The Atlas of Social Complexity

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Abstract.   The purpose of this presentation is to introduce attendees to our forthcoming book, *The Atlas of Social Complexity* (June 2024, Edward Elgar, https://www.atlassocialcomplexity.org), which maps the latest advances in the study of social complexity – including five major transdisciplinary themes and 24 leading-edge areas of research – based on what we see as the new *social science turn* in the complexity sciences.

Keywords. *Social complexity history; Cognition, emotions and consciousness; Psychology of complexity; Living in social systems; Complexity methods*
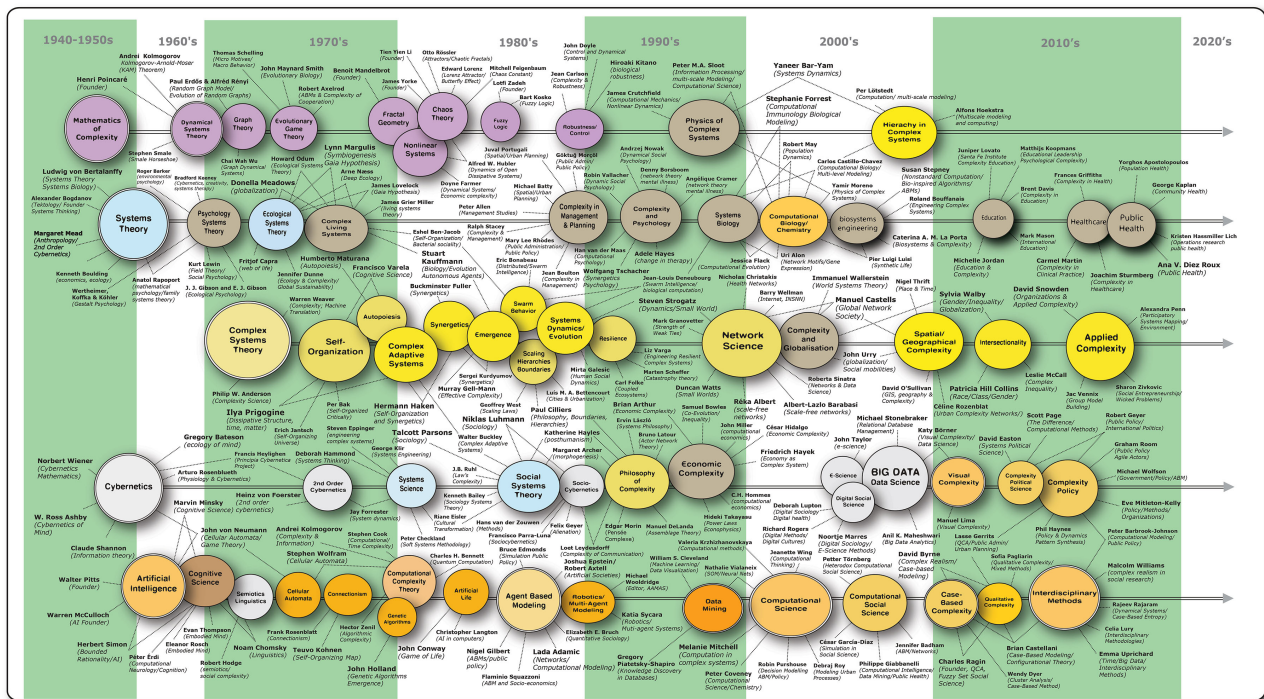
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1 EXTENDED ABSTRACT

Figure 1: Map of the Complexity Sciences.

1.1 The Challenges of Studying Social Complexity

As Figure 1 shows, the complexity sciences have evolved over the past several decades into an expansive field of study that crosses over just about every major area of academic research. It also presently involves almost all of the latest advances in method and multi-methods, particularly computational modelling (e.g., Mitchell, 2009).

Within the social sciences, the complexity sciences have had an impact on social inquiry, going all the way back to the Macy Conferences and the emergence of systems theory and second-order cybernetics – or, in some ways, even further, with the work of Pareto and Spencer. Still, the most recent and longstanding impact started with the *complexity turn* in social science research in the late 1990s (Byrne and Callaghan 2022; Urry 2005).

Since then, while the complexity sciences have done much to advance social science, over the last decade the field has run into some considerable situations – thirteen to be exact. As shown in Figure 2, examples include complexity scientists ignoring social science; privileging computational modelling over qualitative inquiry; failing to address issues of power and inequality in social-ecological systems; and being tone deaf about the real world. These situations prevent the study of social complexity from becoming the disruptive, transdisciplinary field it originally sought to be in the 1950s and, more recently, the 1990s when the complexity turn in the social sciences took place.

