

## Review Essay

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Peter Hedström and Peter Bearman (eds) *The Oxford Handbook of Analytical Sociology*. Oxford: Oxford University Press, 2009, 772 pp.

**Reviewed by:** Gunn Elisabeth Birkelund, University of Oslo and Gianluca Manzo, University Paris-Sorbonne.

*The Oxford Handbook of Analytical Sociology*, edited by Hedström and Bearman, contains a wide array of chapters discussing several aspects of analytical sociology, with an overall focus on how best we should move forward in order to improve sociology.

So, what is analytical sociology? – A developing perspective, solidly anchored in classical sociology, but integrating theoretical insights with new tools, including computer based simulations? Hedström's book *Dissecting the Social* (2005) contributed to a revitalization of a perspective that has been partly neglected by mainstream sociology for several years. Analytical sociology also implies a shift towards a new, context-dependent-action-based sociology. This review is written by two sociologists sympathetic to the idea of developing analytical sociology.

### Introduction

Hedström and Bearman (ch. 1) discuss mechanism-based explanations, the micro-macro link and the notion of causal depth. Social mechanisms and middle range theories (ch. 2, by Peter Hedström and Lars Udehn) have been the focal point of analytical sociology which aims at explaining social phenomena, not just describing them, as we usually do (though in sophisticated ways). The basic explanatory principle was previously related to *methodological individualism*, building on the premise that it is '... typically actors and their actions, that are linked to one another in such a way that they regularly bring about the type of phenomenon we seek to explain' (Hedström, 2005: 2). In the *Handbook*, however, Hedström and Bearman suggest the concept *structural individualism*, which '... differs from methodological individualism by emphasizing the explanatory importance of relations and relational structures' (p. 8). This change of definition seems more in line with one of sociology as a discipline preoccupied with understanding social relations through, for instance, social networks. The new emphasis could also be related to the Robert Merton and James Coleman pragmatic approaches to what counts as a valid explanation; which would be to settle for an explanation if it is *sufficient* and *complete* for the purpose of the study, although possibly at a higher level of analysis than micro-level analysis, and, therefore, for the methodological individualist, not the ultimate explanation. What constitutes actors, their relations and the role of structures and other macro features are obviously still topics that deserve more discussion. The next part of the book contributes to this discussion by dissecting actors and social processes within their constituent parts.

### Social cogs and wheels

Jon Elster (ch. 3) writes about emotions. Emotions are not inconsistent with the rational actor model, he argues, yet they may influence preferences and belief formation, as well as information gathering. As usual, Elster illustrates his arguments with anecdotes, leaving the implementation of his logics to empirically orientated sociologists.

The three elements of the DBO model, desires/preferences, beliefs and opportunities are each addressed in a chapter of their own, i.e. by Jeremy Freese (ch. 5), Jens Rydgren (ch. 4) and Trond Petersen (ch. 6). Freese defines *preferences* as black-boxing psychology, which is to distinguish sociology from other disciplines that would regard mental states as their topic of investigation (such as neuro-science). Rydgren, however, emphasizes a more 'introspective and cognitivist perspective' (p. 98) on *beliefs*, and the two chapters can fruitfully be compared and discussed as examples of different actor assumptions. Petersen defines opportunities as the possible choices available to actors once constraints have been taken into account. Opportunities often depend on the actions of others, yet some actors may be able to expand their opportunities, whereas others may not. He discusses the vacancy competition model, showing the relevance of the concept opportunity in analysis of social inequality.

Karen S. Cook and Alexandra Gerbasi (ch. 10) discuss how the concept of social *trust* is often misused in sociology. They discuss conditions under which decreasing levels of trust in a society may be important. Building on his previous fieldwork among taxi drivers and prisoners, Diego Gambetta (ch. 8) discusses signalling theory and the application of signalling for explaining behaviour that would otherwise be seen as irrational; for example, in situations where the social context may be uncertain and actors are in need of a quick situational definition. Jon Elster (ch. 9) also writes about the relationship of social norms to action, and Daniel G. Goldstein (ch. 7) has an interesting discussion on how we might understand the use of heuristics in everyday life which challenges the notion of rationality in decision-making processes.

