Chaos Theory Links to Morenean Theory: A Synergistic Relationship

RORY REMER

ABSTRACT. The author applies a working knowledge of Chaos Theory (ChT), provided in Remer (2005a), to Morenean theory. He examines the links and parallels between ChT and Morenean subtheories—enactment (psychodramatic), role, sociometry, social atom, and spontaneity/encounter theories—in some detail. After a brief review of the basis of ChT, the author applies the ChT constructs, provides an overview with a list of the constructs and their definitions, and provides illustrations for each subtheory. With a specific example related to each theory, the author emphasizes connections and mutual enhancement. He explores theoretical and practical implications for each subtheory and for the interface at the holistic level.

Key words: chaos theory, psychodrama, sociometry

IN A PREVIOUS ARTICLE (Remer, 2005a), I made the general case for the importance of psychodramatists having a working knowledge of Chaos Theory (ChT). I focused most of that explanation on introducing the concepts and constructs of ChT and offering its mathematical underpinnings. I suggested brief connections linking aspects of Morenean thought—enactment, social atom, role, spontaneity theories, and sociometry—to ChT.

In this article, I expand those connections and provide more detailed illustrations. I discuss each of the subtheories comprising the Morenean system (see Figure 1), which is similar to the configuration presented in Hale (1981), in ChT terms, relating the Morenean concepts and constructs to those from ChT. I also explore the importance and implications of those parallels for theory and practice in the cases provided.

Chaos Theory: A Brief Reminder

As an introduction for those who have not read the Remer (2005a) article, and as a reminder for those who have, here is a brief overview of the main constructs of ChT and some links to Morenean Theory.

Social systems are in perpetual chaos. At issue are only the degree to which and the way in which the patterns of interaction manifest themselves. The chaotic characteristics of those dynamical systems are not to be considered problematic; they are absolutely essential to the systems' functioning. The implications for psychodramatists' knowledge of and skills for addressing those types of systems cannot be understated.

All dynamical systems—human or otherwise—are recursive and adjust by means of feedback loops. They establish and adapt their patterns of behavior, thoughts, feelings, and interactions in complex, chaotic manners.

The Mathematical Basis of Chaos Theory (ChT)

This equation or model, $x_{n+1} = k\ x_n\ (1-x_n)$, is called a logistical map. It feeds values back into itself (i.e., it is recursive). Although it looks simple enough, the equation's behavior and the patterns it generates are evidence of the essential characteristics of a chaotic, dynamical system, such as a group or a family. If k, called the tuning constant, is small, the patterns produced are stable and predictable. Once reached, they do not change under further iteration. For large values of k, patterns are chaotic. They are sensitive to initial conditions and are both short-term predictable and long-term unpredictable. Chaos is highly sensitive, disorderly orderliness.

Application to Group and Social Systems

ChT is about patterns and how they develop and change. The patterns may be related to phenomena at various levels of application or abstraction from various disciplines—physics, chemistry, biology, ecology, sociology, psychology, anthropology, or wherever dynamical systems exist. In the case of psychodramatists, those patterns are of thoughts, feelings, behavior, and interactions and are not quite the solid, more measurable variables of the physical sciences, such as those involved in fluid dynamics.

ChT has important implications for how we approach the study of the structure, processes, and patterns of such systems because of its almost paradoxical nature, which is determined–randomness or predictable–unpredictability. As such, ChT can provide a fundamental basis, perhaps even universal basis, for the comprehension of those pervasive phenomena, including those of Morenean thought. Understanding and applying ChT, however,

requires a different mindset from the concrete, cause-effect one in which psychotherapists have been taught to operate. To grasp ChT and what it has to offer, one needs vocabulary* for and understanding of the following most basic constructs:

1. *Phase spaces* are the conceptualization of the possible views of a system. By specifying different values of chosen variables, one obtains a mapping of the pattern produced. The term conveys the idea that, at best, one sees only a portion of "reality" at one time, that part on which one chooses to focus. Different theoretical perspectives define different phase spaces or different maps and simplifications of the system reality.
2. *Strange attractors and their basins of attraction* are focal points for many and the most challenging patterns generated by dynamical, chaotic systems. They are sets of attracting and repelling points that make up and generate patterns. Their basins of attraction are the areas containing the patterns within their boundaries. Social systems, their members, and other sub- and suprasystems are strange attractors. A possible confusion regarding strange attractors highlights some of the difficulties inherent in the present task—much like explaining the Morenean meaning and use of constructs of spontaneity or tele. The term "strange attractor" has a specific mathematical definition. Although that definition relates to the popular conception of "an attractor," it is not the same. The crux of the difference lies in understanding what "attraction" means. Mathematically, point and cyclical attractors correspond more to the popular conceptions. In each case, patterns return exactly to points that they have visited before, as if drawn to them. In the case of strange attractors, the patterns can approach a point already on the trajectory, and even come arbitrarily close, but can never again reach that point. In fact, points that were attractors can switch valence from positive to negative so that patterns diverge drastically from what might be expected. Although the patterns remain somewhat predictably in a region, within the region, their trajectories are virtually random, or more accurately, seem random. Hence the label "strange attractor.
3. *Fractals* are measures or representations of complexity, and the term conveys two important concepts—that what one sees depends largely on one's perspective and that accuracy of measurement often depends on the definition of the process. Systems' structures and patterns are fractal.
4. *Self-affinity* denotes the tendency for recursive processes to evidence recurring patterns of various types. Patterns tend to repeat themselves, not exactly but close enough to be recognizable even on different levels and scales.
5. *Bifurcation (*and *bifurcation cascade)* is splitting in two. Bifurcation increases pattern complexity. *Cascade* occurs when bifurcations happen at such a rate that no patterns seem discernible.

6. *Recursivity* is self-reflexiveness, the feeding of information from one's patterns back into the process of producing them. Mathematically, it is nonlinearity and nonindependence.
7. *Unpredictability* is the inability to describe with certainty the next state or the previous state of a system, given knowledge of its present state. The type most associated with ChT is sensitivity to initial conditions. That type—and others consistent with ChT—indicates that everything about a system cannot be known with absolute certainty and that any attempt to assess a situation will affect it, conveying the humbling, daunting, realistic perspective of how little control one actually has.
8. *Self-organization* is the inherent tendency for systems in a chaotic state to form new coherent patterns and to reorganize, based only on the interactions of their components (similar to autopoiesis).
9. *Resonance* is the synchronicity of constituent components of a system, leading to reciprocal influence and the production of such patterns as chaos, reorganization, and stagnation.

Social systems as strange attractors evidence continual disruptions or chaos to varying degrees and at different levels that can be examined, discussed, and addressed by using these ideas and structures. Violent, unanticipated, and unanticipatable external impacts can cause severe disruptions in system patterns—in other words, havoc. Those pattern dissolutions are not to be termed chaotic. However, the chaotic properties of dynamical systems are required to address havoc.

Although those addressing dynamical systems disagree about how to approach chaos, they do concur that change cannot occur without it. Thus, dynamical systems must be in a ready state. The readiness seems to rely on the tuning constant. How to know the state and the tuning constant for a given system or how to influence those is open to debate. Complexity theorists believe that "skating on the edge of chaos" is possible; chaoticians see that option as paradoxical, given ChT tenets. Similarly, how to view the production and use of chaos differs. Perhaps, these seeming differences are more a matter of definition and perspective than actual differences.

Need for Chaos

Chaos, or disruption, is a necessary and sufficient condition for change in social systems. It not only is part of the dynamics in evolution but also a coping mechanism for addressing havoc or drastic upheavals. Welcoming chaos—engendering, recognizing, and using it—is incumbent on sociometrists and psychodramatists, if they are to be effective. To see more specifically how and why, I now apply the constructs to the major components of Morenean Theory, as presented in Figure 1.

