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Theory and Limited Diversity in fs/QCA**

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**IMPROVING INFERENCE WITH A ‘TWO-STEP’ APPROACH:
THEORY AND LIMITED DIVERSITY IN FS/QCA**

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Abstract

This paper examines possibilities for drawing causal inferences in comparative analyses based on ‘fuzzy set Qualitative Comparative Analysis’ (fs/QCA). We argue that if causality is assumed to be complex – i.e. causal effects are not necessarily linear, additive, and unifinal – then fs/QCA is a more appropriate methodological tool for developing context-sensitive but generalisable theories than are both standard statistical techniques and (comparative) case studies. We develop our ‘two-step fs/QCA approach’ as an innovative way to apply fs/QCA. It is based both on deductive and inductive reasoning, aims to merge distant and close causal conditions and, thus, leads to middle-range theories. In order to illustrate our methodological approach, we revert to examples taken from the consolidation of democracy literature.

1 Introduction: The methodological divide and the need to ‘move beyond the quantitative and qualitative’

Undoubtedly, the methodology of social and political science has become ever more characterized by a strange divide between quantitative and qualitative approaches. The quantitative or ‘variable-oriented’ researchers usually base their work on statistical methods, mainly treating a high number of cases that constitute a sample from a given population. Qualitative, or ‘case-oriented’ work involves a wide range of methods and techniques, including such different techniques as long-term observations, in-depth interviews, and hermeneutics. Research of this kind is usually conducted with a very small number of cases.

Experience shows that this division between variable-oriented and case-oriented techniques has resulted in a severe bifurcation of research.¹ As a consequence, this division has led not only to the regrettable existence of two sometimes hostile methodological camps, but also to a tendency to avoid studies with a middle-sized N of cases, for which the appropriate methodological tools are not so clear. By mid-sized N studies, we refer to a number of cases roughly between 10 and 35.

There have been some past conceptual attempts to overcome the methodological divide. Early work in this area was provided by qualitative scholars who laid out the scientific rigor of their approach in still frequently quoted path-breaking articles (e.g., Campbell 1975, Eckstein 1975, Lijphart 1971, Lijphart 1975, Smelser 1976). Recently, even an entire and widely recognised textbook on qualitative research designs has been published (King/Keohane/Verba 1994). However, this textbook has been criticized for being biased towards a “large N logic”, since it attempts to apply statistical concepts (such as samples, standard errors and confidence intervals) to qualitative settings (McKeown 1999, Munck 1998, Ragin 2000: 14, Collier/Seawright/Munck forthcoming).

Another attempt at overcoming the methodological divide was undertaken by Charles C. Ragin in the late 1980s (Ragin 1987). In the subtitle of his book he claimed to move ‘beyond the qualitative and quantitative’. He based his approach on Boolean algebra and called it ‘Qualitative Comparative Analysis’ (QCA). From the year 2000 on, his approach became prominent again when he published a follow-up book (Ragin 2000), enlarging the original QCA approach to ‘Fuzzy Set Qualitative Comparative Analysis’ (fs/QCA).

Ragin’s latest book has triggered a lively debate – with both positive and negative evaluations – in the scholarly community. Our standpoint is that while we are basically convinced of the usefulness of Ragin’s concept, we nevertheless

¹ See Almond (1988) for a discussion, Ragin (2000: 25) for a visualization, and Bennet/Bart/Rutherford (forthcoming) for empirical evidence.

see the need and the possibility for improvements and additional modules in order to make fs/QCA more applicable for real research situations. This paper thus aims at presenting an innovative way of applying fs/QCA in middle sized N comparative studies. As mentioned, by this we refer to a number of cases of around 10-35. This is the range of number of units of analysis for which usually in-depth qualitative case-oriented research is difficult to apply.² And, at the same time, statistical techniques are not necessarily impossible to apply but definitely limited to the most basic and simple of its possibilities to analyze the data. However, for macro-comparative research, such a situation is rather the norm than the exception. Hence, the main aim of this paper is to propose an additional methodological tool – the two-step fs/QCA approach – for the often encountered research situation of a mid-sized number of cases.

Therefore, in the following, we will briefly outline the basic concepts of QCA and fs/QCA respectively. Next, we present our proposal to enhance causal inferences with QCA³ and to put a stronger emphasis on the role of theory. In doing so, we present our *two-step fs/QCA approach*. We will make positive use of a generally problematic pattern of QCA, namely, the so-called ‘limited diversity’, a crucial issue for causal inference, which, however, is usually overlooked both in case studies and statistical techniques. In addition, we underline the useful feature of fs/QCA of detecting necessary and sufficient relationships between variables, an issue that cannot be fully dealt with when standard statistical techniques are used. Our illustrative example will be ‘Consolidation of Democracy’ (CoD) studies, but the ideas that we develop are applicable to any other field of comparative social research.

2 QCA as an alternative to case studies and statistical analyses

Technically speaking, QCA can be seen as an elaboration of John Stuart Mill’s well-known methods of agreement and difference (for an excellent and immediately comprehensible illustration, see Skocpol 1984: 379), which have very often been used in qualitative approaches in order to establish causality. However, QCA does not remain on the level of Mill’s methods, as these appear to be rather simplistic: on the one hand, they are not capable of giving satisfactory or reliable results (as demonstrated in Lieberson 1992), and, on the other hand, moving back and forth between the methods of agreement and

² Of course, there are some outstanding exceptions from this general pattern, as, for instance, in the field of democracy studies, Collier and Collier (1991), Rueschemeyer/Stephens/Stephens (1992). These are studies that are qualitative by nature and sensitive to the cases but, at the same time, deal with a reasonable large number of cases.

³ If our argument is consistent for both the earlier QCA and the more recent fs/QCA, we will continuously use the abbreviation ‘QCA’. We will use ‘fs/QCA’ only if we explicitly refer to the extended version of 2000.

difference proved to be impossible for complex empirical settings, especially in the pre-computer era.

In general, Charles C. Ragin raises three points arguing why QCA helps to improve both statistical methods and case study research, namely, the conceptualization of populations, the perception of cases as configurations, and causal complexity.

Due to space reasons, we concentrate on the issue of causal complexity and do not discuss the conceptualization of populations and the perception of cases as configurations to any deeper extent. For more on these topics, see Ragin (2000: 43ff and 64ff).

The strength of case-oriented studies (usually with an N between 1-4) lie in their emphasis on contextual description. And further, their strength is not necessarily limited to a better understanding of certain cases but they potentially contribute to the specification of existing theories. This, at least, is the claim of so-called crucial case studies (Eckstein 1975).

However, the concentration on just a few cases very often leads to interpreting each case as a unique entity and, thus to neglecting the possibility of providing generalizable causal explanations. In addition to this, case studies lend themselves to the danger of producing theoretically less fruitful over-determined models for explaining the outcome, a result of the well-known problem of an unbalanced ratio of variables and cases. In addition, the tendency of case studies to deal with outliers and, thus, with extreme cases reduces the possibilities for generalizations even further (King/ Keohane/Verba 1994, Collier/Mahoney 1996). In sum, it seems fair to state that while case studies are potentially strong in describing complex causal processes, it is generally difficult to draw broader inferences from their results.

When it comes to the issue of *causal complexity*, Ragin criticizes quantitative methods for the high level of simplicity with which they undertake the modeling of causal relationships. For example, regression analysis as it is most commonly applied produces simple *linear* equations, which identify two or three factors as significant. Not only is the usefulness of the concept of significance rather questionable (Carver 1978), but it also seems unlikely that complex reality can be reflected in a short equation where effects are simply *additive*. Social reality is much more interconnected and mutually dependent. Thus, the aim of generalising as much as possible can finally result in an excessive and intolerable abstraction (Ragin 2000: 89). This abstraction leads to the severe problem of overlooking common phenomena such as *equifinality* and *causal conjunctures*. Consequently, as Munck has put it, most of the time only ‘caricatures’ of the existing hypotheses are tested in statistically based research (Munck 2001). Hence, researchers using standard statistical techniques model causal situations in a simplistic way – i.e.

the variables' effect is by default linear, additive and unifinal - due to technical limitations and not out of theoretical arguments.⁴

Several objections to these critiques on regression analysis can be made. Firstly, the combined effect of two (or more) variables can be modeled by introducing interaction terms into the equation. And, secondly, non-linear transformations of variables such as logarithms or square roots can be used in order to capture non-linear relationships between two variables.⁵ Notice, though, that introducing both interaction effects and non-linear transformations requires 'ideal' research conditions in terms of the quality of the data and, most importantly, the number of cases. Obviously, at least the latter is rarely the case in (macro-)comparative studies in which the number of cases studied often lies between 10 and 35. With a set of 35 cases, hardly any of the undeniably existing strengths of advanced and refined statistical techniques can be put into practice.⁶

We hasten to mention that there are interesting and promising developments going on in the statistical camp that aim at making regression analysis a more applicable and fruitful tool for complex causal analysis particularly under unfavorable conditions, that is a mid-sized N. Procedures like regression diagnostics, 'robust' least absolute error regression or the re-weighted least squares regression are designed to keep the effect of outliers and 'leverage cases' under control (Collier 1993: 114f., see Welzel 1999 for a fruitful application). All these approaches add a more case-oriented drive to the regression analysis. All these developments set the benchmark for the usefulness of QCA, in general, and our two-step application of it (which will be outlined below), in particular, as an alternative answer to the mid-sized N problem.

We will rest our argument in favor of QCA on two core issues, which, we argue, are not dealt with properly in regression analysis. QCA allows both for the

⁴ This even leads to the danger that – at least in the long run - overly simple methods may exert a negative impact on the theoretical thinking: “A methodology designed to deal with a world of simple causal mechanisms can only describe that world in simple terms, and the proliferation of simple descriptions blinds us to the possibility of richer theoretical processes that would require more complex methodology. The result is a vicious circle between the twin evils of theoretical poverty and methodological rigidity.” (Braumoeller 1999: 3).

⁵ There is yet another argument in favor of regression, which, nevertheless needs to be qualified, as well: One could argue that linear regression models incorporate the logic of equifinality because the effect of each single variable displays a different path to the outcome. Notice though that this argument, at best, concedes to regression models the capacity to deal with equifinality through paths towards the outcome that are based on single variables. This is a rather strong argument compared to the notion of equifinality through different conjunctural causation. And further, to our knowledge, it is far from being common practice to interpret regression results in terms of equifinality.

⁶ Obviously, we acknowledge that some more (or less) recent statistical approaches (like time-series or Multilevel analysis approaches) also aim at reaching more subtle causal statements. Yet, again, these techniques are not applicable in mid-sized N comparisons.

analysis of *necessary and sufficient relationships* between multiple variables⁷ and a more rigorous and theoretically informed treatment of the phenomenon of *limited diversity*. As will become clear throughout this article, both advantages are further increased if QCA is applied in the two-step manner we suggest below.

QCA is based on a most different system of cases which contributes greatly to the possibility of generalizing the results (Przeworski/Teune 1970: 34). Additionally, QCA is a technique that allows – by means of procedures based on Boolean algebraic concepts – a conversion of the variables that leads to a thoroughly parsimonious list of necessary and sufficient conditions.⁸ The basic idea is that more than one combination of factors can produce the same outcome (equifinality): the same factor may have different effects in different settings, or different factors can have the same effect according to the contexts in which they are placed. For example, a possible equation of such a kind could be the following:

$$AB + CD \rightarrow Y$$

This reads as follows: Y may be caused by a simultaneous appearance of the causal factors A and B, or (in the Boolean notation expressed by the ‘+’), alternatively, by a simultaneous appearance of the causal factors C and D. The particular power of this kind of equation is that all causal factors A, B, C and D are all included to the equation in some way, although any factor alone would not have been sufficient or necessary.

This type of thinking can extend further in an equation like this:

$$AB + aC \rightarrow Y$$

Here, the causal factor ‘A’ plays a different role, depending on its context. Whereas the presence of A is necessary for the causation of the outcome in case of the simultaneous presence of B, it is necessary that A be absent (indicated by the small letter ‘a’) in the case of C being present for Y to result. Thus, factor A can have two different impacts, depending on the contexts. It should be clear from these examples that QCA equations are anything but additive, linear or unifinal. Thus, inferences are drawn in a context-sensitive manner, including conjunctural hypotheses.

