Structuration theories and complex adaptive social systems

Inroads to describing human interaction dynamics

December 31, 2013: Theoretical

Abstract

This paper argues that sociological and social psychological concepts, through a theory of action perspective, can contribute to defining coarse-grained social structures as multidimensional attractors (Goldstein, Hazy, & Lichtenein, 2010) and fine-grained human interaction dynamics as sources of nonlinear and unanticipated social outcomes. By using Gidden’s (1984) structuration theory to define the dimensions of the coarse-grained social system and applying Stone’s (2005) “strong” structuration theory to the fine-grained social system, we clarify the aspects of human interaction dynamics and their relationship to the coarse-grained social system. The paper concludes with three interrelated conclusions and their implications for understanding the “dynamics” of human interactions.

Introduction

Over the past 15 years, complexity science concepts have had a growing influence on our understanding of emergent social phenomena. Constructs such as leadership (Hazy, Goldstein, & Lichtenstein, 2007) and social entrepreneurship (Schwandt, Holliday, & Pandit, 2008) are no longer seen as only individual or personal attributes, but can now be considered as macro, or coarse-grained (Gell-Mann, 2002), level phenomena resulting from human interactions within the social system (or organization). Although significant advances have been made in clarifying the usefulness of complexity principles (e.g., nonlinearity, emergence, schemata, coevolution, and self-organizing and generation) in explaining social systems as a whole, concerns arise as to our lack of specificity and understanding of the human interaction dynamics at the fine-grained level of the social system (Gell-Mann, 2002) and their transposition to the coarse-grained social phenomena (Hazy & Ashley, 2011).

These concerns have manifested themselves in calls for additional efforts to pragmatically define human interactions at the fine-grained level of analysis and move to an understanding of how these pragmatic elements contribute to, and are affected by, coarse-grained social phenomena. The 2012 Academy of Management National Conference highlighted these concerns by opening a line of exploration around the field of “human interaction dynamics” as “the unique and heterogeneous detail within the micro-states that occur during interactions—including the rules that govern these interactions” (Hazy & Surie, 2012: 2).

The undervaluing of the fine-grained level of analysis may have resulted from a focus on coarse-grained social systems questions concerning comparisons of organizational and/or institutional constructs (complexity leadership, social entrepreneurship, economic markets) (Padgett & Powell, 2012) at the expense of fine-grained social dynamics. Coarse-grained levels only provide information about the “conditions of existence” of the institution or system as a whole (Mouzelis, 1995). There is nothing wrong with asking questions about the conditions of existence of the organizational ecosystem; however, this ontological level of analysis tends to cloak more specific, but messy, fine-grained agent actions within the organization. This in turn has left the complexity sciences with little understanding of the conceptual nature of human interaction dynamics as complex adaptive systems (Buckley, 1968).

Specificity and clarity at the epistemological level of understanding necessitate multiple and cross-disciplinary contributions (Allen, Maguire, & McKelvey, 2011; Padgett & Powell, 2012; Powell & Colyvas, 2008; Prietula, 2011). In this context, the purpose of this paper is to address the undervaluing of the fine-grained social system level through the integration of strong structuration theory (Stone, 2005) with the concepts of complex adaptive systems (Buckley, 1998b; Yasmin & Allen, 2011). It is our intention to make a contribution that will both aid practitioners in their application of complexity science to the social milieu and aid in the development of a stronger conceptualization of human interactions at the “algorithm level, where fundamental choices are made in what constructs are represented (and how), what dynamics are defined (and how) in the model, and how they interact (this is where the theory is specified)” (Prietula, 2011: 103).

