

# Self-Organization, Action Theory, and Entrainment

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*Reflections inspired by Alicia Juarrero's Dynamics in Action*

Complexity theory needs desperately to explain itself. Much complexity theory is excessively theoretically “messy.” It is unclear if the insights are consistent; it is doubtful how a human subject could really know the “truths” proclaimed. Understandings, drawn from mathematics and natural science and applied to the social sphere, raise issues of “scaleability”—in what sense could the ideas apply to the human realm?

Up to now, two strategies of explanation have been attempted: the one, epitomized by Paul Cilliers, relates complexity theory to “deconstruction” and Derrida; the other, represented by David Byrne, works in the tradition of rationalist social science (Cilliers, 1998; Byrne, 1998). Alicia Juarrero proposes a third strategy: she has described an ontology-based conceptualization of complex adapted systems (CAS; Juarrero, 1999). By conceptualizing CAS on the level of ontology, she tries to escape the vagaries of the subject and its awareness.

CAS is not just a construction of a “knowing subject,” it is a principle of being. In fact, “knowing” and the subject’s “identity” are both products of CAS. CAS is the “whole” that brings together the bits and pieces of the nervous system and defines the complex relationship(s) capable of producing “knowing” and “self-reflection.” But to get this far, Juarrero has to do battle with western philosophy’s dominant assumptions concerning causation. Consciousness for her, is not an “effect” of some other “cause”—the nervous system is its own “cause.” CAS, she argues, depends on self-organization being taken seriously. The relationship between what the subject (S) has been and now is, is crucial—the prior S transforms via bifurcation into the subsequent S. There is no external cause in the movement from prior S to present (or future) S: change self-organizes. Traditional Newtonian science can only conceive of change as so many billiard balls, the one striking the other and thereby forcing “change” (movement). But in CAS, there is a very different sort of change—a change wherein history, environment, and “self” (“identity”) all play a role.

Juarrero has tried to describe the principles of that sort of change. She has tried to define the ontology of CAS by understanding the “being” of the adaptive system’s manner of change. Her book centers on the ontology of change. By posing the problem of CAS as an ontological issue, Juarrero escapes the pitfalls of trying to base a theory of human behavior on experiential consciousness. For instance, Christine Hardy has attempted the opposing route of analyzing the working of the mind, taking the experienced dynamics of consciousness into account (Hardy, 1998). After defining the mind as semantic constellations—structures of meaning that flexibly interrelate and dynamically alter—Hardy gets bogged down in “complexity overload.” At once she wants to examine “identity,” “information processing,” “self,” “conceptual hierarchy,” “rationality,” “memory,” “perception,” “morphology,” and “the brain.” Hardy’s point of departure—semantic constellations—possesses more phenomenal or intuitive richness than Juarrero’s concept of an ontology of causality, but Hardy tries to do too much, whereby her argument collapses under all the weight. While descriptive work on the mind/matter relationship tends to become hopelessly diffuse and complicated, more rationalist analysis threatens to become unsatisfactorily reductionist. I believe that the mind/matter analysis that Hardy attempted, which provides a rich physiological as well as phenomenological description of how “networks of meaning” occur, could point the way to a more satisfying option. But no one has successfully produced such an analysis.

Juarrero framed her investigation around the ontology of CAS, therefore her text can be focused and rigorous. She posits that “experienced circumstances” are a product of the ontology of change, and not its cause. The ontology of CAS is logically prior to lived awareness. This philosophical move is Juarrero’s most daring proposal; but it is also the one that I, ultimately, find unsatisfactory. I think it kills the dynamics of action, and reduces action to an epiphenomenon of the “first principle” of an ontology of change. Furthermore, it leads to the frustrating situation that what determines explanation is greater than explanation, and most likely cannot be grasped by explanation. Human consciousness becomes a derivative of the ontology of CAS, with only a limited and unclear zone of freedom. The “degrees of freedom” of consciousness are restricted. In my opinion, the anthropological import of “emergence” is that it reintroduces “weak signals” and small distinctions (such as those produced by everyday individual action) into social causality. Not just system or structural change, but small fluctuations can make a crucial difference in the emergence of change (bifurcation). Thus, I see “emergence” or CAS as concepts that have reintroduced the specific, unique, and historical to social causality, after structuralism’s long denial of the individual “subject” and the particular.