Summing up our arguments made so far, QCA is a method that allows the researcher to be sensitive to complex causality in terms of conjunctural causation

⁷ “Whereas fuzzy-set analysis reveals the presence of necessary and causal conditions, quantitative correlational analysis commonly indicates the association of two variables, but not their set-theoretic relationship (i.e. one being the subset of another)” (Pennings 2002: 4).

⁸ For the technical details, we recommend Ragin’s own texts. In our view, a beginner who has never heard about QCA or even Boolean algebra might start with the technical chapters of the 1987 volume which are extremely clear (Ragin 1987: 85ff.).

and equifinality without, however, giving up the aim of generating generalizable and therefore theoretically fruitful findings. As mentioned, similar complex results can be obtained with statistical techniques but not in the framework of a study with 10-35 cases. And even when the perfect large-N conditions are met, the problem of limited diversity (which occurs when not all theoretically possible combinations of independent variables are empirically observable) and its consequences for drawing causal inference is largely ignored in standard statistical techniques and, in addition to this, these techniques come short of displaying such theoretically important concepts like necessity and sufficiency. In contrast, comparative case studies, while theoretically able to deal with necessity and sufficiency statements, the same as with conjunctural causation and equifinality, are weaker than QCA when it comes to generalizing the results obtained, especially, if the cases are not selected carefully, i.e. if the population from which it is drawn from is not specified properly.

3 Critiques of QCA and some rejoinders

It comes as no surprise that a methodological concept which criticizes both the variable-oriented and the case-oriented school has provoked a lively and controversial discussion. Usually, a standard set of criticisms is put forward (see, e.g., Coppedge 2000a: 15, Goldthorpe 1997). These critiques can be summarized in three points. First of all, the degree of usefulness – or sometimes even the very possibility of applying QCA – is put in question because of the need to use *dichotomized* variables. Furthermore, it is criticized that QCA assumes *deterministic causation*, as expressed by the lack of significance criteria for the solutions found and the absence of an error term. And, finally, scholars point out to the danger of producing numerous different *solutions*, *many of which might lack any theoretical and common sense*.

With regard to the need for *dichotomizing the variables* it is accurately argued that not only does dichotomizing imply a loss of information, but the way in which the cut-off points are chosen has a crucial influence on the results obtained (Liebersohn 1992). However, this has become an outdated criticism in the meantime due to the incorporation of ‘fuzzy sets’ into the logic of QCA (see Klir/Clair/Yuan 1997 for a useful basic introduction to fuzzy set theory). Unlike the earlier concept, fs/QCA does allow for values between 0 and 1. Thus, qualitative and quantitative elements are combined in one single assessment (Ragin 2000: 8): the qualitative aspect of being able to distinguish verbally between two different things (expressed in the dichotomous values ‘0’ and ‘1’) can be combined with the quantitative aspect of using figures as representations of more finely grained gradual steps between the qualitative categories ‘0’ and ‘1’. Thus, qualitative concepts, such as ‘democratic/non-democratic’, mark out a range of possible quantitative values (e.g., ‘more democratic than non-

democratic’, etc.). The ‘fuzzy values’ (i.e. the values in between the two landmarks ‘0’ and ‘1’) represent the grade of the representation of the qualitative concept (e.g., 0.25 = ‘rather non-democratic’, 0.75 = ‘rather democratic’). The fuzzy value 0.5 (the so-called ‘crossover-point’) is of special importance as it represents ambiguity between the two qualitative categories. After coding all the variables as fuzzy variables,⁹ the same procedures which were conceptualized for QCA are applied for fs/QCA although the technical processes are now more sophisticated (for a summary, see Ragin 2000: 244ff., for details see Ragin 2000: 203ff.).

Not only does the extension of QCA to fs/QCA overcome the limitations of dichotomous variables, but it also invalidates arguments that QCA necessarily assumes a world ruled by *deterministic causation*.¹⁰ Fs/QCA, in spite of sticking to the notions of necessity and sufficiency, does not assume purely deterministic causation, as is the case with QCA, because the introduction of fuzzy set logic makes it possible to allow for probabilistic statements. Technically, i.e. in a computer program, the probabilistic notion of causality is realized through the option of introducing confidence intervals and performing statistical significance tests which include probability criteria chosen by the researcher (for the straightforward application of this test for ‘quasi-sufficiency of causal combinations’, see Ragin 2000: 109ff.). Furthermore, it is no longer correct to claim that it has to be assumed that the values of each variable do not contain any measurement errors. Instead, the researcher is allowed to specify a confidence interval for each variable (the so-called fuzzy adjustment).¹¹

Whereas these two critiques on QCA have been invalidated with the introduction of fs/QCA, one core issue remains, namely the risk of producing *theoretically unresolvable* (and often contra-commonsensical) *results*. It is argued that it is the minor role theory plays in QCA based research that leads to a lack of

⁹ As soon as fuzzy values are introduced, the question arises *where do they come from* ? Indeed, there are no direct translations of quantitative indicators (such as GNP, etc.) into a scale from 0 to 1. Instead, fuzzy scores should be assigned based on theoretical knowledge (Ragin 2000: 150). This means that it is the researcher’s responsibility to provide a convincing definition of every single fuzzy value. “In the hands of a social scientist [...], a fuzzy set can be seen as a fine-grained, continuous measure that has been carefully calibrated using substantive and theoretical knowledge” (Ragin 2000: 7). fs/QCA has been criticised for exactly this conception of ‘fuzzy values’ which – in the extreme case – can end up as an arbitrary process. As this discussion is not at the core of our argument we content ourselves with pointing out the high importance of a careful handling of reliability and validity of the operationalisation of ‘fuzzy values’. Otherwise, studies based on fs/QCA would lose their scientific merit.

Notice though that in applications of standard statistical techniques the issues of reliability and validity are relevant as well. However, in practice too often the problem is not addressed at all and, in fact, the existence of ‘good’ data is assumed in the application of statistical techniques.

¹⁰ For a discussion on different notions of what determinism means and what the sources for probabilism are, see Bennett (1999) and Mahoney (2000: 391f.).

¹¹ Notice that one important effect of using fuzzy adjustments is to lower the risk of choosing the ‘wrong’ fuzzy cut-off value (0.5) for certain cases.

capacity to draw causal inferences. However, this is based on the contestable assumption that inductive work is necessarily atheoretical and that its level of generalizability is lower by default. We think that this statement needs to be further qualified. By and large, the role of previously established theory in QCA-based studies is not fixed but hinges upon certain features of the research design and, hence, is under the control of the researcher. In the following, we are going to explore what the different technical and theoretical parameters for an increased role of theory in fs/QCA studies are. In this direction, we address the issues of limited diversity and introduce the notion of distant and close factors, a crucial distinction both for the application of fs/QCA and for making valid causal statements. Our argument then culminates in a *two-step fs/QCA approach*, a new way of applying fs/QCA that we propose in order to arrive at stronger causal statements. Our two-step approach explicitly combines deductive and inductive ways of reasoning in one methodological module.

4 Causal inference and fs/QCA

First of all, we think it important to underline that neither a purely deductive nor a purely inductive approach represents a perfect solution to any research problem in the social sciences. Instead, a combination of both ways of thinking – even in the same study – promises to be more fruitful for drawing causal inferences and developing theoretical knowledge. In fact, even hardcore hypotheses-testing large-N statistical studies are never purely deductive; it is almost inevitable, and even desirable, that they develop new theoretical arguments based on empirical findings throughout their analyses (Collier/Seawright/Munck forthcoming: 26f.). Munck is correct when he states that it is “[...] crucial to note that even if causal theorizing is moulded to a greater degree by deductive thinking, causal theory about substantive issues necessarily involves a combination of inductive and deductive modes of thinking” (Munck 2000: 43). Thus, our attempt to make QCA more suitable for drawing causal inferences through a thorough application of theoretical knowledge implies the need to strengthen both the deductive and the inductive aspects in a QCA-based research process.

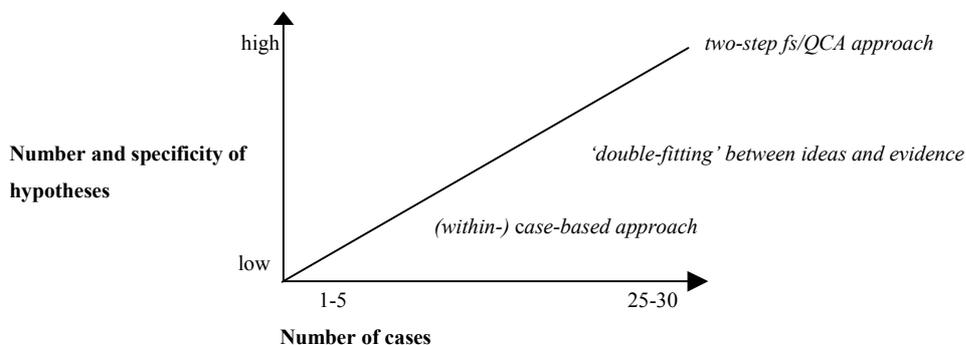
To start with, Ragin’s (2000) point of view on the role of theory in QCA studies is clear. According to him, the theories developed in the social sciences are too weak to produce hypotheses that can be tested with QCA. That is to say, the hypotheses generally found in the literature are too simple in the sense that they do not include the phenomena of equifinality (i.e. different combinations of causal conditions producing the same outcome) and conjunctural causation (i.e. a causal condition exerting its effect only in combination with other causal conditions) (see Figure 2). As a consequence of this, he suggests going back and forth between ideas (theories) and evidence (empirical findings) with the aim of

improving the specification of the model, or the property space (Ragin 1994: 57) respectively. We find that this answer, while basically convincing, is both too general and too biased towards the inductive way of reasoning. In addition to this, it may not be practically feasible in many common research situations.

Imagine, for instance, a research topic for which a large number of diverse hypotheses has already been generated and in which a medium number of cases (i.e. 10-35) is involved. By and large, the more cases are included and the more (and well-elaborated) theoretical hypotheses exist, the less possible is it to go back and forth between ideas and evidence. There are two reasons for this. Firstly, one cannot claim to have sufficient knowledge about each single case as soon as the number of cases exceeds 10 to 15 cases. Going back to the cases in order to re-specify the model more than twice during a research project is highly costly (both in terms of time and money), if not practically impossible. And secondly, even if such a procedure could be put in practice (via a well-functioning international research group, for example), it would be highly unlikely that one could come up with entirely new causal conditions (or combinations of variables, respectively) that have not been mentioned by other colleagues before.

Hence, only under the condition of a low number of cases and weakly elaborated theories, it is possible to tackle the problem of inferring causality by re-specifying the fs/QCA solutions through Ragin's back-and-forth strategy. Thus, the problem remains how to use fs/QCA in middle-size N studies in such a way that the results obtained can be interpreted as something more than pure correlations. Figure 1 sums up our argument graphically and already points to our *two-step fs/QCA approach* as the most adequate strategy for applying fs/QCA under the condition of a medium number of cases and many hypotheses.

Figure 1: Strategies of applying fs/QCA



It is common wisdom that – besides other features like covariation and temporal succession – the use of theory is a keystone for inferring causality. This

is why it is particularly tricky to infer causality from fs/QCA results because, as we have pointed out, most of the theories we have at hand are either too weak to produce hypotheses that reflect higher-order interaction effects and equifinality. Or they are formulated in a too case specific manner, which does not lend itself for a straightforward application to additional cases. The problem at stake can be restated as finding a way to overcome the gap in terms of complexity between the existing theories and the empirical findings generated with fs/QCA. Basically, there are two accumulative solutions to this: (a) reducing the complexity of the fs/QCA solutions through technical manipulations and (b) developing more subtle theories. In the following, we address both ways of closing the complexity gap and, by doing so, it is apt to dwell on the issue of limited diversity.

4.1 Determining the complexity of fs/QCA results through technical manipulations

If it is true that the role of theory and the possibility to infer generalizable causality is – at least to a certain extent – a function of the degree of complexity of the solutions obtained, then it seems to be intuitively suitable to try to reduce the complexity of such solutions, without, however, necessarily becoming as parsimonious as when regression is used. Fortunately, the inclusion of fuzzy set theory has introduced a number of effective technical means that can render fs/QCA results less complex.