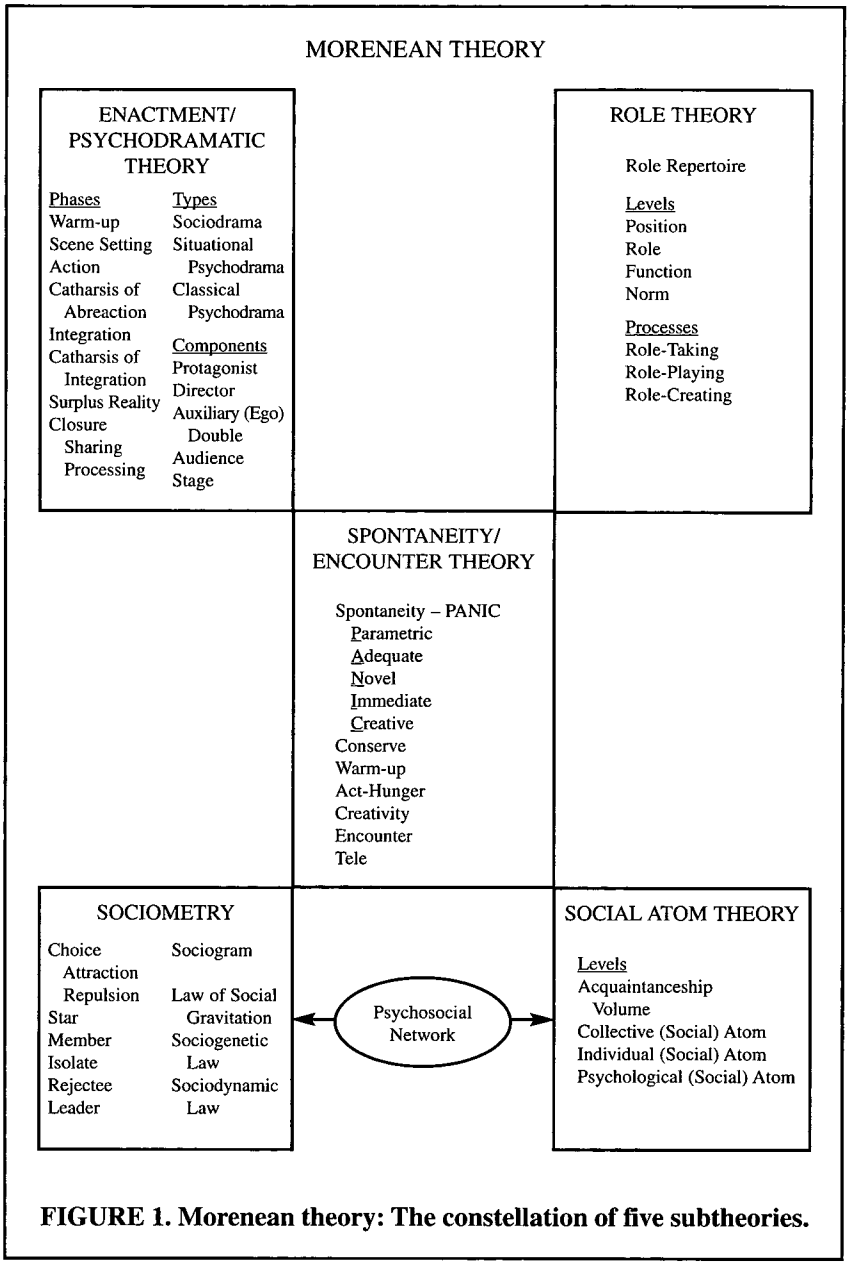


FIGURE 1. Morenean theory: The constellation of five subtheories.

Enactment Theory

Enactment theory deals with what most people believe is psychodrama, the portrayal of scenes from a client's life experience to work through problems. Of course, psychodramatic enactment has broader, more flexible goals than the mere resolution of problems. In any case, enactment theory provides the terminology to talk about and implement all enactments.

Overview of Enactment Theory

Hollander (1969) provided one of the most informative, classic descriptions of enactment theory (or psychodramatic theory) with the Hollander Curve. He integrates various other aspects of Morenean theory in explaining how the enactment emerges from group interaction during the warm-up phase, moves to the enactment proper, and culminates in the reentry to group dynamics in the closure. Once the director selects the protagonist representing the group theme, scenes are selected and portrayed on the stage, using the protagonist's conserves but incorporating the energy and connected issues of the other group members and the director as they serve as auxiliaries and audience. Act-hunger or potential energy is transformed to kinetic energy and channeled into examining and disrupting the conserves, reaching a peak at the catharsis of abreaction. New, more functional conserves are tried out and assimilated as the energy is focused through the use of surplus reality during the catharsis of integration. The enactment ends, and those engaged in the enactment return to group mode, where sharing, and possibly processing, occur.

Enactment Theory Constructs

Figure 1 contains the constructs essential to discussing enactment theory. The following explanations or definitions may make their connection clearer.

1. The *warm-up* is the phase in which group members are helped to focus their energies on the psychodrama enactment process and engage their spontaneity. Through different types of activities, the group members choose a common theme and a person to provide a structure for the action.
2. The *scene* provides a matrix around which the action occurs on the stage.
3. The *stage* contains the action and allows a structure to help differentiate space for different purposes—interviewing, enactment, or group interaction.
4. The *action* is the interplay of the protagonist and auxiliaries in the roles designated in the scene setting. It may be composed of a number of scenes.
5. The *protagonist* is the person selected by the group representing the chosen theme and providing the structure by which the theme is worked.

6. The *auxiliaries* are the active parts of the structure provided, representing significant features of the conserved situation or the scene. They may be significant others or important aspects that are necessary for the release of blocked energy. A special type of auxiliary—the *double*—stands for the internal processes of the protagonist, specifically feelings and thoughts. In a sense, the audience is also an auxiliary, providing a complementary perspective to that of the double, an external removed view that can be incorporated into the action either directly by becoming active auxiliaries or indirectly through the director or other auxiliaries.
7. *Act-hunger* conveys the idea of the blocked or misdirected energy that can be used more functionally to address the issue or problem or theme being explored.
8. The *catharsis of abreaction* results when the energies attendant on and indicated by the act-hunger of those involved in the action are released. Here that energy is focused but is not in a useful form.
9. The *catharsis of integration* brings that energy together in a different, potentially more functional, way and is an integration of the components present in or added to the action.
10. The *surplus reality* is the organization of these components in new ways not previously available.
11. *Closure* is reached in the final phase of the enactment when those present return to group interaction, sharing their personal reactions and reconnecting with each other, the protagonist, and the director. Processing, which is a more technical analysis of the drama, may occur later as another aspect of closure. It is a distinct, although similar pattern of interaction with a different goal and one that is best kept separate.

The director facilitates, promotes, provokes, coordinates, and choreographs the flow of energy within and between the various components and phases of enactment. The enactment process and the relationship of its constructs are illustrated in Figure 2.

Enactment Theory Connections

As the interaction starts, each group member brings patterns of thoughts, feelings, behavior, and interactions to the session (see Figure 3 for the imposition of ChT on the Hollander Curve). People are strange attractors whose patterns, although self-affined and fractal, are contained in a basin of attraction, providing a degree of consistency. Their patterns, individually and with each other, have to be shifted to a slightly different one and to a working mode, which is a different basin of attraction. The warm-up promotes the shift to the enactment pattern. In the transition, the enactment, action orientation, scene, and stage act are embedded basins of attraction that constrain and influence

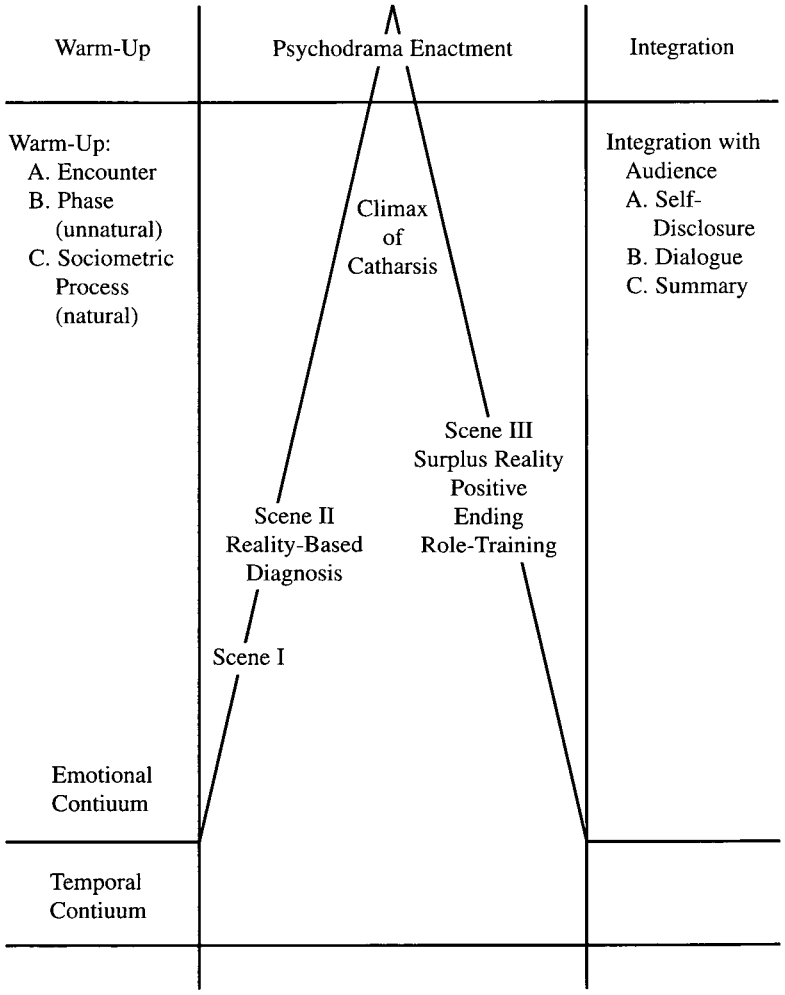


FIGURE 2. The Hollander psychodrama enactment curve. From *A Process for Psychodrama Training: The Hollander Psychodrama Curve,* by C. E. Hollander, 1969, Denver, CO: Snow Lion. Reprinted with permission.

