleanor Clarke Slagle Lecture in 2002.

and as a discipline, occupational science.<sup>3</sup> Yet, within the telling of 10 and 100, I have a wrinkle of my own.

Chaucer referred to “lyfe so short, the craft so long to lerne.” Besides life being too short, occupational therapy is that craft that I have labored to love and learn for 31 years. Just now I am beginning to discern its true self; the authentic occupational therapy of Yerxa’s (1966) Slagle—a craft so long to learn.

Per Ursula K. LeGuin (2000), I shall do a telling—to perform, to act, to tell—hoping to dispel the surreal separation of intellect and passion presumed by Western civilization since the time of Descartes (1596–1650) based upon Plato (428–347 B.C.) and Socrates (469–399 B.C.). As the communications theorist Marshall McLuhan (1911–1980) wrote, “the medium is the message” (McLuhan & Fiore, 2001) and as occupational therapy plays forth,<sup>4</sup> the medium is the message. Such is true for many levels of meanings in this Slagle lecture as well as most everything in daily life. Chaos theory provides the challenge of finding order, or levels of meanings, within apparent disorder. Since King (1978) in her Slagle stated that doing with meaning promotes individual adaptation, I leave that for you to do, as part of art.

I shall endeavor to practice the craft of occupational therapy today, with a blend of science, heart, and art: having two foci. One is on *herstory* or the pattern that connects. The other focus is on theory, a missing link, the invisible theoretical model, which we have implicitly known, embraced, and envisioned without explicitly knowing, namely, chaotic occupational therapy. I request that you review the emotional experiences you undergo during this telling. Thus, in the end I will challenge you to enact meta-emotion of occupation, an evolving concept based upon occupation, related—in part—to Fine’s (1991) import regarding response of feelings about a situation in her Slagle.

### ***Herstory* and Professional Identity Founded Upon Occupation**

Occupational therapy emerged as a health profession in the 1910s, incorporating the mind, body, and spirit in a holistic approach to health. Unlike other professions, however, we have had a challenge explaining what constituted occupational therapy since its inception (Quiroga, 1995), being what Primeau, Clark, and Pierce (1989) called the “invisible profession.” Let us temper occupation with a simple technical analysis, a tangible treatment of occupation having tassels of terms for the populace. The Tetralogy of Occupation is such a tempering. The Tetralogy of Occupation,<sup>5</sup> which may help ameliorate our tautology<sup>6</sup> concerning occupation, consists of four simple concepts:<sup>7</sup> (a) purposeful activity, (b) activity plus meaning, (c) doing with meaning, with (d) participation in context.

Note that fundamental to the Tetralogy of Occupation is the decision to most appropriately consider occupation as a process, and not a product. Such an action takes exception to our profession’s long-standing tainting tautology when talking about occupation in a dual manner—as a means and as an end. Trombly (1995) discussed occupation in this manner in her Slagle: occupation-as-end or goal and occupation-as-means or change agent. The issue was evident at an occupational therapy research consensus conference (Hasselkus, 2000).

Dual use of the term is confusing to external audiences. Metaphorically speaking, one simply cannot have one's cake and eat it too! Thus, let us give up the cake by eating it, and focus upon occupation as a process, or occupation as means (Rebeiro & Cook, 1999), thereby minimizing the confusion that ambiguous use of the word purveys.

Additionally, being a bit of a wit, rather than reinventing the wheel, I looked to the past or *herstory* to find wheels or word forces of others that well-illustrate, in this manner, occupation as process or occupation for the populace. In presenting a framework for activity as an intervention in her Slagle, Allen (1987) stated that, "Activity actualizes a person's strengths" (p. 573). In her Slagle, Johnson (1973) specifically referred to occupational therapy as a process wherein ". . . man learns to make decisions about the quality and style of life he seeks to achieve and to influence his health" (p. 3).

In the same manner that Christiansen (1999) linked personal self-esteem to the development of personal identity in his Slagle, armed with professional identities created by (a) the Tetralogy of Occupation, (b) knowledge of occupation as process, and (c) the sage words of our foremothers, we have the tools necessary to further enhance our professional self-esteem and related professional identity. Armed accordingly, we shall lift off from the tarmac of timidity and go boldly forth where no occupational therapists, and no occupational scientists, have gone before. Our target is not to take down the axis of evil, but rather, using what Huss (1977) referred to in her Slagle as "a caring touch," to build the axis of good in service to society, consistent with our professional origins in a fourth professional identity of values (i.e., moral roots). Our moral roots are what Reed (1986) called humanism in her Slagle; Bing (1981) called moral treatment<sup>8</sup> in his Slagle; Grady (1995) called active participation in her Slagle; and Wilcock (2000) called occupational justice.

The fundamental worth of these sentiments was well-articulated by Stattel (1956) in her Slagle, ". . . [W]e have been given a wonderful professional heritage of courage and wisdom and as we continue to extend our hand to the benefit of mankind, may we continue to believe and search for further knowledge" (p. 194).

The timeless values of our past provide a solid foundation for the professional identity of occupational therapy in the present and henceforth. In order to move forward, thus, we shall go back for the future.

## **Back for the Future**

In her Slagle, Jantzen (1974) stated that receipt of the Eleanor Clarke Slagle lecture award was established by AOTA in 1954 to honor Ms. Slagle (1876–1942). According to Wegg (1960) in her Slagle, "Ms. Slagle is recognized as a pioneer occupational therapist who established principles of occupational therapy for the advancement of the field" (p. 65). Ms. Slagle did innovative work in habit training, program implementation (Serrett, 1985), and served in leadership roles in AOTA (Meyer, 1937).

