Chapter 10
Conclusion

Mello, Patrick A. (2021) *Qualitative Comparative Analysis: An Introduction to Research Design and Application,* Washington, DC: Georgetown University Press, Chapter 10.

> *Set-analytic social science is still in its infancy. The Comparative Method was but a first step on an important journey in social scientific inquiry. There has been considerable progress along this path since The Comparative Method was published, but there is still much work to be done.*
>
> Charles C. Ragin[1]

This book laid out the building blocks of Qualitative Comparative Analysis. In its outline, the chapters followed the stages of an ideal-typical research cycle (Figure 1.1). Beginning with matters of research design, subsequent chapter examined causation, causal complexity, and set theory. The core of the approach was contained in the chapters on calibrating sets, measures of fit, and set-theoretic analysis, while the chapters on QCA variants and critiques again widened the perspective.

With this foundation in place, I want to end with recommendations on *good research practice* when engaging with QCA. These are structured around three guiding principles, to serve as orientation marks for users when conducting their own research with QCA. In that sense, the principles do not introduce any new elements, but reflect the exposition of the method as it was presented throughout the book. This is complemented by advice on how to effectively document and communicate QCA results. The chapter closes by pointing to online resources for users to take the next steps, and a look into some recent trends in QCA research.

Good Research Practice

QCA's growing popularity across the social sciences has sparked various formulations of *best practices* for empirical applications (Emmenegger et al. 2013; Greckhamer et al. 2018; Kahwati and Kane 2020; Oana et al. 2021; Rihoux and Ragin 2009; Schneider et al. 2019; Schneider

and Wagemann 2010; 2012). While this is an area of dynamic development, it has led to what can be considered a canon of agreed-upon standards that published studies should adhere to.[2]

Yet, even though a core of best practices exists, there remains a gap between the proscribed standards and actual research practice as documented in published QCA applications (Emmenegger et al. 2013; Mello 2013). This may also explain some of the criticism aimed at QCA, as discussed in Chapter 9, which often does not differentiate between the method's potential and its actual application in published studies (Gerring 2012, 350).

To be sure, when comparing publications, we must keep in mind that disciplinary standards vary in terms of manuscript length, level of methodological detail, referencing, and the usage of illustrations – to name just a few areas of divergence. Naturally, this also affects how QCA applications from different fields look like. What is standard practice in one field may be rather unusual in another field. There are studies that report QCA results within 4,000-word articles and then there are studies of 12,000 words. Surely, the comprehensiveness of the documentation will differ when comparing such publications. That said, there are parts of the analysis that should always be documented, irrespective of manuscript length. Moreover, there is always the option to provide additional documentation in online appendices or supplementary documents.

The core elements of good research practice are adhering to the analytical procedures and sequences described in previous chapters. This includes the appropriate calibration of the raw data using the described techniques, defining conditions and an outcome that are directed towards a qualitative state, and a properly documented set-theoretic analysis that includes measures of fit, a discussion of how logical remainders were treated, which solution term was chosen for the substantive interpretation, and how the cases fit onto the identified solution paths.

Apart from these more or less technical points, I advocate three *guiding principles* that enhance good research practice with QCA: (1) suitability, (2) parsimony, and (3) transparency. These principles reflect the exposition of the method, as laid out throughout this book. *Suitability* means that even before designing a study we should ask whether our research aim warrants a set-theoretic framework. If we expect causal complexity, as in conjunctural causation, equifinality, and causal asymmetry, then QCA will be a suitable choice. By contrast, if the research aims at identifying linear relationships between one or more independent variables and a dependent variable, then non set-theoretic approaches will provide a better methodological fit. Suitability also means that the study should be designed in a way that builds on QCA's strengths, as outlined in Chapter 9: theory should be formulated in set-theoretic language (which may require a translation of probabilistic statements), causal complexity should be addressed and incorporated in theoretical expectations, conditions and outcome should be

calibrated towards meaningful qualitative states, and emphasis should be placed on cases and their configurations, also by returning to the cases after the set-theoretic analysis.

