Confronting complexity

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Abstract

While complexity researchers have made considerable advances in recent years, complexity thinking, as a formal discipline, has yet to enter the mainstream. We believe that this is partially a consequence of the packaging. The relative dearth of research into practical tools, when compared with that conducted in the areas of philosophy and theory, serves to compound the problem. Given the difficulties experienced by those attempting to transfer complexity ideas from the laboratory to the field, maybe we can best approach the development of tools from alternative theoretical directions—and use our understanding of complexity to evaluate and enhance them. In this article, we introduce Confrontation Management—a theory of human interaction that has its roots in Game Theory—and show that this theory supports the modeling and analysis of, and planning within, complex social systems. As such, we suggest that it represents a powerful addition to any complexity practitioner's toolbox.

Introduction

Alice Munro, the Canadian writer, once said, “The complexity of things—the things within things—just seems to be endless. I mean nothing is easy, nothing is simple.” The more time we spend studying complexity, the more we share her sentiments.

Of course, the very pervasiveness of this complexity is the reason we gravitate towards it—like basin-dwelling moths to the attractor flame. This journal, along with others, stands as a testament to the progress that is being made in this young discipline.

Our passion, however, lies in the possibility of releasing all these ideas into the wider ecosystem. While many of the more beguiling concepts have embedded themselves in everyday language, complexity thinking, as a formal discipline, is clearly much less widespread. There are islands of success, but the intellectual tectonic shifts required to make them continents have not been forthcoming.

Why is this? We believe that it's partially down to the packaging. Complexity thinking is hard. Much of the research draws on sophisticated philosophy. This hinders the broad adoption of the ideas in the professional mainstream. The fact that the amount of research in the area of tools is dwarfed by that in the areas or philosophy and theory serves to compound the problem.

There is no doubt that the packaging of complexity into a neat, user-friendly package is a tall order. It's difficult enough to just describe the damn thing! Maybe this is because we've been gradually expanding the complexity of complexity. As we've experienced the failures of the systems engineering paradigm (Midgley & Richardson, 2007), and seen the limitations of "new reductionism" (Richardson, 2002), our definition of complexity has become increasingly elaborate. Naturally, this has trickled down the pipeline to challenge the tool developers.

But, maybe we can best approach the development of tools from another theoretical direction—and use our understanding of complexity to evaluate and enhance them. Richardson (2008) has discussed the notion of a "modeling culture" where a practitioner uses linear tools in a nonlinear manner. This results in a kind of "cyborg" tool where man is responsible for providing the complex context. However, as complexity researchers surely we'd like to provide man with more assistance in this area.

In this article, we introduce a theory of human interaction that has its roots in game theory. This theory supports a formal modeling framework, and a computerized planning system. It has been applied in the fields of politics, business and government to address real world problems.

We intend to show that this theory, known as Confrontation Management, supports the modeling and analysis of, and planning within, complex social systems. As such, it represents a powerful addition to any complexity practitioner's toolbox.

This article continues with a working definition of complexity thinking, followed by a description of Confrontation Management. Confrontation Management is then considered in the light of our definition of complexity thinking, illustrating its value as a tool for complexity practitioners. We close with a case study showing how Confrontation Management has been used as an effective planning tool within complex social systems.

Complexity thinking
We embark on this section with some trepidation. Attempting to define the key elements of complexity thinking in a complexity journal is never going to go well. We could take the easy way out. You know...you've seen it before—"As avid readers of this journal we assume you are all familiar with complexity thinking." In many circumstances, this would be a valid defense. However, we are arguing that a tool meets certain requirements, so we need to be explicit about those requirements. We need to present some coherent and comprehensive description of complexity thinking. If not, we would just be picking and choosing some ideas from the field.

This lack of discipline can be seen in much of the complexity literature. It generally manifests itself as one of the basic tenets of complexity thinking being shown to be relevant to a particular situation, leading to that situation being described as "complex" (in the formal sense). This won't do. We need to be more rigorous.

This leaves us needing to produce our definition. There are probably as many definitions of complexity as there are complexity researchers. Hey, that means ours is as valid as anyone else's! So screw it—suddenly we feel emboldened. In all seriousness, we can do no more than make an honest attempt at a coherent and comprehensive enumeration of the key elements of complexity thinking—and hope that you can accept it as such. And we'll be mercifully brief...