In her Slagle, Sokolov (1957) was "awed by the honor of being an Eleanor Clarke Slagle lecturer" (p. 13). In 2002, when I was daunted by this honor, I reverted to my habit training in order to cope. A scholar's habit training includes historical review and immersion in

original literature, so I found myself, for the latter part of 2002, sitting in the archives of the AOTF under the tutelage of Ms. Mary Binderman, librarian extraordinaire!<sup>9</sup> And, as Eleanor Clarke Slagle wrote to William R. Dutton, “You may know that I did not fool away many minutes” (correspondence 1929–1937 of Dutton & Slagle). Sitting in the archives with my white, cotton gloves and sharpened, number-two pencils (graciously provided by Ms. Binderman),<sup>10</sup> I spent many an afternoon reading through the original correspondence of Ms. Slagle.<sup>11</sup>

- First, the lyricism of writings of that era has been lost.
- Second, politics are politics—meaning how you do and do not get along with people to accomplish a goal—whether it is the early 1900s or now, remain constant.
- Third, Eleanor Clarke Slagle, as did many others, believed in occupation as a process and occupational therapy as a service to society.
- Fourth, Eleanor Clarke Slagle believed that a college degree is a desirable prerequisite for occupational therapists (correspondence of Eleanor Clarke Slagle, 1925–1929; The National Society for the Promotion of Occupational Therapy, Annual Meetings, 1917–1924). So, in our current move to postbaccalaureate level entry we have finally caught up to the standards Eleanor Clarke Slagle expected in 1920 and 1934.

Personally, I have no doubts that were Ms. Slagle still with us, she would advocate for education at the doctoral level of entry for occupational therapists. Action toward this goal might be a step towards, what Fiorentino (1975) in her Slagle talked about as “the need to change in order to establish the profession of occupational therapy” (p. 19). I think the clinical doctorate is another step in the development of our profession.<sup>12</sup> I believe that we must move to a doctoral level of entry if we are to remain a viable profession delivering health and human services. Remember Chaucer’s line: “lyfe so short, the craft so long to lerne.”

The fifth and single most profound discovery, for me, was the Standards of the National Society for the Promotion of Occupational Therapy set forth in 1925. These standards, I believe, reflect the craft it has taken me over a quarter of a century to really learn—the art, heart, and science of occupational therapy. Paraphrasing a handwritten note from Dr. Robert Bing in the AOTA archives, these 15 standards or principles were developed by an AOTA committee of physicians, chaired by William R. Dutton, finally presented in 1925 but never officially adopted by AOTA (The National Society for the Promotion of Occupational Therapy. Annual Meetings, 1917–1924). The principles were published in *Occupational Therapy and Rehabilitation*, a precursor of *The American Journal of Occupational Therapy (AJOT)*, in August 1925 as part of a lecture outline on occupational therapy for medical students and physicians (Bing, 1981). I have taken poetic license and adapted these timeless principles of occupational therapy as a focus forward for 2025. They have been translated to language of our current time and culture, and are presented in Figure 51.1.

In her Slagle, Hollis (1979) stated that “none of us has any idea what the world, and specifically occupational therapy, will be like in 2020 A.D.” (p. 499). Her statement holds true for 2025 as well: We cannot presume to know what the world will be like then. But, as Bing (1981) suggested, we can and should consider old values “such as these principles” as “we

1. Occupation is a process of participation in meaningful activity to promote quality of life and health.
2. Goals of engagement in occupation include social participation, self-esteem, self-efficacy, health and wellness, mitigation of the effects of disease or injury or both, flow, and capacity for engagement in fulfilling life roles as well as societal responsibility and membership.
3. In applying occupational therapy, three main areas are of concern:
  - a. *Habits of the Mind*: Use of scientific methods including evidence-based care, theoretical foundations, and clinical reasoning.
  - b. *Habits of the Heart*: The virtues of doing good, including care, compassion, as well as kindness, and a humanistic approach.
  - c. *Habits of the Art*: The art of practice including therapeutic use of self, refinement of intuition, and noncognitive actions.
4. Occupational therapy service must be administered under the supervision of a licensed or fully certified occupational therapist, and must be delivered in a manner consistent with the highest standards for and reflective of best practices regarding interprofessional collaboration and communication.
5. Occupational therapy is founded upon an individual's or population's needs, interests, culture, and idiosyncratic characteristics.
6. Occupational therapy practice may extend from individuals to populations. And occupational therapy practice should occur in natural environments with either individuals or groups. The advantage of group work is value added in terms of interpersonal and psychosocial interactions and feedback in situ for generalizability.
7. Any activity in which a client chooses to engage should be within the zone of the just right challenge: within their skills, interests, and abilities.
8. All activities in which a client chooses to engage should be regularly graded and adapted to assure flow, challenge, and change.
9. The most valid outcome measure of occupational therapy intervention is the effect it has on the client—the value it has for the client—and his or her familial or social systems or both.
10. Regardless of the unique characteristics a client may present, ranging from disablement or despair to disease or societal conditions, from the occupational therapist, usual and customary standards of care, standards of performance, as well as moral behavior, should be expected in the therapeutic encounter.
11. During meta-emotion of occupation, or thinking or feeling about thinking or feeling while doing with meaning, various perceptions may be desired—depending upon circumstances—including flow, joy, and happiness.
12. Novelty, variety, individual or group meaning or both, social, and cultural value all influence the occupational process in which one engages, with observable activity as the outcome.
13. Financial gain or conflict of interest or conflict of commitment should never interfere with virtues of occupational therapy practice or any partner (client, therapist, family member) involved.
14. All occupational therapists must be proficient in patient education. They should further be expert in therapeutic use of self and matching their psychosocial style to the client or family member needs.
15. All forms of the process of doing with meaning constitute engagement in the process of occupation. Thus, the scope of occupational therapy is holistic, widespread, and integrated into most all human functions as reflected in the Occupational Therapy Practice Framework, and is an entitlement of all humans in the form of occupational justice.

**Figure 51.1. 1925–2025 occupational therapy's legacy of humanistic ways, occupational justice, and timeless truths.**

chart new directions” (p. 514), and I suggest we continue to explore these values through what Mosey (1985) in her Slagle termed “philosophical inquiry” (p. 505).

