Dynamical Social Psychology: Complexity and Coherence in Human Experience

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Abstract
Human experience reflects the interplay of multiple influences operating on various time scales to promote constantly evolving patterns of thought, emotion, and action. Although the complexity and dynamism of personal and social phenomena have long been recognized, they are difficult to investigate using traditional research methods. This article provides an overview of dynamical social psychology, an approach adapted from dynamical systems theory that is designed to capture the complementary tendencies of stability and dynamism at different levels of social reality, from private thoughts to intergroup relations. Utilizing time-series analyses and computer simulations, this perspective documents the emergence of global properties from the interaction of basic elements in mental and social systems and investigates the time-dependent relation between external influences and a system’s internally generated dynamics. The dynamical approach enables social psychology to advance as a precise science while preserving the basic insights that launched the field over a century ago.

While the taxi was stopped, waiting for a traffic light, Daisy and her friend came out the back of the theater. And if only one thing had happened differently: if that shoelace hadn’t broken; or that delivery truck had moved moments earlier; or that package had been wrapped and ready, because the girl hadn’t broken up with her boyfriend; or that man had set his alarm and got up five minutes earlier; or that taxi driver hadn’t stopped for a cup of coffee; or that woman had remembered her coat, and got into an earlier cab, Daisy and her friend would’ve crossed the street, and the taxi would’ve driven by. But life being what it is – a series of intersecting lives and incidents, out of anyone’s control – that taxi did not go by, and that driver was momentarily distracted, and that taxi hit Daisy, and her leg was crushed.

This scene from ‘The Curious Case of Benjamin Button’ illustrates both what is arguably the signature feature of human experience and what is fundamentally wrong with social psychological theory. Life as it is experienced, even in the most banal of circumstances, is complex and dynamic. Every momentary thought or action represents a punctuation point in a continuous flow of events that interact over time, producing a complex trajectory of points that defines our personal and interpersonal lives. To understand human thought and behavior is to identify meaningful patterns in the flow of experience, while acknowledging the potential for transformation of these patterns owing to the particular confluence of forces at any point in time. However, a recognition that temporal patterns and their potential for change represent the essence of human experience has yet to find a secure home in social psychology. Largely for reasons of convenience, the standard approach to personal and interpersonal processes essentially stops the clock to isolate static features of mind and action that are tethered to a small number of external causes.
This state of affairs shows signs of changing, with the emergence of a new paradigm for psychology that pays homage to the complexity and dynamism of human thought and behavior (cf. Guastello, Koopmans, & Pincus, 2009). Fields as diverse as cognitive neuroscience (cf. Port & Van Gelder, 1995), developmental psychology (e.g., van Geert, 1991; Smith & Thelen, 1993; Thelen & Smith, 1994), organizational behavior (Axelrod & Cohen, 1999; Guastello, 1995), and political sociology (e.g., Axelrod, 1984) are being reframed in terms that allow insight into basic dynamic properties that were routinely overlooked for want of appropriate tools. Dynamical social psychology is an instance of this approach that attempts to reframe the topical landscape of social psychology – from micro processes within the individual to macro processes within social systems – in terms of basic principles of dynamical systems and complexity science (cf. Nowak & Vallacher, 1998; Vallacher & Nowak, 1994a, 1997, 2006, 2007).

The dynamical approach is distinguished from the traditional approach in two ways. First, it recognizes that an external force does not simply ‘cause’ a one-step response in a person or group, but rather triggers a process that unfolds over time, and does so through its interaction with the internal dynamics of the person or group. Focusing only on a response at some arbitrary (but convenient) point in time may be uninformative, even misleading. The immediate aftermath of an external force may diminish, perhaps rapidly or perhaps slowly, or it may become intensified – again, perhaps rapidly or slowly. A person who is insulted at time 1, for example, may experience anger or intimidation at time 2 (e.g., right away) but over time this experience may evolve in completely different directions – diminishing, intensifying, or perhaps oscillating between these feelings.