First, probabilistic criteria can be introduced which filter all those solutions for which the empirical evidence is too weak – if, e.g., only a very low number of cases show the outcome. For example, the researcher can introduce a benchmark that determines the proportion of cases that can be omitted from the analysis if they contradict the result. If, e.g., an independent variable has turned out to be necessary in all cases but one, the variable can still be regarded as necessary despite this contradictory case. It is evident that the higher the probabilistic threshold, the less complex are the results obtained.¹²

Second, in fs/QCA one can introduce confidence intervals, the so-called fuzzy-adjustments mentioned above. This accommodates acknowledgement that the variables used may contain a certain degree of measurement error. Again, the stronger the measurement error assumptions are, the less complex the equations become.

Third, before starting the QCA analysis, the risk of producing overly complex results can be further lowered by computing so-called macro-variables, putting together two or more single causal conditions that have been shown to correlate consistently (see Berg-Schlosser/De Meur 1997 for such a procedure). In this

¹² By and large, the more cases are included in the study, the more it is possible and recommendable to apply probabilistic criteria.

way, one formally reduces the number of causal conditions. Consequently, the more macro-variables are used, the less complex will be the results obtained.¹³

Fourth, the computer program fs/QCA offers the possibility of going through all the simplifying assumptions – namely, assumptions which are made about the expected outcome in logically possible causal configurations, for which, however, empirical evidence is lacking – and being able to reject or to manipulate some of these ‘thought experiments’ (Max Weber) while retaining others on theoretical grounds.¹⁴ This is the issue of limited diversity, which we will address in further detail now. This phenomenon is inherent not only to QCA-based studies, but also to any kind of social scientific (comparative-empirical) research and it introduces a prominent role for theoretically educated thinking. Consequently, the issue of limited diversity leads us into the more general discussion of what counts as a good cause and, finally, to *our two-step fs/QCA approach*.

4.2 Limited diversity as a central feature in QCA

Conducting QCA, encounters with the problem of limited diversity are a common feature. Limited diversity occurs when logically possible configurations of independent variables do not appear in reality. For example, if four causal conditions have been identified, 16 ($= 2^4$) possible combinations of dichotomously coded independent variables are possible. The calculation of the possible sub-set of technically possible combinations of fuzzy-coded causal conditions is mathematically more demanding, but works more or less in the same way (see Ragin 2000: 198ff).¹⁵ However, it might well be that not all of these 16 possible combinations are empirically observable. In fact, not even a set of 16 cases guarantees that all 16 possible combinations will be covered, as single combinations might appear in more than one case. For a (not unusual) set of 8 independent factors, which have potentially made some contribution to the

¹³ Note that this statement is subject to the type of macro-variables used. If such a creation of an index of highly correlated variables already requires many theoretical assumptions, then, of course, its interaction with other causal conditions in the equation might involve a lot of causal complexity that is only formally hidden.

¹⁴ Note, however, that the rejection of many simplifying assumptions tends to be counterproductive if the aim is to obtain more parsimonious solutions: the more simplifying assumptions are rejected, the more complex the results become.

¹⁵ The technique which is applied to the discovery of limited diversity in fs/QCA settings goes back to a ‘property space’ approach, introduced by Paul Lazarsfeld in the 1930s (Lazarsfeld 1937). It can be given an immediately clear graphical illustration for two independent variables: in such a case, a co-ordinate system can be drawn with the axes representing the fuzzy-values of the two variables. The values of the two fuzzy-scales are entered as dots. Two lines at the level of the crossover-point (0.5) for both variables divide the co-ordinate system into four equal squares. If now one (or more) of these four squares is not represented by any dots, then diversity is limited.

outcome, fully 256 ($= 2^8$) possible combinations exist and a much higher number than 256 cases would be required in order to avoid limited diversity. Thus, in research reality, limited diversity is the rule rather than the exception (Ragin 2000: 107, 198).¹⁶

It is clear that limited diversity is not only a technical problem, but has some theoretical implications, as well. The simple strategy of running the Boolean algorithms without recognizing that some combinations are not covered by empirical instances risks over-simplistic and wrong results. Or, “given limited diversity, no matter which conclusion the researcher presents, it involves statements (and thus assumptions) about conditions that have not been observed.” (Ragin 2000: 106, emphasis in the original).

In general, fs/QCA offers three ways to handle limited diversity, namely, (1) blanket assumptions, (2) parsimony, and (3) theory as a guide. The first two are rather constrained in their use: (1) blanket assumptions (this means that all missing cases are treated as if the dependent variable showed the fuzzy value ‘0’) may work for a small number of variables because the effects of this coding procedures can still be controlled, but if the number of variables (and with it, the likelihood of limited diversity) increases, too many ‘blanket assumptions’ would have to be made and the result would be strongly manipulated. (2) Parsimony (this is a simulation for all possible values of the outcome variable from which the most parsimonious one is chosen) may also be too simplifying, and even dangerous since it is the computer that decides which outcome to assign to each single ‘thought experiment’ without informing the researcher about these crucial decisions. Thus, we hold that (3) theory has to play a prominent role. Therefore, theoretical knowledge may help the researcher to decide whether to perform the simplification of the outcome equations despite limited diversity or to consciously avoid such simplifications and base the argument only on the observed cases.¹⁷

¹⁶ It comes as no surprise that limited diversity is also a problem for single-case studies (it is, indeed, the most extreme case of limited diversity) and in quantitative analyses. Nevertheless, statistical procedures are applied without any hesitation, when the variance is only a little higher than 0. If the result is significant, then the most parsimonious solution is accepted, even if its seeming significance goes back to implicit and, mostly, even unrecognized assumptions about those cases that do not exist. This warning, thus, goes further than the well-known statistical basic rule not to draw inferences and to make statements beyond the range of empirically observable data, i.e. to extrapolate a regression line beyond the empirically observable scatter plot or, as in the case of time-series-analysis, to predict the future based on results obtained today. In QCA, however, the warning generally applies to the application of results to non-observed cases, no matter whether or not they lie between the maximum and the minimum values of the independent variables.

¹⁷ This decision can be very simple: if, for example, the famous ‘pregnant man’ is one of the empirically not observable instances, then the categories ‘pregnant men’ and ‘pregnant women’ can be collapsed without hesitation into the single category ‘pregnant’, as pregnancy is a subset of being a woman. However, there are cases for which a certain combination would be possible (even if not expected by theoretical approaches, such as a high level of social policy

As this suggests, limited diversity is mainly perceived as an obstacle to the application of QCA-based approaches. However, it remains true that reality *is a reality of limited diversity* so that this problem cannot be avoided and should not be ignored, as is done in statistical analyses. This is why we suggest below a stepwise application of fs/QCA through which limited diversity is converted from being an obstacle into an analytically fruitful tool.

In order to develop our argument, we now leave the ground of purely technical manipulations of limited diversity and return to the question of the role of theory. Not only do more subtle and complex theories help to decide whether or not certain thought experiments are expected to produce an outcome, but they also contribute to closing the complexity gap between QCA results and hypotheses (see Figure 2).

5 The two-step fs/QCA approach

The main advantage of our *two-step fs/QCA approach* is that it enhances the possibilities for drawing causal inference. As will become clear, this is done by converting limited diversity from being a problem into a methodological tool and thereby allowing both for greater reliance on pre-established theoretical knowledge (deductive reasoning) and for developing new theoretical insights (inductive reasoning), while always having the core elements of causal complexity and equifinality in mind.

We start this last section by underlining the need for both more subtle theories and, as a consequence, more appropriate methods that are able to deal with such kind of theories. In addition, we are going to make use of the well-established distinction between distant and close factors and provide arguments why the commonly applied statistical techniques are inappropriate for combining both types of factors and, consequently, for developing and testing more subtle theoretical arguments. Additionally, we provide a mathematically based argument how and why the two-step approach reduces the amount of simplifying assumptions to be made. And, finally, we demonstrate the application of the *two-step fs/QCA approach* to a data set on the consolidation of democracy containing 39 cases.

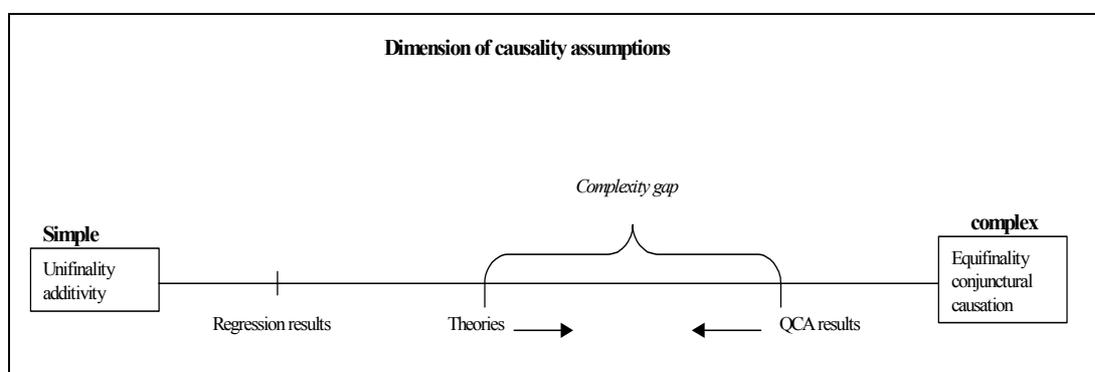
with a right-wing government) but is, nevertheless, empirically not realized. It is here that previously established theoretical knowledge may help to overcome the limitations of the application of QCA that are caused by limited diversity. From this example it becomes clear that theoretical reflections are diametrically opposed to the other alternatives of ‘blanket assumptions’ and ‘parsimony’, which have an unreflected simplifying tendency.

5.1 Reasons for applying fs/QCA in two-steps

Notice that the general problem at stake is to overcome the difficulty of making use of theoretical knowledge and, as a consequence, of inferring causality. As already mentioned, applied to our specific topic of QCA, the problem can be specified as: How can we close the complexity gap that exists between our scarce and simple theoretical knowledge and the (potentially) complex empirical results obtained with QCA ?

Above, we have suggested some general technical means by which to solve the problem of limited diversity and to reduce the complexity of the results obtained with fs/QCA. That is, we moved the dot for fs/QCA further to the left, without, however, going so far as to give up the fundamental principles of equifinality and conjunctural causation. Logically, it follows that the general intention is to use (or in some cases to develop) more subtle theories, i.e. theories that are thick and context-sensitive but generalizable at the same time (Amenta/Poulsen 1994, Munck 2001). Subtle theories can help to formulate hypotheses that take complex causality into account, i.e. which model interaction effects and conjunctural causation.

Figure 2: Complexity gap in causality assumptions



We are convinced that (new) theories of such a kind cannot be formulated only by in-depth readings of the theoretical literature, i.e. without any accompanying empirical analysis, as seems to be suggested by Amenta/Poulsen (1994). In contrast, we think that some kind of combined deductive-inductive reasoning is needed throughout the whole analysis. To achieve this goal, not only must the appropriate method be chosen, but it also must be applied in a fruitful way. As will become clear, our *two-step fs/QCA approach* fulfils both requirements. It incorporates the assumption of complex causality and, at the same time, it is based on a stepwise formulation and testing of hypotheses.

We obviously do not claim that we are able to offer solutions to all theoretical, practical, epistemological, and methodological problems that appear during the endeavor of formulating and testing subtle theories in a comparative research design. Instead, we concentrate on some methodological issues that, we think, are very helpful to combining distant and close factors and to making valid causal statements. Needless to say, a good methodological approach alone is only a necessary and not a sufficient condition for causal inference. In addition to this, one needs powerful substantial theories and good data.

5.1.1 Avoiding tautologies

Following Kitschelt (1999), explanations that exclusively rely on distant (structural) factors provide for causal depth but fall short of demonstrating the causal mechanisms that link deep, distant causes with an outcome. In contrast, explanations based on close factors display causal mechanisms, often, but not necessarily, at the micro-level. Most of the time, the latter type of explanation is too shallow because it runs the risk of leading to tautological statements in regarding part of what should belong to the *explanandum* as the *explanans*.¹⁸ Hence, the mere fact that close factors are closer to the outcome – both in terms of space and time – does not imply that they provide better explanations than more distant factors. Consequently, a good causal statement consists in finding the right balance between the two core features: causal depth and causal mechanisms: “Too much depth may deprive explanations of causal mechanism, but some proposed mechanisms may lack any causal depth.” (Kitschelt 1999: 10).

