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Beyond methodological tenets
- The worlds of QCA and SNA and their benefit to Policy Analysis -

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Abstract:

The aim of this paper is to present combinations of Social Network Analysis (SNA) and Qualitative Comparative Analysis (QCA) and their benefit to Policy Analysis. We think that QCA and SNA are particularly suited to explain complex macro-social phenomena, just like policies. SNA gives access to a set of actors and the relationships between them. The main goal is to model these relationships in order to study action and structure in their mutual dependence (Wasserman and Faust 1997). QCA on the other hand helps to uncover regularities across cases while maintaining within-case complexity; it offers "multiple conjunctural explanations" (Ragin 1987, 2003). First we expose our understanding of Policy Analysis and the problems research on the topic faces. The second part of the paper focuses on SNA and QCA as two approaches, which stand in between of the conventional qualitative/quantitative logic of research. Therefore we will explain the main principles of the methods but also show the communities of the two, the underlying meta-theoretical assumptions, the opportunities they offer to appear as supplementing to each other. Finally, it is to explore, how the combination of SNA and QCA helps to explain policies.

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1. Getting into Policy Analysis: Core elements and approaches

If one tries to cover the principal dimensions of Policy Analysis (PA), one has to describe a multi-faceted area of research, ranging from pragmatic evaluation to theoretical contributions. Héritier mentions in this aspect, that the ideas on science of scholars in this research area range between a Post-Positivism (describing the values of groups) and the scientific neutrality of a utility-cost-analysis (scientific instrumentalism) (Héritier 1993a:21f). As a very general statement, we can say that PA aims to classify policies alongside their effects, their use of political steering instruments and their character (Windhoff-Héritier 1987:21ff; Schumann 1996:74ff). PA was initially developed for the analysis in a national setting. In a modified style, it has its revival in the analysis of the European Integration process. Here, our intention lies less in a detailed account of what Policy Analysis is, but in giving an overview on the main niches in the area of PA and in identifying the methodological shortcomings which evolved with the recent expansion of this research area.

Generally speaking, Policy Analysis is an approach to analyse and compare the determinants and effects of policies. It can be considered to be a holistic approach, in so far as it looks at politics, polity as well as the contents of the political decision making process – the policies. Therefore it has to deal with the beliefs, interests and ideas of actors involved in political bargaining, the institutional framework they are embedded in and the process of interest aggregation with its formal and informal rules. The common denominator of the various approaches on PA defines a policy as a *"product of decisions about what to do, how to do it, and how to decide what to do"* (Peterson and Bomberg 1999:4). To this wide definition it can be added that the goals, objects and tasks of politics depend on the constellation of individual, material and ideological orientations of all the given groups in a society. It is then to decide on how to distribute a limited amount of resources to those interest groups (von Alemann and Forndran 1995:41).

When we browse the literature related to PA, two broad categories emerge. Considering the concept of a policy cycle as the general framework, a rough division of the field goes alongside the principles of policy formation and policy implementation. The former deals with the process of decision-making, concluding temporarily with the

moment a legislative measure is created. Therefore, we can talk about policy formation analysis as the exploration of the analysis of a policy output. The second strand focuses instead on the outcome, by evaluating policy implementation in order to give recommendations to political practitioners. I.e. PA can be applied both - in a descriptive and explanative, as well as a counselling manner (Héritier 1993a:9).

Policy Implementation and Policy Outcome Evaluation

Within the policy evaluation category, an evaluation can be conducted before the policy is implemented (ex-ante analysis) or after implementation (ex-post analysis). Generally speaking, the evaluation of outcomes is a quantitative exercise where all measures of costs and benefits are expressed in monetary values. Several ways of conducting policy evaluation exist (Cost-Benefit Analysis, Cost-Efficiency Analysis, impact analysis, etc.) and the choice of the method as well as the measuring of some uncertainty parameters (such as depreciation level) is left to the discretion of the evaluator. The principal goal of Policy Outcome Evaluation (POCE) is to "evaluate public expenditure decisions" (Stockey and Zeckhauser 1978: 134) and is guided by a Kaldor-Hicks criteria which is fulfilled if there is a "guarantee that the benefits of any project undertaken will be large enough to that those who gain by the project *could* compensate those who lose, with everyone thus made better off" (ibid: 137, emphasis in original). As such, Policy Outcome Evaluation (POCE) implies "a transparent and replicable *methodological step*. The major difficulty consists here in distinguishing, analytically and in reality, effects which are directly generated by the policy under evaluation from those which stem from contextual factors, thus not manageable by the actors of the policy" (Varone 2001:30, emphasis in original, our translation; see also Varone, Rihoux and Marx of this workshop).

Thus, POCE is an analysis performed in view of formulating recommendations or reports to the policy makers. It has a strong pragmatic orientation, as opposed to academic knowledge accumulation. Policy makers (or "clients") consider policy analysts as experts and the reports of the latter one have considerable political power. The "instrumentalisation" of policy evaluation by some often transforms this exercise into a political issue (Barbeaux 2001:21; Varone 2001:30).

The Genesis of a Policy: Policy Output Analysis

As opposed POCE, the goal of Policy Output Analysis (POPA) is to understand the complex mechanisms, which create, transform and sometimes "kill" a policy. Judging or assessing are not the keywords here. Rather, understanding and describing a policy as a research object is the purpose of such studies. For example, how policy changes occur (external events, macro political contexts, etc.), the nature of these changes (incremental, sudden), the role of ideas in the policy process, the existence and role of policy networks are some of the phenomena policy process analysts try to explain. The analytical starting point of POPA concerns – as its name already implies - the contents of politics. But it also considers the institutional framework and the political processes, or the "environment" of the policy content in order to describe and explain policies.

In regards to the evaluation and counselling function of PA, the analysis of the output (POPA) is concerned about the policy itself in a more holistic sense than POCE. As such, POPA looks at components that go beyond the mere measurable impacts; equity, transparency, coordination, negotiation procedures or good governance are some of these other components. For example, on the basis of an identification of the concerned actors, policies can be called distributive or re-distributive. The latter represent a zero-sum-game: There are no gains possible. Therefore, if someone is given more, someone else gets less. With the former – distributive policy – the interaction style is more consensual, as overall benefits are possible.

At least three different strands resting upon POPA can be found: Policy Intertwining (Scharpf 1997, 1995, 2003), Constructivist elements in PA (Sabatier 1993, Majone 1993, 2001, Peters 1999) and Policy Network Analysis (Héritier 1993b, 1993c, Schumann 1996). These strands do not, of course, have clear cut boundaries between them and their approach often overlap in many respects (Thatcher 1998:406).

In this paper we focus on the latter approach, for two reasons: first, Policy Network Analysis is the most methodological oriented among them[1], with the use of Social Network Analysis software, and this paper aims primarily at improvements in the field of Policy Analysis through methodological concerns; and second, it simply seems to be the most prolific one among all the concepts in PA[2]. A Policy Network is a specific

[1] Although policy network analysis does not refer only to formalised studies (i.e. policy communities or more qualitative oriented policy network studies also are part of this approach), in this paper we mean quantitative network analyses when we refer to policy network analysis.