Parsimony means that research design and analysis should strive for simplicity by focusing on essential elements. With QCA, things can swiftly become *very* complex. Just imagine a solution term with six paths that contain seven conditions in various configurations, possibly even with further analyses on alternative outcomes. Such studies often do not succeed in verbalizing and making sense of their findings, especially within the scope of journal articles. The danger then is to limit oneself to a mere "technical interpretation" of the results, without relating the findings back to the academic literature on a topic or broader, more general patterns of social phenomena. I see this as a *crucial drawback* of QCA because overly complex solutions can undermine the broader dissemination of results, beyond a small group of scholars who are versed in set-theoretic methods (and even for these, it might be difficult to make sense of the analytical findings). This also reflects some key points in the criticism discussed in the previous chapter, as voiced by David Collier (2014) or Gerardo Munck (2016). Hence, it should be the aim to design a study and communicate its findings in a way that allows other researchers to grasp the results even without any prior knowledge of QCA.

For example, a focused study with just three or four conditions can provide sound inferential leverage and meaningful findings. Surely, this should not mean that studies with more than four conditions are unmanageable. But rather than increasing the number conditions to cover all aspects of a topic (the misguided notion of adding "controls" for all potentially relevant factors, see Chapter 2 on condition selection), the better strategy will be to *narrow the focus* and thereby limit the number of conditions (for instance, by reducing the analysis to institutional variables, public preferences, organizational features, or individual characteristics, rather than including all of these different groups of explanations in the analysis). Parsimony also applies to calibration rules, which should be conceptualized in a straightforward way, to enhance the interpretability of the eventual findings (what it means to have a case that represents the corresponding set).

Finally, *transparency* is crucial when communicating QCA results in publications. This means that constitutive elements of the analysis and analytical decisions must be documented: the raw data, calibration thresholds, the truth table, the consistency and frequency thresholds, the solution term used for the substantive interpretation, measures of fit, and the treatment of logical remainders. Moreover, there should be an explicit discussion of how the cases were selected and whether other plausible cases could have been included but were not. Finally, there should also be a justification for the selection of conditions and, where applicable, alternative conditions that were not used for the analysis. All of these considerations enhance the *analytical robustness* and *level of confidence* that one can have in the research findings (see Chapter 9).

Transparency also extends to making the raw and calibrated data and R script available on a public repository or journal website, citing the R packages that were used (to enable others to reproduce the analysis with the same packages and to give credit to its authors), and highlighting subjective decisions throughout the analysis (for instance, the decision to drop a certain case because of unavailable or ambiguous data). Table 10.1 summarizes these guiding principles for QCA research.

Table 10.1 Guiding Principles for QCA Research

Guiding Principle	Implications
Suitability	(1) Research aims to explore set relations and causal complexity.
	(2) Conditions and outcome reflect directionality of a given set.
	(3) Theoretical expectations are formulated in set-theoretic terms.
Parsimony	(4) Research design aims for parsimony and conciseness.
	(5) The number of conditions is kept to the feasible minimum.
	(6) Calibration rules are made in a clear and concise manner.
Transparency	(7) All analytical decisions are made explicit.
	(8) All analytical steps are documented in publications.
	(9) Raw data, calibrated data, and R scripts are made available.