Our argument employs sociological and social psychological concepts, through a theory of action perspective, to aid in defining coarse-grained social structures as multidimensional attractors (Goldstein, Hazy, & Lichtenein, 2010) and fine-grained human interaction dynamics as sources of nonlinear and unanticipated social outcomes. These outcomes are defined as “social processes having designated consequences for designated parts of the social structure” (Merton, 1968: 43). We define “social structure” as the manifestation of the collective’s influences on production, reproduction, and integration of the social system through multiple feedback processes. It is our argument that coarse-grained social structures play a major role in generating...
and governing human interaction dynamics. In addition, by employing structuration theories (Giddens, 1993; Stones, 2005), we not only demonstrate conceptual congruence with the theory of complex adaptive social systems (Allen et al., 2011; Buckley, 1968; Goldstein et al., 2010), but we can also add specificity and concreteness to the role of fine-grained human interactions in the production of coarse-grained social structures (Padgett & Powell, 2012).

We begin by using structuration theory to define the dimensions of the coarse-grained social system. We then apply “strong” structuration theory to the fine-grained social system to define the aspects of human interaction dynamics and their relationship to the coarse-grained social system. Finally, we discuss three interrelated conclusions and their implications that contribute to our understanding of the “dynamics” of human interactions.

**Structuration theory and the coarse-grained level of the social system**

During the latter part of the 20th century, sociologists turned away from a purely functional explanation of agency and social structure (Parsons, 1975) and began developing a more complex depiction of agents’ role in creating their own social structure (Archer, 1988; Mouzelis, 1995; Parker, 2000). In this modern conceptualization, the social “structure” is seen as continuously emergent social patterns produced by sets of integrated individual and collective actions/interactions and characterized by an accepted set of norms and values (Pruzan, 2001) and a commonly communicated knowledge base concerning the meaning of the interactions (Schwandt, 2002). Giddens conceptualized the relationship between agency and structure as an inseparable and intricate “duality” that is “both constituted by human agency and yet it is at the same time the medium of this constitution” (Giddens, 1984: 128). To operationalize this duality of social structure, he formulated “structuration theory” as an explanation of the production and reproduction of dynamic social structures as they coevolved with human interactions, over space and time. His theory is predicated on two assumptions: (1) social structure and agency are in practice not separable (except in the process of theoretical analysis) and (2) the relationships between agency and social structures are mutually reciprocating. That is, coarse-grained social structures influence fine-grained interactions, and in turn, they are modified by fine-grained interactions.

To operationalize the theory, Giddens employed two analytical frames. The first frame specifies agency as “knowledgeable actors” that make “informed choices” concerning their actions within the context of the coarse-grained social structure. (We discuss this agency frame when we turn to the fine-grained explanation below.) The second frame delineates coarse-grained social structures as comprising three interrelated social principles that provide information (rules and guidance) for use in conducting fine-grained human interactions. As the social system coevolves with its environment, agent interactions both create and are influenced by these coarse-grained social composites.

Giddens defined the three social principles in terms of their forms, or arrangement of guiding rules, or “modes of implementation” and saw them as ontologically defined in a functional manner. First, the rules of signification enable and guide meaningful communication and sensemaking among the agents. These rules provide structure to clarify information and knowledge for the agents, in the context of the collective. Second, norms of legitimation provide the collective with the ability to morally sanction specific actions and reject others. They provide the rules of inclusion within the cultural boundaries of the collective. Finally, the use of power and the allocation of resources as domination address the functions of command and authority over people and resources.

Table 1 provides more detail on the three coarse-grained structuring principles, their respective modes of implementation, and examples of their coarse-grained ontological manifestations. In this paper, we use the term “social structuring” to indicate

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**Fig. 1: Dynamic reciprocal relationship between coarse-grained social structures and fine-grained social interactions**
to postulate possible alternate social attractors based on the evaluation of the modes. This can be done by simultaneously
agents to “use appropriate rules and resources (structure) to give form to situations of action by interlacing meaning, normative
implementation do play a role in social control; however, the acceptable variance of the modes of implementation allows the
dynamically the coarse-grained modes of
“sharing” (new norms or additional sanctions). Structuration theory places an emphasis on the changeable nature of the coarse-
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the process of fine-grained interactions actually using coarse-grained modes of implementation (guidance information) to
maintain, restore, or alter the stability of the social system.