[2] For a (critical) review of policy network studies, see Peterson 2003, Kenis and Schneider 1991, Marin and Mayntz 1991, Thatcher 1998, Dowding 1995.

type of a Social Network. Under the general headline of Social Network Analysis, research progressed to measurements of relations between units. Social Networks – as well as Policy Networks – are defined by a certain topic determining the type of relationship under investigation. Policy Network Analysis as a concept deals with *"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 acknowledging that co-operation is the best way to achieve common goals."* (Börzel 1997)

The network concept in Policy Analysis is a particular perspective on how society – and therefore a policy field – is structured. It seems impossible to find agreement on more than a very basic definition of what a policy network comprises, as several different concepts lie behind that notion. Policy Network Analysis is an approach, that combines elements of Theories of International Relations (Resource-Dependence Approach) and Comparative Politics (Policy Analysis), Theories of Structure (Institutionalism) as well as Theories of Action (Symbolic Interactionism) (Schumann 1996:84). At large, Börzel differentiates between quantitative and qualitative network analysis on the one hand, and *"Policy networks as a typology of interest intermediation versus policy networks as a specific form of governance"* (Börzel 1997) on the other hand.

2. Challenges for Policy Analysis

> "What is frustrating is the gulf that exists between this sense that the complexities of social phenomena can be unravelled and the frequent failures of our attempts to do do" (Ragin 1987:19).

As mentioned earlier, Policy Analysis was originally a concept of national politics. Scholars of European Integration (and others) have adopted and developed it to analyse a "Multi-Level Governance" (Marks, Hooghe et al. 1995, 1996). Challenged by the new area of research on European Integration, the shortcomings of PA became more obvious as they might have been before. The variety of approaches in the field of PA points out, that it has to deal with a multifaceted subject that additionally is embedded in a complex social context. That means it is not easy to clearly isolate causal explanations[3], and the various approaches in that field share only a minimum of

[3] On this issue, see the paper by Varone, Rihoux and Marx of the workshop.

common explanatory factors. As Togerson commented almost some 20 years ago, this field "often appears as a jungle of diverse and conflicting modes of inquiry, full of inconsistent terminologies, divergent intellectual styles – perhaps, indeed, incommensurable paradigms" (1986:33, cited in Hendrick and Nachmias 1992:311). This assessment is still more or less legitimate today.

Basically, the main problems are located in the features of the subject: the complexity and the interdependence of all units in a political system, which is best depicted by the notion of a system[4]. In fact, a systems perspective guarantees a focus on interdependencies and interactions of policies[5]. Greenberg et al. (1977) suggest that "the phenomena public policy theories seek to explain are radically different from other phenomena that social scientists study" and that "the difference is due to the objects of analysis being more complex in the policy science than phenomena such as voting, elite ideologies or revolutions" (paraphrased in Hendrick and Nachmias 1992:311). Policy Analysis is indeed often characterised as complex because of the multiple actors involved (policy makers, administration, beneficiaries, target groups, etc.) in a multi-level context (local level, national level, sub-national level) and with conflicting goals or interest (e.g. redistribution issues) (a.o. Hendrick and Nachmias 1992; Owen 1995; Schön 1973, 1979; van Buuren 2004). Van Buuren explains that complexity theory has recently been flourishing within PA for several reasons: ontological changes concerning the growing interconnectedness of the real world, epistemological changes concerning the acknowledgment of uncertainty as a way of understanding the world, and changes in the nature of decision-making where participatory style is becoming more common and additional dimensions such as new social actors, human rights or the environment are added (van Buuren 2004:7; see also Gallopin *et al.* 2001:222-3). The difficulty here lies in adopting a viable strategy of analysis, where complexity can be systematically analysed (as opposed to non-formalised case-studies, for example) and can be understood by practitioners (as opposed to stochastic modelling of PA, for

[4] TGS assumes the presence of complexity in a phenomena and tries to express it as a whole, without loosing any of the implications of complexity. The acceptance of the notion of complexity goes against the classical Cartesian way of explaining phenomena. Whereas in Cartesian logic, complexity should be broken into small pieces, TGS asserts that it should be accepted as a pre-existing whole: "The Cartesian logic had taught us to simplify all phenomena by eliminating the unknown, the random or the uncertainty. But in fact complexity is everywhere, in all systems, and it is necessary to keep this complexity, even at the price of admitting that we cannot understand all its richness" (Durand 1979: 11). In systems theory "the whole is more than the sum of the parts, not in an ultimate, metaphysical sense but in the important pragmatic sense that, given the properties of the parts and the laws of their interaction, it is not a trivial matter to infer the properties of the whole" (Simon 1981: 86). As such, Hendrick and Nachmias (1992: 325) argue that "The general systems theory is a promising framework for the systematic study of complexity".

example). As Lempert and Popper (2002) would suggest, within a complex world where uncertainty rules, we need to be adaptive in order to be robust.

As a response, new elements were added, which are indispensable for the analysis of a complex political system like the European Union. The critique on Policy Analysis has led to the evolution of new research strategies. In its methodological sense, new strategies were the application of techniques, like grounded theory (by iterating between empirical and theoretical evidence in the research process), Design-Science (where the researcher is of the opinion that he/she creates the scientific object), Triangulation (as a multiple strategy of inductive and deductive science) and the development of a "Participatory Policy Analysis" that includes the persons affected by a policy (Héritier 1993).

However, along with the complexity of the topic the challenge to solve the difficulties in research design is still in the air: do we seek in depth knowledge of cases or generalisable results? These are the extreme points of a continuum, determined by a trade off between the two ideal scientific notions. As Ragin reminds us, "[n]either view is incorrect. Ultimately, the degree to which a set of observations or cases is one population or many depends on the interests of the investigator and those of the intended audience" (1987:22). On the one hand, Policy Output Analysis (POPA) deals much more with normative and subjective aspects of the policy than Policy Outcome Evaluation (POCE), hence the analysis is generally conducted using qualitative methods. The objective herein is less to judge the effects of a policy and more to ponder the normative criteria a policy should fulfil, from its emergence to it adoption through all the iterative negotiations among the involved actors. Another reason for using qualitative tools in POPA is the necessarily holistic approach of such an analysis. To assess the genesis of a policy requires looking at the complex societal or politico-administrative environment as well, and not just the policy "hardware". The main caveat of POPA is its lack of a systematic analytical approach, and hence the quasi-impossibility of producing comparable data for different policy areas in different national settings (Medda and Nijkamp 1999). With the development of sub-national policy analyses within the European integration frame, this problem looms over this PA

[5] On the relation between system theories and policy analysis, see Hendrick and Nachmias 1992.

category. Indeed, case-studies (one policy in a specific context, sometimes over time)[6] represent the large majority of studies conducted in this PA field.

POCE on the other hand induces quantitative analysis, focusing on "hard" measures such as: What is for the benefit of whom? The main caveats of Policy Outcome Evaluation (POCE) are its underlying assumptions about what is a "good" policy and the validity of statistical tools as appropriate for evaluating policy outcomes. POCE supposes that a policy is good based on the Kaldor-Hicks criterion and therefore dismisses the power dilemma of re-distribution. Statistical tools such as OLS regression (that is multi-variate regression) for measuring the (potential) impact of a policy assumes that it can identify the net effects of a policy by controlling other factors. Such an epistemological assumption is generally acknowledged as being too strong, but is nevertheless accepted as a second-best choice. The problem is that analysts often fail to remind this to themselves or to the client when producing their final assessment.

Since we seek for both, in depth knowledge (complexity) and generalisations (applicability), the next section of the paper focuses on how to cope with complexity and formalisation. We suggest different combinations of SNA and QCA in order to conserve the complexity specificity of Policy Analysis but also to offer pragmatic solutions to this complexity issue and an intuitive visualisation of inter-connected variables.