This fractal piece of *herstory* presents us with principles and patterns that provide a framework for the future, built on the past. Thus, we have gone back to the past to encapsulate a vision or focus forward for the future. The care and enactment of the principles so presented relates to three areas of habits in occupational therapy, corresponding to the scientific, ethical, and artistic dimensions of clinical reasoning suggested by Rogers (1983, p. 616) in her Slagle. I propose that three habit areas for occupational therapy are habits of the mind, habits of the heart, and habits of the art.

### **Habits of the Mind (the Scientist)<sup>13</sup>**

These are based upon use of scientific evidence, theory, and clinical reasoning, what Rogers (1983) referred to as systematic and the scientist’s way of thinking. Included herein would also be what Grady referred to as the science of occupation (1992, p. 584). Further included herein would be the call for scientific evidence about the effects of practice, what Holm (2000) discussed as the mandate for evidence-based practice in her Slagle.

### **Habits of the Heart<sup>14</sup> (the Ethicist)**

These habits pertain to the morality of doing good, caring, compassion, and humanism, what Rogers (1983) referred to as responsive and the ethicist’s way of thinking. This is a particular form of ethical theory called virtue ethics.

### **Habits of the Art (the Artist)**

These habits relate to use of creativity and intuition, surrealism, and the therapeutic use of self, which further relates to what Rogers (1983) identified as convincing as well as the artist’s way of thinking. She summarized it well, stating, “Artistry involves the orchestration of broad strategies for grappling effectively with the uncertainties inherent in clinical practice” (p. 614). And, it also pertains to what Grady (1992) identified as “the purposefulness of occupation will always remain as our art” (p. 584). Much of the work of Peloquin (Abreu, Peloquin, & Ottenbacher, 1998; Peloquin, 1989, 1996, 1997, 2001, 2002) speaks to this neglected area of appreciation.

In a seminal Slagle, Finn (1972) identified that imagination has been dulled in the technological society of today. And, that “it is this process of creative thinking which is required of us, as occupational therapists, in order to interpret our knowledge about human potential, growth and development . . . so that it becomes functional materials for developing . . . the health of a community” (p. 63).

According to Manthey (1997), mutual respect or respect between people is built upon individual respect, or respect for oneself. Let us respect our profession and revel in our cherished and honorable past principles that wrinkle in time across 1925 to 2025. By honoring our profession’s timeless truths, we have potential for individual self-respect so important for mutual respect; required for interprofessional practice; essential to build an axis of good in service to society. In her Slagle, Dunn (2001) argued for “the importance of interdisciplinary

perspectives if we are to understand . . . truths about the experience of being human (p. 615). Only with individualized and mutual respect can this be accomplished. Remember that a single bangle does not jangle.<sup>15</sup>

Now that we have looked to the past, let us look to what else may be a key for our future. In her Slagle, West (1968) stated, "Let us turn, then, from any comfortable reflection on our past to the infinitely more exciting exercise of projecting our future" (p. 10). I shall share with you a piece of my own. For Grady (1992) states, "above all, vision means seeing possibilities" (p. 1062).

## **A Piece of My Own for Occupational Science and Occupational Therapy**

Possibilities. . . . I propose chaos theory as a missing link to help integrate our science and our profession. It can assist in integrating the tenuous tangle of tangents of occupation into a whole, tolerant of Mosey's (1985) pluralistic approach to the profession using many theories, frames of reference, and technologies. Chaos theory has research implications for the discipline and allows for a technical analysis of occupation, which, heretofore, we have been slow to address. It is high time to move from the lens of linearity to the kaleidoscope of chaos in occupational science and occupational therapy. As charged by Henderson (1988) in her Slagle, "We must recognize the importance of theory in the growth of professional knowledge. We must see theory building as something we *can* do, and each of us must accept responsibility for our part in theory development" (p. 574). I suspect that we shall be the Dadaists of linearity.

Occupation as a concept is undergoing a scholarly renaissance for which occupational science has served as a catalyst (Wilcock, 2002; Yerxa, 2000). I shall add to the scholarly discourse on occupational science by elaborating on occupation using chaos theory, extending Yerxa's authentic occupational therapy into chaotic occupational therapy and responding to Henderson's charge. According to Whewell (1847/1967), in the early phases of a discipline, struggle with definitions, conceptualizations, and key constructs pertaining to that discipline are part of the method of science. Kuhn<sup>16</sup> (1962/1970) reiterated this, as well as many other concepts in 1962 and 1970 in his book, *The Structure of Scientific Revolutions*. So, in our struggle to define and refine, we as a profession and as a discipline are perfectly normal. Thank goodness!

## **Chaos Theory**

Chaos theory, as used here, refers to dynamical systems or the interwoven forces and motions of nonlinear systems. The science of chaos, or chaos theory, purports that chaos is a form of order disguised as disorder (Coffey, 1998). That is, chaos theory suggests that even in cases of extreme disorder, what appears as chaos actually has an underlying pattern or order. Just as I hope this complex telling does. Thus, what might appear as chaos, indeed, typically has an underlying order—if only we could discern, understand, or "see" it.

Why is chaos theory important? First, according to Pediani (1996) as based upon Coppa (1993), chaos theory is important because scientific models may be limited in their use for understanding and predicting complex relationships thereby identifying the limits of the ability of humans to predict. Second, in a sense, chaos theory is postmodernism coming to science and to occupational therapy (Royeen & Luebben, 2002). In medicine, the limits of prediction and knowing, closely linked to chaos theory as a metaphor for the limits of knowing, have been the source of hot debate (Goodwin, 1997; Theodoropoulos, 1998). And the debate occurs within one of “the last bastions of the modernist belief that all things are potentially knowable” (Goodwin, p. 1399), which relates to human beings and their sins of arrogance: How can we presume to know all things? Might chaos theory assist us in our challenge to describe human occupation in context over time?