Coarse-grained social structure as attractors

As Table 1 illustrates, the location of the information (rules, etc.) concerning these coarse-grained modes of implementation
(meaning, norms, and power) can be ontologically placed or stored in physical or objective forms (e.g., standard operating
procedures). However, in keeping with Giddens’s duality concept, they may also be located epistemologically in the actions and
interactions of the agents themselves. In these cases, the information is latent and the modes of implementation only visibly
emerge as the result of the fine-grained interactions that either reinforce, or create perturbations in the modes of
implementation. For example, we don’t realize there is a norm concerning our behavior until we violate that norm and receive
sanctions based on the collective’s coarse-grained understanding of those norms.

Giddens believed that the coarse-grained social principles (structures) and their respective modes of implementation (meaning
making, normative actions, and power/resource allocations) were in reality non-separable. This inseparability can be
represented as a three-dimensional social structuration state space (see Figure 2). The space, bounded by a range of
acceptable values of each of the modes of implementation, provides possible patterns, or combinations, of the three modes of
coarse-grained social structuring at any particular time and space. When this solution space as a subset of the space of
possibilities is stable even when it is perturbed below a certain threshold, it can be represented as a dynamical attractor in
phase space. This means it represents all the possible coarse-grained social orientations for a specific social system, or
organization, at a specific time and space as long as the system is not perturbed by external forces beyond a certain threshold.
We call social structures with these properties social attractors.

The coarse-grained social attractor provides an abstract accounting of the acceptable variances of the three coarse-grained
modes for implementing structural constraints on individuals’ degrees-of-freedom. The modes of implementation are not usually
stated in black and white terms; there are usually many gray areas. For example, an organization may value the free exchange
of information internally but may not externally because of its competitive environment. Thus, the coarse-grained social attractor
representing these constraints must provide enough information for agents to modify their actions of sharing depending on their
location. Violation of the norm may lead to adjustments in the coarse-grained mode of implementation of the concept of
“sharing” (new norms or additional sanctions). Structuration theory places an emphasis on the changeable nature of the coarse-
grained social structures in response to the dynamics of human interactions. Dynamically the coarse-grained modes of
implementation do play a role in social control; however, the acceptable variance of the modes of implementation allows the
agents to “use appropriate rules and resources (structure) to give form to situations of action by interlacing meaning, normative
elements, and power” (Parker, 2000: 57).

The acceptable variance in the modes of implementation and the changeable nature of the coarse-grained attractors enable us
to postulate possible alternate social attractors based on the evaluation of the modes. This can be done by simultaneously
describing the modes in terms of their relative contribution to an “open or closed” coarse-grained social structure. We can then
postulate the composite social structure pattern under the assigned nature of the coarse-grained modes of implementation, as

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<td>Organizational mission; Employee handbook; Organizational logo; Communications; Use of technology and physical space; Language.</td>
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<td>Organizational standard operating procedures; Defined relationship between supervisors and supervisee; Influence on agents stemming from collective sanctions or emerging from the agent’s own self-regulation (e.g., guilt).</td>
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We now turn to a discussion of fine-grained human interaction dynamics and their nonlinear coevolutionary relationship to coarse-grained social attractors. As mentioned above, Giddens did not elaborate on the fine-grained level of analysis and use “strong structuration theory” (Stones, 2005) to enhance the analysis of the fine-grained level of human interaction dynamics. We acknowledge this lack of specificity at the fine-grained level of analysis and use “strong structuration theory” (Stones, 2005) to clarify the duality of social structure and human interaction dynamics by relating the knowledgeable capacities of agents to the existing as memory traces and as instantiated in action” (Giddens, 1984: 377), Giddens felt that these modes of implementation clarify the duality of social structure and human interaction dynamics by relating the knowledgeable capacities of agents to the coarse-grained social attractor.