Albeit in different ways, these chapters are preoccupied with dissecting the reality to reveal the constituent parts. The next task would be to utilize these parts, to analyse the aggregated effects of macro-constrained interdependent individual actions. The 15 chapters forming the next part of the *Handbook* come under the heading 'Social dynamics'.

## Dynamic processes

Analytical sociology as a dynamically micro-founded macro-sociology is widely illustrated in this part. Two chapters are orientated methodologically. Michael Macy and Andreas Flache (ch. 11) introduce readers to agent-based modelling, an especially powerful computational technique by which to study system-level dynamics from the bottom up. Macy and Flache correctly argue that this is the most accomplished tool for formally implementing a complex form of methodological individualism. On the one hand, at the micro-level, heterogeneous heuristically orientated, adaptive and learning-based agents can easily be designed; on the other, agents can be constrained by different sorts of macro-entity and embedded in every sort of dyadic (dynamically evolving) network. Theoretical models based on the entire macro-micro-macro loops can thus be implemented and studied. Meredith Rolfe's chapter 18 may be read in connection with the problem of the 'dynamic understandability' pointed out by Macy and Flache. She explores the regularities that exist between certain basic properties of mathematical and computational models of interdependency and both dynamics and outcomes generated by the model.

The transition from methods to substantive topics comes with Elizabeth Bruch and Robert Mare's chapter 12, which is the first of five chapters all dealing differently with interdependency in terms of the effects that an aggregate of past actions has on actors' present actions.

Bruch and Mare focus in particular on segregation processes and argue that a basic dynamic underlies their multidimensionality: 'in the short run, individuals respond to their environments; in the longer run, individuals' responses change the environment for everyone'. To study this dynamic for specific forms of segregation, they advise integrating statistical analyses, mathematics and agent-based models. Using empirical data to set up the model can help reduce its sources of arbitrariness. Michael Biggs's chapter 13 is about self-fulfilling prophecies, which is another class of widespread dynamic processes fuelled by the continuous adjustment of *ego's* beliefs to others' actions. Matthew Salganik and Duncan Watts (ch. 14) report an original experiment they devised to test the existence of a link between the number of people downloading a given song and the probability that *ego* decides to listen to the song. They show

that the stronger the initial information on others' choices, the higher the probability that *ego* decides to listen to the song and the more marked the inequality among songs. Yvonne Åberg (ch. 15) focuses on the decision to divorce and studies how the number of *ego*'s divorced co-workers may modify *ego*'s desire, belief and opportunity to divorce. Unfortunately, as Åberg honestly admits, estimation of a sophisticated event-history model does not enable her to disentangle the hypothesized mechanism. Åberg's analysis thus aims to show the limitations of multivariate techniques in the study of social mechanisms: no matter how rich empirical data are and sophisticated the technique is, statistics always oblige us to infer the constellation of entities and activities at work instead of providing us with an explicit formalization of this constellation (one of the main messages of the *Handbook* is that computational models are needed for this). Finally, Joel Podolny and Freda Lynn (ch. 23) focus on status hierarchies. They define status as the quantity of acts of deference accumulated by a given actor and argue that this quantity constitutes a signal of one's quality for other actors. The emergence of status hierarchies would thus rely fundamentally on the conditionality of *ego*'s choice to be deferential or not to *alter* on *alter*'s received choices of deference. The main consequence of this dynamic – as nicely demonstrated by R. Gould in 2000 in an AJS article – is that *ego*'s initial quality and *ego*'s final status may differ greatly.

The point of view on interdependency changes with Katherine Stovel and Christine Fountain's chapter 16, which is the first of three chapters focusing on the aggregate effects generated by structural properties of the network via the impact these properties have on actors' opportunities, beliefs and desires.

More particularly, Stovel and Fountain build an agent-based model to explore the link between the level of network homophily workers and managers are embedded in and the resulting aggregate level of segregation in the simulated labour market. They show that even in the presence of managers' non-discriminating preferences homogeneous networks suffice to segregate workers across job locations. In chapter 20, Duncan Watts and Peter Dodds deal with network connectivity and topology. By taking Granovetter's original threshold model as starting point, they show by means of agent-based simulations that the way individual choices influence each other depends to a great extent on the overall configuration of links actors are embedded in. In certain respects, Ivan Chase and Brent Lindquist (ch. 24), too, focus on aggregate effects of network configurations. With the hope of gaining insights for humans, they analyse how dominance hierarchies in small groups of animals emerge from the dynamic of attacks that animals address each other in the context of dyadic and triadic interactions.