Where is process or activity in CAS? An ontic theory of CAS would assume that emergence is a process, a form of becoming. Ontic CAS would try to “know” the system’s events, manifestations, and happenings. Such “knowing” would describe processes and activities, without claiming to “know” any determining “first cause” that makes things happen as they do. An ontological

theory of CAS sees emergence as so many signs or symptoms of its principles of action. An ontology of CAS sets out to describe the underlying laws of systemization.

At issue between the ontic and ontological approach is where the “knowing subject” in complexity theory is. If “emergence” is a key developmental characteristic of (living) systems, then our knowledge of it might also be emergent. Such ontic “emergent knowing” would be unstable, changing, and dynamic. If emergence is emergent, it must be historical, contextual, and time bound. Thus, is emergence inside or outside of “time” and process? If “outside” (ontology), how could it emerge; if “inside” (ontic), in what sense would it be knowable? How could the “subject” gain enough distance from emergence to identify its “laws”? If emergence is time and space bound (i.e., contextual), what would it still “mean” if it were decontextualized for analysis? What is left of emergence in an ontology of complexity?

However, the complexity concepts, like bifurcation, attractors, and fitness landscapes, do not seem to be fluid, constantly alternating, or characterized by difference thinking. These complexity concepts may refer to the “emerging” characteristics in the systems they describe, but the concepts themselves do not seem to be “emergent” at all. These concepts seem to rely on an assumed ontology of CAS. Thanks to what CAS is (ontology), the concepts are appropriate. Thus, where do the concepts of emergence come from? Has the emergent process of discovering emergence been banished to the zone of the unknowable, in complexity theory? Does emergence function as its own “black box”? The emerging of emergence remains unaccounted for. Emergence possesses no clear, or consistent, form of (self-)reflexivity.

Thus, is emergence a system or is it a quality of (other) living systems? Is emergence an epiphenomenon of some (other) basic principle? Does emergence really emerge or is it a product of (a yet to be defined) deeper principle of causality? Is there a “cause” to the “effect” of emergence? If no cause-and-effect relationship underpins emergence, how can it be understood? What sort of principle is emergence if it has no cause? Do we either have to posit a rational logic of emergence, or acknowledge that emergence is irrational? Is it necessary to account for the causality, which brings CAS into being, for the concept to be valid? What does the apparent (non)rationality of ontic emergence signify? What import does the metaphysical quality, which is outside of the observable or seeable, have on the proposed ontology of CAS? Debate on all these questions about the logic of emergence has just begun.

Essentially, Juarrero addresses two key issues:

1. Emergence either is or is not a link in a chain of cause and effect—if it is a “link” in such a chain, in what sense does emergence emerge; and if it isn’t such a link, in what sense can be it considered to be rational?
2. Emergence either is or is not in “time”—if it is in “time,” then it is contextual and a process of “becoming.” Emergence, then, has to be understood as a form of “action theory”—as occurrence, event, and process. Otherwise emergence is outside of “time,” and it is a teleo logical principle, which is metaphysical.

Juarrero has gone a long way to clarifying the first question, but I think her efforts to render the second intelligible have been less successful. Her book is important because she has understood that there is a real conflict between traditional thought or ways of thinking, and the ability of emergence to emerge. Too often, there has been confusion between emergence as a phenomenon “existing out there”—a complex of discoveries of positive science—and emergence as an alternative form of logic, which demands context-bound description(s) and a local dynamic apperception of “truth.” The rationality of the former is that of “normal science,” but the rationality of the latter is that of “action theory.” I find fault with Juarrero for not realizing just how radical the difference is between the two.

In summary, engaging with Juarrero provokes discussion of some of complexity theory’s most important assumptions. In this article, I shall try to clarify some of the issues by indicating what Juarrero has asserted, and by describing some of my responses to her text.

## THE FIRST QUESTION: ON “CAUSALITY”

Juarrero’s first key conceptual move takes the form of a notional discussion of the incapability of the western philosophical tradition to accept the idea of “self-causality.” Can something be its own cause? If logically, something can only cause something else—A can cause B, but B cannot cause itself (B)—then self-organization is a logical impossibility. If we assume that only an exterior force can cause something—that there has to be an A that is totally distinct from the B for there to be to a cause—then we sacrifice emergence to logical clarity. If we assume the conceptual primacy of causation, then we have, in effect, taken on a logical a priori, which makes emergence unacceptable. You could almost say that emergence has been made unthinkable, or only thinkable as an error.