Situation	Characteristics
1. No philosophy of complexity	Few attempts to define an epistemology and ontology for social complexity
2. A failure to engage the wider social sciences	Assumption that the social sciences can be ignored because the complexity sciences would offer superior insights
3. Reinventing the wheel	Reinventing existing insights from the social sciences that are then presented as new insights
4. Old words, new words	Rebranding existing insights using terms from the complexity sciences
5. Obscurantism and mystification	Scientific overreach and complicated jargon combine to suggest that life's biggest questions are uncovered
6. Forgetting multilevel thinking and modelling	Despite the transdisciplinary approach of social complexity, almost all research focuses on a single level of analysis.
7. Technique in the absence of theory	Focus on computational methods and big data pushes social theory out of sight
8. Learning tools vs. predictive machines	The ability to learn from simulations is replaced by a desire to predict and control social complexity
9. Minor role of qualitative research	Dominance of quantitative research and quantification of data established a blind spot for qualitative data and methods
10. Methodological closing of social scientific mind	Shying away from advances in computational methods sees many social scientists becoming illiterate with such methods
11. The dire sound of technicalities	Going into a spiral of ever-smaller technical refinement while losing the bigger picture out of sight.
12. Being tone-deaf about the real world	Advanced analyses are coupled to crude recommendations that fail to appreciate the complexity in the target domain
13. Practice does not make perfect	Pragmatic and rushed adoption of the complexity sciences by practitioners constitutes verbal detritus

Figure 2: The Thirteen Situations of Social Complexity Research.

1.2 The Social Science Turn in Complexity Studies

Fortunately, a small but growing global network of scholars are charting new territories for the study of social complexity. We call this the social science turn. This 'turn' fosters a transdisciplinary, social complexity imagination that, in one way or another, addresses the field's thirteen situations to create new areas of disruptive and highly innovative social inquiry. The Atlas of social complexity charts this new territory.

1.3   The Future History of Social Complexity

The Atlas of social complexity organises the future history of social complexity research into six major themes – (1) understanding the history of social complexity research and its current 13 situations; (2) Cognition, emotion and consciousness, (3) Dynamics of human psychology, (4) Living in social systems, (5) Advancing a new methods agenda, and (6) The unfinished space. Within and across these themes, the Atlas surveys over twenty-four leading-edge research areas (some still under construction) that readers can variously combine and develop to pursue their own work. As shown in Figure 3, which highlights the research covered in Theme 4, topics range from immune system cognition and network theories of psychopathology to configurational and intersectional social science to the complexities of place and governance to resilience and economics in an unstable world.
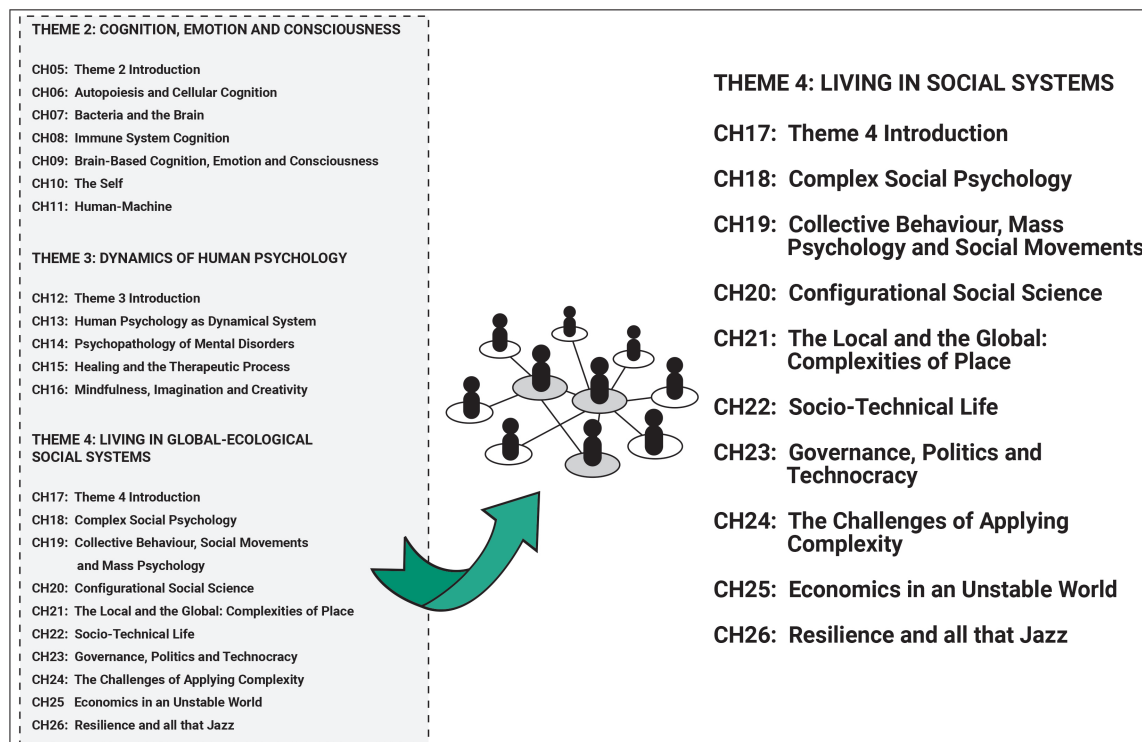