### Strong structuration theory and fine-grained human interaction dynamics

Giddens’s “interweaving” of the various concepts of social structuring has been seen by some as “conflating” structure and agency (Archer, 1988; Parker, 2000). These scholars have argued that there is insufficient treatment of both agency and structure in his conceptualization. Others have criticized structuration theory because of its concentration on the ontological or real nature of society and institutions as opposed to the epistemological issues of fine-grained agent actions (Mouzelis, 1995). We acknowledge this lack of specificity at the fine-grained level of analysis and use “strong structuration theory” (Stones, 2005) to enhance the analysis of the fine-grained level of human interaction dynamics.

We now turn to a discussion of fine-grained human interaction dynamics and their nonlinear coevolutionary relationship to coarse-grained social attractors. As mentioned above, Giddens did not elaborate on the fine-grained level dynamics other than to define agency as having the characteristics of a “knowledgeable actor” that perceives coarse-grained social attractors, is influenced by them, and in turn influences the attractor through his or her interactions. This in itself is an important aspect.
because it sets the stage for agents to possess the capacity for knowledgeable choice based on their interpretation of the
information concerning coarse-grained attractor modes of implementation. In this section we develop the final premise of our
argument that the use of strong structuration theory (Stones, 2005) provides a more concrete understanding of the fine-grained
human interaction dynamics and their relationship to coarse-grained social attractors and their modes of implementation.

Stones's (2005) “strong structuration” theory adds fine-grained epistemological specificity to agency. He introduced in situ
variability with the purpose of making structuration theory more user friendly, so that “Giddens's version of structuration can be
adapted so as to be put to systematic empirical use” (Stones, 2005: 86). His adaptation entails the conceptualization of strong
structuration theory as four social processes that recur with mutual reciprocating influence on each other: external structures
(coarse-grained social structures and modes of implementation), internal agent structures (with conjuncturally specific
knowledge of external structures and general dispositions, or habitus), active agency (agents’ actions and interactions), and
outcomes (as potential changes to internal and external structures).

Figure 3 illustrates our interpretation of the dynamics of Stones's model. We have purposely enhanced the “internal agent
structures” portion of the figure to emphasize Stones’s contribution (and potential empirical strength) at the fine-grained level
and focus our discussions around the two internal structures. These two internal structures provide information and knowledge
so that agents may choose and form dispositions that will guide them in their actions and interactions and their interpretation of
the context of the coarse-grained social attractor.

**Internal conjuncturally specific knowledge**

Conjuncturally specific knowledge is based on the agents’ interpretation of a “positional role” in their environment and is guided
by their interpretation of various rules and normative expectations of the collective. Stones emphasized this role of interpretation
in saying, “Even traditionally conceived social structures don’t work by themselves; they work on a basis of agents acting in situ,
drawing upon and being influenced by interpretive schemes, conceptions of values and norms, and power resources” (2005: 52).

Individual actors maintain a course of action or interactions that are influenced by collective schemata, or sets of simple “rules”
for sensemaking that are indicative of collective “cognitive structures that determine what action the agent takes at time t, given
its perception of the environment at t−1” (Anderson, 1999: 219). These collective schemata are located in and are
representative of the coarse-grained social attractors and their modes of implementation. They have emerged over time and
influence the individual's selection of events and behaviors during interactions. This conjuncturally specific knowledge is the
internalization of the collective schemata as the agent’s specific schema that “partially determine the salience of environmental
events, what meaning is conferred on them, whether they leave any lasting effects, what emotional impact and motivating power
they have, and how the information they convey will be organized for future use” (Bandura, 1999: 27). These processes of
cognitive and emotional integration and sensemaking are constituted through human actions, interactions, and communications
that provide continuous “structuring and restructuring” of not only the modes of implementation, but also the individual's
personality by focusing his or her attention, increasing or decreasing human choice, and reducing equivocality. These meanings
result in increased individual and collective knowledge (potentially good or bad) about the social system and self.