Third, the reductionistic approach of breaking a system into component parts is being replaced with a dynamical approach of looking at how systems function (Shepperd, 1996) *in situ* or *in toto* or both. Simply put, using a gestalt view that the working whole is greater than the sum of the parts calls for a chaotic approach to analysis. This is a holistic approach to which occupational therapy has long laid claim. By understanding and using chaos theory, we may begin to address, among many things, how and why we occupational therapists do holistic practice. We may do so in a manner similar to how Buell and Cassidy (2001) use chaos theory to understand the nature of quality of care in early childhood education, or how Collins (2001) used chaos and complexity theories to explore self awareness in human adaptation.

Chaos theory is based on the work of many individuals from diverse fields. Related to dynamical system theories or nonlinear dynamics and complexity science (Plexus Institute, 2003), however, chaos theory is based—in part—on the work of Prigogone and Stengers (1984), in which they noted that changing patterns of organization were apparent from liquids at boiling point.<sup>17</sup> Much of the interest in more recent developments regarding chaos theory can be traced to the work of the meteorologist Lorenz, who first postulated something termed sensitivity to initial conditions as characteristic of chaos theory. Sensitivity to initial conditions refers to a unique configuration of the interactions of multiple variables in multiple systems, such that the initial conditions are so complex and variable that the eventual outcome of their interactions cannot be predicted. This explains why long-range weather forecasting, more than 4 to 5 days, is not possible—the sensitivity of initial conditions is simply too complex to reliably predict specific outcomes. Is human engagement in occupation in context across time any less complex than the weather?

Related to the concept of sensitivity to initial conditions is the concept of the butterfly effect as postulated by Lorenz in 1960s, delineating sensitivity to initial conditions such that a butterfly flapping its wings in the Amazon can change the path of a tornado in Texas (Warren, Franklin, & Streeter, 1998). Certainly, we can predict generalities such as in the northern hemisphere, it is hotter in the summer and cooler in the winter. We cannot, however, reliably predict specific complexities about a specific individual. So much for evidence-based practice as a mantra!<sup>18</sup> At some point in application, our science must give way to the heart and art for the practice of occupational therapy.

Since World War II, chaos theory has developed out of dynamical systems theory, which has replaced general systems theory as a dominant scientific paradigm (Abraham, 1994; Remer, 1996; Warren et al., 1998). Chaos theory transcends disciplinary boundaries and has been extended from basic sciences into the social sciences including ecology, sociology, sociometry, and psychology (Abraham & Gilgen, 1995; Remer, 1996; Thelen & Smith, 1994). Now is the time for chaos to also permeate occupational science and occupational therapy.

## **A Fractal View of Chaos Theory**

Five key assumptions underlie chaotic systems. I summarize each of these assumptions briefly in turn.

### **Interactions Between and Among Variables Are Nonlinear**

Western culture is based upon underlying assumptions about linear relationships between variables. Assuming linearity, for every increment in variable “x,” there is a proportionate increase in variable “y.” The fundamental assumption of linearity permeates Western society, ranging from increases in class time and schooling in order to improve student achievement, to the predominate use of parametric statistics in research, to diets based upon decreased caloric intake to decrease weight. Chaos theory rejects such notions of linearity and, instead, is predicated upon complex, nonlinear relationships among variables. Has the intervention outcome trajectory of a client with whom you have worked ever been linear?

### **Variables Co-Effect One Another and Are Interdependent**

In chaos theory, there is no such thing as independence. Instead, just as in real life, all things are related to all other things in some manner, but not in a linear relationship. Take, for example, the concept of wind and rock. Wind will wear down a rock through the centuries, and the rock will redirect the wind patterns. The variables, the wind and the rock, co-effect each other. Neither is isolated from the other, but is interdependent in terms of existence. Does not an occupational therapist and her client exist in an interdependent, co-effecting manner creating a *herstory*?

### **Chaotic Systems Exist in Far-From Equilibrium States of Flux or Turbulence**

Chaotic systems, or those systems not in evident order or regularity, do not exist in equilibrium (where forces are equal and cancel each other out). Rather, they exist in states where forces are not equal—the edge of chaos. Consequently, flux or turbulence (disturbance) is created within the system. The classic example of this chaotic state is weather, which is forever changing. Is this not also true of the healthy human condition?

### **Chaotic Systems Are Self-Guided, Self-Organizing, Nonhierarchically Based, and Demonstrate Emergent Behavior**

Chaotic systems are thought to organize or, in some manner, order themselves as they emerge and evolve. And they are not based upon a single authority or power controlling the rest of

the system. Rather, a collection of forces come together and intrinsically guide the overall organization of the system. One may consider the interplay of genetic predisposition, environmental experiences, occupational participation, and emotional tone as—in part—the collection of forces that organize in an individual human to create a unique person.

### Chaotic Systems Possess an Underlying Order

In spite of apparent disorder or randomness, associated chaotic systems are thought to possess an underlying order. Consider the desk of someone writing a paper. Piles are generally everywhere, notes scattered about, and a view of disorder usually reigns. But the author typically knows the underlying order of what information is in which pile, and how to access a particular nugget. The order is there, if one knows or understands the system behind it. Chaotic systems are like that. Life is like that. Occupational therapy is like that.

I shall now present a telling about occupation in six parts, evolving out of my own understanding of chaos and occupation. Many of these ideas are not new, rather the “newness lies in formulation of the idea” (Stattel, 1956, p. 194).

### Charlotte’s Web of Chaos

I shall put forth provisional constructs about occupation using chaos theory. Indulge me while I pay homage to E. B. White and call it Charlotte’s Web of Chaos presented in Figure 51.2.