3. How QCA and SNA answer to some methodological problems of PA

As we have seen above, we have to take into account complexity and inter-relatedness as well as in-depth knowledge and the ability to generalise in Policy Analysis. What we suggest here, is the application of a combination of SNA and QCA in order to achieve these aims to a certain extend. Before exposing the operational description of how to combine QCA and SNA to answer these problems, we found it necessary to justify the suitability of these two methods on epistemological as well as ontological grounds, between them of course, but also applied to the PA issues (Marsh and Smith 2001). At the same time it will reveal our understanding of the two methods and their subjects.

[6] On case-studies, see Gerring 2004.

Qualitative Comparative Analysis (QCA) and Social Network Analysis (SNA) have never been combined as a technique, and neither have they ever been compared and contrasted as an approach (for an exception, see Mohr 1998). Their realm of application differs in many respects and this has kept respective users insensitive to each other. For example, while QCA principally deals with macro-social phenomena and hence has macro-level units of analysis, SNA copes more with micro or meso-level issues such as individual performances or organisational structures. While QCA is a comparative method by definition and hence analyses more than three cases, SNA can be understood as a case-study where the network constitutes the case. Also, while QCA is considered leaning more towards the qualitative camp of social science methodology, SNA is generally identified as a quantitative data analysis technique. These differences are the consequences of perceived incompatibility between QCA and SNA. We would like to show that on the contrary these two methods share deep-rooted assumptions that shape their approach to social science, and help answer some problems arising in the PA field.

The complexity issue

Both QCA and SNA require analysing cases as a whole and thus accepting and assuming complexity as a pre-existing context. That is, for both methods, there is no possibility to talk about causality (or regularities) if the cases have not been looked at as one entity. The contrary would be to look at cases as if they were composed of independent variables, and hence in a fragmented and simplified manner, as in classical statistical approaches. Besides, as Schneider and Wagemann note "causal complexity is the exact opposite of the assumptions of linear and additive regression analysis" (2004:8; see also Ragin 1987:83). QCA uses combinatorial logic to represent its cases: each case is a combination of conditions, therefore allowing within-case and across-case comparisons (Ragin 2003a). As such, it responds to the goal of comparative social science, which is identified as "to produce explanations of macrosocial phenomena that are general but also show an appreciation of complexity" (Ragin 1987:54). With SNA, there is no meaning in measuring anything without looking at the whole network, be it complete network or ego network. Just looking at one or several nodes or cliques is senseless, since any interpretation is relative to the whole network (all nodes and all cliques). SNA furthermore is suited for the analysis of complex phenomena, since it expressly admits its existence within social processes. As Kenis and Schneider (1991) put it for SNA in policy analysis, "[the network concept] helps us to understand not

only formal institutional arrangements but also highly complex informal relationships in the policy process", since "contemporary policy processes emerge from complex actor constellations and resource interdependencies, and decisions are often made in a highly decentralised and informal manner" (1991:27).

Furthermore, both QCA and SNA display a structural logic in their causal interpretations. QCA assumes multiple and combinatorial causality. This rejects the "one factor-one consequence" view on causality. Instead, Ragin explicitly refers to *necessary* and *sufficient* conditions, whereby a necessary condition is one that is always present for an outcome to acquire a certain value but which is not associated on its own to the outcome, and where a sufficient condition is one that is associated on its own to the outcome, but which is not necessarily present for the outcome to acquire a certain value[7]. This suggests two important points: first, that a set of conditions (or a term) is the "*full cause*" (Mackie, 1974:62) of an outcome, as opposed to one condition leading to an outcome. This would be a chemical causation, since the presence of A or B alone does not lead to an outcome, the presence of both simultaneously (A and B) would lead to the outcome[8]. The second important point QCA makes is that there exists multiple "paths" to an outcome[9]. These two concepts (chemical causation and the plurality of causes) is the essence of what Ragin has labelled "multiple conjunctural causation" (1987:121-122). Thus, the conditions (or independent variables) in QCA react in a "chemical" manner, as opposed to a linear and additive manner. The conditions are reduced to such an extent of simplicity ("1"s and "0"s) that their weight is increased to the point where their relationship becomes structural.

As for SNA, it presents one way to cope with a dilemma of Social Theory: the causal relationship between social action and social structure. Its focus lies in-between social entities, a societal space of interactions between individual and collective actors. In this sense, the understanding and conceptual framework of Social Network Analysis expects the interdependence of actors with their environment: actors are able to do

[7] This idea of necessary and sufficient factors is also known under Mackie's INUS ("an Insufficient but Non-redundant part of an Unnecessary but Sufficient) factor (1974: 62).
[8] Mill even argued that we could not talk about a cause by taking individualising its components: "We have, philosophically speaking, no right to give the name of cause to one of them, exclusively of the others." (1872: III, v, 3).
[9] This was also suggested by Mill, and he called this a "plurality of causes": "It is not true that one effect must be connected with only one cause, or assemblage of conditions; that each phenomenon can be

both, to adapt successful strategies in reaction of environmental influences and otherwise to affect a given social structure (Hasse and Krücken 2002). As Wilks & Wright (1987:298) note, 'The properties of the network are not reducible to those of individual actors. The network is the outcome of their combined actions.' Social Networks are *"lasting patterns of relations among actors"* (Wasserman and Faust 1997:7) and in that sense they are the social structure which constrains individual behaviour, but are also the product of actors' behaviour. The "Embeddedness" of social action in social structure is a basic assumption of Social Network Analysis. Actors are interdependent and networks provide channels for the transfer of material and immaterial resources. It is assumed, that actors tend to react on the action of other actors and *"even attempt to mimic each other"* (ibid.). This relational view is the main difference to more common approaches in social sciences. As such, the "network perspective" offers a concept to consider patterns of interaction between actors within and between groups, institutions, and organisations. These patterns represent social structure, and the interactions themselves (the relationship between nodes) are the social action. The type of relationship that is being measured (types of centrality, distance, fragmentation between cliques, etc.) represents the causal link between these embedded social action and social structure.

As such, QCA and SNA's acceptance of complexity not only answers PA's needs, but also does it in a systematic and formalised manner.

Pragmatic matters: Formalisation and Visualisation

Another issue in Policy Analysis, and especially for POPA, was the lack of a systematic case-oriented (small-N world) policy analysis methodology. Given the complexity issue we just described, policy analysts encountered difficulty in formalising their analysis. In other words, transportable or replicable data was hard to produce. From there rises the problem of comparable policy data, an aspect increasingly in demand within EU integration studies, for example. Visualisation, a pragmatic tool to present to policy makers, is also missing concerning the possible recommendations policy analysts could advance, when not using quantitative methods.

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produced only in some way. There are often several independent modes in which the same phenomenon could have originated" (1889, cited in Mackie 1974: 61).

Both Social Network Analysis and Qualitative Comparative Analysis can contribute to these concerns. First, formal comparisons has been recognised as an important strategy in policy networks study[10]. As Kenis and Schneider (1991:45) note: "*the description and measurement capacities of network analysis would be used for cross-network comparisons in order to develop (or test) hypotheses explaining the effect of aggregate characteristics of the policy network on specific interactions. This can be accomplished by cross-national policy network comparisons or by comparisons between different national policy domains or policy processes*". However, although networks do preserve the complexity of Policy Analysis, comparisons of networks do not take into account the contextual factors, at least not in an explicit manner. As such, structural or institutional factors are "guessed" through the network analysis and not separately identified. Therefore, a well co-ordinated policy, for example, would be explained by a network attribute and maybe by other institutional factors which would not have been tested in a formalised way. We will uncover in the next section how the combination of QCA and SNA allows for a distinction of the network attribute as a potentially relevant condition. This strategy is mainly possible thanks to the common ontological assumption underlying both methods: phenomena are conjunctural and stochastic rather than linear and additive; hence multi-collinearity is not seen as a problem (up to a certain degree).