The second distinguishing feature of dynamical social psychology is the recognition that external forces do not operate in isolation but rather interact with each other in complex ways to promote a trajectory of thought, emotion, and behavior. Narrowing the playing field to a small number of factors makes sense from a pragmatic point of view – after all, no one wants to decompose the statistical interaction among more than three independent variables. But in principle – and perhaps in reality as well – the effect of a set of variables may change dramatically when considered in light of other relevant variables in a particular context. The trajectory of thoughts and feelings generated by an insult, for example, may differ dramatically depending on an untold number of other factors – the way in which the insult is delivered, the relationship between the insulter and ‘insultee,’ the mood or self-esteem of the insultee, the presence or absence of witnesses, and so forth. The interplay of these factors, moreover, is not simply a combination of their separate influences but rather may represent an ‘emergent’ phenomenon that would not occur if any of the factors were not operative at that moment.

**Dynamical Social Psychology in Context**

Taken together, the emphasis on temporal patterns and the complex interplay of influences on these patterns represents a dramatic change in the way social psychological processes are conceptualized and investigated. This new approach to social psychology, however, actually has old roots. For one, it represents an application of ideas and methods developed in the natural sciences under the rubric of dynamical systems and complexity (cf. Haken, 1978; Holland, 1995; Johnson, 2001; Schuster, 1984; Strogatz, 2003; Weisbuch, 1992). But dynamical social psychology can also be traced, ironically, to the very earliest days of social psychology.
Roots in dynamical systems

Many areas of science have found it useful to conceptualize their respective topics as non-linear dynamical systems. In its most basic sense, a dynamical system is simply a set of interconnected elements that evolve in time, with the elements continually influencing each other to achieve a coordinated state that characterizes the system as a whole. Depending on the topic, elements can represent anything from atoms and molecules to animals and planets. The task of dynamical systems theory is to specify how the elements interact with each other over time to promote properties and behavior at a higher level of understanding. In physics and chemistry, a fundamental question is how subatomic particles interact to produce visible matter and forces; in ecology, a central concern is how animals interact to generate and maintain a balance between predator and prey; in cosmology, the focus is how celestial bodies such as planets influence each other to produce stable orbits.

The higher-order property or behavior that results from the mutual influence among elements has emergent properties, which simply means that the higher-level property or behavior cannot be reduced to the properties of the elements. The stable pattern of planetary orbits in our solar system, for example, depends on the mutual gravitational influences among the planets, not on the properties of the planets in isolation. Because emergence is attributed to the interactions among elements over time, the process is referred to as self-organization. Rather than being imposed on the system from above or from outside the system altogether, in other words, the higher-level properties and behaviors emerge from the internal workings of the system itself.

Once a higher-level state emerges in a dynamical system, it constrains the behavior of the elements that give rise to it. When a stable orbit emerges in a planetary system, for example, new elements (e.g., a passing asteroid) are captured by the orbit and lose their original trajectory. Because a system-level property or behavior ‘attracts’ the behavior of both existing and new elements, it is referred to as an attractor. A system’s attractor stabilizes the system and actively resists change owing to outside influences. If change occurs, it is because mutual influences among the elements are weakened, increasing the independence of the elements and thereby undermining the coherence and stability of the higher-order state. But from this disassembled state of affairs, the system is primed for emergence to a new higher-order state that provides a different configuration of the lower-level elements. Dynamical systems, in other words, tend to display periods of stability and resistance to change, punctuated by periods of disassembly that set the stage for a new round of self-organization and emergence.

Roots in classic social psychology

The formative years of social psychology are replete with insights into the dynamic nature of human experience, suggesting an early widespread recognition that psychological states are subject to processes of change and transformation. As the 19th century came to a close, William James (1890) coined the term ‘the stream of consciousness’ to capture the endless cascade of thoughts, memories, images, and fantasies competing for conscious attention on a moment-to-moment basis. Soon thereafter, Cooley (1902) emphasized people’s constant press for action, even in the absence of external forces and incentives. Mead (1934) discussed people’s capacity for symbolic representation and the enormous range of interpretation to which this capacity gives rise.

