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Book Review: Michael T. Hannan, László Pólos, and Glenn R. Carroll: Logics of Organization Theory: Audiences, Codes, and Ecologies 2007, Princeton University Press: Princeton, NJ 384pp ISBN: 978 0-691 13106 1 (hbk); ISBN: 978 0-691 13450 5 (pbk)

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Organization Studies 2007; 28; 1587

DOI: 10.1177/017084060606083015

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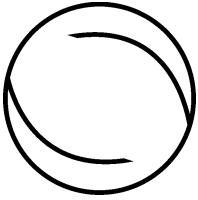
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Book Review

**Michael T. Hannan, László Pólos, and Glenn R. Carroll:
Logics of Organization Theory: Audiences, Codes, and Ecologies**

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ISBN: 978-0-691-13106-1 (hbk); ISBN: 978-0-691-13450-5 (pbk)

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Since Michael Hannan and John Freeman's seminal 1977 article in the *American Journal of Sociology*, the field of organizational ecology has in its thirty years of existence generated a wealth of knowledge about change in the world of organizations through extensive analyses of the founding, growth, and demise of organizations. In *Logics of Organization Theory*, Michael Hannan teams up with László Pólos and Glenn Carroll to reflect on organizational ecology as a research discipline and to point the way forward. They note that, over the years, theories in organizational ecology have become fragmented, and some of the fragments are even at odds with each other regarding the definition of key concepts (e.g. the definition of an organizational 'niche') and their predictions (about, for example, the age dependence of organizational mortality). The authors take the position that the simultaneous development of various theory fragments may not be problematic as such, but that there is a danger that inconsistencies among them may impede further advances and applications. They therefore explore formal logic as a means to resolve ambiguities, and they invoke insights from fuzzy set theory to stimulate the development of new theory.

The authors have chosen to focus on a few selected – but central – areas of organizational ecology. In this respect, *Logics of Organization Theory* has a rather different point of departure from Carroll and Hannan's *The Demography of Corporations and Industries* (2000). That earlier work presented a general survey of the full range of methods and theories in organizational ecology. *Logics of Organization Theory* addresses specific objectives and applies a single methodology: logical formalization.

The authors lay the foundations for their meta-theoretical analysis by first providing a brief introduction to the non-monotonic logic on which their analysis relies. Non-monotonic logic treats conjectures and theorems as general tendencies that can be overridden when more specific knowledge becomes available. Non-monotonic logic thus allows for 'rules-with-exceptions' which, the authors argue, are more appropriate than simpler forms of logic in a social science context.

In their first chapter, the authors introduce the central idea of 'grades of membership'. Whereas empirical studies in organizational ecology are normally content with classifying an organization either a member or non-member of a population (corresponding to classical set theory that would assign either zero

Organization
Studies
28(10): 1587–1590
ISSN 0170–8406
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SAGE Publications
(Los Angeles,
London, New Delhi
and Singapore)

or one to a social actor and its relation to a social entity), *Logics of Organization Theory* considers the possibility that the boundaries of organizational populations may have some degree of 'fuzziness'. They give the example (p.16–17) of the population of universities: some (Oxford and Bologna) are clearly members, some clearly are not (McDonald's Hamburger University), and some are likely to invoke some disagreement (Britain's Open University offering distance learning courses and adult education). The idea of grades of membership has far-reaching implications for several theory fragments discussed in the book and opens up a wide range of new research directions.

Part 1 of *Logics of Organization Theory* (Chapters 2–5) focuses on how organizational forms emerge, and it introduces a new formulation of the theory of density dependence based on the concept of grades of membership. In a radical departure from previous work, the role of external 'audiences' is explicit in this formulation. The perceptions of consumers, analysts, regulators, employees, and activists are acknowledged as instrumental in clustering organizations based on perceived similarities and labeling the clusters. Audience members may also reach a consensus about the attributes of the clusters, creating meaningful social categories. When a category comes to have a minimum level of contrast with the outside world, it may cohere into a taken-for-granted organizational form. The entire process is defined from the perspective of the external audiences. Chapter 5, which is co-authored with Greta Hsu, discusses some interesting extensions of this model to cases in which organizations belong to multiple categories, the implications for defining identities, and the roles of higher-level authorization and social movements.

This intriguing and detailed account of how forms emerge through a co-evolution with audiences moves away from much of the previous work in organizational ecology, which treated organizational forms as 'real' entities. It moves instead toward a social constructionist view of organizational forms. The result is a more in-depth description of important social processes affecting the organizational landscape.

This first part of the work should be of special interest to neo-institutionalists and economic sociologists in general. Some have in the past criticized organizational ecology's density dependence model, which underlies part of the form emergence process, as too general and simplistic to capture complex social processes. Ecologists, in their own defense, have always avoided further precision and detail on the grounds that it might impede comparing research findings from different settings. With this new formulation, the authors have managed to come up with a way of bringing more precision and detail without compromising the comparability of procedures and findings across populations and historical contexts.

