

Insights from PGI Literature Review on Complex Adaptive Systems and the New Synthesis of Public Administration

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NS is an international co-operation initiative led by the Honourable Jocelyne Bourgon P.C., O.C.

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The NS Initiative is a collaborative international research initiative. It was developed in partnership with distinguished academics from a variety of disciplines and senior public sector leaders from countries with different governing systems operating in very different contexts, cultures and circumstances. Seeking insights from theory and practice, and testing ideas in a diversity of environment, are a trade-mark of the New Synthesis Initiative.

The NS Initiative has been underway for the past ten (10) years. The NS conceptual framework and the NS exploratory cycle blend systems theory, adaptive system thinking and complexity theory in an integrated theory to explore the diverse dimensions of complex issues, invent sustainable and pragmatic solutions, learn from practice and course correct and adapt as needed. The NS Initiative asserted that a different mental map and a different way of thinking are needed to invent solutions to the increasingly complex problems governments are facing in practice. This literature review focuses on how NS uses complex adaptive systems (CAS).

Complex Adaptive System (CAS) Thinking to Understand Complex Issues

The first half of the 20th century saw the emergence and formulation of systems theories. In the 1960s, Complex adaptive system (and complexity theory) grew out of systems theories. As a school of thought, CAS took hold in the mid-1980's with the formation of the Santa Fe Institute, a New Mexico think tank formed in part by former members of the nearby Los Alamos National Laboratory (Dodder and Dare, 2000). Participants at the Institute came from multidisciplinary backgrounds, including economics, physics, biology, ecology and archaeology.

According to Cordon (2010), Complex-adaptive systems (CAS) “are made up of interacting components (the system) whose interactions may be complex (in the sense of nonlinear) and whose components are diverse and/or have a capacity for learning that generates reactive or proactive adaptive behavior.” Complex adaptive systems (CAS) are all around us. Some of these include ecosystems, financial markets, the brain, ant colonies, economies, and many other examples where large numbers of constituents independently interact. Similarly, Bourgon (2011) argued that governments are ‘complex systems’ that interact with numerous other complex systems, such as the human community, the global economy, the natural environment or the world wide web, to name a few. Governments are complex and adaptive systems: complex in that they are diverse and made up of multiple interconnected networks; adaptive in that they have the capacity to change and learn from experience.

Complex adaptive systems generally focus on interaction, adaptation, learning, non-linearity, co-evolution and feedback mechanisms. Dodder and Dare (2000) observed that CAS have several common characteristics that recur in a number of natural and human contexts. The most commonly mentioned characteristics in the literature are the following:

- CAS are composed of a network of many agents gathering information, learning and acting in parallel in an environment produced by the interactions of these agents.
- The system co-evolves with its environment.
- Order is emergent, instead of pre-determined, always unfolding and always in transition (perpetual novelty).
- CAS tend to exist in many levels of organization in the sense that agents at one level are the building blocks for agents at the next level.
- CAS, by their nature, have a future that is hard to predict.

Complex Adaptive Systems (CAS) and the New Synthesis of Public Administration (NS)

Modern societies are constructed out of a multitude of complex and dynamic systems. As a result, governing in the 21st century requires a dynamic understanding of the role of government in society. This includes “an adaptive understanding of the interaction between the public, private and civic spheres of life in society, a deeper appreciation of the importance of civic results and the role of citizens in building governable societies.” (Bourgon, 2017:21). Addressing intractable problems require understanding the complexity of ‘multiple system interactions’ (Bourgon, 2009).

NS called for a renewed and innovative approach to governing in the 21st century, a century characterized by complex interdependence, hyper-connectivity, high uncertainty and info-bio technological revolutions. It uses concepts related to complexity theory (networks, resilience, emergence, adaptive systems, collective intelligence, psychology) that are all relevant for inventing solutions to complex problems. This approach –which goes beyond the conventional fields of political science,

public and constitutional law and public administration –provides practitioners with a robust mental map to lead public transformation or a change process in our highly interconnected and complex world. NS Champions and internalizes the following:

- Public transformations go through multiple phases. NS narratives are used to capture the essence of the transformation process as it is taking shape through action. The NS Discovery process is iterative. Public sector leaders are likely to reframe the challenge they are attempting to resolve and the pathway to a better future several times as their search for solution progresses and as more people are coming on board (Bourgon, 2017).
- The exploratory phase of public transformation process helps to generate a shared awareness of the challenges at hand as people re-think the issue from a different perspective, articulate the challenges in societal terms, and explore how to re-position their contribution. During the transition phase, narratives are used to reinforce the common sense of purpose, capture the collective journey, celebrate the group’s efforts and articulate why the initiative is worthy of support. During the transformation phase, key elements are consolidated, changes are institutionalised, and measures are introduced to ensure the sustainability of the new reality. The narrative of change during this phase encourages broad ownership and support.
- A successful transformation must build the capacity to adapt, evolve and lay the basis for the changes to come. It acknowledges the importance of co-evolution with a changing environment, iteration as the partnership is expanding, self-organisation, interactions at multiple

levels, collective learning, collective capacity building and resilience. These features are consistent with the core characteristics of complex adaptive systems mentioned earlier.

- The solution generated by public sector leaders to complex issues does not reside in the various elements but instead in how all the pieces are brought together to form a new whole (Bourgon, 2017).
- A New Synthesis brings together the role of government, people and multiple agents in society in a co-dependent and dynamic approach to collective problem solving. The New Synthesis builds the capacity of government to learn and adapt to changing needs and circumstances. It builds societies resilience and the capacity to co-evolve with its changing environment.

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