Other scholars emphasized the constant reconfiguration of experience in response to the multitude of ever-changing influences in everyday life. Lewin (1936), the father of
'dynamic psychology,' suggested that stability and variability in overt behavior reflect the persistent struggle to resolve conflicting motivational forces, including those that operate from within the person—an idea that is at heart of psychodynamic theories as well (e.g., Freud, 1937). Solomon Asch (1946) suggested that social judgment reflects the dynamic interplay of thoughts and feelings, with this interplay giving rise to a unique Gestalt that is not reducible to the additive components of the elements themselves. And in one of the earliest attempts to systematize social psychology in a textbook, Krech and Crutchfield (1948) framed interpersonal thought and behavior in terms of Gestalt psychology, with an explicit emphasis on the constant reconfiguration of experience in response to conflicting fields of psychological forces.

Despite this early focus on dynamism, theory and research in subsequent years tended to emphasize tendencies toward achieving a stable equilibrium rather than the role of self-sustaining dynamics. This is apparent in theory and research on the cognitive underpinnings of social behavior. So although James (1890) underscored the dynamic nature of conscious experience in his stream of consciousness metaphor, subsequent cognitive models in social psychology tended to emphasize the function of stable attributions, categories, beliefs, and other mental structures. And while Lewin (1936) offered a broad metatheory that framed human experience in terms of a field of ever-present and conflicting internal forces, for the most part this perspective inspired a host of cognitive theories centering on such notions as cognitive balance, the reduction of cognitive dissonance, and the elimination of incongruity. Stability is clearly central to human thought and behavior, but this feature of our psychology is possible only because of dynamic processes that promote the emergence of higher-level states—and that can undermine these states and promote the emergence of qualitatively different states. A theoretical emphasis on stability thus overlooks half the picture.

As we enter a new century, social psychology shows signs of coming full circle, returning to the deep intuitions concerning human experience articulated by the field’s founding fathers. This re-emergence of appreciation for complexity and dynamism was made possible by developments in the understanding of nonlinear dynamical systems in the 1970s and 1980s and the application of these developments to the subject matter of social psychology within the last two decades. These advances have enabled researchers to explore the inherent dynamism and complexity of interpersonal processes, while recognizing the tendencies toward stability and simplicity in these domains. The dynamical perspective, in fact, is defined in terms of these opposing facets of human experience, with theories providing for their reconciliation in a theoretically meaningful manner.

**Dynamical Social Psychology in Action**

Every aspect of human experience is characterized by the complementary tendencies of stability and change. The mind is in constant motion, generating an endless moment-to-moment flow of thoughts and feelings, yet it also demonstrates strong equilibrium tendencies that provide coherence and stability in social judgment. Social interactions unfold with a continuous flow of words and gestures that is never replicated exactly, yet they admit to regularities and patterns. Relationships are defined in terms of the evolution of roles and sentiments, yet they conform to scripts and agendas that constrain the actions of even the most intimate partners. The challenge of dynamical social psychology is how best to capture the interplay of sustained dynamics and stabilization tendencies in a way that both appreciates the unique character of each realm and yet identifies common principles that promote an integrative understanding of human experience. The basic principles of
dynamical systems theory are tailor made for this task. In the following sections, we illustrate how these principles map onto the unique subject matter of social psychology.