Figure 3: Theme 3: Living in Social Systems.

For those looking to get past the normalising conventions of the complexity sciences (particularly postgraduate students and early career researchers) in search of new ideas and new ways of working, the tour taken by the Atlas should prove of some value.

1.4   Current Presentation

The purpose of our presentation is to introduce attendees to *The Atlas of Social Complexity*. We cannot obviously survey the entire book, so instead will focus on a brief introduction to the 13 situations and then introduce the five major themes, focusing in on Theme 4 (Living in social systems), which is the most congruent with the focus of FRCCS2024.

1.5   Endorsements for the Atlas of Social Complexity

The Atlas of Social Complexity was peer reviewed. Here are endorsements by leading figures in social complexity research:

'Many have observed that in the social sciences, everything is connected to everything else but so far we have been singularly unsuccessful in attempting to explain the richness and diversity of this interconnected world. Glimpses of such explanations have come from the sciences of complexity but much of this reasoning has been contained within the traditional straitjacket of the physical sciences. What Castellani and Gerrits have done is to produce an Atlas of this world, through a series of maps that guide the reader to a great array of disciplines that can be informed by a multitude of ideas that they define as social complexity. This is a remarkable commentary on our progress in dealing with complex systems in all their guises and it is essential reading for everyone who seeks an understanding of our interconnected world.' – Michael Batty, University College London, UK

'This book is not just an invaluable Atlas to the extensive and fascinating literature on social complexity, but also an opinionated (in the best way) tour of the landscape, its heights and its depth and its quirks. The authors have read widely, thought carefully and explained clearly a broad sweep of research and practice on the idea of complexity and its application in the social, psychological and economic sciences. The book will be invaluable to academics, researchers, and policy analysts intrigued by how a social complexity approach might aid in the understanding of our complex world.' – Nigel Gilbert, University of Surrey, UK

'An inspiring read for believers and non-believers. Whether or not you agree that complexity is what it is all about, this book formulates a great set of challenges to spark renewal in the interdisciplinary social sciences. Covering a wide terrain from cognition to ecology and intersectionality, it charts a set of adventurous routes through recent research to show how a sociologically informed complexity science can meaningfully address the questions that matter.' – Noortje Marres, University of Warwick, UK

'This is a superb review of the development of social complexity in the social sciences and is a must read for anyone interested in cutting-edge social theory. Castellani and Gerrits convincingly show that this set of concepts is being transformative of social science thinking across multiple disciplines, even if it is developing too slowly.' – Sylvia Walby, Royal Holloway, University of London, UK

"This book stands as a formidable achievement, a true tour de force wherein the authors delve into our complex social world. They unravel the intricacies from the molecules comprising our cells to those shaping our bodies and ultimately forming us as conscious individuals. These individuals, in turn, have pioneered, discovered, and advanced technologies such as electronics, thinking robots, nuclear power, the contraceptive pill, and antibiotics. Collectively, they shape a complex society that, with an accelerating pace of change, achieved remarkable feats like landing a man on the Moon, eradicating smallpox, and establishing the World Wide Web. And, yes, also a society that kills its brothers and sisters and destroys its own natural environment much faster than it can reason about it. A profound sense of urgency emerges to comprehensively grasp these intricacies of our human society, considering its multifaceted interactions. Much like the Greek Titan, this Atlas bears the weight of the world and its remarkable inhabitants, and – guided by the science of complexity – offers new qualitative and quantitative avenues to make sense of this amazing world we live in." – Peter Sloot, University of Amsterdam, the Netherlands

1.6 REFERENCES

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