In the second part of *Logics of Organization Theory*, beginning with Chapter 6, the authors outline the principles of non-monotonic logic and explain its usefulness for theory building. The authors challenge a fundamental assumption of Popper's idea of falsification, namely that finding a false statement in a theory means that the theory must be discarded and replaced by a new one. The idea that one does need to discard a theory when a false prediction is observed, is certainly not new. Even Popper (1970: 57) himself once admitted that "A new insight may strike us like a flash of lightning. But this does not mean that we

cannot evaluate, critically and rationally, our former views, in the light of new ones". According to Popper (p.55), "If we give in to criticism too easily, we shall never find out where the real power of our theories lies." The novelty of this new approach, however, comes from using logic in theory building to define falsified conjectures and theorems as rules with exceptions. This offers guidelines on which theory fragments to keep, which to temporarily disregard, and under which conditions. One example that stands out in this respect is the work on the age dependence of survival chances. This is discussed in Chapter 7, recommended reading for those who might be in doubt about the utility of formal logic in the social sciences. The authors show how conflicting predictions about patterns of age dependence can be made more consistent by ordering the causal stories on the basis of specificity. The use of non-monotonic logic leads to the exclusion of any *ad hoc*, 'flavor of the day' reasoning, which is a very powerful argument in favor of logical formalization.

The third part (Chapters 8–10) presents reformulations of niche theory and resource partitioning. Again, audiences are made more explicit by considering the intrinsic appeal of particular products and organizations from their perspective. A more sociological underpinning is presented for the ecological 'principle of allocation'. By allowing scale advantage to override part of the principle of allocation in non-monotonic logic, resource partitioning has been made more consistent with niche-width theory. Here, the authors also resolve inconsistencies between resource partitioning and niche width theory regarding the definition of a niche.

The fourth part of the book, beginning with Chapter 11, addresses organizational change. In *The Demography of Corporations and Industries*, Carroll and Hannan (2000: 370) pointed out that the relationship between age and firm mortality is still "a genuine unsolved puzzle". In order to move a step closer to solving this puzzle, they have been obliged to increase the level of theoretical complexity by introducing concepts such as intricacy (organizational complexity), viscosity (sluggishness in the response to change), opacity (limited foresight), and asperity (cultural opposition). In *Logics of Organization Theory* they suggest that more traction can be achieved if new empirical studies build on more fine-grained data to explore the length of reorganization periods that presumably increase with increasing intricacy, viscosity, opacity, and asperity. I especially appreciated the authors' willingness to outline the consequences of organizational change in great detail. Critics of organizational ecology have sometimes lamented that it paints a rather bleak picture of organizational change, focusing too much on purported negative consequences. *Logics of Organization Theory*, however, outlines in detail how a change process may unfold over time and the formal logic makes the argumentation traceable and open to debate.

Here, and in some other sections of the book, the authors pose some rather high demands for empirical research. Any research-driven program such as organizational ecology will involve both theory building and empirical testing. *Logics of Organization Theory* clearly contributes to theory and invites researchers to subject these new theoretical developments to empirical testing. But theoretical refinements will only move the research discipline forward if these refinements can be supported or falsified with suitable data. Without the

availability of data, too much refinement may actually slow down theoretical progress, and thus the overall ecology program, rather than enhancing it (one of the book's stated goals).

The authors have clearly heard this concern before. They protest (p.298), "we think that such situations often occur in science when theoretical progress has been made [and] the fact that empirical research has to move beyond the old technology might be a sign of progress." Based on their own experience they note that organizational ecology has faced many of such challenges in the past and researchers have always been able to come up with creative ways to meet data demands.

The book concludes by returning to the original objective of resolving ambiguities among theory fragments and advancing theory. In Chapter 13 the authors nicely show how theory fragments can be integrated by stating them in a common language. Chapter 14 provides some supportive and encouraging ideas on the design of new research. Overall, *Logics of Organization Theory* convincingly achieves its objectives.

In terms of style, although the authors discuss topics that are quite complex even for seasoned organizational ecology researchers, they have managed to come up with many illustrative examples and useful diagrams throughout the book which help to clarify their conceptual ideas. To preserve readability, more specific details—including a primer on first-order logic—are included in an appendix. This engaging book should appeal to a broad audience from the graduate student to the more experienced academic, and in a wide range of domains including economic sociology and strategic management.

Ludwig Wittgenstein (1921:76) once wrote that, "there can never be surprises in logic." Yet, *Logics of Organization Theory* is full of theoretical innovations and surprises, some of which can be entirely attributed to the use of formal logic. The book is not the outcome of a short-term project, but the culmination of a more than a decade-long effort to formalize theory fragments in organizational ecology (see for instance Péli et al. (1994) for one of the first attempts). It builds on a rich body of knowledge developed over the years and pushes our thinking in new directions. By doing so, the authors offer a rich source of inspiration for empirical studies. This book ought to become a frequently cited contribution. It is by any standard a remarkable and praiseworthy achievement.

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