**Intrinsic dynamics**

People’s thoughts, judgments, feelings, social interactions, and social relations evolve and change in the absence of external influence. The internally generated nature of psychological processes was central to the early formulations of social psychology, and it has self-evident intuitive appeal for laypeople. Contemporary social psychological research, however, rarely focuses on the ‘intrinsic dynamics’ of personal and interpersonal phenomena (cf. McGrath & Kelley, 1986; Nowak & Vallacher, 1998). Instead, research typically concentrates on the prediction of outcome measures (dependent measures) from the knowledge of other factors (independent variables). External causation is certainly relevant to social processes, and the focus on outside forces has generated important insight into social psychological phenomena. But external factors do not exert their effect by acting on an empty or passive system. Rather, they interact with the intrinsic dynamics associated with the process in question. The centrality of intrinsic dynamics is observable at different levels of social reality, from basic intrapersonal processes to macro-level societal phenomena.

**Mental dynamics.** When people think about and evaluate issues, objects, and other people, they do not simply have one thought in mind that carries the day. Rather, as James (1890) famously noted in his ‘stream of thought’ metaphor, mental process is characterized by an ever-changing succession of concerns, reflections, fantasies, memories, insights, and stray thoughts. To an appreciable extent, these cognitive and affective elements become progressively organized into higher-order thoughts and judgments that become less variable and erratic. Simply thinking about an attitude object (e.g., another person) in the absence of any external influence, for example, tends to promote more extreme (polarized) evaluations of the object over time as the inconsistencies among specific thoughts are eliminated (Tesser, 1978).

Research with the dynamical perspective has identified temporal patterns of thought that are considerably more elaborate than attitude polarization (Vallacher & Nowak, 1994b). These patterns, moreover, often provide a better characterization of a person’s mental make-up than do the summary aspects of the person’s mental process (e.g., overall attitude, final decision) that are more commonly the focus of investigation. A judgment that is neutral (i.e., neither highly positive nor highly negative) when collapsed over time, for instance, can have very different meanings and implications, depending on the intrinsic dynamics of the judgment process (Vallacher, Nowak, & Kaufman, 1994). When neutrality reflects relatively little variation in evaluation occurring on a relatively slow timescale, the summary judgment might indeed reflect a truly neutral sentiment (or detachment). But if neutrality reflects oscillation between highly positive and highly negative judgments on a rapid timescale, the summary judgment signifies heightened involvement and ambivalence rather than neutrality per se. In this case, characterizing a person’s thoughts and feelings in terms of an average value collapsed over time would be highly misleading. A person’s feelings toward an intimate partner, for example, may reliably alternate between love and hate; averaged over time, one might conclude that the person feels neutral toward the partner – a feeling that is never actually experienced.

**Action dynamics.** Actions typically have a hierarchical structure, in that the performance of an action entails the coordinated interplay of more basic actions or subacts. The act of
‘going to work,’ for example, may involve getting dressed, leaving the house, driving a car, parking the car, and entering a building. Each of these lower-level acts can, in turn, be decomposed into yet more basic lower-level elements. ‘Driving,’ for example, consists of starting the car, turning the steering wheel, making turns, and braking. Each level in an action hierarchy has a different time scale, with the lower-level acts taking place in shorter intervals of time (Newtson, 1994). ‘Going to work’ occurs on a longer time scale than does ‘driving,’ for example, and the time scale for ‘driving’ is longer than that for each instance of ‘turning the steering wheel.’

The intrinsic dynamics of action thus span the levels of action in an overall action hierarchy. A person’s behavior may look like a continual succession of momentary movements when defined in low-level, mechanistic terms but take on the appearance of switching between qualitatively different actions, each occurring on a longer time scale, when defined in higher-level terms. Research has also demonstrated that when people are induced to think about their actions in lower-level terms, they are predisposed to the emergence of higher-level action understanding. Emergence takes place when such individuals are exposed to cues (e.g., social feedback) that suggest higher-level meaning for the actions (Vallacher & Wegner, 1987) or when they reflect on their actions, allowing the lower-level action elements to self-organize into a higher-level act identity that provides subjective integration for these elements (Vallacher & Nowak, 1997). In an unfamiliar social setting, for example, a person may identify his or her action as ‘smiling,’ ‘talking to strangers,’ and ‘moving around the room,’ without a clear sense of what he or she is really doing in more meaningful terms. This state of relatively low-level identification renders the person vulnerable to social feedback regarding his social presence (e.g., likeable versus unlikeable, charming versus boring) that provides an avenue of emergent understanding. In the absence of such feedback, the person may experience emergent understanding as he or she subsequently reflects on the action, with the lower-level identities becoming integrated into a coherent sense of what he or she was doing.