Juarrero spends about 100 pages working out what she sees as the problem, in logic, of causality. The Aristotelian base to causality, which has been reinterpreted in Newtonian terms, has led to an inadequate, straight-jacketed behaviorism. Causality

has gained a logical stranglehold on thought, whereby only cause-and-effect relationships between “givens” (actors, factors, objects), which are distinct (alien, separate) from one another, remain “thinkable.” Enfolded relationships, intertwined bonds, and “self-creation” have been methodologically banned, to the dust heap of the “unscientific.” Science has been built exclusively on foundations of “efficient cause,” a force that brings the object under study into being—the A that determines the B.

Juarrero understands that a science based entirely on efficient cause has no ability to see the inner connections of entwined phenomena, to study the “in-between” that defines interactions among people, or to grasp creativity and self-generated change. Her critique of traditional science is based on its one-sided understanding of “identity”—identity is not only an exterior perspective, coming from outside the self as “Not the Other.” Identity is also what is internal to the self—the self experienced as what it is, has been, and will be. Identity is difference and continuity. If there were no continuity, there would only be total flux and chaos. If there were utter permanence, and no change at all, there would be nothing to experience and no identity. In total change and in total changelessness, there is no consciousness. “Consciousness” assumes continuity and change—an ability to act and to be acted upon. It assumes an identity that is both external and internal, which can be self and world and which is self-aware, as well as “thrown” into perception. It is this complexity of being two things at once—self and world, intentional and receptive, active and reflective—that makes consciousness so complex. The logic of efficient cause cannot grasp this complexity and so it falsifies the relationship(s) between consciousness and self.

Juarrero’s critique of efficient cause leads to an alternative concept of causality. Having argued that western thought has been impoverished by restricting itself to one sort of Aristotelian causality, Juarrero would seem ideally positioned to employ all of Aristotle’s other three sorts of causality: final cause (*telos*, goal, intentionality), formal cause (identity, difference, distinction) and material cause (*hyle*, stuff from which it is made). If causality is not to be restricted to Newtonian billiard balls flying across so many pool tables (efficient cause), and there really is something more to identity, self, and event than efficient cause can discover, what is it?

Complexity theory does make use of the other forms of causality. Formal cause is evoked when researchers try to identify what makes an event just what it is. Complexity theory acknowledges that small variations and distinctions can lead to big differences in the outcomes of events. Just what it is that makes an event what it “is,” and not some other event, is something that complexity theory tries to grasp. It accepts that details in difference—in how many aspects line up, in how different factors relate to one another or act as “shifters”—can lead to an enormous disparity in outcomes. Likewise, complexity theory studies final cause—does structure inevitably complexify, is emergence intentional, in the sense of directed toward consciousness, reflexivity, and awareness? And finally, material cause is investigated when questioning if consciousness is inherent in matter. Thus one can claim that complexity theory returns to Aristotle and reaccepts all his four forms of causality.

But Juarrero does not make this move. The problem, for her, with the return to Aristotle is that it (re)opens science to multiplicity—instead of science acting as an interdict that effectively restricts identity. Aristotelian science could act as a complexifier that multiplies identities. Juarrero rejects the restrictive tradition of scientific causality that has made activity invisible. For there to be activity there has to be a “subject” that acts; that is, an amalgam of the “same” and the “other.” The “self” has to be able to act; that is, to do and/or to make. There has to be a self that changes, by means of its actions. It must be a self with enough continuity to be able to perceive change and enough ability to change, for there to be differences to be perceived. The study of such a self will be inconsistent and unstable. The self will have different appearances, when seen from each of the four perspectives or causalities.

Such a concept of causality leads inherently to an acceptance of the multiplicity of perspectives—such a return to Aristotle is an embrace of postmodern logic. Evidently, there is no one scientific perspective, but at least four. There is no one “truth,” but many. The “truth” of each perspective depends on the advisability of asking the question(s) that it is designed to answer. Such a neo-Aristotelian approach demands that Juarrero explicate which question(s) she wants to address to “science” and/or “knowing,” and why those questions are so important.

Assuming, with Juarrero, that context, self, and identity really count, how do they apply to her own effort at knowing? The problem is that Juarrero wants to arrive at an “action theory.” She is trying to develop a theory of causality that will allow people to do things. Explanation by efficient cause made it impossible for the “actor” to do anything. Action was restricted to external relationships—the A that causes B. Efficient cause provided for an “actor” who could make things happen, in the sense that an “I” makes a “you” do something. Hereby, all social action deteriorates into relationships of exteriority. Experience reveals quite the opposite—leadership, change management, the process of making something happen, is rarely a relationship of exteriority. Action involves being linked together, it is a form of common activity and of changing oneself. Concrete. “hands-on” action cannot be explained via a theory of efficient causality.