Second, visualisation of analyses results might be improved somewhere along the existing pattern of flow charts (qualitative-leaning) and SPSS tables (quantitative-leaning). In the qualitative tradition, the processes and mechanisms are well grasped although the weight of the factors are somewhat blurred. On the other hand, in the quantitative traditions, all the factors are expressed in terms of net effects[11] (controlling other factors), but their inter-dependence with other factors is largely ignored. These issues are still salient in their visualisation techniques. Social Network Analysis developed an efficient visualisation tool (for example with Netdraw in UCInet) that allows an intuitive understanding of the data. Nodes (usually actors or organisations) form a network with ties (lines) between them representing the presence of a relationship (kinship, friendship, influence, common activities, etc.). Cliques or groups of closely related nodes are immediately identified, as well as central actors. On the other hand, QCA has an accurate but less intuitive visualisation procedure through Venn diagrams. The "world" is divided into the presence or absence of variable space

[10] For a proposition on building comparable network data, see Serdült and Hirschi, 2004.

which can overlap among them. This allows an analytical (variable based) display of cases as opposed to the disappearance of cases behind variables, it usually doesn't immediately tell the viewer about the weight of a variable or combinations of variables. Instead, it provides a highly accurate account of variables and combinations of conditions leading to an outcome. This remark is not to say that accuracy is wrong (!), but when the analysis has a pragmatic purpose, like in some Policy Analyses, results or recommendations should also be made available in a convincing fashion (simple, straightforward and sexy). Pragmatism ought not be an accessory concern when dealing with Policy Analysis. As the natural sequel to complexity, pragmatism here is understood as the technique to extract the most useful and complete data from the complex multi-dimensional web of information. Therefore, if QCA data could be displayed in an intuitive network mode, and so that the results are concordant, it might enlarge its audience from researchers to include practitioners as well.

Hence, although counter-intuitive, Qualitative Comparative Analysis and Social Network Analysis share some deep-rooted assumptions in terms of causality and epistemology. This shared basis provides a solid ground on which to build answers to some needs arising in Policy Analysis. An issue such as complexity is fully acknowledged by QCA and SNA, and each method seem to complement the part of the other in a useful way to Policy Analysis, such as making explicit contextual factors in network analysis, or a more intuitive visualisation of QCA data. Adding to these commonalities, we should also emphasise both methods' suitability for a systematic medium N analyses. Indeed, QCA's field of application leans toward macro-social phenomena, whose N is generally situated somewhere between three cases and less than 50, and the number of nodes in a network analysis also rarely go beyond 100 nodes.

Now that a tangible common basis has been laid across both methods, we would like to demonstrate how they could both contribute to the scientific advancement of Policy Analysis.

[11] On the issue of net effects in policy analysis, see Ragin in this workshop.

4. The Combination of QCA and SNA

In regards to Policy Analysis, QCA as well as SNA have been used, although much more widely for SNA than for QCA (see Héritier 1993; Héritier 1993; Staeck 1997; König and Bräuninger 1998; Melbeck 1998 for SNA, Bursens 1999, Sager 2004, Heikkila 2001, Hollingsworth et al. 1996 for QCA applications).

The focus of SNA and QCA respectively is on relations between actors and on a causality focusing on multiple conjunctural explanations to explain complex context dependent phenomena (Ragin 1987:93). Considering both as the main principles in a policy decision-making process, in addition to a small-N set, and aiming at making structure apparent, we propose a combination of SNA and QCA. This combination strategy aims at solving the two main caveats within Policy Analysis: how to conserve the complexity particularism of Policy Analysis and present comparable data stemming from the growing need to analyse sub-national European policies across EU nations. Moreover, the two methods are particularly suited for combinations since both display inter-related variables, a feature that is highly problematic if applied in the frame of classical quantitative methods (auto-correlation problem).

The key added value of explaining a network through a QCA analysis is the equivalence in some of their main epistemological and ontological assumptions. As we have seen in the first section, both methods assume complexity and inter-relatedness. If we were to explain a network (measured with the afore-mentioned assumptions) through a, say, multiple regression, the gap in their basic assumptions might simply invalidate the interpretation. As such, it would make sense to explain a policy network characteristic through explicitly structural (or context) factors since SNA assumes the interdependence between actors and institutions. In a way, it allows to isolate and therefore identify the crucial combination(s) of structural factors leading to a particular policy network attribute.

At our exploratory stage, we have identified three conjunctions of the two methods, by a variation of different dependent and independent variables, all of them including attributional and relational data. The following models are considered only for a meso-level of institutional actors, which should be useful for Policy Analysis.

Network data for QCA analysis[12]

First, a mix of QCA and SNA allows comparing network attributes of actors through QCA. One aspect, which could be seen as problematic with network analysis is the embeddedness of social action within social structure. This could be partially resolved by entering network data and other purely structural data into a QCA matrix. For example, cases would be policy network attributes (for example, the density of a network which could represent a participatory decision making process) and the conditions would be institutional or structural factors such as the degree of autonomy of the structure in which the actor behaves, the degree of specialisation of the actor in the specific policy issue under study, etc. As such, QCA allows making structures apparent where they had to be "guessed". In that sense, one could think about networks as dependent variables.

A second type deals with entire networks attributes as independent variables in order to explain a policy. The relational data has to be transformed into attributes to fit in QCA. On the one hand, the research question here could *a priori* deal with a temporally static topic across nations or policy sectors of how different types of networks produce different kinds of policies and why. For example, cases would be policy issue networks; the outcome would be an efficient implementation of a policy; the conditions would be network attributes such as the density (whether actors are densely connected to each other), the number of cliques in a network (sub-groups of actors within a network), the fragmentation measure (number of components / number of nodes or actors), the core-periphery structure measure (is the network composed of a core and a periphery or of a number of cliques?), etc.
On the other hand, processes and dynamics could also enter the analysis, by comparing networks at certain points in time. Therefore, the outcome here could be the co-ordination type (uni-lateral/multi-lateral bargaining style) of a policy formulation process, with conditions of the similar kind as enumerated above.

[12] The idea of having networks as independent or dependent variables is also presented in Kenis and Schneider 1991: 44ff.

QCA data for network analysis

We propose one last combinatorial model which would treat QCA data like it were relational. In other words, QCA data would be transformed into a symmetrical matrix and thus into SNA data to be analysed with network software. This would allow network measures to represent/describe QCA models, getting close to the notion of a measure for the explained variance of a QCA model. The main innovation here is the visualisation of QCA data in a network fashion. Although visualisation techniques for QCA already exists (Venn diagrams), we think that network visualisation might be more intuitive in terms of interpretation for practitioners who are not familiar with the language of logic (such as policy makers). Also, apart from being more intuitive than Venn diagrams, the use of network software allows to visualise data with more than four conditions, whereas it becomes difficult, even for the trained eye, to interpret a Venn diagram with more than four conditions. In addition, we will advance the merits of a visualisation using Multi-Dimensional Scaling (MDS), a method to visualise spatial representations of (dis-) similarity and closeness measures. Therefore, one can think of plotting cases to a policy, conditions to a policy or matching all of them into one graph, by the use of SNA software[13].