The way network topology itself may be generated constitutes another angle from which the *Handbook* observes interdependency among actors. James Moody (ch. 19) makes a strong argument for devoting more attention to time-constrained network models. He argues convincingly – and demonstrates by simulation – that considering networks as linked temporal events matters because diffusion processes unfold differently on static and dynamic networks. From this point of view, he suggests, more substantively orientated models of link creation/deletion are needed.

Three chapters contain elements to advance along this line. Delia Baldassarri's chapter 17, which focuses more specifically on the genesis of collective action, implicitly suggests that the dynamic of dyadic link formation and dissolution may be conceived as a by-product of the more fundamental 'dynamic of identity construction and group identification' at the micro-level. Christopher Winship's chapter 21 provides a bundle of potential mechanisms for network generation: destruction of social links or impossibility to create them may depend, he argues, on temporal and/or spatial incompatibility between individuals' schedules. Finally, Scott Feld and Bernard Grofman's chapter 22 suggests that a more fundamental mechanism may underlie individuals' schedule compatibility, so facilitating link formation: 'shared foci of activity', i.e. the fact that people practise activities in common time and space, is, according to them, 'the cause of much interaction and similarity and much of the association between the two'.

Stathis Kalyvas's chapter 25 on conflict closes the third part of the *Handbook* by analysing multiple interdependencies, that is to say interdependency among entities at different levels of analysis. In particular, Kalyvas explores the two-way relationship between the micro-level dynamics of interpersonal conflicts in small groups and the macro-level dynamic of conflict among larger ethnic or socio-economic groups. He shows how spatial and temporal patterns of civil war are driven by the

interdependency between organized groups, which exploit individual-level conflicts in order to maximize their power, and civilians, who exploit organizations to solve interpersonal status conflicts.

## Analytical sociology and other fields and approaches

Most of the chapters in the *Handbook* are written by scholars preoccupied with analytical sociology, as would be expected. However, in addition, the editors have invited scholars who do not regard themselves as belonging to this field, to discuss analytical sociology from their own perspectives and approaches. These chapters may well be read first, in addition to the introductory chapters, and in particular for the sceptical reader who may want to get a broader view of the usefulness of analytical sociology within other parts of our discipline.

The authors of these chapters challenge analytical sociology to be more specific about future trails. Richard Breen (ch. 26) discusses game theory and suggests evolutionary game theory as a fruitful tool for analytical sociology, since it allows formal analysis of micro-level decisions and macro-level outcomes. The chapter gives a good introduction to game theory, yet we miss a reference to Jim Coleman's (1998 [1990]) important contribution within this field. Karen Barkey (ch. 30) writes about historical sociology and the analysis of macro-level outcomes by meso-level structures. The link between analytical sociology and historical sociology is a promising new area. Hanna Brückner (ch. 28) argues that surveys can provide data on respondent's attitudes and motivations; whereas Diane Vaughan (ch. 29) discusses analytical ethnography, which strives for mechanism-based explanations. Iris Bohnet (ch. 27) provides a short overview of experimental economics in laboratories and field experiments. Experiments are useful tools for social scientists, and surveys and ethnographic data can be used to build better, empirically calibrated, analytical models.

## Summary

Analytical sociology is not a monolithic school of thought. Although the intellectual root of analytical sociology is predominantly sociological, political scientists, economists and others are also engaged in the analytical turn. Thus, the term 'analytical social science' is often used interchangeably with 'analytical sociology' in this book.

The new energy in this field comes from all the young voices with better skills in computer simulation. The ability to find a specific social phenomenon to be explained, and to formulate clear hypothesis about relevant micro-level mechanisms, i.e. the social cogs and wheels, and then translate these mechanisms into computational models and test them using agent-based models, opens doors that seem promising for the future development of our discipline.

The *Handbook* can be recommended to all students of sociology. The reader will find chapters on actors, interaction and the dynamics of social interdependency. Thus, the book should be used flexibly; by delineating different levels of analysis the book will be an important tool for 'doing' better sociology in the years to come.

## References

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