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Synthesizing Babylon: Building on the structural foundations of social network analysis

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I. Introduction

Synthesizing the *‚Babylonian'* heterogeneity of the literature on policy networks requires an analytical turn to the structural foundations of social network analysis. Almost two decades ago, Börzel (1998) referred to the variety of concepts and analytical applications as ‚Babylonian' when attempting to organize the research on policy networks. Eight years after Börzel, Rhodes (2006: 435) reassessed the – still heterogenous – literature on policy networks and concluded that *„[t]here is no synthesis of the findings of this diverse literature"* to date. Drawing on quantitative social network analysis (hereinafter SNA), I argue that a graph theoretical understanding of policy networks as social structures paves the way for synthesizing seemingly distinct theoretical concepts and empirical findings.

To illustrate my argument, the essay is structured as follows. I begin by outlining the seminal classifications of Börzel (1998) and Rhodes (2006) and briefly discuss why both classifications do not suffice for synthesizing heterogenous empirical approaches. Subsequently, I show why quantitative SNA allows for a synthesis of the diverse findings presented in the selected literature on policy networks. I then evaluate the articles of Grossmann (2013), Cao (2012) and Leifeld & Schneider (2012) from a structural perspective to demonstrate that all three empirical approaches (implicitly) build on graph theoretical notions of policy networks which, thus, makes future syntheses feasible.

II. Classifying policy networks: From analytical tool to theoretical framework

Prior to discussing how distinct approaches to policy networks can be synthesized, a terminological and conceptual clarification on what policy networks actually are is

needed. The articles of Börzel (1998) and Rhodes (2006) provide helpful, yet ultimately insufficient, starting points for this purpose.

In her seminal work on the ‚Babylonian' heterogeneity of the literature on policy networks, Börzel (1998) considers policy networks mainly as an analytical tool. In doing so, Börzel identifies two different streams of research. First, the predominant Anglo-Saxon school of interest intermediation and, second, the emerging German governance school. In terms of interest intermediation, networks are conceptualized as an analytical tool for assessing institutionalized exchanges of resources as power dependency relations between the state and interest groups in a given issue area. However, Börzel (1998: 258) concludes that the interest intermediation approach does not *„systematically link the nature of a policy network with the character and outcome of the policy process"*. This gap is filled by the more theory-guided governance approach to policy networks which conceptualizes networks as a third form of governsance next to traditional hierarchical and market structures, that is, as informal institutions. Thus, the governance framework emphasizes the notion of structural interactions between organizational actors resulting from resource and interest dependencies as a way to facilitate coordination. Irrespective of these theoretical foundations, Börzel (1998: 258) shows that – as in the interest intermediation framework – the governance approach still builds on policy networks mainly as an analytical tool which does not suffice for synthesizing heterogenous empirical findings across policy areas.

Eight years after Börzel, Rhodes (2006: 441) reassessed the *„story of policy networks"*. Contrary to Börzel, Rhodes first distinguishes between the use of policy networks as a descriptive, theoretical and prescriptive tool. Second, and more important, Rhodes casts doubt on the theoretical validity of policy networks as issue areas of interest mediation and as a third form of governance alike by classifying both frameworks as merely descriptive approaches. For Rhodes, only broader theories such as power dependence or rational choice serve as theoretical foundations for network approaches. Rhodes' conclusion further highlights the prevailing inconsistencies between theoretical and methodological foundations of policy network research and, thus, the alleged incompability of the heterogenous literature.