the interaction patterns in certain desired directions. Through the warm-up and setting-the-scene phase, the specific choice of auxiliaries, the engagement of their energies and spontaneity, and the combination of individual attractors'

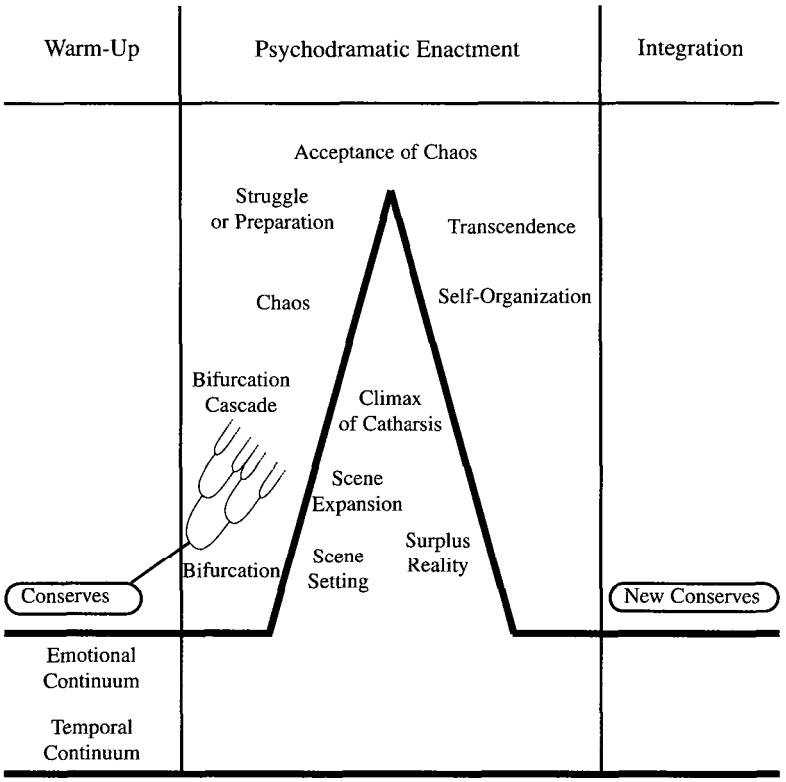


FIGURE 3. The imposition of chaos bifurcation on the enactment curve.

patterns are synergistically promoted by means of resonance. Their interacting also promotes recursive patterns. The choices made—who and what to include and on what to focus—define the phase space to be examined. As each auxiliary modifies the pattern that the protagonist indicates during the scene setting, the patterns are bifurcated. The bifurcations continue to occur in the context of the recursivity of the interactions. Those aspects produce chaos, which is the catharsis of abreaction that provides the system with the ability to change. Again altering the patterns of interaction through the techniques of surplus reality, the strange attractors self-organize their interaction patterns and produce new ones that are self-affined and fractal to the previously existing ones, integrating the components present, although in unpredictable ways. Once the catharsis of integration occurs, the pattern is again shifted to the larger basins

of attraction, which are the group interaction and the outside world where the new patterns of not only the protagonist but also each of the other members influenced by the process are enacted through the newly created conserves or strange attractor patterns. The orchestration of these patterns, moving between and among different patterns and different pattern levels, is influenced by the director, who is also a strange attractor but one who is more conscious not only of the various attractors, basins, and levels involved but also of the possibilities for influencing new pattern production.

An Example of Enactment Theory

A psychodrama group that has been meeting for a few months convenes on a Friday afternoon for two hours. As the members arrive, they chat with each other and are reconnecting (the pattern of interaction is self-affined and fractal, like those of similar meetings, but somewhat different, depending on such influences as the order of arrival and individuals' agendas). After a few minutes, the leader looks around and starts the session (switching the basin of attraction). A check-in takes place, as usual, warming the group to a desired pattern, allowing different members to express their act-hunger, and promoting the resonance that will allow the theme and the protagonist representing it to emerge. John has been having trouble leaving his job worries behind, a topic that others share. After a short period of confusion (chaos) in which the sorting out of the other members' needs and wants occurs, he is chosen as the protagonist. John comes up to the stage area, joining the leader/director who helps him through the interview to define the issue better by choosing and setting a specific scene (basin of attraction and phase space). John mentions a meeting with his boss that happened just before he left work. That scene is set—the office space represented, salient aspects described, and the auxiliary to "be" the boss selected. The director also contracts with John and the group to make the enactment follow the pattern of a situational psychodrama. Thus, the parameters defining the phase space, the strange attractors interacting, and the basins intended to contain the patterns generated are established—at least as predictably as psychodramatists know they can be.

In the initial scene, the patterns of difficulty as perceived by the protagonist are introduced. For example, John's boss Martha is portrayed. Soon, however, through the interactions with the director and auxiliary using such tools as role-reversal, soliloquy, and speaking in the first person, the patterns are bifurcated, as choice points are reached. As the scene unfolds, John becomes stuck, so a double is introduced, further adding energy and complexity to the interaction patterns, until the system shifts to a level of energy necessary for change. John experiences that catharsis of abreaction as a release of emotion—frustration—so intense that he breaks down and cries in front of his

boss. The boss experiences shock; the double experiences anger and confusion. The director, recognizing the opportunity, collaborates with John, the auxiliaries, and the audience to restructure the scene, retaining the components already present but adding a rotating wall of four members to represent a barrier between John and Martha as John sees it—a wall that appears and disappears, invites and then blocks. A wall is experienced by John and Martha in their relationship but perceived differently by each. John, Martha, the double, and the wall experiment with different patterns (i.e., configurations, approaches) until some self-organization to a more functional pattern appears through spontaneous interaction. John first role-reverses with Martha and different aspects of the wall, then dialogues with his double, tries out some changes, and finally settles on slowing the rotation of the wall so that he and Martha can at times be closer together to communicate more directly and differently; at other times they can return to the relative safety of having the barrier acknowledged. The director suggests that John and Martha may want to exercise more control over the wall's height, but John says he likes it as it is and will settle for influencing the sense of access between Martha and himself. This altered pattern of thoughts, feelings, and actions is then injected into an office scene between John and Martha with the "wall" removed from the stage. The director asks if John is finished. He indicates he is, for now. The director then moves the group to the closure phase by reconfiguring the group and having the auxiliaries de-role (shifting the basin of attraction) to allow the sharing to address issues of others' patterns, which are being influenced and perhaps disrupted, and to explore the resonance of the members.

Practice Connections

ChT tends to reinforce many of the tenets that psychodramatists learn about fostering beneficial enactments. It does strongly suggest the need for an open, collaborative leadership and directorial style but also for one that is balanced with enough structure to define the basins of attraction and phase space. To be effective, however, the director must be able not only to recognize but also to foster and tolerate the sense of confusion and disconcerting feelings that attend chaos. Otherwise, change will be impossible, and act-hunger will increase. On the one hand, because the patterns being dealt with are self-affined and fractal, the director and auxiliaries must have enough familiarity with them (e.g., when a group is having a hard time shifting into working mode or someone has lost spontaneity) to recognize changes and to have possibilities available for intervening, even though those conserves will have to be adapted (patterns bifurcated) to accommodate the situational demands. On the other hand, ChT disavows overdirecting, because any intervention will have a degree of unpredictability to it, especially in the long run. The director, auxiliaries, and audi-

ence, as interacting strange attractors, must allow the process to unfold, while influencing and following almost simultaneously. That aim or skill calls for spontaneity—the willingness to explore possibilities (i.e., bifurcations) openly and creatively. "Trusting in the process" means allowing self-organization (Remer, 1998) and relying on the system resonance in which the system patterns break up, re-emerge, and cohere in what is most functional at the moment. Effective psychodramatic enactment calls for embracing chaos.