![Fig. 3: Dynamic portrayal of strong structuration theory](https://journal.emergentpublications.com/wp-content/uploads/2015/11/ca0d2c8b-3a14-25fa-09ff-294a846c1dc.png)

**Internal general dispositional knowledge—The self**

Stones defined general dispositional knowledge as taken-for-granted skills and dispositions “encompassing generalized
worldviews, cultural schemata, classifications, typified recipes of action, deep binary frameworks of signification, habits of
speech and gestures, and methodologies for adapting this generalized knowledge to a range of particular practices in particular
locations in time and space” (2005: 88). He drew on Bourdieu's concept of habitus to illustrate the taken-for-granted and
unnoticed nature of these dispositions: "In each of us, in varying proportions, there is part of yesterday's person; it is yesterday's
person who inevitably predominates in us, since the present amounts to little compared with the long past in the course of which
we were formed and from which we result" (Bourdieu, 1977: 79). These intricate, idiosyncratic characteristics represent the
agents' personal histories, values, goals, and habits.

Individual actions are dependent upon “feedback accompanying enactment which provides the information for detecting and
correcting mismatches between concepts and actions” (Bandura, 1999: 26). Individual meaning, in the context of the coarse-
grained attractor, is based on this feedback in the form of extracted cues from objective sources and from their interactions.
These cues, sometimes minor, have the power to launch new nonlinear cyclic actions that can change personal life courses,
Agent differences are in many respects dependent on the individual perception and interpretation of both coarse-grained social attractors and their modes of implementation, and the perceptions of “other” agents’ actions and the actions of “self” (Buckley, 1998a; Mead, 1934). Strong structuration theory adds more specificity to human interaction dynamics by acknowledging the importance of actors and their cognitive and emotional internal structures (e.g., schema and habitus). Stones’s elevation of agency is in a way a double-edged sword concerning our quest for clear and useful descriptions of fine-grained social dynamics. On the one hand, the internal conjuncturally specific structures are easily linked to the modes (meaning schemata, norms, power) through practical mechanisms such as job descriptions and leadership positions. However, the general dispositional internal structures require additional levels of interpretation and inferences of human interactions. It appears that to be complete, the specification of human interactions must consider a range of individual differences emanating from unique backgrounds, moralities, and capabilities. These differences are dependent on the cognitive/affective knowledge and preferences of agents as they respond to the information provided by the coarse-grained modalities of norms, power, and meaning schemata.

Individuals’ interactions are driven by their need for satisfying self-interest and need for gratification in the context of coarse-grained social structures. Individuals are expected to make judgments, matches, and selections as to the relationship between the “situation” and the “ends” using their values and habitus as influenced by the norms of the collective. Each action is associated with the structuring of their environments in an attempt to add meaning, understanding, and sometimes order. This continuous process of differentiation and integration is accompanied by ever-increasing elaborations that generate additional information and increased equivocality. This unique knowledge distracts from the social system’s ability to predict and increases its nonlinearity. The unpredictable nature of human interactions increases the degrees of freedom within the social system and creates tension between coarse-grained and fine-grained social structures that can be manifested in the form of conflict.

At the collective level, we sometimes find individuals interacting in situations in which their personal values must conform, to a certain extent, with collective norms and values that have emerged over time. In these cases, human conflict, both individual and collective, may arise from the agents’ dependence on their internal conjuncturally specific knowledge and internal dispositions. This conflict can be both constructive (e.g., disagreement around process or task) and/or destructive (e.g., personal competition or self-interest over the achievement of the collective’s goal) (Jehn, 1997). Therefore, the coarse-grained structuring processes must include modes of implementation with the capacity for dampening (McKelvey, 2003; Weick, 1995) or controlling the tensions associated with destructive, or personal, conflict.

