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Times, Noise and Institutional Complexity. A Comment on Graham Room's Essay on the "Contingent Historical Model" of Social Dynamics

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Abstract

This comment on the essay "The Empirical Investigation of Non-Linear Dynamics in the Social World. Ontology, Methodology and Data", by Graham Room, focuses on the challenge of understanding institutional change in complex social systems. It discusses the evolutionary foundations of Room's "Contingent Historical Model" by questioning the bio-social divide on selection mechanisms. It concentrates on Room's concept of temporalities of institutional change and discusses the role of noise.

Keywords: institutional change; complexity; social evolution; time; noise.

We all are living in a non-linear social world — Room argued in his essay "The Empirical Investigation of Non-Linear Dynamics in the Social World. Ontology, Methodology and Data" (2020). There is no better example than the COVID-19 pandemic. The current health, economic, social and political crisis is a strong testbed for all general linear models of the social world, to follow Room's critical remarks on the limits of these models. The COVID-19 challenge has shown how adaptive decisions, behavioural zigzags, unpredictability and uncertainty prevail in public decisions and social behaviour at all levels. Contingent events trigger complex institutional dynamics, while policy makers and experts introduce ambiguities, noise and messages that alter people's perceptions by means of various performativity devices, e.g., charts, masks and tests. At the same time, behavioural responses are anticipated by policy announcements and measures that induce constructive, circular processes of meaning where it is

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often impossible to distinguish regulatory agencies from system responses. In short, reading this article by Room offered me a fascinating framework to examine non-linear dynamics in social systems, which probably also apply to understanding patterns of change and innovation in situations of crisis and emergency like the ones we are living in today. This is to say that Room's article is timely and valuable also to readers who are relatively unfamiliar with the case of patents and patterns of technological innovation, the context of Room's model.

First, I would like to say that this article follows a coherent and convincing path of research on complexity and policy, where Room is trying to enrich, "complicate" — as the honourable Albert O. Hirschman would say — the conventional "economic," "legal" approach to policy as top-down, outside-in regulation. As I have argued in Squazzoni (2014; 2017), not only does the global interdependence of technology, economies and societies make institutional agency and regulation more reactive and adaptive, it has also marked a shift of policies and regulations from top-down, outside-in decisions to management and governance of complex social systems "from the within." I believe that Room agrees on this position, as he surely agrees on the danger of public decision makers who do not understand such an important semantic shift. In his last books on agile policy in turbulent times, his attempt at overcoming conventional policy thinking by integrating complexity approaches and public policy has been — in my understanding — a very convincing plea to innovation in policy theory, modelling and practice (e.g., Room, 2011; 2016).

Thus, in this article, Room proposes a brilliant excursus on complexity, biological and social evolution, without technical jargon, in order to illustrate the potential of complexity models to understand social and institutional change. His framework tries to integrate "blind," bottom-up, self-organization processes and institutional agency under the umbrella of a "Contingent Historical Model." In this model, institutional dynamics are seen as the outcome of power competition and positional advantages between actors, who add novelties and "noise" to the emergent, social organization processes. In doing so, Room fully embraces the "blind vs. purposive" dichotomy that characterizes the conventional debate on biological vs. social evolution mechanisms. In this case, he is purely classic and political and social scientists will surely appreciate this distinction.

However, recent research by primatologists, ethologists, neuroscientists and evolutionary biologists suggests that biological evolution is not totally "blind" as it integrates purposiveness at various levels. We are not the only "manipulative," "experimental" purposive species, as the evolutionary key includes different mechanisms for gene-environment interactions in various species. Not only does purposiveness have its counterparts in non-human species (e.g., Sapolski, 2017); so do power, competition, positional advantages and status hierarchies, which are prevalent in many species (Wrangham, 2019). Recent research confirms that we humans have only scaled up these mechanisms thanks to the co-evolution of brain and social structures, while biological and social evolution are deeply, jointly intertwined via the link between social environment and genetic selection.

Indeed, if we take the perspective of long-term social evolution, there is no such a thing as a "biological" or "social" ontological level of reality, one characterized by "blinded" selection, the other by "purposive," intentional processes. These are intertwined levels. We could consider them as different entry points or specific strata that specialists use to cut the unique "evolution cake" which include all species (e.g., Sapolski, 2017). In short, in my opinion, the "bio-social" evolutionary divide is unnecessary to base the complexity/evolutionary theoretical framework of Room's contingent historical model and seems to me more a conditioned reflex. Perhaps, besides the dichotomy blinded selection vs. purposiveness, self-organization networks vs. insti-

tutional agency, Room could explore "hierarchical orders vs. contingent chaos," perhaps he could link this dichotomy to stable vs unstable institutional orders of meaning, cognition, classifications and culture. In any case, independent of the usefulness of dichotomies and levels to frame conceptual reflections and research, I believe that Room's model would benefit from being grounded in recent evolutionary research that has challenged the biological/social evolutionary divide. My understanding is that this departure would also bring new insights and a more flexible framework on institutional change.