This combination (or even fusion) of two methods would be best understood through an application of an existing QCA analysis. Since there are not yet so many applications of QCA on policy analysis, we chose Redding and Viterna's application on the success of left-libertarian parties in Western Europe (Redding and Viterna 1999). The purpose of this exercise is to show the applicability of SNA technique on QCA data but also to identify some added-value of this combination of methods. We first summarise Redding and Viterna's application by exposing the truth table and the minimal equations they obtain through a classical QCA.

SUCCES	PNB	SOCS	CORP	LEFT	PROP	
0	0	0	0	0	0	JP, NZ, AUS
0	1	0	0	0	0	CAN, USA
0	0	0	0	1	0	UK
0	0	0	0	0	1	IT
0	1	1	0	0	0	FR
0	0	1	0	0	1	IR

[13] For a comprehensive overview of the available software and free downloads, the International Network for Social Network Analysis gives the details on its homepage. <http://www.insna.org/INSNA/soft_inf.html>, 30.08.04.

1	0	0	1	1	1	FI
1	1	0	1	1	1	CH
1	0	1	1	1	1	AT
1	1	1	0	1	1	BE
1	1	1	1	1	1	DK, West DE, SW
1	1	1	1	0	1	NL

Table1: truth table Redding and Viterna

The outcome (SUCCESS) is present when there was a successful left-libertarian party formation. The presence of the conditions PNB and SOS express respectively a high GDP per capita and a high social security expenditure. They represent the demand-side hypothesis, in other words that the more economically developed a society is, the more post-materialist values it creates and hence there would support the emergence of left-libertarian parties. The presence of the conditions CORP, LEFT and PROP express respectively a high level of corporatism, the presence of left parties in government and the presence of a proportional representation system. They together represent the supply-side hypothesis or the speculation that these institutional factors are conducive to successful left-libertarian party formations. Finally, the study concerns 18 OECD countries during the 1980s.

The minimised equation obtained by Redding and Viterna identifies PROP (presence of a proportional representation system) as a necessary condition (the outcome is observed whenever the condition is observed, too) and the strong corroboration of the second institutional hypothesis. As such, the equation is represented below:

SUCESS = CORP LEFT PROP +
(AT, DK, FI, DE, NO, SE, CH)
GDP SOS LEFT PROP +
(BE)
GDP SOS CORP PROP
(NL)
= **PROP (CORP LEFT + GDP SOS LEFT + GDP SOS CORP)**

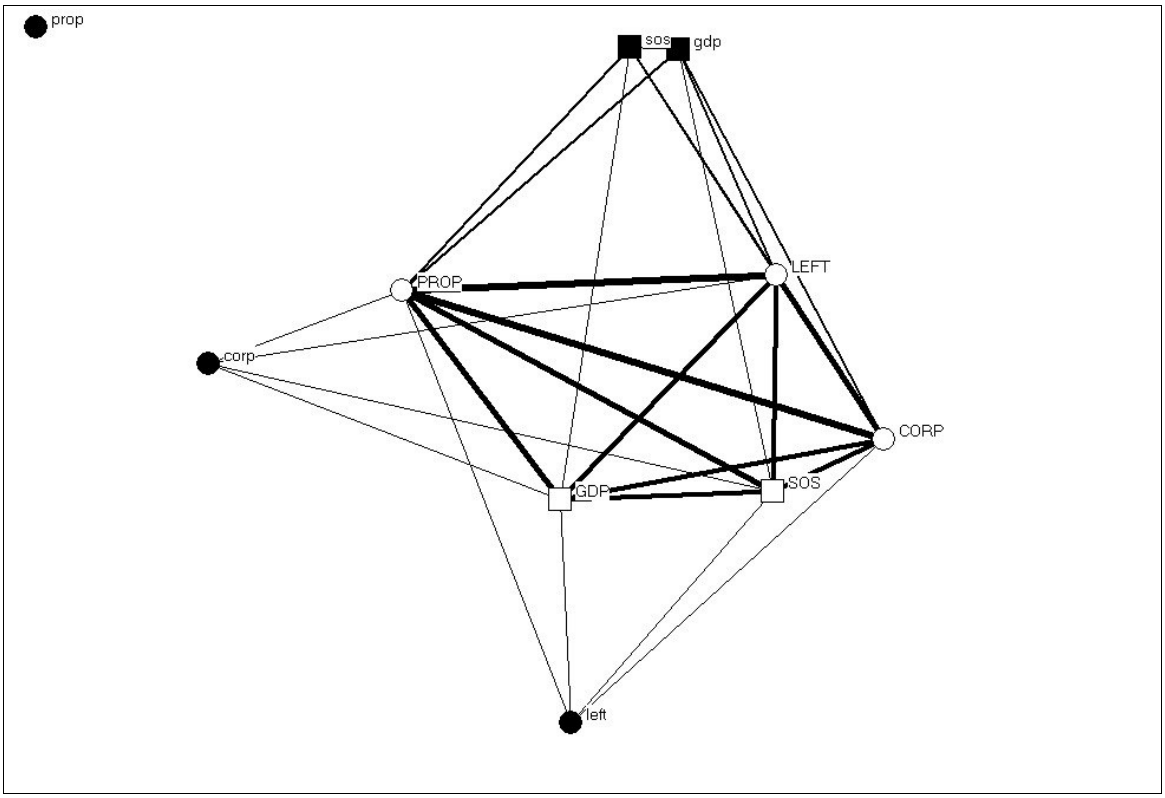
Next, the transformation of QCA data into a network matrix is done by counting the number of times a presence/absence of a condition is observed with the presence/absence of another condition. In this example, we take only the data for the 1 outcome; we count the number of times the presence of GDP is observed in co-

occurrence with the presence of SOS, with the absence of SOS ("sos"), etc. This is repeated for all conditions, present and absent. At the end, we obtain the following network data matrix.

	GDP	gdp	SOS	sos	CORP	corp	LEFT	left	PROP	prop
GDP	0	0	5	1	5	1	5	1	6	0
Gdp	0	0	1	1	2	0	2	0	2	0
SOS	5	1	0	0	5	1	5	1	6	0
Sos	1	1	0	0	2	0	2	0	2	0
CORP	5	2	5	2	0	0	6	1	7	0
corp	1	0	0	0	0	0	1	0	1	0
LEFT	5	2	5	2	6	1	0	0	7	0
left	1	0	1	0	1	0	0	0	1	0
PROP	6	2	6	2	7	1	7	1	0	0
prop	0	0	0	0	0	0	0	0	0	0