**Boundary critique**

The process of boundary critique (Midgley, 2005) is arguably the key feature of complexity thinking. We view this as the central element, with the remaining elements we will define being corollaries of the commitment to it.

Life is defined by where we draw the lines. The fact that defining these boundaries is so difficult is part of what makes life interesting. All boundaries are no more than temporary patterns resulting from a filtering process (e.g., based on personal values). As such, they are to some degree arbitrary (at the same time both quasi-objective and inter-subjective) and require ongoing review to understand how they shape our context of interest—and how our context of interest shapes them. Richardson (2005) has demonstrated this at length (with cellular automata).

Although boundaries are difficult to define, define them we must. In this spirit, Ulrich (1995) argued that a boundary is rationally justified if it is agreed by all the stakeholders—the involved and the affected—with the agreement being expressed through language. While we may not agree on the meaning of words, we can at least reach an understanding of how others are using them—e.g., one man's “terrorist” is another man's “freedom fighter”.

**Pluralism**

Given the non-reality of all boundaries (…very Buddhist…), we cannot rely completely on any one perspective. All perspectives are ideals and the real world is not idealistic. Mono-paradigmatic approaches are risky as they only tell part of the story.

Perspective is being used here in the broadest possible sense. It refers to individual opinions as well as particular methodologies. In a sense, these perspectives can be equated with stakeholders as they all have a vested interest in being recognized as relevant and important in the war of ideas—a kind of evolutionary mementos.

Being aware of multiple perspectives equips you for more effective boundary critique, of course. This is one of the processes that helps provide crowds with their wisdom (Surowiecki, 2005).

**Synthesis**

Synthesis is closely related to pluralism. It relates to the attempt, through the use of boundary critique and pluralism, to tailor descriptions (models) to the context of interest, rather than have the model shape the context. Or, to put it another way, have the dog wag the model tail, rather than vice versa.

Of course, it is never this simple. By definition, the context of interest must pay some lip service to the model. If not, the model would have to be as complex as the reality it seeks to explain. It is quite reasonable to take a particular context and evolve it so that it can be more easily understood through a model. The key is that the “evolution” is reflected in the real world and is not just something that happens in the mind of the analyst. So, through boundary critique, an incoherent plurality is beaten and brutalized into a context specific and provisionally synthetic whole.

This synthetic whole can still only be a bastardization of the real world. It can only, therefore, be a tool for thought, rather than a proxy for reality. We need to maintain some ontological distance from our constructions. The commitment to “boundary critique” and “pluralism”—and maybe “improvement”, as in Critical Systems Thinking (Flood & Romm, 1997)—is more important than the final model itself.
Emergence

The starting point of an analysis should not completely predetermine the end point of the analysis. This should lead us to be wary of purely systematic approaches. We need the flexibility and confidence to wander through “analysis space” (evolving as a consequence of our boundary critiques) in a way that acknowledges the emerging view of the real world, rather than the favored method / methodology. In addition, we need to recognize that the real world will collectively conspire to respond to our design interventions in a variety of ways—some of them not considered by the “designers”.

This requires us to engage in a tricky balancing act. Being overly prescriptive leads to narrow-minded analysis, while “anything goes” analysis can lead nowhere. Emergence requires some kind of container to filter out the cacophonous noise of reality. The structure of that container, however, should not remain fixed or overly restrictive.

Timeliness

Although the allocation of boundaries (in both space and time) is essential to “doing stuff”, control/design in complex systems is a never ending process. Most models used in support of decisions will, at best, only have short-term applicability. To guide any complex system in a particular direction requires ongoing analysis and intervention. And, of course, with the analyst being part of the complex system he seeks to affect, the notion of a “particular direction” will itself evolve. No room for long-term dogmatism here!

Confrontation Management

Confrontation Management, also known as Drama Theory (Howard, 1998), is a general theory of human interaction. While having its genesis in game theory, it was developed in reaction to two weaknesses of that theory when applied to real world interactions involving people:

1. Game theory assumes that people pursue their objectives within a fixed frame or structure;
2. Game theory assumes that people always act rationally in pursuit of their goals.

