"Realists" and "Idealists" in QCA? A Rejoinder to Schneider (2018)

Alrik Thiem
Swiss National Science Foundation Professor
University of Lucerne

alrik.thiem@unilu.ch

In a recent contribution to *Political Analysis*, Schneider (2018) criticizes my article on the methodology of necessary conditions in Qualitative Comparative Analysis (QCA). In that article, I demonstrated Schneider and Wagemann's (2013) Theory-Guided/Enhanced Standard Analysis (T/ESA) to be self-defeating because the procedure, in contradistinction to the inventors' stated purpose, virtually always produces ***con***servative ***sol***utions, and not enhanced parsimonious or intermediate solutions. I referred to this phenomenon as the CONSOL effect (Thiem 2016).[1] More generally, Schneider places his commentary in the broader context of what he sees as a split in the QCA community between the majority of "realists" and a small minority of "idealists".

Two main arguments thus make up Schneider's critique. The first is specific to Thiem (2016) and focuses on T/ESA [Section 2 and parts of Section 3 in Schneider (2018)]; the second maintains that "QCA idealists" lack all connections to "real" science and are therefore of no help to empirical researchers [parts of Section 3 and Section 4 in Schneider (2018)]. In contrast, "QCA realists" like Schneider supposedly "make QCA applicable to, and useful for, real social science research" (Schneider 2018: 252). I respond to the second argument first because a reply to it does not require any knowledge of QCA or technicalities. It simply is a personal story from behind the scenes of science.

QCA Realists vs. QCA Idealists? The View of a Convert

In contrast to Michael Baumgartner—an analytical philosopher by background with whom I have co-authored many of the studies labelled by Schneider as "idealist"—I have been raised inside the very same social science QCA community that Schneider says he is part of: I have studied business administration, economics and political science; my PhD, defended in October 2012 at ETH Zurich, was co-supervised by Daniele Caramani, Charles Ragin and Gary Goertz; I was a teaching assistant to Carsten Schneider and Claudius Wagemann at the ECPR methods summer school in Ljubljana in 2011; and I co-taught the IQMR (Institute for Qualitative and Multi-Method Research) course on QCA with Charles Ragin at Syracuse University in 2013. My first empirical QCA application (Thiem 2011) was published during my second year as a PhD student, I reinvigorated the COMPASSS website and bibliography, and I was a management board member of COMPASSS from 2012 to 2016, years during which I had also established and organized the annual "International QCA Expert Workshop" in Zurich. If anything, I was an applied QCA researcher with as many connections to real

[1] Note that Schneider uses the wrong publication year. It should be Thiem (2016), not Thiem (2017).

empirical research as one could possibly have. My areas of expertise are in European foreign and security policy (Haesebrouck & Thiem 2017; Thiem 2011).

However, during these years of trying to apply the conventional QCA toolkit to real-world data, I got into ever closer contact with the innermost mechanics of this method, its algorithms, its mathematical foundations, and its philosophical background, about all of which I found very little in existing writings. I began to study books on electrical engineering, where QCA's Quine-McCluskey algorithm originally comes from, philosophical texts on theories of causation, which was essential for understanding Mackie's INUS theory and criticisms of it, and I started delving much deeper into the formalities of Boolean algebra and its various extensions than the snippets presented in Ragin (1987; 2008) or Schneider and Wagemann (2012). In addition, I increasingly exchanged views and arguments with Michael Baumgartner, whom I first met at ETH Zurich, and who provided me with the fresh input only someone external to the social-science QCA community could do.

It was during these years that I more and more discovered, and became firmly convinced, that what Goertz, Schneider, Ragin, Rihoux and Wagemann were publishing and teaching was flawed in many regards. Not only did these scholars ignore a considerable body of literature that had already been written in analytical philosophy and electrical engineering decades ago (although they regularly cited these works) but this ignorance led to a raft of arguments, proposals, procedures and "standards of good QCA practice" that were problematic at best, downright false at worst, or simply internally so inconsistent that one could always cherry-pick one's favored view.

Illustrative examples for this claim? See Schneider and Wagemann (2012: 108), where the authors argue that a *redundant* condition could well be an INUS, that is, a *non-redundant* condition (see Thiem & Baumgartner 2016: 805, footnote 6 on this); or Schneider's argument that conservative solutions do not rest on any assumptions about remainders (Schneider & Wagemann 2012: 162), followed by an argument by the same author that conservative solutions rest on assumptions about remainders (Schneider & Rohlfing 2016: 546, first published in May 2014), followed by an argument by the same author that conservative solutions do not rest on any assumptions about remainders (Wagemann & Schneider 2015: 40); or Ragin's argument that QCA is a method for identifying INUS conditions (Ragin and Strand 2008: 431-432), whereas Rihoux (2006) enumerates five main purposes of QCA, among which the identification of INUS conditions is none. Such a list of problems could easily be extended over pages.

Similarly alienating for me was the way these authors dealt with criticism of QCA. Instead of engaging constructively with their critics, many of whom presented valid points that should have been taken seriously (such as Lucas and Szatrowski's (2014) criticism that QCA has never, in fact, been demonstrated to work the way it was claimed it works), proponents built up a wall of outright rejection or tried to immunize QCA against any sober attempt of evaluation. No one likes admitting mistakes or omissions, but the degree to which QCA's core group defended their respective territory appeared more motivated by concerns about scholarly reputation and personal dislikes rather than a genuine interest in the advancement of science.