Documenting and Communicating QCA Results

Two points raised in the previous section were the documentation and communication of analytical results. What should be entailed in the documentation and how ought this to be done? Even more importantly, how to effectively communicate the findings from a QCA study? Beginning with *documentation*, there is a consensus that, for the sake of transparency and to enable others to comprehend what a study has done, QCA researchers should thoroughly document their data sources, raw and calibrated data, calibration criteria, and the analytical choices made throughout the analysis. Moreover, key elements like the truth table, solution terms, and case membership in individual solution paths should always be reported in publications (Schneider et al. 2019; Schneider and Wagemann 2010). Ideally, these should be part of the main body of text in a journal article or book chapter, but they can also be relegated to appendices. Alternatively, some of these elements can be placed in supplementary documents that are made available online, as on a journal's website or a public repository. However, essentials like the truth table and solution should always be part of the main body of text. To save space, one option is to omit logical remainders from the published truth table and to

provide the complete truth table in an online appendix (in that case there should be a footnote in the former to indicate that the truth table was abbreviated).

Beyond these points, it is considered good practice to provide other relevant information on the analysis in supplementary documents – including descriptive statistics on the conditions and the outcome, histograms on the distribution of set membership scores, XY plots of raw and calibrated data, and results of robustness tests that have been conducted. These help other researchers (and reviewers) in assessing, contextualizing, and reproducing the analytical results. Naturally, the content of such documents varies with the character of the respective study. Applications based on quantitative data and the direct method of calibration should provide descriptive statistics and, potentially, robustness tests with alternative calibration thresholds, whereas studies based on qualitative evidence can use supplementary documents to provide more detailed case narratives. There are numerous examples of such complementary documents, especially among more recent publications (see Böller and Müller 2018; Johais et al. 2020; Kuehn et al. 2017; Mello 2020; Schneider and Maerz 2017; Vis et al. 2013).

Finally, a central task for any QCA study is *communicating* its findings in an effective manner. This is where causal complexity *does* pose a challenge. How do you convey a clear message for readers (and reviewers) when there are multiple "moving parts", complex interrelationships between conditions, and imperfect set relations? Certainly, what should *not* be done is restricting the substantive interpretation to a mere technical description of the analytical results. Yet, undeniably, there are published studies that limit the discussion of their results and overall conclusions to such formalistic, technical accounts.

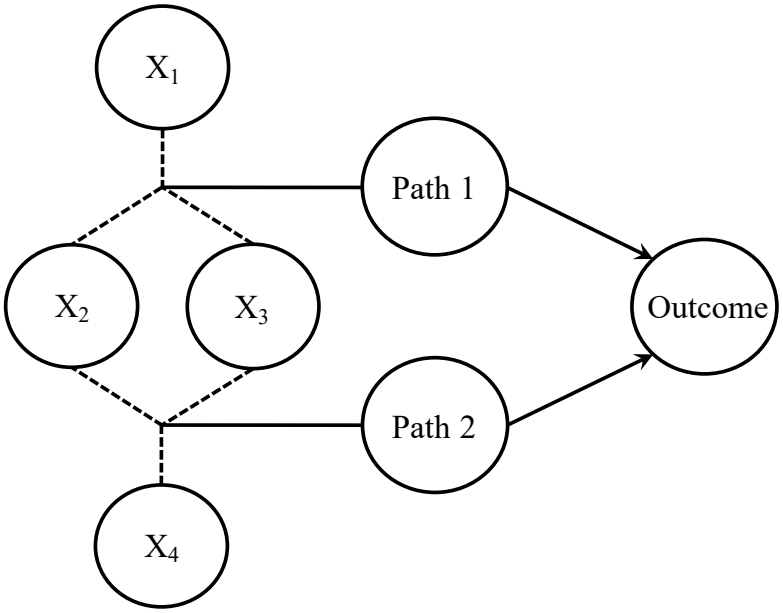
To enhance the communication of QCA results, I have three suggestions that tie in with the principles outlined in the previous section. First, a large part occurs during the framing of the research problem and the development of theoretical expectations. When researchers make an *explicit connection* between their research aims and causal complexity, as the core methodological assumption of QCA, then the substantive interpretation of the analytical findings becomes a matter of contrasting theoretical expectations with the identified set relations.