Although currently no laws or rules govern internal individual judgments (although the extensive interest and new advances in neuroscience and human actions will most likely change this), we can apply some discriminators to the agents’ interactions to determine patterns of the internal structures as manifested in actions. For example, we can discern agents’ level of critical thinking about their actions by distinguishing the cognition associated with habitual or routine actions (Nelson & Winter, 1982) versus new or unique actions. Habitual action is “human activity which is influenced by prior activity and in that sense acquired; which contains within itself a certain ordering or systemization of minor elements of the action; which is projective, dynamic in quality, ready for overt manifestation; and which is operative in some subdued subordinate form even when not obviously dominating activity” (Dewey, 1922: 41). Here the agents’ reflections are quite automatic during the interactions—what Kahneman defined as System 1 thinking, where agents operate “automatically and quickly, with little or no effort and no sense of voluntary control” (2011: 20). This type of automatic response may be the agents’ default action process—not necessarily controlled by their coarse-grained social attractor as a “cultural dupe,” but employed as an efficiency measure for social fine-grained interacting.

As agents continually evaluate feedback concerning their actions (with regard to conjuncturally specific and general disposition schemas), they may confirm their actions, or the information may provide an emotional trigger, or realization, that their routine interactions and System 1 thinking are not congruent or adequate. This triggering can spur more reflective examination—what Kahneman called System 2 thinking, a process that “allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice and concentration” (2011: 21).

Agents evaluate and integrate their own internal structural schemas during human interactions. They have the capacity to make “informed choices” concerning their specific actions, thus producing the nonlinear nature of “choice” that can emerge in the form of unpredicted human actions.

Stones’s strong structuration theory, by adding the internal agent structures, has added both more specificity and more complexity to our understanding of human interaction dynamics. Some will be disheartened over the unpredictability of these types of fine-grained structures; however, it is this addition that brings us closer to the actual nature of the human condition and the outcomes of interactions in practice.
Conclusions and implications

We believe that structuration theories provide three interrelated contributions to our understanding of the “dynamics” of human interactions in complex adaptive social systems, as outlined in the conclusions below.

Conclusion 1

Structuration theory and strong structuration theory are conceptually congruent with the theory of complex adaptive social systems.

Our purpose in delineating the theory of structuration was to present its critical dynamic elements (structural duality, interactions, human dispositions, and mutual reciprocation between coarse-grained structures and fine-grained social structuring) so that they could be compared with the elements of complex adaptive social systems (emergence, nonlinearity, coevolution, attractor, and schemata). The ongoing reciprocating dynamic aspects of fine-grained human interactions are seen in an indirect causal relation with coarse-grained attractors, resulting in social order. This relationship is congruent with the complex adaptive system concept of emergence (emerging social structure from human interaction and emerging human interactions from social structure). In both frames, characteristics of emergence meet Goldstein's criteria for emergent phenomena as “novel macro-level entities and properties with respect to a micro-level substrate: ostensiveness in the sense of unpredictability in non-deducibility; integrated coordination characterizing the macro level; and dynamical in the sense of coming to be over time” (Goldstein, 2011: 66).

Both theoretical frames agree on the importance of schemata as conveyers of information from the coarse-grained structures to the fine-grained interactions. Structuration theory is more explicit in its use of schemata as a conveyer of “meaning” and signification structures at both the coarse-grained collective social structure level and the fine-grained level as representing dispositions and memory traces, whereas complex adaptive social systems theory treats schemata more as a source of rules for action and has thus far down-played agent knowledgeable choice.

Couched in the intersection of schemata and emergence is the nonlinear nature of the social processes. Both theoretical frames abandon the traditional notion that the collective in its pursuit of survival should be seeking rational, stable social structures and equilibrium with its environments. Although the social system may be “seeking order,” its natural state is that of reducing “disorder” or entropy.