Interaction dynamics. Social interaction involves the coordination of individuals’ behavior over time. Considerable research has focused on the interpersonal coordination of relatively low-level actions, such as speaking (e.g., Condon & Ogston, 1967; Dittman & Llewellyn, 1969) and limb movement (e.g., Kelso, 1995; Newtson, 1994; Turvey, 1990). Two people, for instance, may be asked to swing their legs while sitting down across from one another (Beek & Hopkins, 1992), with one person swinging his or her legs in time to a metronome and the other person trying to match those movements.

Two forms of coordination have been revealed in this research: in-phase, with the individuals swinging their legs in unison, and anti-phase, with the individuals swinging their legs with the same frequency but in the opposite direction. Individuals are able to maintain anti-phase coordination only up to a certain frequency of movement, at which point they switch to in-phase coordination. When the frequency is then decreased, at some value they are able to coordinate anti-phase again, but this tempo is significantly lower than the point at which they originally started to coordinate in-phase. Such hysteresis indicates that movement coordination can be analyzed as a nonlinear dynamical system. Thus, each pattern of behavior (in-phase and anti-phase) is maintained despite incremental changes in movement frequency, until a threshold of frequency is reached, beyond which there is a rapid and qualitative change to the other behavior pattern (Kelso, 1995). Modes of coordination more complex than in-phase and anti-phase have also been identified in this line of research (cf. Baron, Amazeen, & Beek, 1994; Turvey, 1990).
Interpersonal dynamics are not limited to the coordination of speech and motor movements but also include the temporal coordination of higher-level actions (e.g., plans, goals) and internal states (moods, judgments, etc.). The quality of a social relationship is reflected in the ability of partners to coordinate in-phase with respect to their respective higher-level actions, opinions, and feelings (e.g., Baron et al., 1994; Guastello, Pincus, & Gunderson, 2006; McGrath & Kelley, 1986; Nowak, Vallacher, & Zochowski, 2005; Tickle-Degnen & Rosenthal, 1987). The ebb and flow of sentiment, information exchange, and action may convey deeper insight into the nature of a relationship than might global indices such as the average sentiment, the amount of information exchanged, or the summary action tendencies. Thus, people who feel positively about one another are said to ‘be in synch’ or ‘on the same wavelength’ with respect to their internal states.

Societal dynamics. Tracking the temporal trajectory associated with the emergence of norms and public opinion may provide greater insight into the society’s future make-up and likely response to external threat than simply knowing what the societal norms and opinions are at a single point in time (Nowak, Szamrej, & Latané, 1990). When norms and opinions develop incrementally over a long period of time, the society tends to display resistance to external threats or even to new information that might promote better economic conditions. But societal change in political and economic ideology can also occur in a rapid, nonlinear manner (e.g., Nowak & Vallacher, 2001), with a trajectory that resembles phase transitions in physical systems (Lewenstein, Nowak, & Latané, 1993). Societies undergoing such nonlinear transitions are vulnerable to subsequent rebounds of the earlier ideologies and highly responsive to threats and new information, and they can experience a period of sustained oscillation between conflicting worldviews (Nowak & Vallacher, 2001).