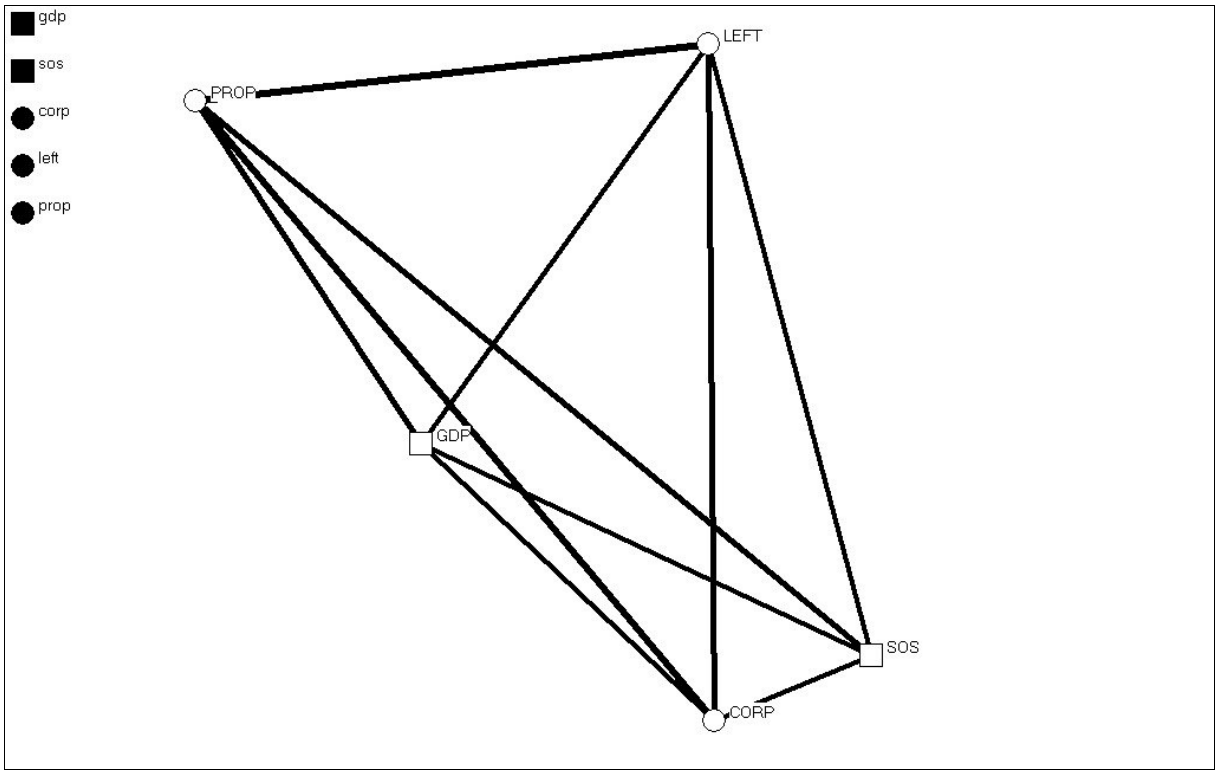
Table2: Co-occurrence of Conditions (Redding and Viterna Data)

Finally, using a SNA software (here, UCInet) and a network visualisation tool (here Netdraw in UCInet), the QCA data is visualised, with the ties expressing co-occurrence of conditions for the explanation of the 1 outcome. We set parameters of visualisation such that the stronger the ties, the thicker the ties appear. The presence of conditions is indicated by white nodes and the absence by black nodes. In the same way, demand factors (SOS and GDP) display square nodes (!) whereas supply factors (CORP, LEFT and PROP) circle nodes. The parameters thus set to easily grasp interesting information, we can also "play" with the level of complexity we wish to see. As such, we present here three levels of complexity. The first visualisation displays all ties connecting all nodes. The second is an intermediary step where only the nodes that are connected more than three times are displayed as a network. Finally, the third level allows us to look at the most strongly co-occurring nodes (or conditions).



Step 1 of QCA data visualisation using Netdraw

The first level of visualisation (all ties are drawn) already gives some interesting insight into the relationship between conditions. We can see that there is one "isolate" or a node that has no tie to any other: the absence of proportional representation ("prop") is not once observed with the successful left-libertarian party formation. On the contrary, PROP or the presence of proportional representation has a central position within the network, an information that is consistent with its necessary character in QCA equation. Moreover, the strong ties (thicker lines) link the present conditions together quite obviously, whereas the absence of conditions (circle nodes) is represented in the periphery of the network. This intuitively shows that the hypotheses are generally corroborated since the presence of conditions correctly leads to the outcome. The display of the network is done using the MDS (Multi-Dimensional Scaling) function of Netdraw, which allows to spatially bind nodes that are "similar", i.e. conditions that share similar co-occurrence with other conditions, while conditions that are "dissimilar" or share minimal co-occurrence with other conditions are represented far away from each others. At this first level of visualisation, this MDS added-value is not fully appreciated, but we will see how it can contribute to Policy Analysis at subsequent levels.



Step 2 of QCA data visualisation using Netdraw

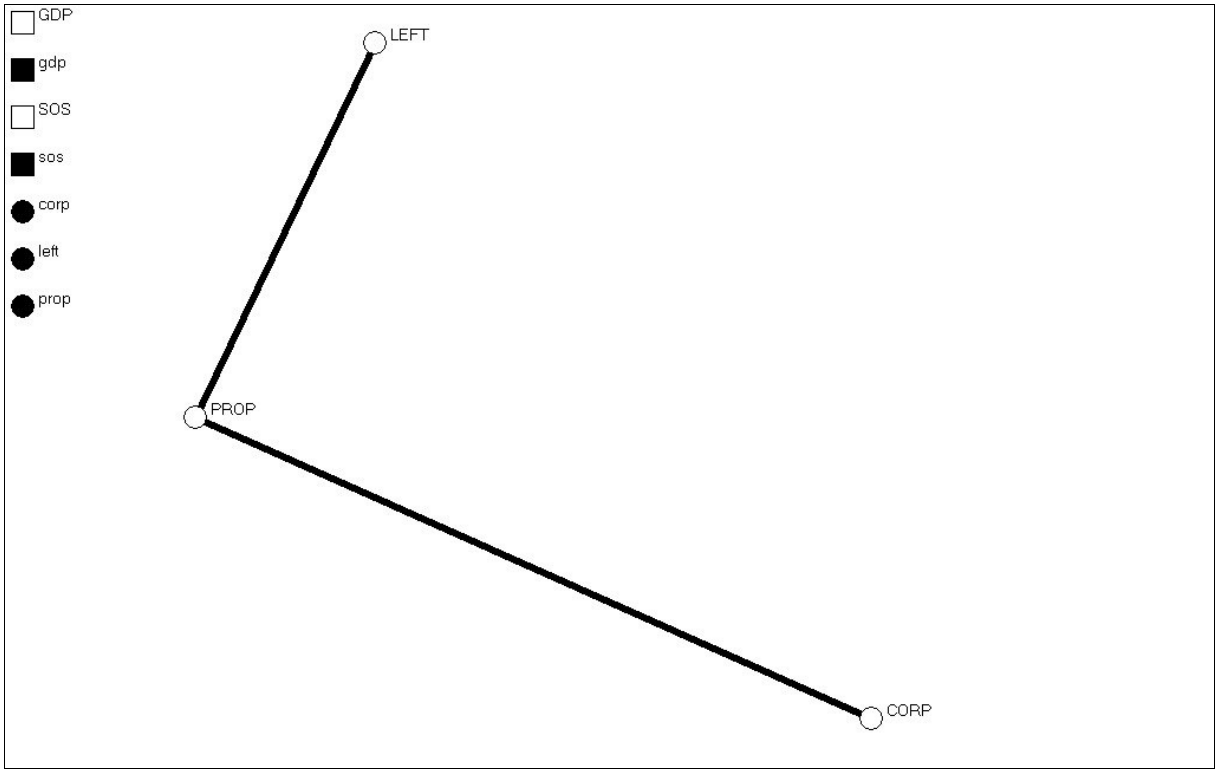
This second level of visualisation, with the threshold set to "more than 3 times of co-occurrence" greatly reduces the "noise" surrounding the relationship between the most relevant conditions. Indeed, this network represents the most often observed co-occurring sets of conditions leading to the success of a left-libertarian party formation. As such, all the conditions with a "0" value are now isolates in the upper left corner of the graph, and only conditions with a "1" value are still part of the network. This is a stronger corroboration of the authors' hypotheses than what was observed in the first level visualisation of the data.