Role Theory

Role theory addresses constellations of more or less consistent patterns of interaction and expectations that make us who we are and influence how we interact. Psychodramatically, our role repertoires make up Moreno's view of personality and its development.

Overview of Role Theory

Various versions of role theory have developed. Biddle (1979) offers one consistent with Moreno's writings and more clearly delineated. He offers a model of roles that has four layers—positions, roles, functions, and norms or expectations—from which he discusses how the roles, which constitute our patterns of behavior and interaction, develop, change, and are implemented. In essence, he suggests that we have constellations of roles that serve as conserves, allowing us to react in different situations and permitting us and others to judge whether those responses are appropriate. The four different levels also let us distinguish between types of patterns (e.g., social and psychodramatic ones as in mothers vs. a specific mother). The theory provides means for discussing phenomena related to behavior patterns, such as conflicts between patterns or role conflicts.

Role Theory Constructs

Figure 1 contains the constructs germane to role theory. In the following passage, I present further definitions and explanations for clarification:

1. A *position* is a constellation of roles used in a specific context. Examples are spouse, mother, and law enforcement officer.
2. A *role* is a relatively consistent pattern of behavior that has sufficient coherence to be labeled. Examples are supporter, antagonist, and joker. A position may, and usually does, have many roles involved with it.
3. A *function* designates the purpose of or action taken in a role. Roles often require many functions. Being a mother may require the role of supporter. Being a supporter may mean blowing noses, cleaning, setting limits—various functions demanded in implementing the role.

4. A *norm/expectation* is a rule by which a function is judged to be implemented effectively and appropriately. For example, a parent setting limits must do so consistent with societal constraints; the child cannot be severely beaten to reduce the incidence of a behavior. Norms and expectations are internal and external to an individual.
5. The *role repertoire* is the collection of all roles available to a person across all positions. In Morenean terms, it defines an individual's personality.

Figure 4 contains a representation of role constellations.

Role Theory Connections

With the focus of role theory on patterns, many of its connections with ChT are apparent. Roles, functions, and norms can be found appearing multiple times, not only in a given individual but also across people. Thus, patterns are self-affined. However, because the different positions generally require variations, the patterns are fractal. The role configuration evidences self-affinity at multiple levels, not only in the similarity of patterns but also in the way that they are generated. For example, one considers each construct as a strange attractor with its own basin of attraction (i.e., patterns that vary within boundaries), and role conflicts because the lack of role reciprocity can be portrayed at each level (see Figure 5).

Because interaction is central to role enactment, such interactions evidence the complexity of dynamical systems' patterns, particularly in their unpredictability. In her diagrams, Hale (1981) shows how the interactions of strange attractors (roles), even those involving just two people, quickly become complex. The reciprocity further demonstrates recursivity.

In looking at role development, bifurcation and self-organization can be seen in moving from role-taking (starting with a role conserve), to role playing (altering the basic role structure to adapt to new circumstances), to role-creating (reorganizing role structure so that the components have new relationships to each other). In fact, ChT conveys a better sense of what role-creating entails—a level of chaos to promote significant change, perhaps achieved through the bifurcation cascade engendered by rapid proliferation of role demands. Even the construct of position connotes defining a phase space, limiting the focus of description and exploration.

An Example of Role Theory

Let us consider the positions of parent and child. Jane has an infant, Jamie. As a baby, Jamie has a limited role repertoire—eater, sleeper, eliminator, crier. Jane needs to act as a feeder, observer, and caretaker. Certain aspects of the patterns of interaction between them may be attractive (e.g., caressing), oth-

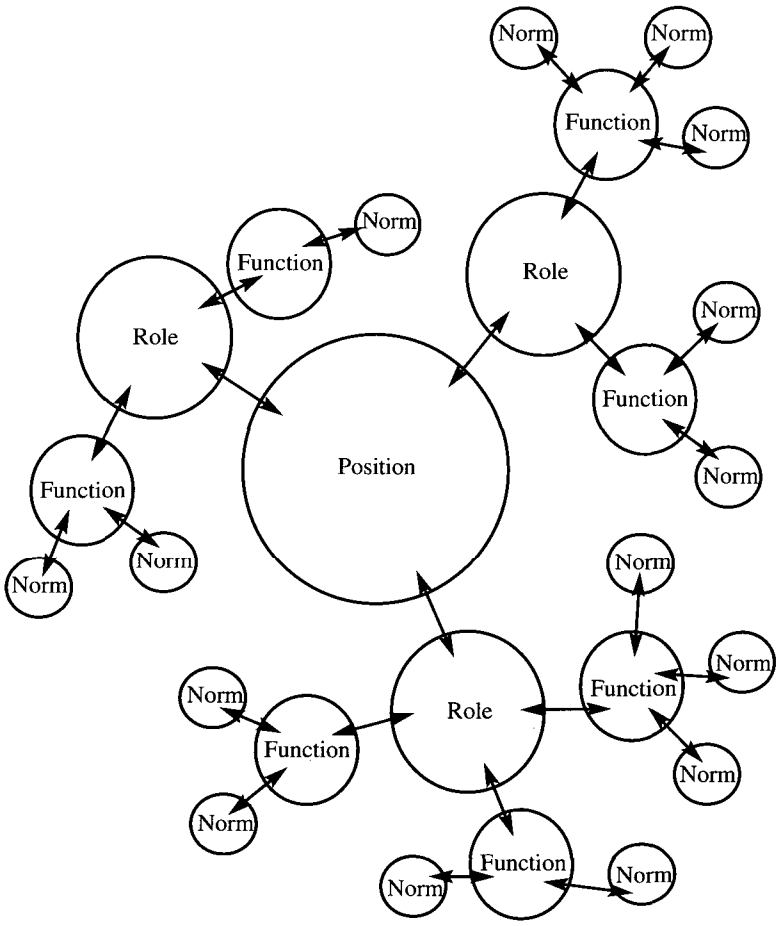


FIGURE 4. Role constellation diagram. Based on concepts from *Role Theory, Expectations, Identities, and Behaviors*, by B. J. Biddle, 1979, New York: Academic Press.

ers perhaps repulsive (e.g., diaper changing). However, assuming valences across either individuals or situations is unwarranted because of unpredictability (e.g., breast feeding). The two interact as strange attractors. As Jamie ages and develops, these simple patterns bifurcate. Jamie develops a number of different kinds of cries; Jane bifurcates her responses to address different demand variations, the proliferation fostered by recursivity. As the

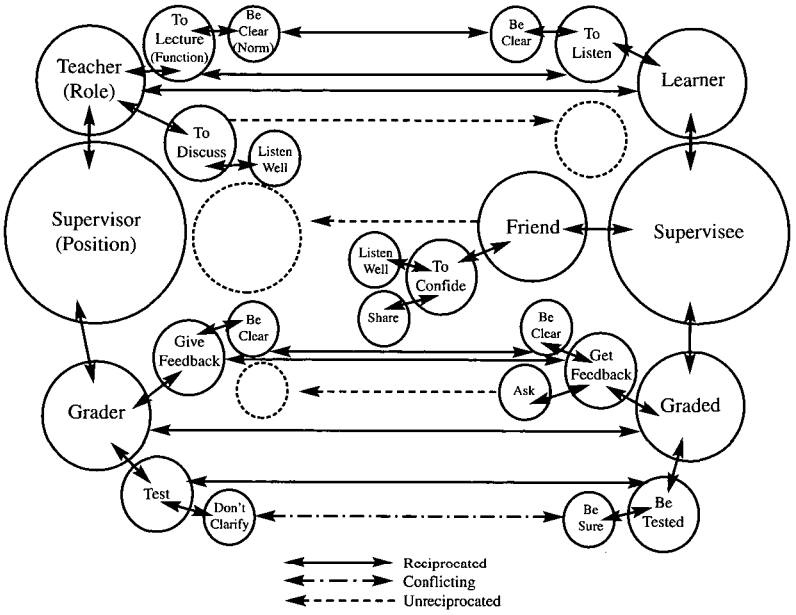


FIGURE 5. A diagram/example of role reciprocity indicating possible sources of role conflicts.

phase space expands, Jake, the father, enters the interactions; other family members are present; and friendships develop. The patterns become more complex, including many variations and bifurcations of roles, functions, and norms (e.g., Jamie learns to communicate differently with parents, friends, and others). These patterns are fractal and self-affined. Major transitions occur—developmental stages—usually accompanied by chaos and evidencing self-organization (e.g., the influence of peers during adolescence). Attempts to implement existing or past patterns of interaction that have proved viable (e.g., kissing Jamie goodbye at school) may just as easily backfire, producing unpredictable reactions (e.g., wiping the kiss off, kissing back, begging off the ritual). The patterns continue to morph throughout life (e.g., Jamie becomes a mother to Janine), and the connections of ChT to role theory are even more evident, even in genetic structure.