Precisely, this scenario was observed in several Eastern European countries after the collapse of communism in the late 1980s. The communist regimes suffered a humiliating defeat during this period, with public opinion switching dramatically to pro-democratic parties. But this switch reversed itself in the next election cycle as people experienced economic setbacks owing to the destabilization of existing social and political structures. This rebound, in turn, was reversed in subsequent election cycles, and so on, in a pattern of change in public opinion characterized by dramatic oscillations in political and economic worldviews. The nonlinear nature of social change corresponds to basic principles of dynamical systems (cf. Latané, 1981; Lewenstein et al., 1993) that have been implemented in computer simulations (cf. Nowak & Vallacher, 1998, 2001; Nowak et al., 1990). Computer simulations are invaluable in this line of work because they can assess the long-term consequences of basic dynamical processes. Years and even decades of change in a social system can be compressed into the time it takes to run a computer program. Computer simulations are useful, too, in that they help to visualize the emergence of social structures owing to the dynamic properties at work (e.g., Latané & Nowak, 1997). The simulation of societal transition in Eastern Europe, for example, showed the emergence of spatial ‘clusters’ (corresponding to geographical regions) of public opinion in these countries (Nowak & Vallacher, 2001).

Attractor dynamics

Psychological systems display intrinsic dynamics, but they also demonstrate stability and remarkable resistance to change. Each day, people encounter vast amounts of information
relevant to social judgment and interpersonal relations, with much of this information being mutually contradictory. Yet, people typically manage to form and maintain relatively coherent patterns of thought and behavior in their everyday lives. Two people in a romantic relationship, for example, are likely to experience a wide variety of thoughts and feelings about one another, but over time each person’s mental state will tend to converge on positive sentiment toward the other. Despite the ever-changing nature of intrapersonal and interpersonal experience, then, people’s mental, affective, and behavioral states tend to converge on relatively narrow sets of specific states or on patterns of change between specific states. These states or patterns of change represent psychological attractors.

Psychological attractors. When a system is at its attractor, it tends to maintain that state despite forces and influences that have the potential to destabilize it. An external influence may succeed in moving the system to another state, but the system will return fairly quickly to its attractor. Several well-documented processes imply the existence of an attractor. Self-regulation, for example, is defined in terms of resistance to temptations and distractions, impulse control, and the maintenance of internal states representing personal standards and values (cf. Carver & Scheier, 1999; Vallacher & Nowak, 1999). In similar fashion, psychological reactance (Brehm & Brehm, 1981), self-esteem maintenance (Tesser, Martin, & Cornell, 1996), and self-verification (Swann, 1990) each reflect a tendency of mental systems to converge on a particular state (e.g., a level of self-esteem) and to resist outside forces that threaten to dislodge the person’s judgments and beliefs from that state.

Attractors are not limited to goals, intentions, or other desired states. A person might display a pattern of antagonistic social behavior, for example, despite concerted efforts to avoid behaving in this manner. In similar fashion, someone with low self-esteem may initially embrace flattering feedback from an acquaintance, but over time he or she may discount or reinterpret this feedback, displaying instead a pattern of thought that converges on a negative self-evaluative state (Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). In intergroup relations, warring factions may exhibit conciliatory gestures when prompted to do so but revert to a pattern of antagonistic thought and behavior when outside interventions are relaxed (Coleman, Vallacher, Nowak, & Bui-Wrzosinska, 2007). In short, when a system’s dynamics are governed by an attractor, the system will consistently evolve to a particular state, even if this state is not hedonically pleasant and will return to this state despite being perturbed by forces that might promote a more pleasant state.

Multiple attractors. A psychological system may have more than one attractor, each corresponding to a different stable and coherent state. Which attractor governs a system’s dynamics in a particular instance depends on the initial states or starting values of the system’s evolution. The set of initial states converging on each attractor represents the basin of attraction for that attractor. This means that for a person or a group characterized by multiple attractors, the process in question can display different equilibrium tendencies, each associated with a distinct basin of attraction. Within each basin, different initial states will follow a trajectory that eventually converges on the same stable value. However, even a slight change in the system’s initial state will promote a large change in the system’s trajectory if this change represents a state that falls just outside the original basin of attraction and within a basin for a different attractor.