In networks, a tie is the relationship between two nodes only, but the diffusion of these relationships to unite all nodes and thus compose a "network" is assured by the transitivity assumption (if A and B are strongly connected and B and C are also strongly connected, than there is a big probability that A and C also are strongly connected). In the present case, since PROP and LEFT are strongly co-occurring (7 co-occurrences) and PROP and CORP, too (7 co-occurrences), LEFT and CORP also display a strong relationship (6 co-occurrences)[14].

Of course, we do not forget the combinatorial logic that is fundamental to QCA, but by transforming QCA data into network data, we add a probabilistic character to the

[14] On transitivity, see Wassermann and Faust 1997:150ff, 241ff.

interpretation of the policy analysis results. Here, we are not saying that all QCA analyses should incorporate this probabilistic element, but that seen the pragmatic concerns of an exercise such as Policy Analysis, the analyses should respond to these specific needs. However, this second level of visualisation of the data may still throw a too broad "net" on the relevant conditions for policy analysts.



Step 3 of QCA data visualisation using Netdraw

Finally, the last level of visualisation leaves the analyst with three conditions, LEFT, PROP and CORP. The threshold is set to "7 or more ties": LEFT and PROP co-occur 7 times and CORP and PROP also. If we were to visualise the same data with "6 or more ties", there would be a line between LEFT and CORP. The analyst can now conclude that a successful left-libertarian party formation is observed when there is a strong positive relationship between proportional representation and the presence of a leftist party in government or between proportional representation and a high level of corporatism. In any case, PROP is central since it is linked to both other conditions, whereas the latter ones are not (as strongly) linked.

Since PROP and LEFT are closer to each other on the MDS scale (they are spatially closer to each other than to CORP), the analyst would consider the combination of the

two conditions as more relevant (because more probable in the real world) than the other two possible combinations of conditions (PROP and LEFT or LEFT and CORP). We would again like to stress that there is a concordance of results between QCA equations and SNA visualisation. In other words, Netdraw does not go counter to QCA results (isolates, centrality of PROP, coherence of direction of conditions).

As added-value to QCA, this visualisation technique plugs in a probabilistic parameter to the interpretation. Indeed, the most travelled paths are directly identified, along with the distance (expressing the proximity) between conditions. Some probabilistic flavour is particularly welcome for PA since it is economically and ethically problematic for policy makers to implement several policies for one societal issue (Ragin 2003b). One might argue that this path probability is taken into account when a term is matched with the observed cases, with software such as TOSMANA. However, we argue that visualisation with a network software provides another interpretation of the relationship between conditions: the rigidity or the determinism of case matching is dropped for a more flexible causal interpretation through conditions[15].

Another added-value of transforming QCA data into a network matrix is the possibility of testing the significance of the results. Since the non-independence of variables and the non-random selection of cases are common assumptions to both methods, classical statistical hypotheses testing remain invalid. Network analysis relies on permutation technique such as the QAP procedure to test hypotheses under such assumptions. It might prove interesting to try this technique with QCA data in future research.

5. Conclusion: The benefit for Policy Analysis

The aim of this article was twofold: first, we offered to clarify the boundaries of Policy Analysis and identify the main streams which compose it as well as the main caveats of this area of research. By that, it was to demonstrate the main shortcomings of PA. In our opinion, PA asks for a holistic approach given that policies are macro-social

[15] This explanation-oriented example (POPA) might not prove as illustrative of the visualisation strength as a recommendation-oriented example (POCE) with real policy evaluation data, but we hope that the essence of the advantages offered by such a technique has been made clear.

phenomena of extreme complexity. If one has the goal to explain policy outputs and outcomes properly, one has to include polity as well as politics in the research design. However, this leads to one of the main shortcomings in this field: most research on Policy Analysis does not go beyond case studies. Comparisons and generalisations are hardly possible therefore, as we deal with case studies of small N. Comparative policy analysis represents a rapidly growing need in the field of Policy Analysis, as a result of the recent extension of its application from a primarily national setting towards a more comparative European setting. Moreover, Policy Analysis has to deal with the inherent complexity of its research subject, making general causal explanations rare. Indeed, classical statistical methods and solely qualitative studies are only partly able to bring research further in this field.

The second aim of this paper was subsequently to propose a combinatorial strategy of Qualitative Comparative Analysis and Social Network Analysis capable of covering these above mentioned "blind areas" in PA. We showed how two apparently different methods, Qualitative Comparative Analysis and Social Network Analysis, prove to be sharing some fundamental views on science and explanation. Indeed, the combination of these methods allows to preserve complexity and still bring formalisation in order to allow more accurate comparative policy analyses, or offer new visualisation tools for the pragmatic necessity of policy makers. One of the main messages that we wished to be retained is the necessary concordance of assumptions among theory, methods and data. In other words, we should seek to clarify the epistemological and ontological bases of one's own and select theories, methods and data in accordance to the declared assumptions.

Bibliography

BARBEAUX, M. (2001). "L'évaluation en tant qu'enjeux politique", in de VISSCHER, Christian and VARONE, Frédéric (eds.), Evaluer les politiques publiques, Louvain-la-Neuve, Academia-Bruylant.

BÖRZEL, T. A. (1997). What's so special about policy networks ? - An exploration of the concept and its usefulness in studying European Governance, EIoP - European Integration online Papers. 2003.

BURSENS, P. (1999). Impact van Instituties op Beleidsvorming: Een Institutioneel

Perspectief op Besluitvorming in de Communautaire Pijler van de Europese Unie. Ph.D. Dissertation, University of Antwerp.

DURAND, Daniel (1987), La Systémique, Paris, P.U.F.

GALLOPIN, G. C., S. FUNTOWICZ, M. O'CONNOR and J. RAVETZ (2001). "Science for the Twenty-First Century: From Social Contract to the Scientific Core". International Social Science Journal 53(2): 219-229.

GERRING, J. (2004). "What is a Case Study and What is it Good for?", American Political Science Review 98(2):341-354.

GREENBERG, G. D., J. A. MILLER, L. B. MOHR and B. C. VLADECK (1977). "Developing Public Policy Theory: Perspectives from Empirical Research" The American Political Science Review 71(4): 1532-1543.

HASSE, R. and G. KRÜCKEN (2002). Neo-Institutionalismus im Theorievergleich - Netzwerkansätze, Theorien der Strukturierung und Systemtheorie, Transcript. 2002.

HEIKKILA, T. (2001). Managing Common-Pool Resources in a Public Service Industry: The Case of Conjunctive Water Management. Ph.D. Dissertation, University of Arizona, Tucson.

HENDRICK, R. M. and D. NACHMIAS (1992). "The Policy Sciences: the Challenge of Complexity". Policy Studies Review 11(3/4): 310-328.

HÉRITIER, A. (1993). Einleitung. Policy-Analyse. Elemente der Kritik und Perspektiven der Neuorientierung. Policy-Analyse. Kritik und Neuorientierung. D. V. f. P. Wissenschaft. Opladen, Westdeutscher Verlag: 9-38.

---------- (1993). Policy-Netzwerkanalyse als Untersuchungsinstrument im europäischen Kontext: Folgerungen aus einer empirischen Studie regulativer Politik. Policy-Analyse. Kritik und Neuorientierung. D. V. f. P. Wissenschaft. Opladen, Westdeutscher Verlag: 432-450.