Role Theory Practice Connections

Especially where self-affinity and fractalness enter descriptions and interventions, ChT informs role theory and role patterns, evidencing both charac-

teristics. Role structures can be influenced, but only to a degree. The need for adaptability is stressed, reinforcing the development and expansion of role repertoires. Trying to control such development, however, is doomed to failure and is even self-defeating (i.e., producing the opposite affect to what was intended, such as when telling a teenager how to dress). Influences outside a given phase space and affecting patterns and basins of attraction have to be admitted. Chaos is inevitable, and self-organization will occur, with the most functional outcome resulting from injecting desired influences or components into the mix where they have a chance to be part of the next pattern. For example, in doing role-training, exposure to diverse role structures and situational demands should be engendered.

Sociometry

Sociometry (as distinct from social atom work) was developed to assess and measure experiences and explain the short-term interpersonal or social connections between and among individuals. In addition to describing patterns, sociometry provides ideas for influencing those patterns.

Overview of Sociometry

Sociometry deals with the assessment, use, and influence of transient interpersonal connections, like those of group members as manifest in choices made and implemented. Social choices vary according to situations, depending on the criteria for the choice, how those criteria are interpreted by the individual choosing, how choices are expected to be reciprocated, the attraction or repulsion of individuals for each other, and a host of other factors. The choices change as those factors vary. Patterns that are observed, however, tend to develop in certain more or less consistent ways: Patterns start with the basic unit, the dyad, and build to complexity from that base (*sociogenetic law*). Choices are not uniformly distributed among individuals (*sociodynamical law*). Connections are influenced by affinity, which is the attraction or repulsion, and the physical distance between individuals (*law of social gravitation*). Thus, group dynamics depend on the group sociometry, and group sociometry can be inferred from the group dynamics either directly (e.g., asking members to choose a designated criterion or criteria) or indirectly (e.g., by looking at the natural choices being made, such as who sits next to whom).

Sociometric Constructs

Figure 1 contains sociometry constructs. The clarification and expansion of those follow.

1. A sociometric *star* is a group member chosen most frequently by others in regard to a specific criterion. The star may be positive or negative, according to the valence of the criterion; the star may be of attraction, if the person is selected for inclusion, or rejection, if the person is actively excluded. Stars have significant influence on the group interaction patterns.
2. A *rejectee* is a person who is actively excluded by members of the group and not chosen for inclusion by any member of the group. If this pattern is manifest over many criteria, the rejectee status is a concern. Rejectees demand energy from the group.
3. An *isolate* is a person who is neither actively included nor excluded by all group members. Isolates also draw energy from the group by their presence. Similarly, if this pattern is manifest over many criteria, the isolate status is a concern. If isolates are not eventually included as members, they may become rejectees.
4. A *member* is a person in the group who receives some choices, at least some inclusions, and perhaps some active exclusions from other group members.
5. A sociometric *leader* is a group member who frequently, if not always, is chosen as the star. Leaders are influential across many situations.

An illustration of a possible diagram of one group's sociometry through the use of the constructs can be found in Figure 6.

Sociometric Theory Connections

Although bearing different labels, each of the group sociometric positions described is a strange attractor acting within the individual's basin (generating relatively consistent patterns of personal interaction style, such as shyness, collegiality, or aggressiveness) and within the larger basin of the group itself. These patterns are fractal and self-affined across group sessions, different group configurations (e.g., seating arrangements, absent members), different periods in a session, and even other group situations. They are self-affined even to the larger basin of attraction of the world outside the group, which is what makes the group interaction as a basin for intervention so valuable. Although the group sociometry may seem stable—the attractors look more like focal points of fixed or cyclical patterns—the group is still a dynamical system. The degree of sensitivity may change abruptly with the loss or addition of members or changes in choices. The chaotic nature, particularly the aspects of resonance and self-organization, is most apparent during transitions in stages of group development, in which the phase space or basin of attraction of the group interaction patterns may shift drastically with the chaotic nature of patterns during transition readily observable. Interventions to alter group sociometry also evidence the dynamic nature. Moves intended for one result (e.g., pairing a star with an isolate or rejectee to increase the chance for

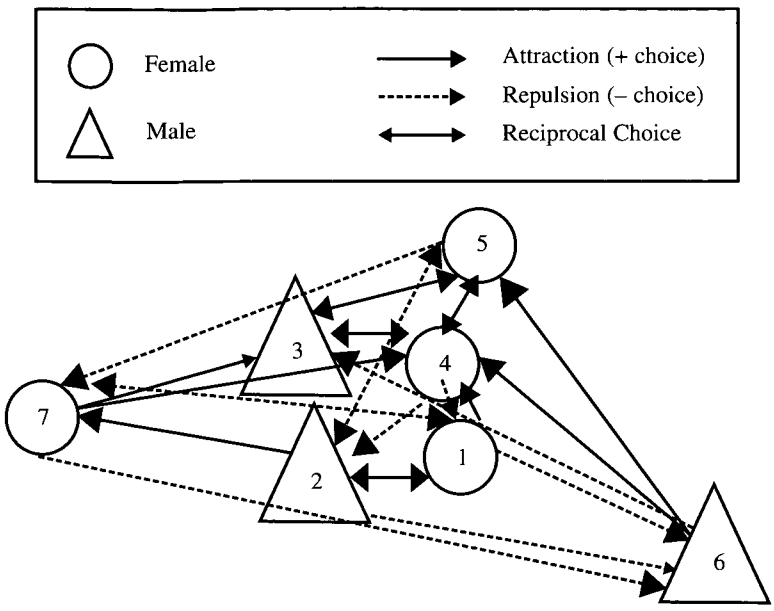


FIGURE 6. An example of a sociometry diagram (sociogram).

inclusion) may have the opposite effect (e.g., creating a group schism), demonstrating the unpredictability of interaction patterns. Still, the laws of sociometry are consistent with ChT. The patterns bifurcate as the interaction expands outward from the dyad to more complex configurations, sometimes resulting in such chaos that self-organization produces a pattern highly fractal to what existed previously. As strange attractors, dyads manifest the mix of attractions and repulsions expected by ChT and social gravitation, with the patterns changing over time to influence the patterns that are labeled group stages (e.g., a member can be put off in the working stage by the same pattern, such as holding down expression of emotion that was found attractive in the forming stage). Although we can predict patterns in the short term and within a basin, as per sociodynamics, the longterm ebbs and flows and the unpredictability of the sociometry are evident.

An Example of Sociometric Theory

Jim and Mary have been long-standing members of a training group of eight that has met fairly consistently for over two years. They had a strong

sociometric connection from when they, as newcomers to the group, were relative isolates at the same time. With some changes in group composition, they have emerged as leaders—the dominant strange attractors. Jim tends to be the task leader, the one to whom the group looks to "get things done." Mary usually emerges as the maintenance leader, the star when people need emotional support. Although others also serve these functions, particularly when the phase space shifts to Jim or Mary during an interaction, the patterns fall within a relatively stable basin of attraction. Mary's pattern slows interaction down; Jim's speeds it up. The group benefits from both influences (attractors) at some times and is negatively affected by both at other times.