When both distant conditions and close factors are put together in one-equation models based on correlations, close factors usually appear the clear winner in explaining more of the variation of the dependent variable. Note, however, that this is set up by the underlying technical logic of regression analysis, which washes out the causal effect of the distant factors. This is particularly true if the close factors are causally connected to the distant ones. Hence, the ‘success’ of close factors in statistical analyses is neither surprising nor insightful for reaching a good causal statement (see Kitschelt 1999: 15 for a more detailed explanation of this point).

If it is true that in standard statistical techniques close factors perform better and, thus, the danger of drawing if not wrong, but overly simplified conclusions is severing (Kitschelt 1999: 14), then “there is nothing to be gained from pitting deeper and more distant (i.e. temporally prior) structural or cultural variables against proximate causes in the same equation.” (Kitschelt 1999: 24). Consequently, Kitschelt suggests a two-step approach and, in this way, allows for

¹⁸ In the literature, this common error is referred to as the problem of endogeneity (e.g. King/Keohane/Verba 1994: 185ff) and it could also be regarded as the inverse of the etiological fallacy (Schedler 1997).

a much more subtle and complex causal analysis. We fully agree with this idea because the aim of methodological innovation should be an improved matching between theory and reality. A two-step approach is particularly useful for reflecting reality in a better way, and, hence, for improving theory.

However, Kitschelt stops short of pushing his line of argument towards its logical end: instead of allowing for true causal complexity in both analytical steps, he seems to prefer the use of standard statistical techniques. In doing so, he introduces many of the biases and causal simplifications, like additivity, linearity, and unifinality that he and others (e.g. Munck 2001: 135) rightly criticize, and which we have discussed above. And further, the notions of necessary and sufficient relationships stays largely undiscovered, the same as the hidden assumptions about empirically non-existing combinations of variables. This is why we, instead of merely suggesting a two-step analysis, go further and propose the use of fs/QCA in the form of our *two-step fs/QCA approach*. We explain its logic at length in the next section.

Before doing so, we present an additional argument for performing a two-step analysis with fs/QCA. This argument does not rest on the assumption that in standard statistical approaches the effect of distant factors would be washed out by the inclusion of close factors. In fact, this is an empirically rather weak assumption, especially if the close factors are not strongly causally connected to the distant ones.

5.1.2 Getting a grip on limited diversity

In order to justify the reasons for applying fs/QCA in a two-step manner, we look through the analytic lenses of limited diversity and, hence, provide a more formalized argument for why a fs/QCA-based two-step approach is more adequate for widening the space for theoretical reasoning throughout the analytical process is by looking at it from the angle of limited diversity.

Assuming a situation in which the results obtained with a one-step procedure are identical to the ones with a two-step analysis, the researcher should be less confident about the results of the one-step procedure. This is because the number of simplifying assumptions that have to be made in a one-step approach is much higher than in a two-step approach and easily exceed a manageable amount. In the two-step approach, limited diversity and, as a consequence, the number of simplifying assumptions is lowered by means of theoretical thinking in connection with technical manipulations.

This crucial point of reducing the amount of limited diversity by applying a two-step instead of a one-step approach become readily visible if we consider the highest possible number of simplifying assumptions (z), about which the researcher has to decide. Generally, they can be computed as $z_{\max} = 2^k - 1$, with k

equals the number of causal conditions.¹⁹ As can be easily seen, the maximum number of simplifying assumptions increases exponentially to the number of independent variables. Consequently, z_{\max} will be considerably lowered, if the parameter k can be split up into k_1 and k_2 (with $k_1 + k_2 = k$). Ideally, k_1 and k_2 should be as equal as possible, or, in other words, both k_1 and k_2 should be $k/2$.

If, e.g., $k = 8$ (a rather common scenario in comparative research), the maximum number of simplifying assumptions is $2^8 - 1 = 255$. If the two analytical steps can be modeled in the ideal way of getting two sub-sets with four variables each ($k_1 = k_2 = 4$), then the maximum number of simplifying assumptions becomes $2^4 - 1 + 2^4 - 1 = 30$. Obviously, this is much lower than 255! Even if the researcher only succeeds to split the eight original variables into, e.g., two distant ones and six close factors (which is a kind of ‘worst case scenario’ in the case of eight variables), the maximum number of simplifying assumptions becomes $2^2 - 1 + 2^6 - 1 = 66$. Thus, given a set of 8 independent variables, at least 189 maximum simplifying assumptions – in the best case even 225 – can be saved with a two-step approach.

Figure 3 shows this for other examples, as well. The upper line represents the maximum number of simplifying assumptions in a one-step approach ($2^k - 1$). The medium line represents the maximum number of simplifying assumptions in a two-step approach, if one category consists only of two variables and the other one of the rest (‘worst case’, with $2^2 - 1 + 2^{k-2} - 1$, or, easier, $2 + 2^{k-2}$). The lower line represents the maximum number of simplifying assumptions in a two-step approach, if the set of variables is equally distributed to the categories (‘best case’, with $2^{k/2} - 1 + 2^{k/2} - 1$ or, easier, $2 \cdot 2^{k/2} - 2$ in the case of an even number of variables, and $2^{k/2-0.5} - 1 + 2^{k/2+0.5} - 1$, or, slightly easier $2^{k/2-0.5} + 2^{k/2+0.5} - 2$ in the case of an odd number of variables).²⁰ The graph only displays the situation

¹⁹ As is well known, 2^k combinations of dichotomous variables are possible: each combination combines all k variables which can take two different values, namely, ‘presence’ (expressed in capital letters) or ‘absence’ (expressed in small letters). Readers who are already familiar with fs/QCA will have noticed that Ragin proposes three possible values (‘no statement made’ as a third one); however, in terms of the maximum number of simplifying assumptions, this is not important. If, e.g., the following combinations of variables: ABC, ABc and AB, exist, then the maximum number of simplifying assumptions which have to be made is 2 and not 3, because, if simplifying assumptions have already been made for ABC and ABc, no simplifying assumption is necessary for AB, as AB is the Boolean sum of ABC and ABc.

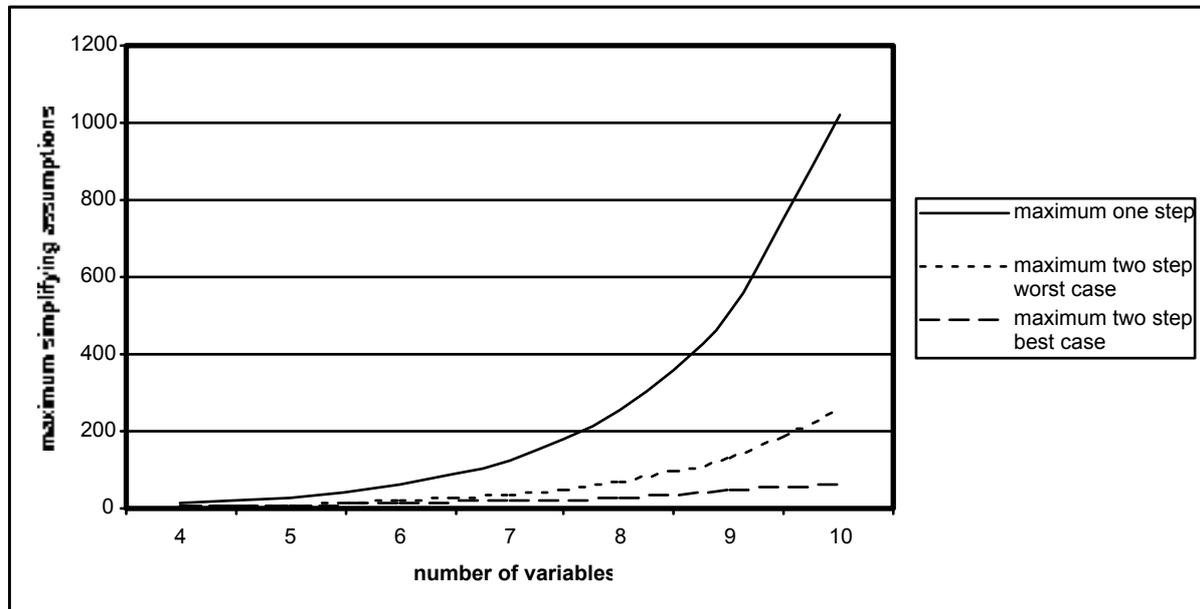
Thus, there is a maximum of 2^k combinations which possibly has to be examined. However, since at least one of these combinations has to be realised in any case, the maximum number of simplifying assumptions is $2^k - 1$.

It is clear, though, that this formula just helps us to illustrate our argument. In reality, the number of maximum assumptions will be (much) lower than $2^k - 1$, depending on the number of cases and the test parameters chosen. Although it is theoretically possible to calculate the exact number of simplifying assumptions for a given data constellation, this is too difficult to do in this article and is not at the core of our general argument.

²⁰ The formula also shows the possibility to compute how many maximum simplifying assumptions can be saved: at least $2^k - 1 - (2 + 2^{k-2})$ or $2^k - 2^{k-2} - 3$ maximum simplifying

from $k = 4$ onwards, because with a number of variables lower than 4, a division into two subsets does not make much sense.

Figure 3: Number of simplifying assumptions



In sum, Figure 3 nicely demonstrates the virtues of our two-step approach and the (often overlooked) vices of one-step approaches in dealing with limited diversity – no matter whether in QCA or in standard statistical techniques. A two-step approach reduces the amount of limited diversity and, by doing so, diminishes the amount of simplifying assumptions to be made to a degree that can be dealt with conscious theory-based decisions.

5.2 A general description of the two-step fs/QCA approach

Briefly, the basic logic of our *two-step fs/QCA module* is the following. In a first step, the distant structural factors are analyzed with fs/QCA. After this, the closer factors are inserted into the structurally defined contexts that have previously been shown to make the outcome possible and a second fs/QCA analysis is run.²¹ That is to say, not only do we suggest dividing the analysis into

assumptions can be saved ('worst case'), up to a saving of $2^k - 1 - (2 \cdot 2^{k/2} - 2)$ or $2^k - 2 \cdot 2^{k/2} + 1$ with a pair number of variables, and $2^k - 1 - (2^{k/2-0.5} + 2^{k/2+0.5} - 2)$ or $2^k - 2^{k/2-0.5} - 2^{k/2+0.5} + 1$ with an impair number of variables.

²¹ Notice that the order of the analytical steps – first distant, then close factors – follows an intuitive and widely recognized theoretical reasoning, which can be found in the basic logic of

two separate steps grouped around the variables at the two levels of causal depth, but we also argue that it is important to allow for true causal complexity in terms of equifinality and conjunctural causation at both steps. This, in turn, implies the application of fs/QCA instead of standard statistical techniques. Graphically, our *two-step fs/QCA approach* is presented as in Figure 4.