HÉRITIER, A., Ed. (1993). Policy-Analyse. Kritik und Neuorientierung. Opladen, Westdeutscher Verlag.

HOLLINGSWORTH, R., HANNEMAN, R., HAGE, J. and RAGIN, C. (1996). "The Effect of Human Capital and State Intervention on the Performance of Medical Systems" Social Forces 75(2):459-484.

KENIS, P. and V. SCHNEIDER (1991), "Policy Networks and Policy Analysis: Scrutinizing a New Analytical Toolbox", in MARIN, Bernd and MAYNTZ, Renate (eds.), Policy Networks: Empirical Evidence and Theoretical Considerations, Frankfurt am Main and Boulder, Colorado, Campus Verlag and Westview Press,

KÖNIG, T. and T. BRÄUNINGER (1998). "The Formation of Policy Networks. Preferences, Institutions and Actors' Choice of Information and Exchange Relations." Journal of Theoretical Politics 10(4): 445-471.

LEMPERT, R. and S. POPPER (2002). Shaping our Long-Term Future: Policy Analysis Under Conditions of Complexity and Deep Uncertainty. Seminar for the RAND and

Woodrow Wilson International Centre for Scholars, available at http://www.complexityandpolicy.org/dial.htm .

MACKIE, J. L. (1974), The Cement of the Universe. A Study of Causation, London, Oxford University Press.

MAJONE, G. (1993). "When Does Policy Deliberation Matter?" Politische Vierteljahresshrift, Herbst. Special Issue on Policy Analysis**:** 97-115.

---------- (2001). "Two Logics of Delegation. Agency and Fiduciary Relations in EU Governance." European Union Politics 2(1): 103-122.

MARKS, G., HOOGHE, L. and BLANK, K. (1995). "European Integration and the State", EUI Working Paper RSC No.95/7, Florence, European University Institute.

MARKS, G., L. HOOGHE, et al. (1996). "European Integration from the 1980s: State-Centric v. Multi-level Governance." Journal of Common Market Studies 34(3): 341-378.

MARSH, D. and SMITH, M. J. (2001). "There is More than One Way to Do Political Science: On Different Ways to Study Policy Networks", Political Studies 49:528-541.

MEDDA, F. and NIJKAMP, P. (1999). "A Combinatorial Assessment Methodology for complex Policy Analysis", Working Paper, Department of Spatial Economies, University of Amsterdam.

MELBECK, C. (1998). "Comparing Local Policy Networks." Journal of Theoretical Politics 10(4): 531-552.

MILL, John Stuart (1967). A System of Logic: Ratiocinative and Inductive, Toronto, University of Toronto Press.

MOHR, John W. (1998). "Measuring Meaning Structures", Annual Review of Sociology,

OWEN, G. (1995). "Policy Networks in a Changing World". Paper presented at the Political Science Association Annual Conference, University of York. Accessible at: http://www.psa.ac.uk/cps/1995.htm

PETERS, G. (1999). Institutional Theorie in Political Science. The 'New Institutionalism'. London, New York, Pinter.

PETERSON, J. (2003). "Policy Networks" IHS Political Science Series 90.

PETERSON, J. and E. Bomberg (1999). Decision-Making in the European Union. London, Macmillan Press LTD.

RAGIN, Charles C. (1987), The Comparative Method. Moving Beyond Qualitative and Quantitative Strategies, Berkeley, Los Angeles and London, University of California Press.

---------- (2003a), "Making Comparative Analysis Count", paper presented at : COMPASSS Launching Conference, Louvain-la-Neuve and Leuven, Belgium.

---------- (2003b), "Recent advances in fuzzy-set methods and their application to policy questions", paper presented at: COMPASSS Launching Conference, Louvain-la-Neuve and Leuven, Belgium.

REDDING, K. and VITERNA, J. (1999). "Political Demands, Political Opportunities: Explaining the Differential Success of Left-Libertarian Parties" Social Forces 78(2):491-510.

SABATIER, P. A. (1993). Policy Change over a Decade or More. Policy Change and Learning. An Advocacy Coalition Approach. P. A. Sabatier and H. C. Jenkins-Smith. Boulder, San Francisco, Oxford, Westview Press: 13-56.

SAGER, F. (2004). "Institutions métropolitaines et coordination des politiques publiques: une AQQC des arrangements politico-administratifs d'articulation entre urbanisme et transports en Europe". Revue Internationale de Politique Comparée 11(1):67-84.

SCHARPF, F. W. (1997). Games Real Actors Play. Boulder, Colorado, Westview Press.

---------- (2003). Politische Optionen im vollendeten Binnenmarkt. Europäische Integration. M. Jachtenfuchs and B. Kohler-Koch. Opladen, Leske+Budrich: 219-254.

SCHARPF, F. W. (ed.) (1995). Games in Hierarchies and Networks. Frankfurt am Main, Campus Verlag.

SCHNEIDER, Carsten Q. and WAGEMANN, Claudius (2004), "The Fuzzy-Set/QCA Two-Step Approach to Middle-Range Theories", paper presented at : APSA 2004 Annual Meeting,

SCHÖN, D. A. (1973). Beyond The Stable State: Public and Private Learning in a Changing Society. Harmondsworth, Penguin Books.

SCHÖN, D. A. (1979). Generative Metaphor: A Perspective on Problem-Setting in Social Policy. Metaphor and Thought. A. Ortony, Ed.. Cambridge, Cambridge University Press.

SCHUMANN, W. (1996). Neue Wege in der Integrationstheorie. Ein policy-analytisches Modell zur Interpretation des politischen Systems der EU. Opladen, Leske+Budrich.
SERDÜLT, U. and HIRSCHI, C (2004). "From Process to Structure: Developing a Reliable and Valid Tool for Policy Network Comparison" Swiss Political Science Review 10(2): 137-155.

SIMON, H.A. (1981). The sciences of the artificial (3rd ed.). Cambridge, MA, MIT Press.

STAECK, N. (1997). Politikprozesse in der Europäischen Union: Eine Policy-Netzwerkanalyse der europäischen Strukturfondspolitik. Baden-Baden, Nomos Verlagsgesellschaft.

STOKEY, E. and ZECKHAUSER, R. (1978). A Primer for Policy Analysis. New York, WW Norton and Company, Inc..

THATCHER, M. (1998). "The Development of Policy Network Analyses. From Modest Origins to Overarching Frameworks" Journal of Theoretical Politics 10(4): 389-416.

VAN BUUREN, A. (2004). Knowledge for Governance in Complexity. Paper presented at

the PSA Annual Conference, April 6-8, Lincoln.

VARONE, F. (2001). "L'évaluation comme démarche scientifique", in DE VISSCHER, C. and VARONE, F. (eds.), Evaluer les politiques publiques. Louvain-la-Neuve, Academia-Bruylant. 29-42.

VON ALEMANN, U. and E. FORNDRAN (1995). Politikwissenschaft zwischen Politik und Wissenschaft. Methodik der Politikwissenschaft: eine Einführung in Arbeitstechnik und Forschungspraxis. Stuttgart, Berlin, Köln, Kohlhammer: 32-45.

WASSERMAN, Stanley and FAUST, Katherine (1997), Social Network Analysis. Methods and Applications, Cambridge, Cambridge University Press.

WILKS, S. and M. WRIGHT, Eds. (1987). Comparative Government-Industry Relations: Western Europe, the United States and Japan. Clarendon Press.

WINDHOFF-HÉRITIER, A. (1987). Policy-Analyse. Eine Einführung. Frankfurt, New York, Campus Verlag.