The facilitator notes a bifurcation in the group pattern, a schism forming along gender lines when the group members' goals seem to conflict. At this juncture, the group composition changes. First, one male member receives a promotion that requires him to move across the country, thus removing his pattern of interaction from the mix and exacerbating the schism. Shortly after, another male member has a family crisis that draws him away from the group for an extended period of time, leaving Jim as the sole man in the training group. Although the new group patterns are self-affined to those previously experienced, the degree of fractalness with Jim's pattern has increased. Jim becomes a rejectee. The more he attempts to exert his influence on the group, the more the other members, led by Mary, resist; the more they resist, the harder Jim tries—a recursive situation. A confrontation occurs between Mary and Jim, throwing the group into chaos and preventing either Mary or Jim from being able to function effectively from a preferred pattern. The facilitator (I use the term *facilitator* rather than *leader* here to make the distinction from the term *sociometric leader*), recognizing the danger of being perceived as siding with one or the other, makes a process observation about the group interaction pattern to the group as a whole (shifting the basin of attraction and defining the phase space) and tells the group that they have to use what they have learned to address the situation. On one hand, that directive increases the chaos but, on the other, contains it. The other trainees eventually deal with the confusion, and Pat emerges as the star who is able to ameliorate the situation by combining aspects of both task and maintenance patterns. The self-organization accommodates the demands of the situation by redistributing the patterns of responsibility-taking. The positions—patterns of interaction—of Mary, Jim, and Pat are altered somewhat, as is the entire group sociometry.

Sociometry Practice Connections

ChT emphasizes the necessity of being aware of the group sociometry and the limitations on influencing it. For a facilitator or director, it is important to recognize the pattern consistencies and inconsistencies of both the indi-

viduals and the group as a whole (strange attractors with basins) to be able to glean possibilities to promote functional sociometry. Grasping the nature of the dynamic relationships that can maintain a certain sociometry or disrupt it, and the unpredictability inherent in those relationships, can help facilitators in their efforts to provide a viable, working relationship for a group. In particular, realizing the recursive, influential nature of simply focusing on the sociometry (Heisenberg unpredictability) better prepares the facilitator to recognize possibilities and adapt to more or less unpredictable changes in the situation.

Social Atom Theory

The focus of the social atom theory is the more long-term relationships among people. The theory deals with why and how individuals become important in each others' lives, and why those patterns can change—or not change. Where sociometry has a group-pattern perspective, the social atom refers to the constellation of connections around an individual.

Overview of Social Atom Theory

As social beings, we have numerous patterns of connections with others. In Morenean theory, we cannot successfully function, or even exist, without some minimum number of certain types of such connections. This phenomenon is addressed through our social atom (SA).

Not all people are equally bonded to us. Different qualitative and quantitative levels of connection, as we perceive them, exist. Those present in our lives populate these structures, or our social atoms. Although these constellations have a more or less consistent pattern, they still fluctuate. Others come and go and become more or less important in our lives, varying from mere fleeting contacts to deep abiding relationships. The concept of social atom provides some description and understanding of those patterns, the necessity for them, and insight into how they might be influenced.

Social Atom Theory Constructs

Four constructs that form the basis for addressing social atoms areas are as follows:

1. The *acquaintanceship volume* is composed of all the people (and sometimes other entities) of whom we are aware and with whom we have some perceived connection.
2. The *collectives* are groups of individuals who share a common connection,

although they may share more than one. The *collective (social) atom* is the minimum number of such groups with which an individual must maintain contact to survive and function.

3. The *psychological (social) atom* is the nucleus (the minimum core) composed of those persons without whom we could not survive. Unfortunately, Moreno never coined a term to capture the essence of this description. The popular term that comes closest to fitting that need might be *significant other (SO)*. SOs are those with whom we have many, strong connections, usually reciprocal.
4. The *individual (social) atom* is composed of those people with whom we have multiple connections of a somewhat mutual but more transitory nature. In a sense, their essence is captured as being somewhere between the collective and psychological levels, that is, more than just someone seen regularly with some connection but not a person essential to survival. Still, that these connections may not be active or actively pursued at a particular moment does not preclude their becoming so again. Labeling those people comprising this level of "individuals" leaves something to be desired. Moreno did not supply a term. "Acquaintance" tends to understate the strength of the connection; "friend" seems to overstate it (in both instances depending on the idiosyncratic meaning of those labels). Perhaps "associate," "colleague," or "companion" might serve as an appropriate term.

Figure 7 contains social atom theory constructs and their relationship.

Social Atom Theory Connections

If one considers the types of connections between people and their patterns with the people at different levels of the SA, the self-affined and fractal characteristics are apparent. There are not only similarities of content exchange patterns (shared interests) but also similarities of interaction patterns. If one considers individuals as strange attractors, one recognizes that the self-affined and fractal aspects of patterns (e.g., role complementarities, cultural background) influence attractions and repulsions in just the kind of unpredictable manner ascribed to chaotic patterns. Bifurcation, bifurcation cascade, and self-organization are evident in one-on-one relationship patterns, multiple interactions (e.g., in collectives), and in the expansion of the SA as a whole (i.e., the addition of collectives, individual, and even whole large basins of attraction such as new work places or communities) with patterns becoming more complex, at times to the point of reaching disruption, then being reorganized in self-affined ways. Recursivity is inherent in the patterns and their generation if only by the definition of a relationship. Moreover, the recursive nature of interaction patterns as they develop and fluctuate is evident as con-

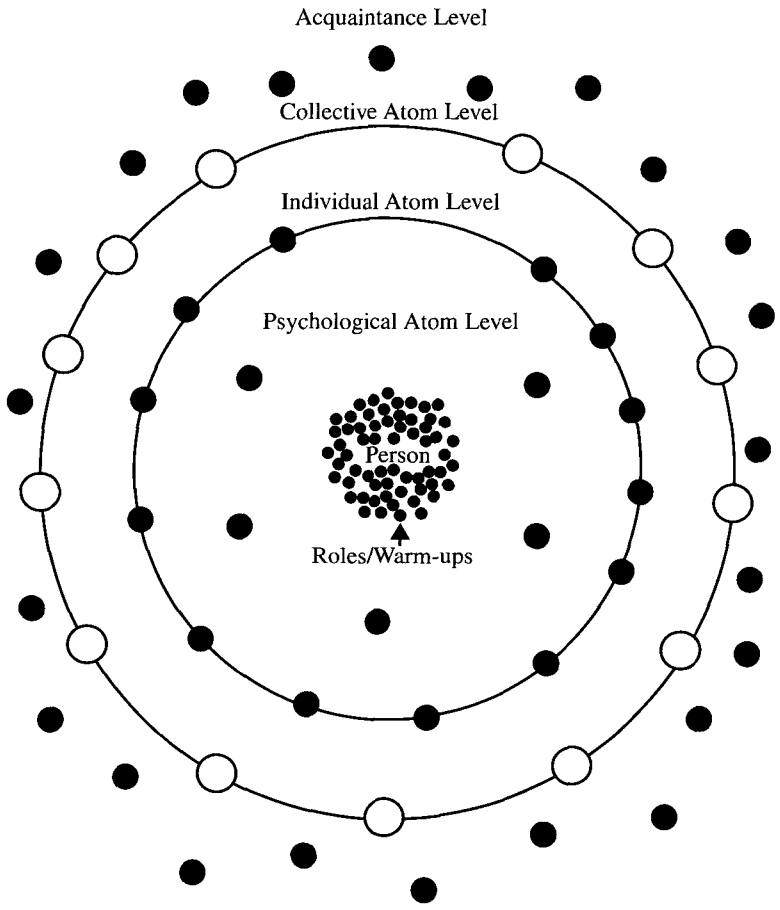


FIGURE 7. A conceptualization of the social atom structure.

nections ebb and flow. The SA itself designates a phase space, constraining examination of relationship patterns to a particular set of factors or a perspective and a basin of attraction because it contains the fluctuating perceptions of the person whose SA is being considered.

An Example of Social Atom Theory

Justin and Miyoko major in international studies. They have been in class together and are members of the same jogging group. After they start all in

present tense sharing lunch times and chatting, they discover they hve more interests in common. They start seeing each other more frequently, increasing contact and finding more commonalities and a few differences. Justin tends to make the plans, and Miyoko likes his take-charge, responsible approach. Justin appreciates Miyoko's relaxed, go-with-the-flow bent. As they spend more time together, each is introduced to the other's circle of friends. At first, all goes well, but after a few months they find themselves spending time mainly with Justin's friends. When Miyoko mentions this to Justin, he responds in a mixed way. He says that she should either spend time with her friends or set up social occasions for them to meet her friends as a couple. When she does, he criticizes her choices—whom to see, where to go. Justin starts spending more time alone with his friends because Miyoko does not want to go along. He wonders why she has become so pushy. Eventually, they have a huge disagreement, resulting in their not seeing each other for a month. However, they get back together and extend their contacts with the friends that they have in common, with each still spending some reduced time with old connections.