In situations of social conflict, for example, there are often two dominant responses, one corresponding to aggression and one corresponding to conciliation. Minimal differences in the circumstances associated with the conflict can thus promote dramatically
different behaviors, with no option for a response that integrates the two tendencies (Coleman et al., 2007; Vallacher, Coleman, Nowak, & Bui-Wrzosinska, 2010). In such instances, a seemingly trivial event (e.g., a disparaging remark by an outgroup member) can transform a peaceful relationship into a contentious one. By the same token, an unremarkable positive event (e.g., an unsolicited apology for a disparaging remark) can reposition the parties to a conflict within the basin of an attractor for positive relations. Knowing the attractors associated with a social relationship, and identifying the basins of attraction associated with each, is critical for understanding the effect that various events are likely to have on the nature of a social relationship.

The existence of multiple attractors in a system captures the intuition that people can have different (even mutually contradictory) goals, values, self-concepts, and patterns of social behavior. To illustrate this idea, consider a romantic couple that has two attractors: a strong attractor associated with positive feelings and a weak attractor associated with negative feelings. Let us assume the couple has a wider basin of attraction for positive feelings than for negative feelings. The partners are likely to evolve toward positive feelings if they begin an interaction within a broad range of affective states (e.g., neutral to very positive), but they may end up feeling negative about one another if they begin an interaction within a different (more restricted) range of affective states (e.g., mildly to highly negative). A broader range of initial states is therefore likely to promote a communication trajectory that results in an exchange of warm sentiments as opposed to critical comments. However, if the couple routinely starts out with negative feelings, the negative attractor, despite having a narrow basin, may dictate the trajectory for feelings expressed in the couple’s interactions. It is conceivable, of course, that the couple has a wider basin of attraction for negative feelings, in which case anything short of a highly positive initial state could dissolve into a negatively toned exchange (Gottman, Swanson, & Swanson, 2002).

**Latent attractors.** A system may have multiple attractors, but when one of them is manifest, the others may not be visible to observers (perhaps not even to the actors themselves). The existence of these potential states of the system might not even be suspected. However, these latent attractors may be very important in the long run because they determine which states are possible for the system when conditions change. Critical events and information might not be reflected in the observable state of the system, but they may have the effect of creating a latent attractor representing a potential state that is currently invisible to all concerned.

The implications of latent attractors have recently been explored with respect to social relations characterized by long-term and seemingly intractable conflict (e.g., Coleman, Bui-Wrzosinska, Vallacher, & Nowak, 2006; Coleman et al., 2007; Nowak, Vallacher, Bui-Wrzosinska, & Coleman, 2007; Vallacher et al., 2010). In intergroup relations, for example, factors such as objectification, dehumanization, and stereotyping of outgroup members are preconditions for the development of intractable conflict (Deutsch, 1973), but their immediate impact may not be apparent. Instead, these factors may gradually create a latent attractor to which the system can abruptly switch in response to a relatively minor provocation. But by the same token, attempts to resolve conflict that seem fruitless in the short run may have the effect of creating a latent attractor for positive intergroup relations, thereby establishing a potential relationship to which the groups can switch if other conditions permit. The existence of a latent positive attractor can promote a rapid de-escalation of conflict, even between groups with a long history of conflict.
Attractor dynamics are highly relevant to a wide range of personal and social processes. Beyond capturing basic intuitions regarding these processes, framing them in terms of attractors allows for simplification in the description of a system’s dynamics. Instead of describing moment-to-moment changes in a system’s state, one can describe the structure of attractors in the system and the patterns of transition between the attractors. Short-lived reversible changes in the state of the system reflect transitions between the system’s existing attractors. Deep and lasting changes in the state of the system, on the other hand, correspond to changes in the structure of attractors.