Practitioners need to understand that Juarrero is right—western philosophy has restricted our awareness of causality to a model that is inappropriate for understanding everyday action. If we want to discuss what we actually do when making things happen, we need to (re)complexify our concept of causation and learn to think about self-organization. That is, we need to learn to understand how we make things happen by being ourselves, by identifying with our own psychological, physical, and social makeup, and by opening ourselves to the historical and material forces that shape our world. Managing as efficient cause impoverishes the roles of self, change, and causality.

## THE SECOND QUESTION: ON “TIME”

What is “time” in emergence and complexity theory? In classical science, “time” is the space within which things are ordered, but it has no positive characteristics. Time is not an actor in science; in fact, all phenomena in physics are reversible. That means that time in physics has no momentum, direction, or identity. In effect, nothing ever really happens in physics, since all action can be inverted. But consciousness is not like that. We cannot reverse our lives; lived time will not flow backwards. Thus time in science is essentially different from time in human activity. Any convincing action theory has to include an experientially satisfying concept of time to be believable.

Insight into complex systems depends on some way of dealing with time. In classical physics, phenomena under study do not change with time—gravity, entropy, relativity all remain the same. The concepts around which physics is defined are atemporal. But change is inherent to complex adaptive systems—if there is no change, there is no adaption. CAS, thus, is all about the same and the different—it analyzes the system (the “same”) that changes (the “different”). But how can something be the same and different at once? The answer has to be sought in how things change.

Juarrero explores how the prior version or state of a system causes the present one. Assuming that history matters, there is a difference between prior *S* and present *S*. If one rejects the distinction, then one asserts that the prior and present *S* are the same. One can argue that the prior *S* is the source or cause to the present *S*—this is a form of self-causation wherein *S* causes *S*. What keeps the prior and the present *S* separate is time or history. If one takes account of time and history in one’s theory of causality, there is no problem in letting a prior *S* determine a present *S*. But if history does not matter, and ought to be discounted in timeless generalizable laws, then the prior *S* cannot be permitted to be the cause of the present *S*. The assumption of permanent *a priori* laws leads to the postulation that the prior *S* and the present *S* must be the same. Self-causation disappears.

Juarrero rejects this impediment to action theory and insists that time and history do count. But what sort of time and history is she referring to? Is it the time and history of CAS, and not those of a “consciousness” or experiencing subject? The issue is whether complexity theory is going to base itself on lived time, and become a theory of consciousness; or on “scientific time,” and remain enclosed in causal analysis. Juarrero chooses the latter option; I am committed to the former.

Taking CAS as the point of departure, systems adapt—they change. But *how* do they change? “Attractor” is the key term in describing the change process. But how do we understand attractors? If we define them as constraints, as valleys in fitness landscapes from which a system is more or less unable to escape, then the attractors are the ontological limits to identity. Attractors “embody the system’s current control parameters” (Juarrero, 1999: 158). These parameters are influenced by the system’s internal dynamics, its past, and/or its environment. The attractors can be very one dimensional (point attractor), or characterized by a flipflop between two states (limit cycle attractor), or be very complicated and defy our ability to discover order (strange or complex attractors). But all attractors are about entrenched behavior—the stronger the attractor’s pull, the stronger a perturbation it takes to dislodge the system from it. Attractors are as close to ontology as we can get in a historical dynamic universe. The dispositions and propensities of *S*—that is, *S*’s identity— are expressed by the attractors.

What we learn from CAS is that bifurcations can take place—the field of attractors within which *S* exists can radically change. Identity is circumstance and environment dependent. *S* can change. Thus reordering of the system’s landscape belongs to the system’s possibilities. Systems can and do change. But how they can both change and remain the same (retain some measure of identity) is unclear in Juarrero’s work. In human consciousness, change and difference meet. But Juarrero’s “action theory” tries to study CAS externally, from outside the system. She never steps into a (CAS) system and tries to construct an internal point of view. She never takes her own reflexivity into account—how does her consciousness relate to CAS, and to action theory? How does consciousness perceive action?