Tying in with the previous point, one way to enhance the communication of QCA results is via *graphical representation*. This can be equally used to illustrate theoretical expectations and/or the analytical results. For instance, Claude Rubinson (2019) provides a useful compendium of different visualizations for QCA, including Venn and Euler diagrams, treemaps, star charts, radar charts, or branching diagrams. Users can draw from this menu of choices to identify the most suitable visualization for their own research context. More generally, Gary Goertz (2020) develops ways how to visualize complex concept structures – a discussion that resonates very well with QCA studies (see also Goertz 2017).

To provide an example for the graphical representation of causal complexity, Figure 10.1 gives an abstract summary of hypothesized set-theoretic relationships of conjunctural causation and

equifinality, involving four conditions and an outcome (based on Mello 2012). Essentially, the conditions are expected to combine in two distinct paths, both of which lead to the outcome. For each of these paths, the joint presence of three conditions is required, as indicated by the dashed lines. Together, these conditions constitute the paths that bring about the outcome. In this manner, a variety of different set-theoretic expectations can be visualized. The advantage of graphical representation is that it enhances the understanding of larger patterns. For instance, in Figure 10.1 conditions X_2 and X_3 are of central importance – also visually – because these conditions constitute elements in both of the theorized pathways, whereas conditions X_1 and X_4 are peripheral but make distinct contributions to the respective configurations.

Figure 10.1 Visualizing Conjunctural Causation and Equifinality



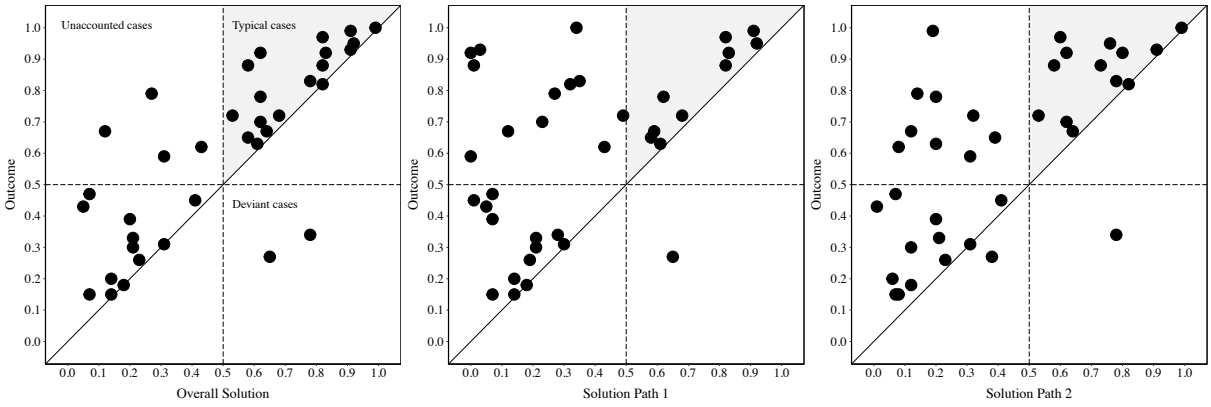
Another way to use graphical representation is by visualizing the solution of the QCA analysis. For example, Figure 10.2 shows the overall solution and the two solution paths for a fuzzy-set QCA study with 36 cases. Here, the common XY plot is enhanced with dashed lines to indicate the *qualitative* difference of whether cases are considered to be rather inside or rather outside the outcome and solution or respective solution path (Schneider and Rohlfing 2013).

The plot emphasizes three kinds of cases. The shaded area in the top right triangle highlights *typical cases* that hold membership in both the outcome and the solution, and consequently, also in at least one of the solution paths. Clearly, in an ideal QCA, most of the cases that show the outcome should appear in the top right corner. By contrast, the top left rectangle holds *unaccounted cases*. These are cases that show the outcome of interest, but which are rather outside the solution term. From a theoretical perspective, these cases are not in themselves problematic – because they do not share the features that are expected to lead toward the outcome – but we

would rather not have too many cases in this area, as this would mean that our explanation cannot account for a large part of the phenomenon we care about.