Dynamical Social Psychology in Perspective

The aim of dynamical social psychology is to identify the basic properties of human experience that are manifest at different levels of social reality, from private thoughts to intergroup relations. This approach recaptures the seminal insights concerning human dynamism and complexity that were articulated in the early years of the 20th century but does so with a degree of scientific rigor that was not available until very recently. The understanding of nonlinear dynamical systems in the physical sciences and mathematics has generated a rich source of methods and formalisms that has enabled social psychology to have its cake and eat it, too. Innovative means of collecting and analyzing time-series data (i.e., patterns of change in a phenomenon of interest) have been developed that provide rigorous yet deep insight into the intrinsic dynamics of mental, affective, behavioral, and interpersonal processes. Formal models enable researchers to identify the factors that are critical for understanding the essence of psychological and social processes. Computer simulations are invaluable in this regard, enabling psychologists to model the complexity of social processes and document the emergence of higher-order properties from the interaction of basic elements in a mental or social system (cf. Read & Miller, 1998; Smith, 1996; Vallacher & Nowak, 2007). The dynamical approach, in short, provides the concepts and tools with which social psychology can advance as a precise science while preserving (and refining) the basic insights that launched the field over a century ago.

We hasten to add a word of caution, however. Social reality should not be confused with physical reality. Individuals are not interchangeable in the way that atoms are, and groups composed of individuals are more than self-organized ensembles of simple particles. One of the basic rules of human functioning, moreover, is people’s capacity and penchant for reflecting on their operating rules and attempting to override them. The unique yet defining features of human experience go beyond the recognition that people are dynamic and complex. This makes the task of dynamical social psychology more challenging than discovering the differential equations that govern intrapersonal, interpersonal, and collective dynamics. So although the dynamical models developed in the natural sciences may be a good first approximation, the properties that separate us from other systems in the world must ultimately be incorporated into theory and research. It is an ironic testament to the dynamical perspective that a coherent theory of social experience should be assembled from elements that are both universal within nature and at the same time unique to human experience.

Short Biographies

Urszula Strawinska received her MA in Psychology with a focus on Social Psychology of Computer Science and Communication from the Warsaw School of Social Sciences and Humanities (Warsaw, Poland) and her Ph.D. in Experimental Psychology from Florida
Atlantic University. She is a junior teaching and research assistant at the Warsaw School of Social Sciences and Humanities where she teaches undergraduate and graduate courses in IT, Human-Computer Interaction, Research Methods, and Psychology. Her research and teaching interests include dynamical social psychology, complexity approach in social sciences, research methods, and also areas that investigate social and psychological aspects of new technologies.

Robin R. Vallacher is Professor of Psychology, Florida Atlantic University, and Research Affiliate at the Center for Complex Systems, Warsaw University. He has been a Visiting Scholar at University of Bern, Switzerland, and Max-Planck-Institute for Psychological Research in Munich. Dr. Vallacher has published research on a wide variety of topics in social psychology, from individual-level processes such as self-concept, self-regulation, and social judgment, to interpersonal and collective phenomena such as close relationships, fairness in social exchange, social justice, inter group conflict, and social change. In recent years, he has adapted concepts and methods from the study of nonlinear dynamical systems in the natural sciences to the investigation into issues and topics in personality and social psychology. Using experimentation and computer simulations (cellular automata, attractor neural networks, coupled dynamical systems), he and his colleagues are attempting to identify the basic dynamic properties common to such seemingly disparate topics as protracted social conflict, dysfunction in close relations, ambivalence in social judgment, self-concept stability, and the emergence of personality from social interaction. He has published five books, including two that develop the implications of dynamical systems and complexity for social psychology. Dr. Vallacher holds a Ph.D. in psychology from Michigan State University.

Susan L. Wiese received an MA from Radford University and her Ph.D. from Florida Atlantic University. Research interests include examining self-related phenomena such as self-esteem and self-regulation from a dynamical systems perspective and applying dynamical methodology to examining relationships between the self and social interaction. Susan’s current research looks at the dynamic interplay between stability of self-view and flexibility of behavior, and its implications for adapting to changing social demands and influences.

**Endnote**

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**References**