However, while the two classifications differ substantially with regard to the presumed use and theoretical underpinnings of policy networks, Börzel and Rhodes share a similar basic understanding of what networks are. Börzel (1998: 254) defines *policy networks* as *„a set of relatively stable relationships which are of non-hierarchical and interdependent nature linking a variety of actors, who share common interests with regard to a policy and who exchange resources to pursue these shared interests [...].“* Similarly, Rhodes (2006: 426) regards policy networks as *„sets of formal institutional and informal linkages between [interdependent] governmental and other actors structured around shared [...] beliefs and interests in public policy making and implementation.“* Thus, both Börzel and Rhodes emphasize the structural interdependence between a set of political actors as a crucial feature of policy networks. Consequently, subsuming different streams of research on policy networks requires a broad, inclusive understanding of the term which captures these relational dependencies. Building on the formal definition of Pappi (1993: 84), *policy networks* are subsequently defined as *„eine durch Beziehungen eines bestimmten Typs verbundene Menge von [politikrelevanten] Einheiten“*.

Nevertheless, merging heterogenous empirical approaches based on a formal definition only does not suffice for syntheses as is illustrated by the inconsistent classifications of Börzel and Rhodes. Instead, synthesizing the heterogenous literature on policy networks requires an analytical framework which builds on theoretical conceptualizations of (policy) networks as a set of interconnected actors within certain relational structures. The following section argues that the graph theoretical foundations of quantitative SNA provide a fruitful starting point for this purpose.

III. Synthesizing policy networks: Networks as social structures

“Social network analysts work at describing underlying patterns of social structure, explaining the impact of such patterns on behavior and attitudes.” As Wellman (1999: 94 as cited in Knoke & Yang 2008: 9) highlights, analyzing relational data on both the actor and structural level allows researchers to identify prevailing social structures and to assess the effects of structural patterns at the same time. Put differently, contemporary SNA focuses on the structural relationships between relevant political actors which, in

turn, constitute the social – or, more precisely, political – structure. Hence, *social structure*, i.e. *"regularities in the patterns of relations among concrete entities"* (White et al. 1976: 733; see further Wellman & Berkowitz 1988: 4), can be operationalized in terms of policy networks. Building on the basic definition of Mitchell (1969: 2), a policy network can thus be defined as *"a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved."*

This structural, yet inclusive, conceptualization of policy networks builds on three theoretical assumptions about the structural patterns and their effects on the political actors' behavior as summarized by Knoke & Yang (2008: 3-9). First, structural relations between relevant actors are of greater importance than time-invariant actor-specific socioeconomic or attitudinal characteristics. Second, socially constructed structural mechanisms within policy networks alter the political actors' perceptions, attitudes and actions. Third, relational structures do not constitute a static entity but rather induce dynamic processes which are subject to continuous change resulting from dyadic interactions and social learning between political actors. In turn, these network dynamics alter the structural relations which constitute the policy network.

Going beyond a solely metaphorical use of policy networks with the above-mentioned theoretical assumptions, quantitative SNA further provides formal definitions and measures to empirically analyze previously specified theoretical concepts. In a graph theoretical understanding, political actors within the policy network under scrutiny represent the *nodes* while the connections between actors are referred to as *ties* or *edges*. Generally speaking, dyadic ties between relevant actors are either directed or undirected interpersonal connections, be it social, political or economic relations. These dyadic relations between political actors are then analyzed as common properties of both interaction partners which – analogous to metatheoretical power dependency and resource exchange frameworks – persist as long as the dyadic connection is maintained. Since network analyses depict both realized and unrealized connections between relevant political actors, nodes are not necessarily connected to every other node within the policy network. As a result, the occurring connections among political actors induce

the specific structural configuration of the policy network which can vary substantially depending on the form and content of the realized ties.

In sum, by formally analyzing interactions between actor-specific behavior on the micro level and political structures on the macro level as dyadic exchange processes, a structural conceptualization of policy networks constitutes a metatheoretical framework which links the emergence of political outcomes to the actions of relevant political actors. Adopting this structural perspective on policy networks, the subsequent section identifies the fundamental similarities between the empirical approaches of Grossmann (2013), Cao (2012) and Leifeld & Schneider (2012) to demonstrate the potential for a fruitful synthesis of the findings.