Juarrero limits herself to the hermeneutic reconstruction of identity. She posits that an after-the-fact narrative can be constructed describing what has changed, been adapted, or occurred. CAS is only knowable retrospectively—after *S* has regained identity; that is, been (re)captured by attractors. Once *S* is positioned in a new fitness landscape, it is possible to undertake a comparative study of its past and present identities. There is no identity that transcends the power of the attractors—the laws of the system are ontologically primary, human identity and consciousness are secondary. Consciousness is a quality of a certain sort of CAS. “Truth” is determined by the human ability to reconstruct what has happened to the structure of the CAS. In so far as we can see what attractors were in play and what bifurcations occurred, we can “know” what has happened.

“Truth” is not proactive—it is the hermeneutic reconstruction of CAS behavior.

I do not share this concept of the “truth.” First, I wish to point to an inconsistency in Juarrero’s position. How could she “know” that “hermeneutic truth” is possible? How does the realization take place that attractors and bifurcations work, as she argues they do? What sort of consciousness could come up with such an idea? There is a potential answer to the question in Juarrero’s text, namely via “entrainment,” discussed in the next section. Suffice it to say that entrainment, in this context, signifies that the structure of complexity theory must match the structure of “natural reality.” The “idea” and the “reality” lock into one another and form an isomorphic unity. This would make CAS, and the theory of attractors and bifurcation into a natural philosophical truth.

In contrast, I believe that complexity theory is a human historical creation wherein human thought attempts to express its hopes, desires, insights, and future. For me, attractors are “boundary objects.” As in Kurt Lewin’s field theory, there are points of force or of energy, around which systems (consciousness, people, societies) organize. Attractors are force fields that act as a magnet—they attract behavior to their way of being and acting. Concepts, plans, and projects can all function as attractors—they can draw in human energy and make action occur. Attractors have force and momentum—they are manifested as definitions, agreements, and behavior. Human understanding and activity are organized and defined in terms of attractors. Attempts to organize activity—to make action cohere and to get it to be goal directed—are expressed as attractors. The process of ordering is organized around institutions and agreements, all structures of activity—these form the boundary objects of society. These boundary objects have to be attended to constantly—without redefinition, leadership, and commitment, they collapse.

The attractors of CAS are the boundary objects of organizing—they are humanly produced, maintained, and enforced. A great deal of individual and social energy is expended in creating and maintaining boundary objects. To get human action to cohere takes energy, activity, and commitment. Order can be emergent in human activity, but human activity is not “for free.” Individual persons possess a limited amount of energy, i.e., “life.” They expend their “aliveness” in their activities, often searching for coherence and “meaning.” Human energy often seeks attractors—senses of order and structure around which activity can coalesce. Consciousness is often an effort at seeking and finding coherence—it is frequently to the pursuit of boundary objects or attractors that it can rally.

Juarrero’s attractors are already there—the “natural truth” of existence. My attractors have to be pursued, built up, created, and even seduced. They can turn out to be a deception and can be amazingly rewarding. They can create fundamental renewal and merely pass away. They can bring the new as well as let us fall into mere repetition. There is no guarantee that attractors will bring anything in particular—they are possible structures of order with which consciousness has to attempt to deal as best it can. Attractors are the field within which consciousness is buffeted from option to option, while trying to find, preserve, or assert some sense of self or of identity. In this perspective, attractors are an ontic field wherein the becoming of human consciousness takes place. In Juarrero’s theory, attractors are an ontological truth that precedes all human action. The human “actor” is primary in my version of complexity theory, and secondary in hers.

## AND ENTRAINMENT

Entrainment is a biological and physical phenomenon. For instance, if a group of women share an apartment, after a while their menstruation cycles will synchronize. They become biologically correlated. Likewise, liquid water, when transforming into snowflakes, moves from random action to structured. In entrainment, a series of entities form a cohesive system, wherein the whole has a form or identity that the parts did not possess. Juarrero defines entrainment in terms of context-sensitive restraints; that is, in entrainment attractors constrain behavior by entraining lower-level processes to the attractors’ overall organization (Juarrero, 1999: 162) Elements are captured by an attractor system and independent or random factors (such as the individual menstrual cycles, or drops of water) “entrain, producing a global pattern of distributed, coherent” activity (Juarrero, 1999: 177).

Once captured in—entrained by—the cell’s overall dynamics, the individual water molecules therefore behave as if in concert with the others; as if, that is, they knew what the others were doing and modified their behavior accordingly, without any one molecule giving orders. A control hierarchy has appeared (Juarrero, 1999: 141).