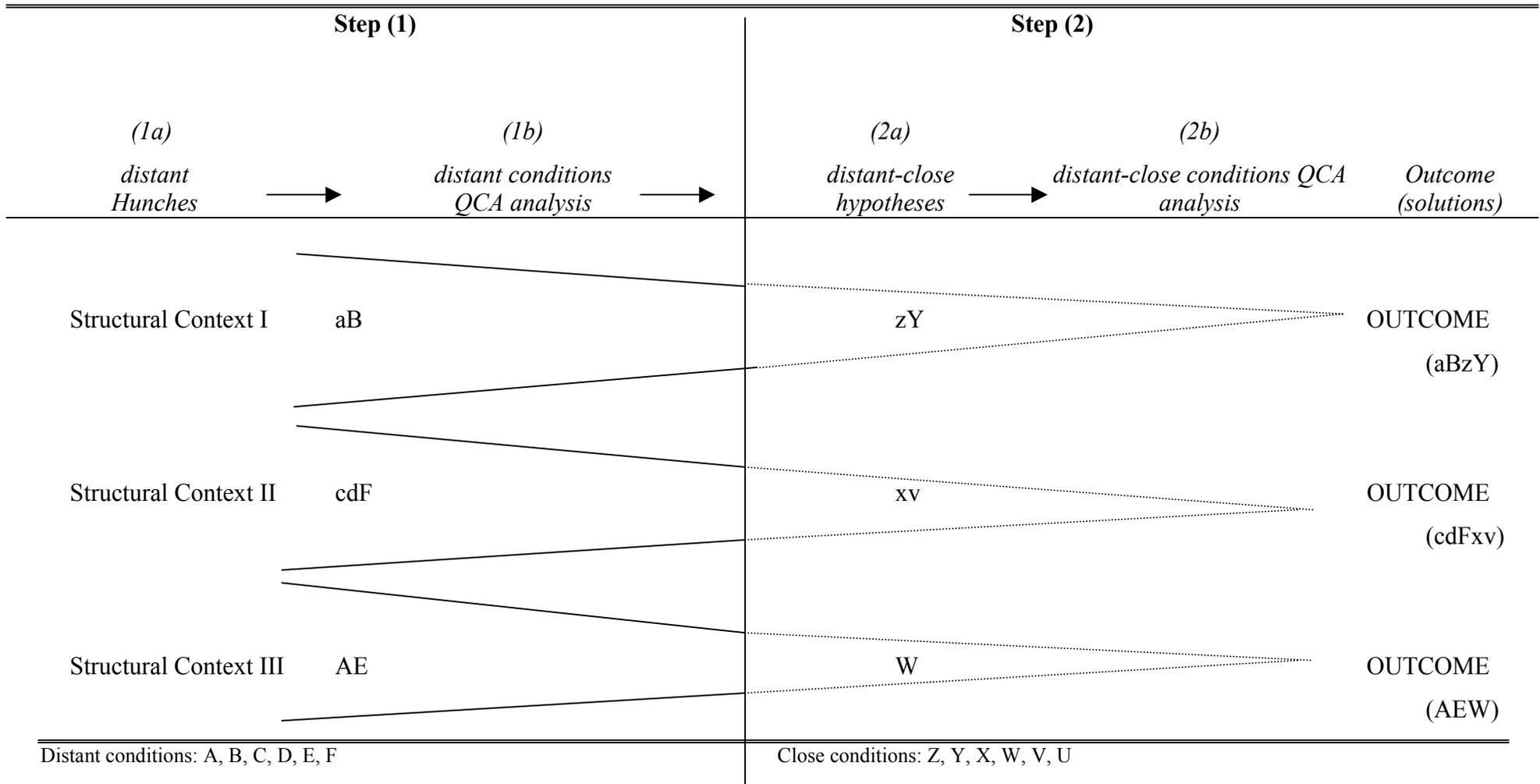
Let us explain the procedure in further detail. The first task (1a) is to formulate various theoretically guided hunches about which different combinations of distant factors are likely to make an outcome possible. It is important to underline that we call them hunches rather than hypotheses. In this way, we make clear that they are less specific than hypotheses, that is to say, there is still a lot of ‘noise’ in them. The reasons for this are clear: first of all, the first analytic step is exclusively based on distant factors and we deliberately leave out the whole set of close factors, which are nevertheless known to influence the outcome as well. Therefore our equations are mis-specified, or, to use the terminology of fs/QCA, the property space needs further specification. Moreover, our hunches cannot be exact (and, hence, cannot be labeled as hypotheses) because as theories they would not be good enough in order to model higher order interaction effects and equifinality.

After having formulated some theoretically guided hunches, the first QCA analysis, based only on distant factors, is carried out (1b). Looking at it from a different perspective, this first step of analyzing distant conditions for an outcome helps to reduce complexity – without, however, becoming as parsimonious as one-equation regression results – and, by this, to limit diversity. When it comes to the second step, there is a crucial difference between this theoretically driven and voluntarily produced type of limited diversity and the one that naturally occurs: in the latter case, we have to make educated guesses about the outcome of the non-existing combinations of causal conditions whereas in the former case we can assume the irrelevance of the outcomes of all the excluded combinations in the following analytical step because these combinations do not exist as a structural context that foster the outcome.

In essence, what we do by analyzing the distant factors in a first step is in line with the well-known recommendation by Przeworski and Teune (1970: 26-30) to replace ‘proper names’ of social systems by the explanatory factors that account for why causal relations take a particular form within each system.

path dependence and in the notion of a funnel of causality. The common idea is that distant factors are believed to provide the framework, or, the context, in which the close factors are embedded and without which the causal impact of close conditions on the outcome cannot be fully understood.

Figure 1: The two-step fs/QCA module



Our second step (2a) starts with the formulation of hypotheses on the effect of certain close factors in specific structural contexts. This implies that there are at least as many context specific hypotheses and subsequent analyses on the effects of close factors as there are contexts found in the first step. Note the advantages of the hypotheses developed at this stage: they allow for conjunctural causation both within and between close and distant factors as well as for equifinality. Note also that this is only possible because of the first, purely distant factor-based analysis which has reduced the set of the outcome-enhancing structural contexts to a manageable number.

Having formulated hypotheses on the effect of the close factors in each structural context, we run separate fs/QCA analyses for each of them (2b). That is to say, each single analysis consists of all the close factors plus the respective subset of distant factors that define one of the several contexts that make the outcome possible. There might be different solutions for each structural context, i.e., it is possible that various different combinations of close factors link a structural context to an outcome. Of course, the aim is not to find one explanation for each single case, that is to say, to conclude that every case is a ‘unique’ case.²² Instead, the logic of our two-step approach is most adequate to produce middle-range theories (for middle-range theories, see Thelen (2002: 95), Esser (2002), or, classically, Merton (1957)).

5.3 *An application of the two-step fs/QCA approach*

In order to explain our *two-step fs/QCA approach* better, we apply it to some illustrative data. The research field we have chosen is the Consolidation of Democracy (CoD). In this subfield of social science, not only is the number of competing theories, hypotheses and variables exceptionally large, but also is the number of cases is most likely to range somewhere between 10 (in the case of regional approaches) and around 60 (the whole universe of third wave democratizing countries). Very often, this leads to the problem of “many variables-small N,” and statistical approaches are often limited to focus only on a small subset of possible causal conditions for which the above-mentioned rather atheoretical assumptions of linear, additive, and unifinal effects have to be made. Of course, our methodological argument is not limited to the study of CoD but suits most of the comparative research topics equally well.

Depending on the way they are counted, it is easy to come up with more than two handfuls of different hypotheses on CoD. Following our above discussion of distant and close causal conditions, one way of giving some order to these factors is to analytically separate two opposing theoretical strands. On the one hand are explanations based on spatio-temporally distant (deep, structural, long-lasting,

²² In order to avoid this, the technical remedies for reducing the complexity of QCA results introduced above can be applied.

background) conditions²³ and, on the other, spatio-temporally close (shallow but not necessarily always actor-oriented factors and/or discrete, single events) causal conditions.²⁴ Figure 5 illustrates the fact that behind each of these two labels, a variety of hypotheses is hidden.

Figure 5: Close and distant factors of CoD

(a) Some distant factors for CoD formulated in fuzzy set hypotheses:

The more a country belongs to the set of countries that are ...

- socially and economically developed²⁵ ...
- dominated by Christian instead of Muslim religion²⁶ ...
- ethno-linguistically homogeneous²⁷ ...

²³ By and large, distant structural conditions are those characteristics of the cases that do not change easily over time or that cannot change under any circumstances. This means that they lie beyond the actors' scope of influence. In contrast, close factors are closer to the outcome, both in terms of time and/ or space and, consequently, also in terms of their causal effect on the outcome. They are more likely to change over time. However, what are close and what are distant factors is flexible and depends on the kind of research question asked and the design chosen.

Moreover, it is important to underline that close conditions are not necessarily contingent, actor-centered decisions and constellations, as suggested by Mahoney/Snyder (1999) . Instead, close factors might equally well include institutional features, economic developments and the like.

²⁴ The notion of 'distance' and 'closeness' has found yet another expression in an ongoing theoretical debate in social science, namely, the discussion between behavioralists (or rational-choice scholars in the widest sense) and (neo-)institutionalists (for excellent reviews of this rather fuzzily perceived theoretical school, see Hall/Taylor 1996, Immergut 1998). Whereas the former can be seen as representatives of a paradigm which emphasizes 'close' conditions of social action, the latter have concentrated more on big and distant processes (for this discussion, see Somers 1998); some scholars adhering to the historical variant of (neo-)institutionalism even go so far as to argue that history (which is absolutely unchangeable) is the ultimate cause of social outcomes (Kato 1996: 563, Somers 1998: 723). Recent work has tried to overcome this distinction by finding a balance between the two camps, prominently, for example, Mayntz/Scharpf (1995) and Scharpf (1997) with their actor-centered institutionalism.

²⁵ This relationship is expressed by the frequently cited phrase by Lipset: "The more well-to-do a nation, the greater the chances that it will sustain democracy" (Lipset 1981: 31). Over the past decades, this probabilistic connection between wealth and democracy has been shown with ever- more sophisticated statistical methods and improved data. (see, e.g. Lipset/Seong/Torres 1993 or Przeworski/Alvarez/Cheibub/Limongi 1996). Yet the question of the direction of causality, either from democracy to wealth, or vice-versa has not been answered conclusively.

²⁶ E.g. Huntington (1991), Inglehart (1998), Gasiorowski/Power (1998), or Merkel (1999: 97ff.).

²⁷ E.g. Dahl (1971: 105-123), Muller/Seligson (1994), Inglehart (1997), Gasiorowski/Power (1998), Lijphart (1999), Welzel (1999: 86ff.), or Evans (2000).

- experienced with democracy²⁸ ...
- characterized by Anglo-Saxon colonial heritage²⁹)
- characterized by a soft authoritarian instead of a harsh totalitarian past³⁰ ...
- characterized by having passed through a pacted transition³¹ ...
- close to the centers of Western hemisphere countries³² ...
- late-comers in the third wave³³ ...

... the more likely it is to belong more fully to the set of consolidated democracies.

(b) Some close factors for CoD formulated in fuzzy set hypotheses:

The...

- weaker and not hierarchically organized the military is³⁴ ...
- more the governmental system contains parliamentary features³⁵ ...
- more proportional and not majoritarian the electoral system is³⁶ ...
- more easily that IMF austerity programs can be implemented³⁷ ...
- more effectively economic reforms can be put into practice³⁸ ...
- more foreign aid a country receives³⁹ ...

... the more likely it is to belong more fully to the set of consolidated democracies.

²⁸ E.g. Barro (1994), Muller (1995), or Gasiorowski/Power (1998).

²⁹ E.g. Weiner (1987: 18-22), Diamond/Linz/Lipset (1989: 172ff.), Muller (1995), or Reisinger (1999).

³⁰ E.g. Slater/Schutz/Dorr (1993: 43-45), or Linz/Stepan (1996).

³¹ E.g. Karl/Schmitter (1991). For critique on their hypotheses, see Bunce (1999), the same as McFaul (2002) for an interesting attempt to contextualize the effect of pacts on CoD.

³² For a broad assessment of international factors of third wave democratization, see Linz/Stepan (1996: 72ff.), Pridham (1997), or Zielonka/Pravda (2001). Especially on the closeness to the West, see Reisinger (1999).

³³ On the topic of *Zeitgeist*, snowballing and diffusion, see Huntington (1991), Slater/Schutz/Dorr (1993), or Pridham (1997). A promising large- N approach to the diffusion effect is Brinks/Coppedge (1999).

³⁴ E.g. Linz/Stepan (1996) or Przeworski/Alvarez/Cheibub/Limongi (1996).

³⁵ E.g. Linz (1990a, 1990b) or Shugart/Carey (1992), for a refinement of the initial hypothesis, see Nohlen/Fernández (1991), Nohlen/Thibaut (1996), or Mainwaring/Shugart (1997).

³⁶ E.g. Nohlen/Kasapovic () and Mainwaring (1994) as an attempt to model the interaction effect of presidential systems with a multiparty system and undisciplined parties. See Frye (1997) and Metcalf (2000) indices of presidential power.

³⁷ Data on this variable can be found in Ragin (2000: 263ff.).

³⁸ E.g. Przeworski (1991), Haggard/Kaufman (1992), Bunce (1999), or Alonso/Maravall (2001).

³⁹ E.g. Schmitter/Brouwer (1999).