Then there are *deviant cases* in the lower right rectangle. These are problematic because they conflict with our expectations. Deviant cases hold membership in the QCA solution term but their scores for the outcome are qualitatively lower than expected and suggested by the solution. In an ideal setting, there should be no deviant cases. Yet, in empirical applications, researchers will occasionally identify deviant cases. What is important is that their number should remain small in relation to the number of typical cases. Researchers should also discuss plausible explanations as to why their deviant cases did not show the outcome. If there are too many deviant cases, then the research design and especially the selection of conditions and their conceptualization should be revisited.

Figure 10.2 Visualizing Solutions and Paths



The graphical representation entailed in Figure 10.2 can be a useful starting point for the provision of *case narratives* on typical cases, deviant cases, and/or unexplained cases, depending on which cases appear in the respective study. This part could also emphasize pathway cases (see case selection, Chapter 2), which are cases that are uniquely covered by one of the solution paths. These could also be highlighted separately in the XY plots for the solution paths. Clearly, the extent to which a QCA journal article can go into detail on specific cases is limited. Yet, in order to do justice to the case-oriented nature of QCA, there should at least be illustrative examples of cases for each solution path, so as to illuminate the respective configurations and paths towards the outcome. These can be complemented with additional information provided in appendices. Table 10.2 summarizes these points.

Table 10.2 Documenting and Communicating QCA Results

Documenting and communicating QCA results	
Documentation	(1) Reporting all relevant analytical choices
	(2) Raw data, calibrated data, and calibration criteria
	(3) Truth table with consistency/frequency thresholds, logical remainders, and discussion of their treatment
	(4) Solution terms with measures of fit and case membership in solution paths
	(5) Identification of any typical cases, pathway cases, deviant cases, and unexplained cases
	(6) Descriptive statistics, histograms, XY plots of raw/calibrated data
Communication	(1) Explicit connection between research aims and QCA's methodological assumptions
	(2) Graphical representation of theoretical expectations *and/or* graphical representation of solution and solution paths
	(3) Case narratives on typical cases, pathway cases, deviant cases, and/or unexplained cases

QCA Resources

Learning a new method requires not just a textbook but *actual practice* to further this aim. In that light, the book's appendix refers to an online R Manual to conduct the analytical steps discussed in this book. This is complemented by online material available on my website, www.patrickmello.com. There you can find an R Script that mirrors the discussion from the analytical chapters in this book as well as sample data sets.

A helpful resource is the QCA community website of the COMPASSS network, www.compasss.org (the acronym stands for comparative methods for systematic cross-case analysis). On the COMPASSS website you can find news entries on QCA-related topics, information about training opportunities, a newsletter that you can sign up for, working papers, and various other resources. The COMPASSS management team is headed by Benoît Rihoux and Claude Rubinson, whereas the methods network involves more than 60 QCA experts from around the globe.

A good way to learn QCA is by attending a dedicated course on it. By now, there are various different formats available, from short one-day introductions and workshops to full courses that span over two weeks. Some courses are also offered in online formats. In the United States, a regular course on offer is entailed in the Institute for Qualitative and Multi-Method Research (IQMR) at Syracuse University. This covers a range of modules, including QCA and set-theoretic methods. There is also a dedicated QCA course at the ICPSR Summer Program in Quantitative Methods at the University of Michigan. In Europe, regular courses are held at the ECPR Summer School in Methods and Techniques, with a two-week introduction to QCA, and at the complementary ECPR Winter School, with a one-week format that aims at advanced users of QCA. Additionally, there are many other opportunities for summer schools and workshops, including an intensive one-week QCA course at the FORS Swiss Summer School in Social Science Methods, co-organized by the University of Geneva and the Università della Svizzera Italiana (USI) in Lugano, where the course is hosted. A list of current training opportunities can be found on the COMPASSS website.