In Confrontation Management, parties’ are modeled as interacting in an attempt to attain objectives that they cannot bring about unilaterally. Tensions caused by the incompatibilities between their objectives (which can be shown to be of six types) result in creative attempts to change the context of the interaction. The possibility that parties will act against their assumed preferences—i.e., act irrationally—as they jostle is very much part of the analysis.

Some may be anxious about the idea of Confrontation Management being a generally theory of interaction. It does seem rather bleak. While we’re sure that the readers of this journal will be aware of the problems of staking too much on the definition of a single word, we would, nevertheless, like to address this concern.

Confrontations sit on a continuum between conflict and collaboration. It is only in the rare case of total unqualified agreement that we have parties that are not in some form of confrontation. A confrontation exists whenever parties have incompatibilities in their objectives. Even when their objectives are perfectly aligned, the potential for those objectives to diverge creates a shadow confrontation.

People generally interact with others to change their intentions in some way. If we agree as to the goals of a project, we may disagree over the timescales. If we agree on the timescales, we may disagree over the correct approach. If we agree over the correct approach, we may disagree over the staffing. Interaction is driven by the desire to change intentions—however benign that desire may be.

We intend to give a fairly rough and ready definition of Confrontation Management. Readers interested in a more detailed treatment may wish to pursue it through the references.

Evolving confrontations

Parties to a confrontation (who may be individuals, sovereign states, or something in between) interact in the course of pursuing their projects. Their projects are generally driven by their values, which, in turn, emerge from their historical backgrounds.

Figure 1 describes the phases through which an interaction evolves (Howard, 1998). First, there is a “scene-setting” phase in which parties discuss the issue. During this phase they develop a common understanding of the situation. While not necessarily
laying their cards on the table, they at least agree which deck they will be using—e.g., the options open to them. “Scene-setting” will also involve the identification of other parties to the interaction. These will generally be identified for the purposes of strengthening an existing party’s case.
Complexity thinking via Confrontation Management

Increase pressure on Holbrooke by strengthening the impact of his (Mladic’s) threats.

Something that is often not appreciated about interactions is that they are a permanent state of affairs. Policymakers, therefore, need to understand what interaction “is” at any moment in time, and what is currently evolving second-by-second and, as such, require regular review and intervention if they are to be managed effectively.

Matters are what the other parties believe a given party is capable of—even if the given party knows this to be false. The actions that a party knows it can take—i.e., the options open to it—are fairly limitless.

The “scene-setting” phase ends when the parties have agreed on the structure of the interaction—i.e., no new information is added to the discussion. This is crucial as no progress can be made while parties are being constantly bombarded with new data.

If a confrontation is defined purely in narrative terms, it can be difficult to introduce neutral terms while retaining the integrity of the discussion. Once positions and stated intentions have been defined—e.g., the focus shifts from the personalities to the interaction.

Confrontation Management allows the essential elements of an interaction to be identified through the process of dilemma framing. The temptation in boundary critique is to err on the side of caution by casting the net wide. However, over-specification is just as bad. It is a balance that the method attempts to achieve.

Options Boards are ephemeral devices. They bring some insight to an interaction at a point in time and—like Keyser-Schütz—evolve as the interaction evolves. This is important to understand when modeling interactions—i.e., someone changes the structure of the interaction—e.g., by adding a new element to an offer—a new Options Board emerges.

We recommend complexity research and practitioners look closely at this technique. It could represent a starting point for understanding the nature of interactions.

Fig. 1: Phases in the evolution of a confrontation

Fig. 2: Options Board describing a confrontation

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Another way in which Confrontation Management supports pluralism is in its ability to support analysis using semantic framing. A rough analysis of the papers published in this journal in 2007 shows that less than 10% of them were primarily concerned with the development of tools for practitioners.

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An important point to note, especially for the purposes of this article, is that a party’s position is largely defined by its perceived position. How a party perceives itself is critical. This is because a party’s perceived position is generally used to determine its actual position. For example, a student recently mentioned a problem she was having with her son. She gave the following description:

Fig. 3: Options Board describing a confrontation

Fig. 4: Options Board describing a confrontation


When faced with dilemmas, parties return to either the “scene-setting” or “build-up” phases to redefine the interaction. Any effort expended on activities not designed to resolve dilemmas is, by definition, off-topic.

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Persuasion—our threat is insufficient;...