Both the distinction between distant and close factors and the claim to combine them is common in many research areas. In the field of democratization studies this claim has been made by Bunce (1999: 7), Gasiorowski/Power (1998), Karl (1990), Kitschelt (1992), Lipset (1993:16ff.), O'Donnell/Schmitter (1986), Zhang (1994), to mention only a few. However, due to several problems at the (meta)theoretical, empirical-practical, and methodological levels, this type of combination is a difficult and rarely realized task. Consequently, very little progress has been made in integrating the enormous number of approaches and findings into a broader and more coherent set of theories on CoD (Munck 2000:19ff, Munck 2001). That is, to say, despite the fact that the phenomenon of CoD is known to be characterized by causal heterogeneity/equifinality and conjunctural causation/interaction effects, the rich literature has not yet been used to create 'thick and general theories' (Munck 2001), i.e. theories that are context-sensitive and generalisable at the same time, and which combine distant structural conditions with close causes.⁴⁰

5.3.1 The data

We are thankful to Mark Gasiorowski and Timothy Power who generously shared their data set on CoD. It is nevertheless important to underline that the subsequent analysis is not intended to be a reproduction of their analysis (Gasiorowski/Power 1998) with a different method. First of all, our article aims at presenting a general *methodological* argument. Any *substantive* contribution to the research on CoD would require both a deeper theoretical discussion on the causes for CoD and, most prominently, more careful translations of Gasiorowski's and Power's (metric, ordinal, and nominal) variables into fuzzy set scores. Furthermore, Gasiorowski/Power apply a logistic regression, and, thus, their dependent variable CoD is dichotomous. Our translation of their dichotomy into a 7-category fuzzy set was very often based on an eye-balling process and,

⁴⁰ There might be good reasons for this situation, such as that CoD is a relatively young research topic and deals with a global macro-phenomenon. Additionally, it has been argued that "(1) No single factor is sufficient to explain the development of democracy in all countries or in a single country. (2) No single factor is necessary to the development of democracy in all countries. (3) Democracy in each country is the result of a combination of causes. (4) The combination of causes producing democracy varies from country to country" (Huntington 1991: 38). This is another way of saying that there are neither necessary nor sufficient factors and that the causal conditions for CoD are characterized by conjunctural causation and equifinality. As we argue in this article, the choice of the appropriate methods is crucial for the development of thick theories, with the standard statistical approaches often serve as obstacles rather than facilitators.

thus, our data got further decoupled from the original version and from ‘reality’.⁴¹ Finally, we do not include the entire set of variables Gasiorowski and Power use in their analysis, mainly to circumvent the problem of missing values. Due to this decision, we excluded, for example, such an important variable like GDP per capita, which not only appears as a predictor of CoD in Gasiorowski/Power (1998), but is also frequently mentioned in the broader literature as one of the most important condition for CoD.

We base our attempt to explain CoD in 39 cases out of which 14 are more inside than outside the set of consolidated countries (fuzzy scores > 0.5), 23 more outside (fuzzy scores < 0.5) and 2 cases that are neither in nor out (fuzzy score = 0.5). We employ a total of eight independent variables. Four of them are distant factors and four are close factors of CoD. The distant fuzzy set causal conditions are: degree of Muslim population (MOSLEM), degree of ethno-linguistic fractionalization of society (ETHNO), degree of regional democratization (REGDEM), and the amount of prior experiences with democracy (PRIDEM). The close factors are: university enrolment rate (UNIV), the dummy variable presidential system (PRESI), the amount of effective number of parties (PARTIES), and the ratio of military personnel per capita (MILIPER).⁴² All eight causal conditions are believed to have an impact on the outcome CoD.

5.3.2 Studying CoD with the two-step fs/QCA approach

Following our *two-step fs/QCA module*, the first task is to formulate hunches about which (combination of) distant factors constitute contexts that foster CoD (1a). The most basic hunch we make is that no single distant factor alone provides such a context. In line with the general argument of conjunctural causation, it is expected that certain combinations of factors offer CoD fostering environments. In other words, we do not expect to find a single necessary and sufficient context, but combination(s) of conditions. The most secure hunch is to state that if all four conditions are fully fulfilled, than this constitutes a context in which CoD is likely to occur:⁴³

moslem • ethno • REGDEM • PRIDEM • UNIV • PRESI • parties • miliper → COD

⁴¹ Nevertheless, our data set is available upon request; however, it should only be used to replicate and check the analyses subsequently discussed and not for further substantial research on CoD.

⁴² With regard to the generating of fuzzy set scores out of their data, we decided to translate all variables into 7-categories fuzzy set scores, with the exception of the presidentialism variable, which we kept in its original dichotomous format.

⁴³ The convention is that capital letters indicate the presence (fuzzy set scores higher than 0.5) of a concept and small letters its absence (fuzzy set scores lower than 0.5) in a given case.

Clearly, such a model suffers from overdetermination (and theoretical unattractiveness) and the aim and strength of QCA is to reduce this model to more succinct and parsimonious expressions. It seems reasonable to expect that being a country with a large majority of Muslim citizens, together with a high ethno-linguistic fractionalization, provides serious challenges to a young democratic political system, making it very difficult for it to become consolidated.⁴⁴ Formulated differently, we expect that not being ethno-linguistically fractionalized and not being a Muslim country together provides an environment that fosters CoD. An additional (note, not an alternative) hunch is that CoD should be more likely to occur in countries that have prior experiences with democracy and that, at the same time, are surrounded by democratic neighbors. Formally, these hunches can be expressed as follows:

$$\begin{aligned} \text{moslem} \bullet \text{ethno} &\quad \rightarrow \quad \text{COD} \\ \text{PRIDEM} \bullet \text{REGDEM} &\quad \rightarrow \quad \text{COD} \end{aligned}$$

In the next step (1b), it is empirically tested whether these hunches represent the situation in our data.⁴⁵ In order to do so, we analyze all four distant conditions together at the same time. And in fact, the result we obtain is not over-complex and appears as follows:

$$\begin{aligned} (1) \text{ moslem} \bullet \text{ethno} \bullet \text{REGDEM} &\quad \rightarrow \quad \text{COD} \\ (2) \text{ moslem} \bullet \text{PRIDEM} &\quad \rightarrow \quad \text{COD} \end{aligned}$$

In plain words, in our data set, consolidated democracies are ‘usually’ found in two different ‘distant’ contexts: (1) Either in countries with a low percentage of Muslim citizens together with a low degree of ethno-linguistic fractionalization and the presence of many democratic neighbor states, or (2) in countries with a low percentage of Muslim citizens in conjunction with prior democratic

⁴⁴ See Fish (2002) for a recent large-N study on the negative impact of an Islamic religious tradition on the prospects for democracy.

⁴⁵ Above we described several parameters that help to determine the complexity of the results obtained. We opt for a benchmark proportion of 0.7, a significance alpha level of 0.05, and a fuzzy adjustment value of 0.17. To scholars used to work with standard statistical techniques, these parameters might seem rather relaxed. Notice though that it takes, for instance, seven confirming and no disconfirming cases to pass an even easier test with a benchmark proportion of 0.6 and an alpha level of 0.05. This is a relatively large number compared to the midsize N to which fs/QCA should best be applied. Hence, we apply rather strict probabilistic criteria but, at the same time, we allow solutions to pass that only display a benchmark proportion of 0.7 instead of a full membership. In addition, the fuzzy adjustment further relaxes the test parameters and makes less complex solutions likely to result from our analysis.

In order to have any effect, the fuzzy adjustment always has to be at least equal to the smallest fuzzy unit. In the case of 7 fuzzy categories, the smallest unit, i.e. the step from one fuzzy category to another is 0.17.

experiences. In addition, the program displays the absence of a high percentage of Muslims as a ‘quasi-necessary’⁴⁶ condition. Only two simplifying assumptions⁴⁷ had to be made in order to arrive at this result.

From this result, several conclusions can be drawn. The chances to consolidate democracy in a Muslim dominated country are minimal (at least if we look at our 39 countries in the data set), or, put the other way round, not being Muslim dominated is a usually necessary feature for a CoD fostering context. However, at the same time, it is not sufficient. It has to be accompanied by other distant factors. Secondly, in addition to the variable ‘moslem’, all the other three distant factors represent relevant characteristics of a CoD fostering context, as well. However, none of them is needed in all cases of successful CoD (i.e. none of them is usually necessary) and none of them alone is enough to constitute a CoD friendly context (i.e. none of them is usually sufficient). Hence, the result we obtained from our first fs/QCA step is a paradigmatic example of a complex causal statement that encompasses conjunctural causation and equifinality. In seven cases, it is usually sufficient to be a non-Muslim country and to have prior democratic experiences to describe the CoD fostering context. In other six cases, it does not make a difference whether a country has or has not prior democratic experiences, as long as it is non-Muslim, non-ethno-linguistically fractionalized, and if it is surrounded by democratic neighbors.

Following our *two-step fs/QCA module*, the next step to take (2a) is to formulate hypotheses about which (combinations) of our four close factors have positive effects on CoD in either of the two CoD fostering contexts. At this stage, educated theoretical reasoning is most crucial. However, since the purpose of this paper is not to contribute substantively to the research field of CoD, but to suggest a new methodological module, we do not concentrate on a more careful development of distant-close hypotheses.

The empirical analysis in the next step (2b) puts these distant-close hypotheses to an empirical test. In order to run the distant-close analysis, we first create data sets for each distant context. This means that each data set only includes those cases that display the respective context variables.⁴⁸ The most likely outcome is that some of them will be confirmed while others will not be empirically supported. Note, however, not only do the unpredicted empirical results serve as

⁴⁶ The statement of ‘usually necessary’ or ‘quasi-necessity’ owes to the fact that we are applying probabilistic criteria, i.e. a certain causal factor might be necessary in many cases but not in all of them (Ragin 2000).

⁴⁷ The simplifying assumptions were made for the non-existing combinations of variables (a) ‘fsmoslem • FSETHNO • fsregdem • FSPRIDEU’ and (b) ‘fsmoslem • FSETHNO • FSREGDEM • FSPRIDEU’.

⁴⁸ In addition, the values for the distant factors are all set to their respective extreme values (i.e. either 1 or 0). This follows logically from our argument that the contexts found in step 1 are fostering and therefore necessary for CoD. Setting their values to 0 or 1 avoids that the underlying algorithm of fs/QCA cancels one or more of these distant conditions out.

a source for disconfirming hypotheses, but they themselves are also the basis for formulating new causal arguments through inductive reasoning.⁴⁹

We first analyze the interaction of close factors in the distant context ‘moslem • ethno • REGDEM’.⁵⁰ The result displays as follows:

$$\text{moslem} \bullet \text{ethno} \bullet \text{REGDEM} \bullet \left\{ \begin{array}{l} \text{PRESI} \bullet \text{parties} \quad \rightarrow \text{COD} \\ \text{PRESI} \bullet \text{UNIV} \quad \rightarrow \text{COD} \\ \text{PRESI} \bullet \text{miliper} \quad \rightarrow \text{COD} \end{array} \right.$$

Three different combinations of close factors connect the distant context described as ‘moslem • ethno • REGDEM’ to the outcome CoD. In each case, the presence of a presidential system is a usually necessary close condition of CoD in such a context.⁵¹ However, the presence of a presidential system alone

⁴⁹ We should mention here that our suggestion of a two-step approach is not completely new, but can be seen as the extension of well-established practices in small-N analyses to a larger number of cases. Looked at from this perspective, our second step can be interpreted as a specific formalized version of ‘pattern matching’ (Campbell 1975). Note also that for the second step other methodological approaches other than QCA could be used. Mahoney/Snyder (1999) and Larsen (2000), for instance, also base their arguments on the distinction of distant and close factors, but discuss other methods for combining them. More specifically, one could set up a game theoretical model for each group of countries that has shown the same structurally defined context leading to CoD (see the volume edited by Blossfeld/Prein (1998) for an extended discussion of how to link game theory with large N analyses; for a discussion of the obstacles to linking game-theoretical approaches with knowledge generated by other methods, see Munck (2000:15f, 240)).

Another methodological option consists in doing several in-depth, case-based, historical analyses. Here, the idea is to select one country from each subgroup of structurally similar countries and to link these structures narratively with the outcome, particularly concentrating on the crucial decisions taken by the most relevant actors. This approach of ‘causal narrative’ (Sewell 1996, Mahoney 2000) or ‘contrasting the context’ (Collier/Mahon 1993: 108, Grassi 2000: 14, fn 6) can contribute to further theory-building if similar patterns of actor constellations and of decisions taken (their timing, sequence and speed) are found in structurally similar countries. However, by and large, due to their focus on events and outcomes, historical narratives are only of limited use for causal analysis (Kitschelt 1999, Mahoney 2000).