Current Developments

Originated over three decades ago, QCA continues to evolve and develop (Marx et al. 2014). As shown in the introductory chapter, empirical applications now cover nearly all areas of the social sciences. At the same time, there is a great degree of *pluralism* under the broad tent of QCA, including not only an array of different variants and approaches, with more variants being developed, but also different ways in how the method is applied in diverse research settings from qualitative case studies to large-*N* analyses. The examples used throughout this book and the contributions from other authors testify to this diversity of approaches.

Moreover, there has been some *ontological differentiation*, as critical realism has been embraced by a number of QCA scholars, moving away from more positivist assumptions (e.g., Byrne and Ragin 2009; Gerrits and Pagliarin 2020; Gerrits and Verweij 2014; Olsen 2014; Rutten 2019; 2020). At the same time, debates about causal claims and the conditions under which these could be substantiated with QCA have emerged, as touched upon in Chapter 9 (Baumgartner and Thiem 2020; Duşa 2019a; Haesebrouck and Thomann forthcoming; Rohlfing and Zuber 2019; Schneider 2018). These developments will certainly continue, leading to a further branching out and differentiation within the field of set-theoretic methods.

Where is QCA headed? As the previous sections have shown, the evolution of the method has served to clarify and refine the analytical procedures of QCA, to acknowledge its strengths, and to become aware of its limitations. Though QCA is conceived as a *via media* approach that combines advantages of qualitative and quantitative methods, there is no silver-bullet method for all research inquiries in the social sciences and QCA should not be presented as such. However, the limitations of the method can be overcome when guidelines for good QCA

research practice are followed and these also help to make the most out of the method's distinct strengths (see Chapter 9).

Moreover, there is potential in combining QCA with other methods of inquiry. Indeed, multi-method research (MMR) has become the "gold standard" in some areas of the social sciences. In particular, there are fruitful ways of combining set-theoretic comparative methods and within-case methods like process tracing. This remains a dynamic area of research, as scholars are trying to find appropriate ways in how to combine the research logics of these approaches (Beach and Rohlfing 2018; Goertz 2017; Meegdenburg and Mello forthcoming; Schneider and Rohlfing 2013). Another vibrant area of research is software development, and particularly the R packages, which have increased their functionality substantially over the past years (Duşa 2019b; Oana and Schneider 2018; Oana et al. 2021).[3] Because of the open environment of R, this area should see plenty of future development.

Conclusion

This book set out to provide a comprehensive guide to QCA and its successful empirical application. Moreover, the book sought to give step-by-step guidance on how to turn a research project into an effective QCA study, and how to interpret and present set-theoretic analytical findings in publications. As stressed throughout these pages, I believe that *research design* is of central importance on these matters. This is why the book preceded the exposition of the analytical routines with chapters on research design, set theory, and causation and causal complexity. If there is one takeaway lesson, it is that rather than spending time on "perfecting" their set-theoretic measures of fit through analytical modifications, users should reconsider their research design and their concepts. As a *case-oriented* approach with a decidedly *qualitative* bent, QCA is more than the technical exercise of minimizing configurations. It is my hope that the book conveys this holistic approach to QCA and that it proves useful to you – regardless of whether you are taking the first steps towards your own QCA study, have worked with it before and want to improve your application of the method, or want to try out new variants.

Note

[1] Ragin (2014, xxix).

[2] This should not imply that the recommendations given are identical. The edited volume by Rihoux and Ragin (2009) contains 13 tables with guidelines on various aspects of QCA research. Similarly, the standards of good practice by Schneider and Wagemann (2010) contain 26 detailed points (see also Schneider and Wagemann 2012). Emmenegger et al. (2013) derive

several concrete recommendations from their review of welfare state research. Kahwati and Kane (2020) contain many practice tips in their book on QCA in mixed methods research.