Entrainment, here, is defined as a principle of top-down control, rather than as an emerging bottom-up quality of organizing. Following Derrida’s sense of relationship, texts, structures, and organizations are all wrought with connections and links. The parts defer—that is, are in relationship—to one another. But networks of order are diffuse, diverse, and dynamic. They shift constantly, reorganizing continually. Organizational boundary objects are efforts at definition, which hold for a while but constantly need attending to. Organizing is a constant process of ordering and structuring, The agreement or structure of today is the uncertainty or equivocation of tomorrow. Efforts at ordering that attempt to establish attractors are uncertain, variable, and fragile.

Entrainment exists—different identities, facets, or factors engage one another and fall into some sort of order. Of course, entrainment occurs in the physical and biological realms. Particles and compounds, one-celled animals and ecosystems, can display entrainment. There is emergent order in nature, which is much more complex than Newton’s laws would lead us to expect. But Juarrero sees entrainment all over the place, as a basic category of natural order. For her, complex order is a product of entrainment. The “higher level” captures elements of the “lower level” and imposes structure on what were unrelated elements. Entrainment provides inevitability to complexification. The logic to the process for Juarrero is not bottom up or internal to the event itself—the cause of entrainment determines biological and social development. Entrainment replaces efficient cause as the key principle of action.

Whatever the “cause” of entrainment might be, it is outside the ordering process itself and is thus (literally) metaphysical. Basing social science investigation on such a metaphysics would have the effect of putting the principles of explanation out of the reach of empirical observation. Social observation becomes an after-the-fact recording of entrainment processes that have already occurred. Because consciousness is a product of entrainment—the result of a reorganization of the mental system wherein

“self” and “reflection” have been locked into place, creating “selfawareness” and the ability to achieve “higher-level thought processes”— acts of consciousness assume entrainment. Entrainment is the fore-structure of consciousness—it logically precedes all consciousness.

That consciousness is an emergent phenomena, wherein levels of the nervous system cohere in complex ways, is acceptable enough. But consciousness can also be understood—in so far as it is currently possible to understand it—as a product of the looseness of difference. Consciousness can be thought of as a result of the many slightly different weak signals that all voice in the mind. By bringing these differences into contact with one another, “mind” emerges. Tightly coordinated links of entrainment are but one sort of hypothesized relationship. Much looser, paradoxical, and polyvalent forms of order could be least as important to the formation of consciousness.

Entrainment is a very interesting phenomenon—studying structures of (tight) interconnectedness is important enough. But the interconnectedness, which is in-between—neither firm nor loose, strict nor indifferent, fixed nor instantaneous—may be more crucial to the formation of consciousness. In relationships of identity and nonidentity, of consistency and alteration, of structure and change, there is the “doubleness” of the dynamic or creative (Peat, 2000). There is, for me, too little real dynamics possible in Juarrero’s interpretation of entrainment; action is not merely a hermeneutic reconstruction of entrainment’s deeds. Juarrerro’s agenda of:

1. analyzing our culture’s logical prejudice against self-organization— that is how things cause themselves;
2. exploring the time and context boundedness of identity; and
3. investigating entrainment

points to key themes in complexity theory and CAS that need to be pursued. But her emphasis on ontology deflects the analysis from the dynamics of action and event. We need to prioritize the ontic—lived and experienced—qualities of complexity theory if we want it to address practice. The ability to think “messiness,” to examine unresolved contradictions, and to accept weak signals makes it possible to combine reflection and action. The simplification of consciousness to a hermeneutic of entrainment, of awareness to this one sort of structure, destroys the complexity of interaction and the creativity of action.

Juarrero’s critique of efficient cause points the way to a complexification of causality, but she retreats from the radical interpretation of her own insight. “Order,” defined by entrainment, can be thought of as an exception to the complexity of the everyday. Most of the time, the elements of the systems we deal with do not lock into tight synchrony; the space between the different elements is where organizing, individuality, and consciousness occur. Action theory is what we need when there is little or no entrainment. When and how should we want to nudge entrainment? When is difference preferable?

The ethics of entrainment and difference are crucial to how we approach ordering and organizing. In entrainment things seem to hold together; and in difference they multiply and create. Contradictions and ambivalence between the two can be forced to apparent resolution by choosing one above the other. But sacrificing order (causality and entrainment) to creativity (difference and emergence), or vice versa, destroys the dynamic quality of (ontic) lived experience. To preserve the dynamics of action, one has to have the ontic intensity of involvement, activity, and engagement.

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