⁵⁰ The test parameters remain almost the same, i.e. we use a fuzzy adjustment of 0.17 and a test proportion of 0.7. Only the alpha level is slightly relaxed from 0.05 to 0.1, due to the small number of cases that are analyzed within this context (N=7).

⁵¹ Again, we underline that these results are by no means reliable contributions to the substantial discussions on explaining CoD. The fact that the presence of a presidential system displays as a necessary close condition of CoD in the distant context ‘moslem • ethno • REGDEM’ might run against the common wisdom in the literature and, hence, we interpret it as an artefact of the accumulation of several inaccurate codings we did and a biased case selection (all countries described by this context are Latin American democracies) and not as a proof of the inadequacy of our method. Notice also that in the second distant context we

does not ‘explain’ why this distant context allows for CoD to occur. In addition, the presence of either a high level of university enrolment or a low number of effective parties is needed to formulate a logical expression that is usually sufficient to ‘explain’ the outcome. Only four simplifying assumptions⁵² were needed to arrive at this conclusion.

The analysis of the close factors in the second CoD fostering context (moslem • PRIDEM) gives the following results.⁵³

$$\text{moslem} \bullet \text{PRIDEM} \bullet \left\{ \begin{array}{l} \text{UNIV} \quad \rightarrow \text{COD} \\ \text{miliper} \quad \rightarrow \text{COD} \end{array} \right.$$

There are two different close factors that link the distant context of a non-Moslem society together with prior democratic experiences to the outcome CoD: Either the presence of a high university enrolment or the absence of a high ratio of military personnel per capita is needed to ‘explain’ CoD under these distant conditions. There was a total of nine simplifying assumptions that had to be made in order to produce this result. This is more than in the previous analysis but the solutions are also less complex. Two out of four close factors are superfluous for the explanation of CoD in this context, namely the type of governmental system and the number of effective parties.

In sum, with our two-step module we found that CoD can be explained by five different distant-close equations, each of which applies to different subset of cases. Undoubtedly, the usefulness of the methodological tool we suggest in this paper, rests on the question, how much of a theoretical sense can be made of the results obtained. The complexity of results obtained with the two-step fs/QCA approach goes well beyond those usually produced by regression analysis. But, as we insisted throughout this article, there is a need for pushing our theoretical knowledge to more subtle statements. Coppedge nicely formulates the need for assuming complex causation: “Although I would be as delighted as any other political scientist to discover simple, elegant, and powerful explanations, I think the common sense of the layperson is correct: we must presume that politics is extremely complex, and the burden of proof rests on those who claim that it is not” (Coppedge 2000b: 12).

analyze below, the type of government does not play a role at all and is discarded as a close factor for CoD.

⁵² These are: (a) univ • PRESI • parties • miliper, (b) univ • PRESI • PARTIES • miliper, (c) UNIV • PRESI • parties • MILIPER, and (d) univ • PRESI • PARTIES • MILIPER.

⁵³ Due to the even lower number of cases (N=6), we had to relax the test criteria slightly, whereas the alpha level and the fuzzy adjustment remained the same (0.05 and 0.17 respectively), we lowered the criteria for the membership score from 0.7 to 0.65.

In order to get to the 5 equations, a total of 15 simplifying assumptions had to be made throughout the whole stepwise procedure. Had we not employed our *two-step fs/QCA approach* and had, instead, analyzed all 8 independent variables in one step, the analysis would have resulted in 7 distant contexts and a total of 12 different equations, for which 112 simplifying assumptions had to be made. Not only is this solution more complex, but it also rests on many more simplifying assumptions. Both features contribute to the fact that the result from a one-step procedure are less theory-based and, consequently, less reliable for inferring causality. Hence, the application of fs/QCA in a two-step manner opens the door for informed theoretical thinking and, by doing so, enables the investigator to reach less complex solutions with more confidence in their reliability.

6 Conclusions

In this paper we discussed the new comparative method fs/QCA as a tool for comparative studies with a mid-sized number of cases. We focused on the issue of how to draw causal inference from the results obtained when this method is applied. In our discussion, we started by showing that QCA is more sensitive to the issue of complex causality than are both case studies and standard statistical techniques.

Next, we demonstrated that some of the critiques of QCA do not apply to its extended version fs/QCA. Thanks to the integration of fuzzy set logic, variables no longer have to be dichotomous and the results obtained are not deterministic but contain probabilistic notions.

We then argued that these developments increase the possibilities for drawing causal inference with fs/QCA more confidently. In order to achieve this aim, we suggested a specific use of fs/QCA, which we labeled the *two-step fs/QCA approach*. Making use of theory and adopting the idea of limited diversity (which is usually seen as a ‘problem’ of QCA), we distinguished between distant and close factors. In this way, the two-step approach allows for the formulation and the testing of complex (context-sensitive, subtle) but, at the same time, generalizable hypotheses through a stepwise combination of deductive and inductive reasoning. We hold that both standard statistical techniques and classical case studies are less suitable for combining causal complexity and generalizability in order to produce middle-range theories than is fs/QCA - if the latter is applied through the *two-step fs/QCA approach*.

Concluding, our proposed supplement to fs/QCA enhances the role of theory. It is clear that the distinction between distant and close variables (not least their definition!) requires a high level of theoretical knowledge and that therefore research may become more vulnerable to external critique. Hence, we hasten to point out that a methodological tool never be relied on, by itself, to produce good

causal statements. What is inevitably needed are well-grounded theoretical arguments that have to be developed during the research process, something we could not accomplish with our empirical example in the framework of this paper. If fs/QCA is mechanically applied, it will not work. However, this is as true for fs/QCA as for any other method used in comparative research.

Bibliography

- ALMOND, Gabriel Abraham (1988): Separate Tables: Schools and Sects in Political Science. *Political Science and Politics*, vol. xxi (4), 828-42
- ALONSO, Sonia/MARAVALL, Jose Maria (2001): *Democratizations in the European Periphery*, Instituto Juan March de estudios e investigaciones, Estudios 169. Madrid
- AMENTA, Edwin/POULSEN, Jane D. (1994): Where to Begin. a Survey of Five Approaches to Selecting Independent Variables for Qualitative Comparative Analysis. *Sociological Methods & Research*, vol. 23 (1), 22-53
- BARRO, Robert J. (1994): *Democracy and Growth*, NBER, NBER working papers 4909. Cambridge
- BENNETT, Andrew (1999): *Causal Inference in Case Studies: From Mill's Methods to Causal Mechanisms*, Presented at the American Political Science Association Conference, Atlanta, Georgia
- BENNETT, Andrew/BARTH, Aharon/RUTHERFORD, Ken (forthcoming): Do We Preach What We Practice? a Survey of Methods in Political Science Journals and Curricula. *Political Science and Politics*,
- BERG-SCHLOSSER, Dirk/DE MEUR, Gisèle (1997): Reduction of Complexity for Small-N Analysis: a Stepwise Multi-Methodological Approach. *Comparative Social Research*, vol. 16, 133-162
- BLOSSFELD, Hans-Peter/PREIN, Gerald (eds.) (1998): *Rational Choice Theory and Large-Scale Data Analysis*. Boulder: Westview Press
- BRAUMOELLER, Bear F. (1999): *Statistical Estimation in the Presence of Multiple Causal Paths*, Presented at the Midwest Political Science Association Conference, Chicago, Il., 15-17. April
- BRINKS, Daniel/COPPEDGE, Michael (1999): *Patterns of Diffusion in the Third Wave of Democracy*, University of Notre Dame, Department of Government and International Studies, Notre Dame
- BUNCE, Valerie (1999): The Political Economy of Postsocialism. *Slavic Review*, vol. 58 (4), 756-793
- CAMPBELL, Donald T. (1975): Degrees of Freedom and the Case Study. *Comparative Political Studies*, vol. 9, 178-193
- CARVER, Ronald P. (1978): The Case Against Statistical Significance Testing. *Harvard Educational Review*, vol. 48 (3), 378-399
- COLLIER, David (1993): The Comparative Method. in: FINIFTER, Ada (ed.): *Political Science. The State of the Discipline II*. Washington: The American Political Science Association, 105-119
- COLLIER, David/MAHON, James E. Jr. (1993): Conceptual "Stretching" Revisited: Adapting Categories in Comparative Analysis. *American Political Science Review*, vol. 87 (4), 845-855

- COLLIER, David/MAHONEY, James (1996): *Insights and Pitfalls: Keeping Selection Bias in Perspective*, University of California, Department of Political Science, Berkeley
- COLLIER, David/SEAWRIGHT, Jason/MUNCK, Gerardo (forthcoming): The Quest for Standards: King, Keohane, and Verba's Designing Social Inquiry. in: BRADY, Henry E., COLLIER, David (eds.): *Rethinking Social Inquiry: Diverse Tools, Shared Standards*. Lanham: Rowman&Littlefield
- COLLIER, Ruth Berins/COLLIER, David (1991): *Shaping the Political Arena. Critical Junctures, the Labor Movement and Regime Dynamics in Latin America*. Princeton: Princeton University Press
- COPPEDGE, Michael (2000a): Combining large- and small-n approaches in democratization research. <http://www.nd.edu/~mcoppedg/crd/COLLMUNC.htm> (27.5.2002a)
- COPPEDGE, Michael (2000b): How the large N could complement the small in democratization research. <http://www.nd.edu/~mcoppedg/crd/cpmeth.htm> (8.8.2001b)
- DAHL, Robert Alan (1971): *Polyarchy Participation and Opposition*. New Haven: Yale University Press
- DIAMOND, Larry/LINZ, Juan J./LIPSET, Seymour Martin (1989): *Democracy in Developing Countries: Latin America*. Boulder, London : Lynne Rienner Publisher
- ECKSTEIN, Harry (1975): Case Study and Theory in Political Science. in: GREENSTEIN, Fred I., POLSBY, Nelson W. (eds.): *Handbook of Political Science*. Massachusetts etc.: Addison-Wesley, 79-137
- ESSER, Hartmut (2002): Was könnte man (heute) unter einer "Theorie mittlerer Reichweite" verstehen? in: MAYNTZ, Renate (ed.): *Akteure Mechanismen Modelle*. Frankfurt a.M./New York: Campus, 128-150
- EVANS, Geoffrey (2000): *Explaining Ethics Polarization Over Attitudes Towards Minority Rights in Eastern Europe. a Multilevel Approach*, Instituto Juan March de Estudios e Investigaciones, Estudios 146. Madrid
- FISH, M. Steven (2002): Islam and Authoritarianism. *World Politics*, vol. 55 (October), 4-37
- FRYE, Timothy (1997): A Politics of Institutional Choice: Post-Communist Presidencies. *Comparative Political Studies*, vol. 30 (5), 523-552
- GASIOROWSKI, Mark J./POWER, Timothy J. (1998): The Structural Determinants of Democratic Consolidation. *Comparative Political Studies*, vol. 31 (6), 740-771
- GOLDTHORPE, John H. (1997): Current Issues in Comparative Macrosociology: a Debate on Methodological Issues. *Comparative Social Research*, vol. 16, 1-26
- GRASSI, Davide (2000): *Democratic Consolidation in Contemporary Political Regimes: The Case of Latin America*, Paper prepared for the ECPR Joint