[3] A comprehensive listing of available software is maintained at: http://compasss.org/software/ (accessed on December 12, 2020). At the time of writing, 19 different software programs for various computer environments and research purposes were available.

References

Baumgartner, Michael, and Alrik Thiem. 2020. "Often Trusted but Never (Properly) Tested: Evaluating Qualitative Comparative Analysis." *Sociological Methods & Research* 49 (2): 279-311.

Beach, Derek, and Ingo Rohlfing. 2018. "Integrating Cross-case Analyses and Process Tracing in Set-Theoretic Research: Strategies and Parameters of Debate." *Sociological Methods & Research* 47 (1): 3-36.

Böller, Florian, and Marcus Müller. 2018. "Unleashing the Watchdogs: Explaining Congressional Assertiveness in the Politics of US Military Interventions." *European Political Science Review* 10 (4): 637-62.

Byrne, David, and Charles C. Ragin, ed. 2009. *The Sage Handbook of Case-Based Methods.* Los Angeles: Sage.

Collier, David. 2014. "QCA Should Set Aside the Algorithms." *Sociological Methodology* 44 (1): 122-26.

Duşa, Adrian. 2019a. "Critical Tension: Sufficiency and Parsimony in QCA." *Sociological Methods & Research* (DOI: 10.1177/0049124119882456): 1-25.

———. 2019b. *QCA with R. A Comprehensive Resource*. Cham: Springer.

Emmenegger, Patrick, Jon Kvist, and Svend-Erik Skaaning. 2013. "Making the Most of Configurational Comparative Analysis: An Assessment of QCA Applications in Comparative Welfare State Research." *Political Research Quarterly* 66 (1): 185-90.

Gerring, John. 2012. *Social Science Methodology: A Unified Framework*. 2nd. Cambridge: Cambridge University Press.

Gerrits, Lasse, and Sofia Pagliarin. 2020. "Social and Causal Complexity in Qualitative Comparative Analysis (QCA): Strategies to Account for Emergence." *International Journal of Social Research Methodology* doi: 10.1080/13645579.2020.1799636: 1-13.

Gerrits, Lasse, and Stefan Verweij. 2014. "Critical Realism as a Meta-Framework for Understanding the Relationships between Complexity and Qualitative Comparative Analysis." *Journal of Critical Realism* 12 (2): 166-82.

Goertz, Gary. 2017. *Multimethod Research, Causal Mechanisms, and Case Studies*. Princeton, NJ: Princeton University Press.

———. 2020. *Social Science Concepts and Measurement*. Princeton: Princeton University Press.

Greckhamer, Thomas, Santi Furnari, Peer C. Fiss, and Ruth V. Aguilera. 2018. "Studying Configurations With Qualitative Comparative Analysis: Best Practices in Strategy and Organization Research." *Strategic Organization* 16 (4): 482-95.

Haesebrouck, Tim, and Eva Thomann. forthcoming. "Introduction: Causation, Correctness, and Solution Types in Configurational Comparative Methods." *Quality & Quantity*.

Johais, Eva, Markus Bayer, and Daniel Lambach. 2020. "How Do States Collapse? Towards a Model of Causal Mechanisms." *Global Change, Peace & Security* 32 (2): 179-97.

Kahwati, Leila C., and Heather L. Kane. 2020. *Qualitative Comparative Analysis in Mixed Methods Research and Evaluation*. Los Angeles Sage.

Kuehn, David, Aurel Croissant, Jil Kamerling, Hans Lueders, and André Strecker. 2017. "Conditions of Civilian Control in New Democracies: An Empirical Analysis of 28 'Third Wave' Democracies." *European Political Science Review* 9 (3): 425-47.

Marx, Axel, Benoît Rihoux, and Charles C. Ragin. 2014. "The Origins, Development, and Application of Qualitative Comparative Analysis: The First 25 Years." *European Political Science Review* 6 (1): 115-42.