Starting at the collective level as the basin of attraction, strange attractors Justin and Miyoko begin to interact, mixing their patterns and generating a new pattern that is self-affined and fractal to their previous patterns and contained in the basin of attraction of their relationship, thus entering each other's SAs. These patterns are part of their individual, previously experienced SA patterns and incorporate their patterns of feeling, thought, behaviors, and interactions. As they continue their contact, the patterns bifurcate to include the other's strange attractor patterns and the members of each one's SA. As bifurcation occurs, valences of attractors reverse, and behaviors that were attractive now tend to repulse (e.g., "go with the flow" becomes "lack of interest," "take charge" becomes "controlling"). The phase space also shifts, with more emphasis on personal needs and wants. Their patterns become more complex (influenced by friends' patterns and inputs, affected by recursivity) until they become chaotic (i. e., confusing, disconcerting, unpredictable). After a period of disruption, the patterns self-organize into different patterns that are both similar to (self-affined) and different from (fractal) the previous patterns (i. e., spending time with old friends but incorporating new relationships).

Social Atom Theory Practice Connections

Injecting ChT constructs into their relationship helps explain and normalize the phenomena being experienced. Knowledge of bifurcation allows people to understand that relationships are complex and unpredictable. They can grasp and benefit from viewing others and themselves as strange attractors whose patterns vary and influence each other recursively. Some can even

admit that the same aspects of relationships that are attractive in certain situations are repellent in others. Helping shift the phase space from the individual SA—look at the facets of the SA from another perspective, perhaps through role-reversal or mirror—is often influential in and of itself. Knowledge of self-organization and unpredictability can help people struggling with the lack of control inherent in human connections.

Spontaneity/Encounter Theory

Spontaneity/encounter theory is central to the Morenean system. It primarily addresses the phenomena that are essential to all the other subtheories—bonding, trust, and interactive energy. In particular, it focuses on adaptability to interpersonal and other life situations.

Overview of Spontaniety/Encounter Theory

I have pulled two areas of Morenean theory together because I see them at the center of the subtheory constellation, necessary to the understanding and implementation of all other areas. Perhaps commonality is insufficient to group them, and they should be considered as separate. However, given the essential interpersonal and social nature of all Morenean thought, I believe that they are inextricably linked—one cannot have effective encounter without spontaneity, and one cannot have spontaneity in interpersonal interactions without encounter.

Having spontaneity means one has the ability to respond to new circumstances adequately or to react in "old" situations creatively, energetically, and appropriately (Moreno, 1953/1993). The criteria, as indicated by the acronym PANIC, to judge whether one is acting spontaneously is as follows:

The action must be (a) within the **p**arameters of the situation, (b) **a**dequate to the demands of the situation, (c) **n**ovel, to generate energy to have an impact, (d) **i**mmediate, in the present moment, and (e) **c**reative, modifying the established pattern from which the action arises to increase future adaptability. (Hollander, personal communication, January 28, 1985, acronym mine).

As indicated by the last criterion, spontaneity is grounded in a structure that has developed from previous experience, either one's personal experience or that of others.

In particular, when others are involved, being spontaneous requires adjusting to demands injected by others' needs and perceptions as well as one's own needs (e.g., acting assertively). Assessing what these requirements might be (i.e., meeting the first two criteria) necessitates encounter—connecting with others in a congruent, honest, and open manner. To engage in a productive encounter, one must be able to recognize the basic structure of the interaction and adapt accordingly (i.e., respond spontaneously). To have a functional

encounter, one must be clear about one's own needs and perceptions and must be willing and able to see the situation from another's perspective and, at times, others' perspectives (i.e., role reverse with the other being encountered and able to convey an understanding of and respect for the other's view; Hale, 1981; Remer & de Mesquita, 1990).

Whether therapists are promoting a functional enactment, exploring and attending to role structures, examining and repairing social atom relationships, or dealing with the sociometry of a group, encounter and spontaneity come into play. Spontaneity and encounter theories supply the terms and understandings to do so.

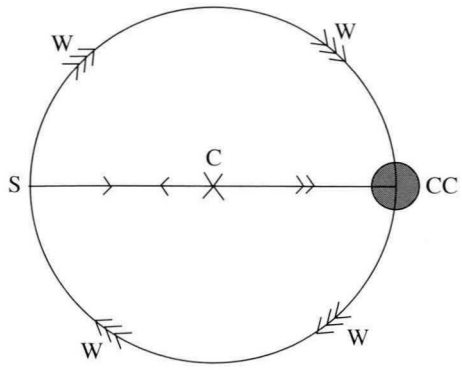
Spontaneity/Encounter Theory Constructs

The following five constructs are involved in understanding spontaneity theory:

1. *Spontaneity* is a quality or characteristic possessed by people that allows them to act in accord with the PANIC criteria to meet the goals of adaptability already mentioned in the definition.
2. A *conserve* is a structure based on past experience that provides direction for acting effectively in a given situation.
3. *Warm-up* is a multidimensional process (e.g., cognitive, emotional, physical, chemical, social) that engages energy for addressing situational demands and promotes the selection of an appropriate conserve and the ability of interactively modifying that conserve to meet the demands.
4. *Creativity* is the ability to establish a modified conserve, link it to other relevant conserves, and convey those connections to others.
5. *Act-hunger* describes the constellation of reactions (i.e., thoughts and emotions) of individuals when an action does not satisfy the PANIC criteria, thus resulting in lack of closure.

The primary construct of encounter theory is *tele*. On a basic level, tele is the ability to "see" and "be seen," that is, to recognize the patterns of other individuals as they really are and the ability to allow others to recognize one's own patterns accurately, as epitomized by Moreno's classic and graphic description cited by Hale (1981, p. 93). Tele is in contrast to *transference*, which is projecting one's unwarranted perceptions of others on to them (e.g., seeing them as you need to see them, not as they really are). As a result of the encounter process, tele between individuals can be influenced, although not primarily consciously, so that bonding, trust, comfort, connection, and communication are affected. In instances of strong tele, the resonance quality of patterns and connections is clearly evident between and even among those interacting. Figure 8 contains the canon of creativity (Moreno, 1953/1993),

WHO SHALL SURVIVE?
CANON OF CREATIVITY
SPONTANEITY-CREATIVITY-CONSERVE



FIELD OF ROTATING OPERATIONS BETWEEN SPONTANEITY-CREATIVITY-CULTURAL CONSERVE (S-C-CC)

S — Spontaneity; C — Creativity; CC — Cultural (or any) Conserve (e.g., a biological conserve; i.e., an animal organism, or a cultural conserve; i.e., a book, a motion picture, or a robot; i.e., a calculating machine); W—Warm-up is the "operational" expression of spontaneity. The circle represents the field of operations between S, C, and CC.

Operation I: Spontaneity arouses Creativity, C. S → C.
Operation II: Creativity is receptive to spontaneity. S ← C.
Operation III: From their interaction Cultural Conserves, CC, result. S—>>CC.
Operation IV: Conserves (CC) would accumulate indefinitely and remain "in cold storage." They need to be be reborn; the catalyzer Spontaneity revitalizes them.

CC—>>>S—>>>CC.

S does not operate in a vaccuum, it moves either towards Creativity or towards Conserves.

Total Operation
Spontaneity-creativity-warming up—act < actor / conserve

FIGURE 8. The canon of creativity. From *Who Shall Survive? Foundations of Sociometry, Group Psychotherapy, and Sociodrama* (Student ed.), by J. L. Moreno, 1993, Roanoke, VA: Royal. Reprinted with permission of American Society of Group Psychotherapy & Psychodrama.

which is a portrayal of the central process of the spontaneity theory and its constructs.