These constructs are related and interacting layers of occupational (a) complexity, (b) patterns and metapatterns, (c) process, (a) shaping, (e) variance, and (f) transience. I put these forth as an invitation to scrutinize that which could evolve to be our mainstay: an analysis of the web of occupation.

#### Occupational Complexity<sup>19</sup>

Occupational complexity refers to the many variables or processes that influence or co-



Figure 51.2. Charlotte’s Web of Chaos.

effect one another within the many contexts in which occupation occurs (Dunn, Brown, & McGuigan, 1994), including adaptation (Frank, 1996), flow (Csikszentmihalyi, 1990), meaning (Christiansen, 1994), motivation and volition (Kielhofner, 1995), occupational identity (Christiansen, 1999), occupational appeal and intactness (Pierce, 1998), and intentionality and meaning of occupational engagement (Crabtree, 1998; Jackson, 1996; Magnus, 2001; Pierce, 1998; Zemke & Clark, 1996). Using the 1995 AOTA position paper, Golledge (1998)

suggests that an emphasis on the dimensions (performance, contextual, temporal, psychological, social, symbolic, and spiritual) of occupation reflects occupational complexity. Wilcock's theory of the need for human occupation (Wilcock, 2002) including theological need and sociocultural factors might be an analogous way to view occupational complexity.

In linking such complexity to chaos theory, occupational complexity transcends a parallel distributed processing system, wherein dimensions of occupation consist of systems or networks, or webs, which are heterarchially (Spitzer, 1999) arranged into an overall system. As used here, occupational complexity refers to the interaction of variables (dimensions) within one of these systems, as well as to the dynamical interaction of multiple systems undergirding occupation within a given person. Thus, I hypothesize that three networks of systems, that is, internal occupational processes (the brain), occupational performance (the body), and occupational contexts (the environment) comprise or encompass the dynamical systems of occupation for which any or all of these networks, or webs, or subcomponents of networks may be control parameters thereby illustrating the dynamics of neuro-occupation. Any of the individual dimensions of occupation may be control parameters. Control parameters refer to key variables that, if changed or varied, influence (not control) the entire operation of the occupational system(s), or webs.

To illustrate, we know that if we vary a control parameter such as volition (psychological) through use of a reinforcement system, occupational performance can be changed. Further, if we vary context, the occupational performance is affected and consequently changed. Thus, variation of key control variables manipulates or changes the operation of the systems or of the entire system, or the occupational complexity (neuro-occupation), of that individual. Neuro-occupation, a term coined by Padilla and Peyton (1997) and used by others (Gutman & Biel, 2001; Howell, 1999; Lohman & Royeen, 2002; Walloch, 1998; Way, 1999) refers to the interactive, interdependent development or symbiosis between the human nervous system and engagement in occupation. Many Slagle lecturers such as Ayres (1963) and Farber (1989) foreshadowed the concept of neuro-occupation in discussing the effect of atypical nervous system activity upon human performance whereas others, such as Reilly (1962), emphasized the reverse, or the effect of purposeful human activity upon health. The concept of neuro-occupation integrates the two approaches into a single, emerging interfield theory as defined by Bechtel (1998).<sup>20</sup>

## **Occupational Patterns and Metapatterns**

The patterns of occupation—occupational forms (Nelson, 1997) or designs—shape and form our lives. Occupational patterns refer to the design or configuration of occupations or proto-occupations in a human or primate (Fortune, 1996; Wood, Towers, & Malchow, 2000). I hypothesize that occupational patterns are, in and of themselves, chaotic systems that are self-organizing, self-guided and, in states of health, far from equilibrium. And, the personal meaning of our occupational patterns constitutes occupational identity as suggested by Christiansen (1999).

Patterns overall “tend to repeat themselves not exactly, not perfectly, but still enough to be recognized” (Remer, 1996). Clark (1997) has hypothesized that patterns of occupation should be identifiable and discernible regarding which patterns will promote health. I further hypothesize that additional occupational patterns can also be identifiable such as (1) those not conducive to health, (2) those promoting disease, or (3) those putting one at risk for injury, (4) those promoting joy, and (5) those promoting happiness or contentment.

If chaos is, indeed, order disguised as disorder, the challenge to occupational science and occupational therapy is to discern the pattern of occupations giving rise to varying conditions or states such as health, disease, injury, or happiness. In theory, occupational patterns apply to individuals across the lifespan. Our myopia, however, may prevent our ability to discern patterns while we are in the midst of them. Only by larger picture “gestalts” can occupational patterns be discerned. One needs either a view over time (longitudinal) or across dimensions (fractal geometry) to see how pieces or fractals or bits contribute to the larger “whole” or intact pattern.

To illustrate, just as one may need a psychologist or psychotherapist to discern psychological patterns behind behaviors of an individual, an occupational therapist may be needed to discern occupational patterns characterizing the person’s unique manifestation of activities of daily living, leisure, work, parenting, and stress-release activities. To illustrate, Clark (1997) referenced understanding of an occupation to past, present, and future events.

As used by Clark (1997), the temporality of occupational patterns refers to the ability to see the design of occupations over a given time, what Bateson (1996) refers to as composition. Occupational patterns, however, may also be metapatterns (e.g., groups of bits in routines or configurations of occupations by groups of individuals, or by societies). In chaos theory, metapattern refers to the world as comprised of patterns (Goertzel, 1995). As applied to occupation, metapattern refers to the patterns of a single individual during a temporal “slice of life,” or when repeated occupational patterns last across the lifespan. According to another Bateson (1979), metapatterns are “The pattern which connects.” In the case of morning routines, pilot research suggests that the result of one’s morning routine is *carpe diem*, or seize the day.

## **Occupational Process**

Fisher (1998), in her Slagle, stressed the importance of process to occupational therapy. Similarly, a chaotic construction of occupation should emphasize that occupation is a process, and not a product that can be simplistically observed as a performance, action, or activity. Occupation is so much more than just activity!