Meegdenburg, Hilde van, and Patrick A. Mello. forthcoming. *Case-Based Methods: Combining Process Tracing and Qualitative Comparative Analysis*. London: Palgrave Macmillan.

Mello, Patrick A. 2012. "Parliamentary Peace or Partisan Politics? Democracies' Participation in the Iraq War." *Journal of International Relations and Development* 15 (3): 420–53.

———. 2013. "From Prospect to Practice: A Critical Review of Applications in Fuzzy-Set Qualitative Comparative Analysis." 8th Pan-European Conference on International Relations, Warsaw, 18-21 September.

———. 2020. "Paths towards Coalition Defection: Democracies and Withdrawal from the Iraq War." *European Journal of International Security* 5 (1): 45-76.

Munck, Gerardo L. 2016. "Assessing Set-Theoretic Comparative Methods: A Tool for Qualitative Comparativists?" *Comparative Political Studies* 49 (6): 775-80.

Oana, Ioana-Elena, and Carsten Q. Schneider. 2018. "SetMethods: An Add-on R Package for Advanced QCA." *The R Journal* 10 (1): 507-33.

Oana, Ioana-Elena, Carsten Q. Schneider, and Eva Thomann. 2021. *Qualitative Comparative Analysis Using R: A Beginner's Guide*. New York: Cambridge University Press.

Olsen, Wendy. 2014. "The Usefulness of QCA under Realist Assumptions." *Sociological Methodology* 44 (1): 101-07.

Ragin, Charles C. 2014. *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*. 2nd ed. Berkeley, CA: University of California Press.

Rihoux, Benoît, and Charles C. Ragin, ed. 2009. *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques.* Thousand Oaks, CA: Sage.

Rohlfing, Ingo, and Christina Isabel Zuber. 2019. "Check Your Truth Conditions! Clarifying the Relationship between Theories of Causation and Social Science Methods for Causal Inference." *Sociological Methods & Research* (DOI: 10.1177%2F0049124119826156): 1-37.

Rubinson, Claude. 2019. "Presenting Qualitative Comparative Analysis: Notation, Tabular Layout, and Visualization." *Methodological Innovations* online first (July 18) (doi:10.1177/2059799119862110): 1-22.

Rutten, Roel. 2019. *Critical Realism and Complex Causality: On the Assumptions You Buy In To When You Are Making Causal Claims*. Oisterwijk: Wolf Publishers.

———. 2020. "Applying and Assessing Large-N QCA: Causality and Robustness from a Critical-Realist Perspective." *Sociological Methods & Research* (forthcoming): 1-21.

Schneider, Carsten Q. 2018. "Realists and Idealists in QCA." *Political Analysis*: 1-9.

Schneider, Carsten Q., and Seraphine F. Maerz. 2017. "Legitimation, Cooptation, and Repression and the Survival of Electoral Autocracies." *Zeitschrift für Vergleichende Politikwissenschaft* 11 (2): 213-35.

Schneider, Carsten Q., and Ingo Rohlfing. 2013. "Combining QCA and Process Tracing in Set-Theoretic Multi-Method Research." *Sociological Methods & Research* 42 (4): 559-97.

Schneider, Carsten Q., Barbara Vis, and Kendra Koivu. 2019. "Set-Analytic Approaches, Especially Qualitative Comparative Analysis (QCA)." APSA Section for Qualitative and Multi-Method Research, Final Report of the Qualitative Transparency Deliberations Working Group III.4.

Schneider, Carsten Q., and Claudius Wagemann. 2010. "Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy-Sets." *Comparative Sociology* 9 (3): 397–418.

———. 2012. *Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis*. New York, NY: Cambridge University Press.

Vis, Barbara, Jaap Woldendorp, and Hans Keman. 2013. "Examining Variation in Economic Performance Using Fuzzy-Sets." *Quality & Quantity* 47 (4): 1971-89.