Spontaniety/Encounter Theory Connections

The spontaneity process is clearly dynamical. Conserves are strange attractors, and warm-ups release and focus the energy necessary for self-organization. Patterns of spontaneity, warm-up, creativity, and act-hunger are self-affined and fractal over time and, in many ways, with others' patterns. Although they certainly are within basins and in the short term, predictable, they can vary a great deal, depending on situational influences. That spontaneity requires parameters means that a phase space is defined. The process is recursive, with conserves influencing warm-ups, warm-ups influencing spontaneity level, spontaneity influencing creativity, creativity influencing conserves, although recursively and not linearly. During both the process and its outcome, the modified conserve is self-affined and fractal, which allows conserves to serve as the basis for action and which requires adaptability. The flow, however, is neither linear nor cyclical, but rather nonindependent and interactive or unpredictable and complex. During the process, conserves are bifurcated, often to the point of cascade, particularly when others (strange attractors) and their patterns are involved (for more detailed analysis, see Remer, 1996).

Similarly, encounter is chaotic. As anyone who has engaged in the process can attest, the disconcerting reaction engendered by opening one's patterns to exploration (both a "butterfly" and Heisenberg unpredictability phenomenon) is an experience of chaos, but one that is necessary for patterns to be influenced. The recursive interaction of strange attractors is a necessity but is typically effective only if contained in the larger basin of attraction provided by the pattern of encounter (Hale, 1981) and, usually, by a group setting or at least the presence of a third party.

An Example

Juan and Melba are two group members. Recently, Melba said something about men that affronted Juan. Juan blew up at her, calling her a dumb feminist. Melba has said little in the group since, and the other members are upset and concerned about both of them and the group's future as a whole. The facilitator offers to help them work on their problem through an encounter. Through a series of direct interactions (making owned statements), role-reversals (acknowledging having heard the other's statement and position), and doubling each other (promoting an appreciation for the thoughts and feelings), Juan is able to express his irritation in a constructive manner. Melba is similarly able to clarify her message and intent in a more assertive way. Both find they can

respond differently in the group and outside. The other group members are asked to share their own owned responses to the interaction. The group members' anxiety decreases, and they find themselves more willing to be direct in conveying their reactions to each other.

Melba and Juan, and the other group members for that matter, have act-hunger, their patterns of interaction having been disrupted to the point of experiencing chaos. Each, as a strange attractor, is operating out of a basin of attraction. The interaction patterns of all are evidencing self-affinity to those previously produced and are conserved. Sufficient energy has been generated to allow a change in the system dynamicals in which the tuning constant is in a range where change can occur. The patterns will eventually self-organize one way or the other. The group may dissolve, a schism may form, or other patterns are possible. However, the best chance for influencing the patterns is through containing the interaction in a basin of attraction by suggesting possibilities and by promoting particular patterns (e.g., encounter patterns). Engendering the spontaneity process will bifurcate the conserves, producing more possible patterns of interaction with the more functional ones being positive attractors. Although the outcome is unpredictable to a greater or lesser degree (e.g., Juan, Melba, or other group members may not respond as hoped), counting on the previously occurring patterns to be part of the mix, the tele (resonance of the group members) must be relied on. Shifting the phase space (e.g., highlighting the group sociometry) as part of the process will likely also influence the patterns. The hope is that, as the collective of strange attractors interact, the individual patterns of thought, feeling, and action will produce new self-affined but fractal patterns better suited to the situation at every strange attractor basin level, that of the individual, group, and beyond.

Practice Connections

On the one hand, the parallels between the canon of creativity and ChT reinforce the insights offered by Moreno (1953/1993) about how spontaneity operates to allow continual adaptation and the necessity for being able to adapt. The unpredictability of dynamical system patterns points to the need. The fractal and self-affined characteristics relate to important facets of the outcome, a revised conserve. The process of bifurcation indicates the "how." On the other hand, the constructs and interventions supplied by Morenean theory give means to cope with the impact of dynamical human systems, areas not within the purview of ChT. Methods of spontaneity training, role-training, sociometric analysis, and enactment help in promoting and containing chaotic patterns.

When encounter is examined, the image of two strange attractors interacting to generate new patterns within a larger basin of attraction suggest an

approach and a goal for dealing with chaotic interaction patterns, emphasizing and increasing self-affinity, and acknowledging and positively reframing fractal aspects. Similar to the observations on spontaneity, role-reversal, doubling, and guidance offered by sociometry theory (e.g., the sociogenetic law—pairing of individuals to promote telic connections thus shifting the phase space and operating within a different basin) again suggest direction. Trusting the process emphasizes the need to trust in such interacting systems to self-organize and find functional patterns as the constituent systems define them.

Conclusion

Each subtheory exposition can be expanded and examined further in its own right (e.g., Remer, 1996, 1998, 2001a, 2001b). The limiting of the phase space allows more detailed explanation, understanding, and generation of ideas on a given focus. In each case, the "fit" and mutual enhancement of ChT and Morenean theory is apparent.

ChT normalizes the experience of chaos attendant on sociometric interactions and promotes a tolerance of reactions to dynamical system situations, if not of an embracing of chaos; Morenean theory provides tools for working in and with human interaction dynamical patterns. Because Morenean theory by philosophy, design, and implementation is innately dynamic, it already operates in this phase space and in many cases, operates better than do other theories (e.g., for application of the mesh of both theories to families and trauma treatment, see Remer, 2000, 2004, 2005b).

As I (Remer, 2005a) indicate, the implications for further expansion of theory, practice, and research can reach beyond the present phase space and basin of attraction, even to disrupting the present philosophical conserve, logical positivism, by which and in which our patterns are constrained. Particularly, ChT may affect the way we approach doing research. That topic, although extremely important, is beyond the scope of the present discourse and begs for further examination. Because of the synergistic relationship of ChT and Morenean theory, continued exploration can likely prove beneficial to both theories.

NOTE

*The need for this type of expanded and more complete explanation points to the difficulty in conveying the sense of ChT adequately. For some, the short version is acceptable; for others, the longer version is desirable. Much depends on the reader's background and awareness of or tolerance for ambiguity. However, there is only so much space for presentation so I have had to make accommodations, compromises, and choices about how much is enough. I hope I have made functional ones, if not entirely the right ones, for each reader.

REFERENCES

Biddle, B. J. (1979). *Role theory, expectations, identities, and behaviors*. New York: Academic.

Hale, A. E. (1981). *Conducting clinical sociometric explorations: A manual for psychodramatists and sociometrists*. Roanoke, VA: Royal.

Hollander, C. E. (1969). *A process for psychodrama training: The Hollander psychodrama curve* (p. 14). Denver, CO: Snow Lion.

Moreno, J. L. (1993). Who shall survive? *Foundations of sociometry, group psychotherapy and sociodrama* (Student ed.; p. 18). Roanoke, VA: Royal. (Original work published 1953)

Remer, R. (1996). Chaos theory and the canon of creativity. *Journal of Group Psychotherapy, Psychodrama, and Sociometry, 48*, 145–155.

Remer, R. (1998). Chaos theory and the Hollander psychodrama curve: Trusting the process. *The International Journal of Action Methods: Psychodrama, Skill Training, and Role-Playing, 50*, 51–70.

Remer, R. (2000). Sociatric interventions with secondary victims of trauma: Producing secondary survivors. In P. F. Kellermann & M. K. Hudgins (Eds.), *Psychodrama and trauma: Acting out your pain* (pp. 316–341). London: Jessica Kingsley.

Remer, R. (2001a). The evolution of sociometric theory from a chaos perspective. *International Journal of Action Methods: Psychodrama, Skill Training, and Role-Playing, 53*, 17–32.

Remer, R. (2001b). Social atom theory revisited. *International Journal of Action Methods: Psychodrama, Skill Training, and Role-Playing, 54*, 74–83.

Remer, R. (2004). When a partner is traumatized: Learning to cope with chaos. In D. R. Catherall (Ed.), *The handbook of trauma and the family* (pp. 51–68). New York: Brunner-Routledge.

Remer, R. (2005a). An introduction to chaos theory for psychodramatists. *Journal of Group Psychotherapy, Psychodrama, and Sociometry, 58*, 130–150.

Remer, R. (2005b). Family disruption: Chaos vs. havoc. In V. L. Bengston, A. C. Adcock, K. R. Allen, P. Dilworth-Anderson, & D. M. Klein (Eds.), *Sourcebook on family theory and research* (pp. 123–124). Thousand Oaks, CA: Sage.

Remer, R., & de Mesquita, P. J. (1990). Teaching and learning the skills of interpersonal confrontations. In D. D. Cahn (Ed.), *Intimates in conflict* (pp. 225–252). Hillsdale, NJ: Lawrence Erlbaum.

RORY REMER is a professor in the Department of Educational and Counseling Psychology at the University of Kentucky in Lexington. His e-mail address is rremer@uk.edu.