One aspect of nonlinearity (non-proportionality) of social processes emanates from having the same level of analysis involving two or more reference frames in operation at the same time and space. This social phenomenon also occurs as “network folding,” which impacts “how multiple-network topologies can shape the dynamics of emergence and evolution of organizational actors over time” (Padgett & Powell, 2012: 6). Strong structuration theory demonstrates this “nonlinear” nature of the agency by insisting on two internal structures that have to be rectified when judging the appropriateness of power distribution in human interactions. For example, the relationship between conjuncturally specific structures such as a “supervisory role” and the mode of implementation of power is also dependent on the modes of norms and meaning.

Conclusion 2

In addition to theoretical congruency, structuration theories provide added face validity to the modes of implementation of coarse-grained social attractors and fine-grained human interaction dynamics.

The advantage of using structuration theory to understand complex adaptive social systems is that it allows theorists to postulate potential social patterns (attractors) using face- and empirically-validated variables (e.g., norms, meaning schemata, power, agent perceptions of role, morality, and modes of thinking) that can be reinterpreted as to their nonlinearity, emergence, and/or meaning schemata. For example, at the fine-grained level we can evoke the variation of human interactions by using variables such as roles (Katz & Kahn, 1978), routines (Winter, 2012), and/or patterns of cognitive judgment (Kahneman, 2011) and then examine changes in emerging social attractors and their modes of implementation.

Because of the rich empirical history of these social variables, we are able to add more definition to both coarse-grained and fine-grained concepts such as Hazy’s “organizational resilience and critical slowing down” and move toward “reliable signals that would indicate that something is about to change” (Hazy, 2012: 1). Structural explanations of social system processes may also aid in anticipating transitions in the system’s stochasticity (Scheffer et al., 2012) based on internal human interaction dynamics as well as the influence from external coarse-grained events.
Conclusion 3

Coarse-grained and fine-grained social structuring exhibits a duality relationship that may limit the determination of both constructs at the same point in time and space.

A recurring theme in our argument has been a deliberate focus on the uncertainty of the relationship between fine-grained human interaction dynamics and their coarse-grained attractor contexts. The duality nature of structure conflates human structuring processes and reduces our ability to predict precise outcomes (coarse-grained) from agent interactions (fine-grained). This inability to predict outcomes of human interaction with any certainty is a result of the mutually dependent nature of the modes of implementation and fine-grained human interaction dynamics.

This idea of “uncertainty” is not new. Physicists ran into it early in their development of quantum mechanics: “The uncertainty relation limits the accuracy with which position and momentum can be simultaneously ascribed to the particle. Both quantities are fuzzy and indeterminate—Heisenberg Uncertainty Principle” (Merzbacher, 1961: 22). The natural science uncertainty inherent in determining both instantaneous position and the rate of change of position (which involves measuring the difference between two instantaneous positions which are necessarily different) is similar to the predicament in the social sciences when all relevant factors are always changing. We are not able to predict with any certainty the precise nature of the social attractor of the future because in the next instance of time, human interaction dynamics may irreversibly affect the nature of the meaning schemata, the distribution of power, or the nature of the social norms.

Giddens understood that most rule systems “are subject to chronic ambiguities of ‘interpretation,’ so that their application or use is contested, a matter of struggle, and constantly in process, subject to continual transformation in the course of the production and reproduction of social life” (1993: 130). If we proceed along the path of the natural sciences, then one answer to social uncertainty may be to represent the modes of implementation and human interaction dynamics as probability functions. This may lead us to the same conclusion that the physicists reached: Living with uncertainty is the nature of complex systems.

It is hoped that these four conclusions can provide inroads to the nature of human interaction dynamics—not because they are “new and improved” variables, but because they involve reexamining human interactions using perspectives that allow us to embrace uncertainty as “normal.” The nature of human organizations demands the simultaneous consideration of both fine-grained and coarse-grained social structures. Thus, the concept of human interaction dynamics might be better defined within a human interaction context. The argument for the inclusion of context as an equal player emanates from the dynamics of structuration theories. One cannot divorce the two broad constructs.

References