Dynamical systems theory presupposes the evolving nature of a process over time. Similarly, a single occupational process evolves or unfolds over time. And, a single occupational process is interrelated with other occupational processes of a given individual in a specific situation, unfolding at the same time, at overlapping times, or at different times. Any given occupational process rarely, if ever, unfolds in isolation.

I hypothesize that more typically, multiple occupational processes are ongoing, and related to one another simultaneously, sequentially, or both (e.g., they co-effect one another

with a web). For example, I regularly exercise on a treadmill and watch a favorite television show while dinner is cooking. This illustrates a web of at least three ongoing, co-effecting occupational processes: (a) exercising on the treadmill for health and wellness; (b) watching television for humor, stress release, and passage of time; and (c) cooking dinner, an occupation that is part of my caregiver role. Segal (2000) uses the term enfolding to refer to performance of “more than one occupation at a time.” I use the phrases “web of occupational processes,” or “webbing.” Related to this, Cokie Roberts (2003) talked about “multitasking” by women in her opening ceremony presentation.

Occupational processes imply that occupation is not just a product (like “meal” or a “garden”), but is a process—a force that fosters order (occupation) out of chaos (nonuniformity). Conceptualization in this manner allows for a larger view of occupation not just as an event, but as a continually self-generating system, where the doing provides the meaning for generating more doing, and so on.

Occupational processes, perhaps, are the web of life!<sup>21</sup>

Narrowly defining occupation as “activities of daily living” or “work” or “leisure” lacks the larger richness and diversity, and—indeed—the sequencing and emergent aspects, of occupation in all of our lives. How occupations enfold into one another and how occupations are multiplied while enacting them is discussed by Bateson (1996). Thus, multiple occupational processes enfolding over the lifespan, and enfolding across cultures over generations is the essence of what is meant by occupational process, a chaotic process so much more complex than a single event or activity.<sup>22</sup> Finally, the human drive to engage in occupational processes as a self-organizing function (Kielhofner & Forsyth, 1997) is that which gives life richness and meaning. Instead of Descartes’ phrase, “*Cogito ergo sum*” (I think, therefore I am), I propose that occupational science and occupational therapy use “*Ago, ergo sum*” (I do [with purpose], therefore I am).

## Occupational Shaping

In a chaotic process, wind is a force that shapes rock (Abraham, 1994). Similarly, occupation can be considered a chaotic process that shapes a human (e.g., occupational shaping). The total of our beliefs and sense of self comes from the occupational shaping of the web of a lifetime—be it a few days or over 80 years.

Just as a rock has a physical structure transformed by wind, the human species has a genetic blueprint shaped by occupational engagement. The interdependence presupposed in chaos theory renders nature versus nurture moot (Abraham & Gilgen, 1995). So too, nature versus nurture is irrelevant in a chaotic conceptualization of occupation. Rather, this chaotic elaboration of occupation, including occupational shaping, places our attention where it needs to be: upon the multiple webs of occupation.<sup>23</sup> It places our attention upon the nature of occupational engagement and the changes that take place within an organism, the environment, and society overall due to the engagement in the occupational process, also referred to by Law (2002) as participation. Well before the International Classification of Functioning, Disability, and Health (World Health Organization [WHO], 2001), participation has been a component of many foremothers’

Eleanor Clarke Slagle lectures including Zimmerman (1960), Ackley (1962), and King (1978).

One may surmise that occupational shaping is developmentally based. It may be. A developmental framework, however, would have to be flexible and incorporate the wide range of variation that is normal and typical. It is theorized that occupational shaping occurs within development networks or webs of typically occurring occupations in which those of a given age and culture most typically engage.

Research in the *Proceedings of the National Academy of Sciences* (Maguire et al., 2000), and widely reported in popular media provides strong data supporting the construct of occupational shaping in very concrete terms. The investigators reported evidence of significantly larger posterior hippocampi of a group of London taxi drivers as compared to control subjects. This is clear evidence of occupational shaping of the brain, in a literal sense!

### **Occupational Variance**

Occupational variance refers to the degree to which occupational processes are free to vary related to the control parameters of the individual's dynamical systems. In this case, degree of freedom refers to the variables that influence the process (i.e., the number and kinds of things that compose the system) (Freeman, 1995). Thus, occupational complexity is determined, in part, by the variance allowed for by the degrees of freedom. Occupational science may be the identification and delineation of the webs (networks and networks of systems, internal occupational processes, occupational dimensions, and occupational contexts) and the key control variables or control parameters. Accordingly, occupational therapy would be the-planned-for perturbation (or force-creating adaptations) of control parameters impinging upon the web designed to promote health and well-being. This may be what Nelson (1997) called occupational synthesis, which is based upon the creative process (Hasselkus, 2002; Pierce, 2001, 2003).

### **Occupational Transience**

Occupational perseverance is the continued or prolonged engagement in an occupation directly related to previous or former engagement in that occupation (Carlson, 1996). I propose an antithetical concept: occupational transience. I define transience as the new temporariness in everyday life and propose that occupation is a transient structure or temporal state that exists interspersed between chaotic modes and that chaotic modes are the rich milieu of nonuniformity that is life, which exist when occupation is absent or in flux. Consequently, occupational process orders chaos in our lives as human performance that is organized (Carlson, 1996). Occupational transience, therefore, is a chaotic state in which we exist in between occupations. I hypothesize that based upon Toffler's (1970) notion of transience, individuals will have varying metapatterns of high or low transience of occupations.

Occupational transience may be the negative space within a web. Metaphorically speaking, occupational transience may be the equivalent of "living in the state of stuck."<sup>24</sup> Admittedly, this is an oversimplification since, indeed, there are only degrees of chaos and order

resulting from occupation, not absolute states or quantities. And, as based in chaos theory, Warren et al. (1998) further hypothesized that the time of greatest change is related to the degree of chaos in a given state (e.g., the greater the degree of chaos),<sup>25</sup> the greater the susceptibility to perturbation. Such a concept has potentially profound implications for the practice of occupational therapy. We should practice near the edge of chaos! No protocols need apply.