In the second part of the article, Room tested the model on an empirical case, i.e., patents, seen as an example of contingent historical process ideally representing the co-evolution of institutions and technological/organizational/social dynamics. Room argues that models must be validated with appropriate datasets and offers a very valuable guide to link his model to data (see the very useful Table 1). I must confess that I found this part intriguing but partly under-developed. Perhaps, this is because the empirical part has already been presented in other papers and this is only part of a more complex research project, which is difficult to concisely summarize in a relatively short paper. For example, the role of power and competition as forces inducing social and institutional change in the case of patents is unclear to me. I understand the self-organized processes determining patent networks (triggered by knowledge, citations, references, evaluations), as well as the role of institutional dynamics in shaping/refining/introducing new ontologies of meaning and classifications in a complex interplay with existing networks. I don't understand the role of actors who are competing for power and advantages behind institutional dynamics. This is not only a theoretical question. It is also an empirical one, as the intentions of these powerful agencies might not always be empirically traceable.

This problem is also linked to concepts of dynamics, time and noise. Room's framework fully embraces the dominant paradigm of time and dynamics as a sequence of changes and innovations in a world in constant flux. There is strong evidence of significant advances that such a paradigm has permitted in understanding, for instance, the co-evolution of technology, institutions and organizations. However, there is a valuable intellectual tradition that considers time as "duration," "persistence," and "continuity." As suggested by the famous French historian, Fernand Braudel (1958; 1979/1992), looking at the long-time temporal scale of social evolution, "*dans la longue durée*," helps to understand that time is not what changes but rather what persists, remains and repeats itself. Time is internal to social processes and can be slow or fast depending on their duration and constructive rhythm. The way we cut or integrate time and dynamics, by calling them "fast" or "slow," is part of our intellectual exercise. Along this same line, the German sociologist, Norbert Elias in his discussion on time (Elias, 1986), tried to avoid a purely "dynamical" picture of time as measure of changes and innovations or a (either linear or non-linear) sequence of events.

Here, Room convincingly decomposes time of complex social systems in "fast" and "slow" dynamics, the former characterized by network adaptation in a structure of interdependence and constraints, the latter typical of purposive actions, which according to Jain and Krishna (2003), cited by Room, add "random novelties," in form of "introduction of new modes and connections." This reminded me of a multi-level, hierarchical configurational structure with layers "running" at different speed or rhythm, something close to the concept of "temporalities" suggested by Fernand Braudel.

When reconstructing the history of capitalism, the economy and markets, Braudel suggested that social time is a sort of "geological" stratification and intersection of "*longue durée*" structures (persistence, duration, and geological times), "*conjonctures*" and events. Braudel em-

phasizes continuity, Room emphasizes change, one is a historian, and the other is a political scientist. This comparison made me focus on some questions on the case: (1) are the "fast" and "slow" dynamics of patent ontologies proposed by Room too empirically biased by "formal" recorded events, which could even be "ritual" events and obscure "real" dynamics of institutional systems (e.g., organizational strategies, patenting as reputational signals to attract investments, classifications and ontologies of meaning influenced by corporate actors etc.); (2) would the same "fast" and "slow" dynamics proposed here resist a variation of cases, contexts and datasets. For instance, if instead of patents and technological innovations, which strongly depend on institutional classifications and semantic ontologies and have "scheduled times" or "regular events," we would apply the same contingent historical model to a database of proverbs and maxims to examine the evolution of common knowledge, wouldn't Room's model require adaptation towards a Braudelian concept of time?

In the case of proverbs and maxims, institutional actors can exploit available common knowledge, at best they can repurpose or reuse it, such as in political communication, but proverbs and maxims which remain and persist over time, across generations are a more cogent source of knowledge that anyone else. In this context, selection of meaning and classifications is not operated by a centralized institution, such as a patent office with regular deadlines and procedures. Obviously, I took this example from Elster's idea that proverbs and maxims are mechanisms of explanation of social behaviour and so part of the broader common knowledge of social actors across different societies (Elster, 2015). In short, the question is: should Room's model require radical revisions when applied to contexts or cases where institutional selection is less formal, hierarchical, and regularly scheduled as in the case of patenting offices and regulators?

Finally, I would like to concentrate on noise. Noise is usually seen as a source of unpredictability, a residual factor essentially disturbing central tendencies, substantially unbiased, without deterministic and constant effects. Indeed, its presence or absence are distinguishing features of stochastic and deterministic models. In Room's framework, noise could be viewed either as part of the "contingent" nature of the social world or an alternative to random mutations to explain social evolution, via purposive agency, that is an ingredient of the fundamental non-linearity of the social world. If we remove random mutations from biological evolution, we would have the collapse of the whole Darwinian mechanism, as genetic diversity and variety will be suppressed and so adaptation and fitness. If we remove randomness and noise from social evolution, would the social world be more or less predictable or more or less prone to purposive institutional manipulation? In other words, do positional powers, the sources of purposive agency in Room's framework, act as a source of order or noise in social evolution? The question whether positional powers or institutions make the social world more or less predictable by adding noise to endogenous social evolution processes is of paramount importance, especially given the contrasting evidence of computational studies on the role of noise and randomness in making the social outcomes more (not less!) efficient and predictable (e.g., the review by Macy & Tsvetkova, 2015). Again, a question for Room is: what is the role of noise in the contingent historical model?

In conclusion, I found Room's article very stimulating and I am fully in line with his research agenda. I believe we are in the same league and in the same club. My critical questions are more requests for guidance to fully understand his theoretical agenda.

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