- Sessions, Workshop 4, Copenhagen, Denmark, April 14-19
- HAGGARD, Stephan/KAUFMAN, Robert R (1992): *The Politics of Economic Adjustment : International Constraints, Distributive Conflicts, and the State*. Princeton, N.J : Princeton University Press,
- HALL, Peter A./TAYLOR, Rosemary C. R. (1996): Political Science and the Three New Institutionalisms. *Political Studies*, vol. 44, 936-957
- HUNTINGTON, Samuel P (1991): *The Third Wave. Democratization in the Late Twentieth Century*. Norman: University of Oklahoma Press
- IMMERGUT, Ellen M. (1998): The Theoretical Core of the New Institutionalism. *Politics & Society*, (26), 1
- INGLEHART, Ronald (1997): *Modernization and Postmodernization Cultural, Economic and Political Change in 43 Societies*. Princeton: Princeton University Press
- INGLEHART, Ronald (1998): Die "Schwedenisierung" der Welt. Wertesysteme in globaler Perspektive. *WZB-Mitteilungen*, (81), 5-8
- KARL, Terry Lynn (1990): Dilemmas of Democratization in Latin America. *Comparative Politics*, vol. 23 (1), 1-21
- KARL, Terry Lynn/SCHMITTER, Philippe C. (1991): Modes of Transition in Latin America, Southern and Eastern Europe. *International Social Science Journal*, vol. 128, 267-282
- KATO, Junko (1996): Review Article: Institutions and Rationality in Politics. Three Varieties of Neo-Institutionalists. *British Journal of Political Science*, vol. 26, 553-582
- KING, Gary/KEOHANE, Robert O./VERBA, Sidney (1994): *Designing Social Inquiry. Scientific Inference in Qualitative Research*. Princeton: Princeton University Press
- KITSCHOLT, Herbert (1992): Political Regime Change: Structure and Process-Driven Explanations? *American Political Science Review*, vol. 86 (4), 1028-1034
- KITSCHOLT, Herbert (1999): *Accounting for Outcomes of Post-Communist Regime Change. Causal Depth or Shallowness in Rival Explanations*, Paper prepared for delivery at the 1999 annual meeting of the American Political Science Association, Atlanta, September 1-5
- KLIR, George J./CLAIR, Ute St./YUAN, Bo (1997): *Fuzzy Set Theory. Foundations and Applications*. Upper Saddle River, NJ: Prentice Hall PTR
- LARSEN, Stein Ugelvik (2000): Challenges to Democratic Theory. in: LARSEN, Stein U. (ed.): *The Challenges of Theories on Democracy. Elaboration Over New Trends in Transitology*. New York: Columbia University Press, 447-483
- LAZARSFELD, Paul (1937): Some Remarks on Typological Procedures in Social Research. *Zeitschrift für Sozialforschung*, vol. 6, 119-139

- LIEBERSON, Stanley (1992): Small N's and Big Conclusions: An Examination of the Reasoning in Comparative Studies Based on a Small Number of Cases. in: RAGIN, Charles C., BECKER, Howard S. (eds.): *What Is a Case? Exploring the Foundations of Social Inquiry*. Cambridge: Cambridge University Press, 105-118
- LIJPHART, Arend (1971): Comparative Politics and Comparative Method. *American Political Science Review*, vol. 65 (3), 682-693
- LIJPHART, Arend (1975): The Comparable-Cases Strategy in Comparative Research. *Comparative Political Studies*, vol. 8 (2), 158-177
- LIJPHART, Arend (1999): *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries*. New Haven, CT ; London:
- LINZ, Juan José (1990a): The Perils of Presidentialism. *Journal of Democracy*, vol. 1 (1), 51-69
- LINZ, Juan José (1990b): The Virtues of Parliamentarianism. *Journal of Democracy*, vol. 1 (1), 84-91
- LINZ, Juan José/STEPAN, Alfred (1996): *Problems of Democratic Transition and Consolidation Southern Europe, South America and Post-Communist Europe*. Baltimore: Johns Hopkins University Press
- LIPSET, Seymour Martin (1981): *Political Man. The Social Base of Politics*. extended edition ed. Baltimore
- LIPSET, Seymour Martin (1993): The Social Requisites of Democracy Revisited. *American Sociological Review*, vol. 59 (1), 1-22
- LIPSET, Seymour Martin/SEONG, Kyoung-Ryung/TORRES, John Charles (1993): A Comparative Analysis of the Social Requisites of Democracy . *International Social Science Journal*, vol. 45, 155-175
- MAHONEY, James (2000): Strategies of Causal Inference in Small-N Analysis. *Sociological Methods & Research*, vol. 28 (4), 387-424
- MAHONEY, James/SNYDER, Richard (1999): Rethinking Agency and Structure in the Study of Regime Change. *Studies in Comparative International Development*, (Summer), 3-32
- MAINWARING, Scott (1994): Presidentialism, Multiparty Systems, and Democracy: the Difficult Equation . *Comparative Political Studies*, vol. 26 (4), 198-228
- MAINWARING, Scott/SHUGART, Matthew S. (1997): Juan Linz, Presidentialism, and Democracy. A Critical Appraisal. *Comparative Politics*, vol. 29 (4), 449-471
- MAYNTZ, Renate/SCHARPF, Fritz W. (1995): Der Ansatz des akteurzentrierten Institutionalismus. in: MAYNTZ, Renate, SCHARPF, Fritz W. (eds.): *Gesellschaftliche Selbstregulierung und politische Steuerung*. Frankfurt a.M., 39-72
- MCFAUL, Michael (2002): The Fourth Wave of Democracy and Dictatorship.

- Noncooperative Transitions in the Postcommunist World. *World Politics*, vol. 54 (1), 212-244
- MCKEOWN, Timothy J. (1999): Case Studies and the Statistical Worldview. *International Organization*, vol. 53, 161-190
- MERKEL, Wolfgang (1999): *Systemtransformation*. Opladen: Leske und Budrich
- MERTON, Robert K. (1957): On Sociological Theories of the Middle Range. in: MERTON, Robert K. (ed.): *On Theoretical Sociology. Five Essays, Old and New*. New York: The Free Press, 39-72
- METCALF, Lee Kendall (2000): Measuring Presidential Power. *Comparative Political Studies*, vol. 33 (5), 660-685
- MULLER, Edward N. (1995): Economic Determinants of Democracy. *American Sociological Review*, vol. 60, 966-982
- MULLER, Edward N./SELIGSON, Mitchell A. (1994): Civic Culture and Democracy. The Question of Causal Relationship. *American Political Science Review*, vol. 88, 635-652
- MUNCK, Gerardo L. (1998): Canons of Research Design in Qualitative Research. *Studies in Comparative International Development*, vol. 33 (3), 18-45
- MUNCK, Gerardo L. (2000): *Democracy Studies: Agendas, Findings, Challenges*, Department of Political Science, University of Illinois at Urbana-Champaign, Urbana, Il.
- MUNCK, Gerardo L. (2001): The Regime Question. Theory Building in Democracy Studies. *World Politics*, vol. 54 (October), 119-144
- NOHLEN, Dieter/FERNÁNDEZ, Mario (eds.) (1991): *Presidentialismo Versus Parlamentarismo*. Caracas
- NOHLEN, Dieter/KASAPOVIC, Mirjana *Wahlssysteme und Systemwechsel in Osteuropa*. Opladen
- NOHLEN, Dieter/THIBAUT, Bernhard (1996): Transitionsforschung Zu Lateinamerika: Ansätze, Konzepte, Thesen. in: MERKEL, Wolfgang (ed): *Systemwechsel 1. Theorien, Ansätze und Konzepte der Transitionsforschung*. 2 ed. Opladen, 195-228
- O'DONNELL, Guillermo/SCHMITTER, Philippe C. (eds.) (1986): *Transitions From Authoritarian Rule. Some Tentative Conclusions About Uncertain Democracies*. Baltimore: John Hopkins University Press
- PRIDHAM, Geoffrey (1997): *Building Democracy? the International Dimension of Democratisation in Eastern Europe*. Rev ed ed. London: Leicester University Press
- PRZEWORSKI, Adam (1991): *Democracy and the Market Political and Economic Reforms in Eastern Europe and Latin America*. Cambridge: Cambridge U P

- PRZEWORSKI, Adam/ALVAREZ, Michael/CHEIBUB, José Antonio/LIMONGI, Ferdinand (1996): What Makes Democracies Endure. *Journal of Democracy*, vol. 7 (1), 39-55
- PRZEWORSKI, Adam/TEUNE, Henry (1970): *The Logic of Comparative Social Inquiry*. New York, London, Toronto, Sydney: Wiley Interscience
- RAGIN, Charles C. (1987): *The Comparative Method. Moving Beyond Qualitative and Quantitative Strategies*. Berkeley/Los Angeles/London: University of California Press
- RAGIN, Charles C. (1994): *Constructing Social Research. the Unity and Diversity of Method*. Thousand Oaks: Pine Forge Press
- RAGIN, Charles C. (2000): *Fuzzy-Set Social Science*. Chicago: University of Chicago Press
- REISINGER, William R. (1999): *Reassessing Theories of Transition Away From Authoritarian Regimes: Regional Pattern Among Postcommunist Countries*, Annual Meeting of the Midwest Political Science Association, April 15-17, Chicago
- RUESCHEMEYER, Dietrich/HUBER STEPHENS, Evelyn/STEPHENS, John D. (1992): *Capitalist Development and Democracy*. Cambridge: Polity Press
- SCHARPF, Fritz W. (1997): *Games Real Actors Play*. Boulder: Westview Press
- SCHEDLER, Andreas (1997): *Expected Stability. Defining and Measuring Democratic Consolidation*. Wien: Institut für Höhere Studien
- SCHMITTER, Philippe C./BROUWER, Imco (1999): *Conceptualizing, Researching and Evaluating Democracy Promotion and Protection*. Florence: European University Institute
- SEWELL, William H. jr. (1996): Three Temporalities: Toward an Eventful Sociology. in: MCDONALD, Terrence J. (ed.): *The Historic Turn in the Human Sciences*. Ann Arbor: University of Michigan Press, 245-280
- SHUGART, Matthew S./CAREY, John M. (1992): *Presidents and Assemblies: Constitutional Design and Electoral Dynamics*. New York: Cambridge University Press
- SKOCPOL, Theda (1984): Emerging Agendas and Recurrent Strategies in Historical Sociology. in: SKOCPOL, Theda (ed.): *Visions and Methods in Historical Sociology*. Cambridge: Cambridge University Press, 356-391
- SLATER, Robert O./SCHUTZ, Barry M./DORR, Steven R. (eds.) (1993): *Global Transformation and the Third World*. Boulder: Lynne Rienner Publisher
- SMELSER, Neil J. (1976): *Comparative Methods in the Social Sciences*. Englewood Cliffs, NJ: Prentice Hall
- SOMERS, Margaret R. (1998): "We'Re No Angels": Realism, Rational Choice, and Relationality in Social Science. *American Journal of Sociology*, vol. 104 (3), 722-784
- THELEN, Kathleen (2002): The Explanatory Power of Historical

- Institutionalism. in: MAYNTZ, Renate (ed.): *Akteure Mechanismen Modelle*. Frankfurt a.M./New York: Campus, 91-107
- WEINER, Myron (1987): Empirical Democratic Theory. in: WEINER, Myron, OEYBUDUN, Ergun (eds.): *Competitive Elections in Developing Countries*. Duke: Duke University Press, 3-34
- WELZEL, Christian (1999): *Fluchtpunkt Humanentwicklung: Modernisierung, Wertewandel und Demokratie in globaler Perspektive*. Berlin: Habilitationsschrift, eingereicht am Fachbereich Politik- und Sozialwissenschaften der Freien Universität Berlin
- ZHANG, Baohui (1994): Corporatism, Totalitarianism, and Transition to Democracy. *Comparative Political Studies*, vol. 27 (1), 108-136
- ZIELONKA, Jan/PRAVDA, Alex (eds.) (2001): *Democratic Consolidation in Eastern Europe*. Oxford, New York

use QCA to engage in a dialogue between cases and theories – Understand the specific conception of causality conveyed in QCA – multiple conjunctural causation and its practical consequences – Reflect on the usefulness of QCA to reach a certain level of. In a more general way, QCA techniques can be located in a two-dimensional matrix listing numbers of variables and numbers of cases in relation to other supplementary or neighboring approaches (Figure 1.1). Cases and Theory. Techniques of configurational comparative analysis (CCA) are “case oriented” in the sense that they deal with a limited number of complex cases in a “configurational” way (see p. xix). Are you sure you want to remove Improving inference with a “two-step” approach from your list? Improving inference with a “two-step” approach. theory and limited diversity in fs/QCA. by Carsten Q. Schneider. Published 2003 by European University Institute in Badia Fiesolana, San Domenico (FI) . Written in English. Subjects. Methodology, Inference, Social sciences, Political science, Fuzzy sets. Models of causal inference: Going beyond the Neyman-Rubin-Holland theory. Paper presented at the Annual Meetings of the Political Methodology Group. Google Scholar. Braumoeller, B. F. (2017). Between complexity and parsimony: Limited diversity, counterfactual cases, and comparative analysis. In *Vergleichen in der Politikwissenschaft* (pp. 180–197). Heidelberg: Springer. CrossRef Google Scholar. A data envelopment analysis approach for accessibility measures: Simulating operational enhancement scenarios for railway across Europe. *European Transport Research Review*, 7(2), 18. CrossRef Google Scholar. Shahijan, M. K., Rezaei, S., Preece, C. N., & Ismail, W. K. W. (2015).