Occupation is the organization of nonuniformity into a new form through participation. Thus, chaos theory allows the use of occupation as a normalizing process, regardless of the presence or absence of a disability or impairment. In this case, occupation, as a normalization process, allows for participation and activity as consistent with the ICF (WHO, 2001).

### **Cautions About Chaos**

Having given enthusiastic support and endorsement of chaos as a foundational concept for occupation as a telling herein, I provide a note of caution. Chaos is not to be construed as a grand theory, but rather as a pragmatist's (Hooper & Wood, 2002) working tool for integration of occupational science and occupational therapy concepts, knowledge, and science by providing a broader perspective (Remer, 1996), although allowing for the unique case of an individual's experience. For, much like complexity theory in nonlinear dynamical systems, chaos is not a comprehensive theory but a collection of ideas, concepts, observations, and models (Waliszewski, Molski, & Konarski, 1998).<sup>26</sup> Further, use of chaos in occupation will be beneficial only as it facilitates continued development of a body of knowledge about occupation and therapy. As Baum (1980) stated, "We must do more than speak of our theories. We must develop a rage for knowledge and document our principles as a scientific discipline" (p. 508). We must always remember, however, that per our timeless principles and values, being a good occupational therapist may not be possible without being a good human being—and no theoretical reference is going to make us good human beings.<sup>27</sup> Only our morals will do that.

### **Conclusions About Chaos**

In this telling of occupation, I have presented chaos theory, which transcends our culturally normed reference of linearity. Use of chaos to reconstruct occupation will allow incorporation of most all theoretical and research work done to date in occupational science and occupational therapy, as well as allow for a practical distinction between the two. The potential value of such a meta theory to provide a cohesive core for the science of occupation is great.

According to Arndt and Bigelow (2000), order and chaos are in a delicate balance. I would argue that chaos will predominate, and that those who embrace, understand, and use chaos theory will succeed. At the beginning of this telling I shared a quote from Chaucer. Nearing the end of this telling, another quote attributed to Chaucer seems apt: "Ful wys is he that can himselfen knowe!" With liberal revising for our current time, I suggest—full wise is she who can know herself, her profession of occupational therapy, and her discipline of occupational science.

## The Ending of a Telling

### Pay Your Professional Tax

First, we have the arsenal to move occupational therapy forward in service to society. Professional identity means responsibility. We must take off from the tarmac of timidity and enter the tableau of occupation. We shall take the concept of occupation, the theories of occupation, and instead of the lens of linearity, use the collide and scope of chaos. In her Slagle, Fidler (1966) referred to professional tax as the privileges and obligations “that come with a profession” (p. 1). Brunyate (1957) believed that privilege is bound in duty. So it is. You are charged to pay for your privilege of being an occupational therapist. You are charged to pay your professional tax and take up the scholarship of occupation—as an art, science, and therapy! Llorens (1970) said it best in her Slagle: “I would like to share a rather startling discovery I made some time ago. It was that ‘they,’ whoever ‘they’ were that I should be doing something to objectify our knowledge and raise the level of our practice included ‘me.’ I, here-with, challenge each of you to join me in that task so that we can move toward facilitating growth and development and fulfilling the promise of occupational therapy” (p. 101).

### Engage in and Encourage Meta-emotion of Occupation

In her Slagle, Moore (1976) foreshadowed the proposed concept of meta-emotion of occupation stating that, “. . . humans need to understand emotional self before they can fully participate in intellectual life” (p. 19). So too Reilly (1962) valued the inexorable import and integration of thinking and feeling, stating that “man, through the use of his hands, can creatively deploy his thinking, feelings, and purposes to make himself at home in the world and to make the world his home” (p. 2). Ask yourself the following questions: “What do I feel about this telling?” “What did I feel when it started?” “How do I feel that it has ended?” Development of such an awareness of feeling or thinking about feeling or thinking while doing with meaning is the meta-emotion of occupation (Royeen & Duncan, 2001; Royeen, Duncan, & McCormack, 2001).<sup>28</sup> Reflection on thinking or feeling and thinking or feeling while doing over time builds our knowledge and understanding of ourselves, of practice, and of those whom we serve—a dimension of meaning we have not fully addressed in our profession and our discipline. The concept of meta-emotion of occupation is based upon the commonly accepted term metacognition, which means thinking about how one thinks to achieve a cognitive task such as addition or subtraction. Meta-emotion further incorporates aspects of the concept of somatic marker as discussed by Damasio (1994).

### Honor the Pattern That Connects

Bing (1981) stated, “We are influenced by those who come before us more than we can truly know. . . . The past assists us in fashioning our future” (p. 516). As homage to our former Eleanor Clarke Slagle lecturers, and as homage to the metaphor “I am my motherdaughter,” I have included a meaningful reference to each previous Eleanor Clarke Slagle lecturer as a part of this telling.<sup>29</sup>

Rood (1958) stated, “We benefit by the drive and vision of those who have gone before and we in turn have a responsibility to add our particulate share whatever it might be” (p. 326). West (1968) called this professional responsibility and consciousness (p. 13). The pattern that connects is, indeed, part of what has shaped us in the present and will continue to do so in the future. The medium is the message—look for and honor the pattern that connects.

### **Surrealism as Our Art**

Occupational therapists see the surreal in order to help people get real. We can see what is not possible, and through occupation can create and adapt the world to make things doable with meaning. Creativity is the key to our art, and according to Rogers (1983), perplexity spurs on our artistry (p. 616). As Nietzsche (1961/1969) expressed in *Thus Spoke Zarathustra* through the character Zarathustra, “I tell you: one must have chaos in one, to give birth to a dancing star. I tell you: you still have chaos in you” (p. 46).