IV. Subsuming policy networks: A structural perspective

The first of the selected articles on policy networks by Grossmann (2013) seeks to disclose the structural variation and underlying dimensions across issue areas. For this purpose, Grossmann conceptualizes policy networks as a methodological framework to comparatively assess the structural differences between issue areas that are to be expected theoretically. Empirically, the analysis relies on so-called *policy-area histories* which trace relevant policy enactments and developments in 14 federal American issue areas since 1945. Methodologically, Grossmann applies graph theoretical multidimensional scaling techniques and cluster analysis to analyze the level of similarity between issue areas as well as two-mode affiliation networks linking actors and policy enactments as two types of nodes.

Similar to Grossmann, Cao (2012) draws on graph theoretical notions when conceptualizing the international political economy as a system of multiplex fiscal, monetary and regulatory policy networks. Empirically, Cao analyzes a complete network of 63 national economies as structurally embedded nodes to assess the effects of international trade, portfolio investment and intergovernmental organization networks on crossnational convergences of domestic economic policies. By employing multidimensional scaling techniques and inferential latent-space models, Cao locates all national economies under scrutiny in a multidimensional policy space to visualize the

respective policy distances between countries and to analyze positional characteristics. In doing so, Cao shows how the structural positions of countries within the international political economy network lead to policy convergence due to competitive forces between positionally similar countries and social learning processes between positionally proximate countries, respectively.

While Grossmann and Cao analyze structural (dis-)similarities between different types of networks within a (mostly) descriptive framework, Leifeld & Schneider (2012: 732) assess network tie formation by means of statistical inference. Theoretically, Leifeld & Schneider conceptualize policy networks as institutionalized opportunity structures for information exchange, namely, the exchange of political, i.e. strategic, and technical, i.e. scientific, information between political actors in the German toxic chemicals policy domain. To disclose the effect of opportunity structures in terms of transaction costs and the political actors' strategic behavior on network tie formation, Leifeld & Schneider apply exponential random graph models (ERGM) to show how politics is driven by resource-dependencies rather than preference similarities between actors.

In sum, when adopting a structural perspective of policy networks as outlined above, the analytical similarities between the seemingly distinct appoaches of Grossmann, Cao and Leifeld & Schneider become clear. Although the articles differ in terms of the policy networks under scrutiny, the level of analysis and both the relational form and content, Grossmann, Cao and Leifeld & Schneider rely on quantitative SNA as their methodological tool of choice. On the one hand, Grossmann follows a descriptive approach by employing multidimensional scaling techniques and cluster analysis to disclose the structural differences across issue-areas networks. On the other hand, Cao and Leifeld & Schneider apply inferential distance and random graph models, respectively, to analyze network structures in international political economy networks as sources of domestic policy convergence (Cao) or to explain tie formation in information exchange networks as institutionalized opportunity structures (Leifeld & Schneider). In other words, even though the empirical approaches vary with regard to the policy-specific relational patterns between political actors, all three empirical analyses (implicitly) build on graph theoretical underpinnings resulting from a structural understanding of policy networks. Consequently, this common feature paves the way for future syntheses of the reviewed articles.

V. Conclusion

I argued in this essay that (re-)turning to the structural foundations of social network analysis is the key to synthesizing seemingly distinct theoretical and empirical research on policy networks. Employing a broad definition of policy networks based on the structural interdependencies between political actors, quantitative SNA provides both an inclusive metatheoretical framework and formal methods to analyze the interplay between political structures and relevant political actors across different policy areas. To further this argument, the essay outlined fundamental similarities between the methodological approaches of Grossmann (2013), Cao (2012) and Leifeld & Schneider (2012) when building on a graph theoretical understanding of policy networks.

In conclusion, future research on policy networks should focus more on the graph theoretical foundations of policy networks when comparatively assessing diverse empirical findings across policy areas. In doing so, Börzel's (1998) and Rhodes' (2006) classifications can be fruitfully extended to finally make a move towards synthesizing the ‚Babylonian' heterogeneity of the empirical literature on policy networks.

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