### **Summary**

In her Slagle, Gilfoyle (1984) suggested that we must question the three areas in occupational therapy. I use her three areas as a guide to summarize, in a very small nutshell, this complex telling. First, Gilfoyle suggested we must question our value system. Herein I have presented a timeless value system for elaboration and delineation to practice based upon appreciation and review of our *herstory*. Second, she suggested we must question the demands of practice. Herein I have provided a provisional exploration of Charlotte’s Web of Chaos to liberate us from a linear view of reality, which does not match practice. Third, Gilfoyle suggested that we question educational requirements. Herein I have suggested that the entry-level clinical doctorate should become our norm.

### **Closing Blessing**

In his Eleanor Clarke Slagle lecture, Dr. Robert Bing (1981) quoted the grand dame herself. I shall do the same as a blessing to end this telling: “The integrity of your profession is in your hands. I bid you Godspeed in your work” (Eleanor Clarke Slagle as cited in Bing, 1981, p. 516).

### **Acknowledgments**

If it takes a village to raise a child, then it takes a vast network to raise a scholar to write and present a Slagle. To acknowledge just a few of my vast network, I give my heartfelt thanks to Marlene Aitken, PhD (occupational therapy), for general proofreading; Cindy Coirritore, PhD (management information systems and technology), for technology advisement and the veeper; John Fleming, OT (occupational therapy), for theoretical advising; Julie Gasper, PhD (business), for the veeper voice of Eleanor Clarke Slagle; Gail Jensen, PhD (physical therapy), for repeatedly instructing me to “just move the field forward”; Beverly Kracher, PhD (business ethics), for assistance in the history of philosophy; Ivelisse Lazzarini, OTD (occupational

therapy), for assistance in technology; Aimee Luebben, EdD (occupational therapy), for Latin translation and editing; Carol Peters and Sue McGahan, for expert secretarial support and assistance; Doris Pierce, OT (occupational therapy), for helping me practice occupation; Barbara Rider, PhD (occupational therapy), for support, feedback, and inspiration; Laura Strickland, EdD, OT (occupational therapy), for theoretical assistance; Sidney Stohs, PhD (toxicology), who modeled great scholarship and closed his eyes while I took an unofficial sabbatical; and Patricia Wilbarger, MEd, OT (occupational therapy), for support, inspiration, and clinical understanding of chaos in action.

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## Endnotes

1. A multidimensional exploration using poetry as scholarly inquiry (Cahnmann, 2003) with full recognition of the role of self in this paper (Peshkin, 2000).
2. The literary and artistic genre of surrealism grew out of Dadaism, an art movement prior to WWI founded upon defying rationality through artistic expression. Surrealism's goal was to blend the unconscious and conscious into an authentic, or surreal, reality.
3. Development of a discipline includes responsibility as a steward of the discipline.
4. The concept related to play, specifically fun, has been shown to be highly correlated with learning (Zardetto-Smith, Mu, Phelps, Houtz, & Royeen, 2002).
5. See Royeen (2002).

6. Please see p. 564 of Allen (1987) for a parallel discussion of Soviet psychology's use of the word "activity" as a principle and focus of study as a tautology.
7. For a thorough review of purposeful activity, please see Lyons (1983).
8. For a historical review of humanistic moral treatment in occupational therapy, see Kielhofner and Burke (1977).
9. It is interesting to note that Bing (1981) suggested that "The history of occupational therapy is the most neglected part of our professional endeavors" (p. 514).
10. These are environmental conditions required to maintain the integrity of historical documents.
11. My fact-finding and constant comparative methodology, using historical review, resulted in five themes.
12. See Pierce and Peyton (1999) for an historical overview of clinical doctorates in the health fields.
13. The phrase used by Hooper and Wood (2002).
14. Bellah, Madcsen, Sullivan, Swindler, and Tipton (1985) as cited in Hasselkus (2000) in an *AJOT* "From the Editor" section titled "Habits of the Heart."
15. Adapted from "A single bracelet does not jingle" (Chavez, 2002, p. 24).
16. What Kuhn referred to as paradigm and paradigm shift is similar to consilience and consilience of induction as discussed by Whewell (1847/1967).
17. Dr. Prigogone died in June 2003.
18. It is beyond the scope of the current paper to delineate how and why chaos theory renders much of evidence-based practice moot; suffice to say that humans are complex systems and though we can reliably predict the course of a disease across populations, we cannot presume to predict how any given individual will react in a particular set of circumstances given a particular disease condition! Rogers (1983) well-articulated this on p. 607 of her Slagle.
19. Occupational, as used here, is based upon Gilfoyle's 1984 Eleanor Clarke Slagle definition, "Occupational is defined as a process of action in which a person is the action agent or doer" (p. 578).
20. Ayres referred to the profession and field of study called neurophysiologists. Early founders talked of occupationologists. (The National Society for the Promotion of Occupational Therapy, Annual Meetings 1917–1924.) I hope we see an analogous profession and discipline evolve: neuro-occupationologists.
21. A phrase borrowed from Capra (1996).
22. Activity is but a teaser for occupation!
23. Allen (1987) identified that the only social science to address activity as a central focus is Soviet psychology.
24. This phrase is borrowed from Scherer (2000) but may be used somewhat differently from her intent.
25. Just short, that is, of going beyond the edge of chaos into madness.
26. According to Allport (1960), General Systems Theory was seen as the hoped for unifier for a monistic approach. I see chaos theory allowing for Mosey's (1985) pluralistic approach.
27. Adapted from Manian's (1997) statement about physicians in reference to chaos theory.
28. Actually defined as appreciation (including conscious, subconscious, and unconscious processing of information) of the feelings that occur during engagement in the process of *occupation* (Royeen, 2002, p. 620).
29. *AJOT* could not accommodate the listing of all Eleanor Clarke Slagle lecturers that was developed. I have recommended to AOTA that it be posted on the AOTA Web site, and be maintained henceforth.