It was during this time of growing disturbance with what I was witnessing that I began to write and publish articles demonstrating that the path this group of scholars had established,

and kept a firm grip on, was full of stumbling blocks and highly questionable practices.[2] From all these years of experience with applying QCA to empirical data, and from the knowledge I had gathered by studying books and articles other than those usually given as reading material in conventional QCA courses, I developed the convictions I now hold in 2018, convictions that stem from the realities of "real" research. And because they stem from these realities I apply them in my own research on QCA, integrate them in workshops I teach in Europe and the US, present them at conferences to applied researchers and other methodologists, and draw on them when carrying out consultancy work for international organizations and when advising applied researchers during their projects.

Thus, I firmly believe there are no "QCA idealists" or "QCA realists". There are only those who challenge conventional wisdom and those who try to preserve the status quo by all means. Cutting edge research always meets fierce resistance if it challenges conventional wisdom, which is, after all, not such a negative feature of science as Kuhn (2012 [1962]) had already argued. It fulfils a minimum filtering function. Yet, this same resistance also often prevents, or at least delays, positive change because senior researchers enjoy first mover advantages, occupy important veto positions as journal editors or manuscript reviewers, they can leverage considerably more human and financial resources, and young researchers often depend on their reference letters for grants and jobs.

T/ESA: A Tool for "Real" QCA Research?

Schneider argues that my criticism of T/ESA is "unconvincing and incoherent both for QCA realists and idealists". Had Schneider not just skimmed my publications, but instead read them in detail, he would have quickly noticed that I have already questioned, in 2014, the purpose of separate preceding tests for necessary conditions, as practiced in conventional QCA research, in the context of causal data analysis (Thiem 2014). What is more, however, in Thiem (2016: 479) I first alert readers to the fact that I do by no means imply by anything I would be going to show that "necessity analyses are purposeful in the context of causal inference with QCA". At a later stage, I again repeat that the standard Boolean definition of a necessary condition has nothing to do with causation (Thiem 2016: 480). All I wanted to do was to show that one need not even make this more "fundamental argument against preceding tests for necessary conditions […] for proving T/ESA ill conceived." (Thiem, 2016: 479). From this perspective, I am a die-hard idealist in Schneider's view of QCA's scientific community.

Since Schneider seems to have overlooked all these passages, let me re-enter the realm of "QCA realism" for the moment again in order to prevent talking at cross purposes, and assume that separate tests for necessary conditions supposedly help prevent so-called untenable assumptions to enter Quine-McCluskey's minimization process. Schneider argues that QCA realists have formulated several criteria that need to be applied during the search for necessary conditions: *empirical consistency*, *empirical relevance*, and *conceptual meaningfulness*. Let me start with what Schneider calls "conceptual meaningfulness" because he has already mentioned this concept in a recent piece that was part of a symposium in

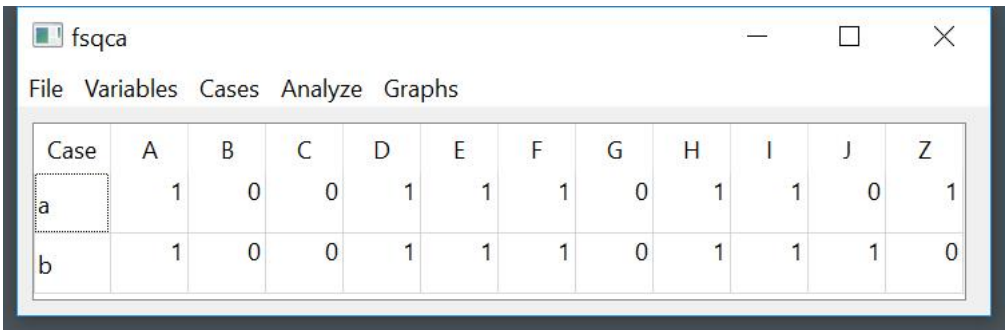
[2] One of my first pieces was a criticism of Vink, van Vliet, Schneider and Wagemann's dismissal of multi-value QCA (Thiem 2013).

Comparative Political Studies (Schneider 2016; Thiem, Baumgartner & Bol 2016; Thiem & Baumgartner 2016), and because it stands somewhat apart from the other two, more formal criteria.

First of all, it should be pointed out that I have never read any other methodological texts on QCA by anyone else apart from Schneider that elaborates on, let alone clearly defines, "conceptual meaningfulness". Schneider did not say anything more detailed about this concept in Schneider (2016), but he seems to try and be more explicit in section 2.3 of his current critique. Re-citing the definition of necessity under the Boolean-algebraic branch of propositional logic that I emphasized in my original article, Schneider clarifies that "QCA realists do not follow this particular notion of necessity" (p.248). Instead, he argues that QCA realists focus on so-called "SUIN" conditions, conditions that are "sufficient but unnecessary part[s] of a factor that is insufficient but necessary for an outcome". "Sufficient"? "Unnecessary"? "Insufficient"? "Necessary"? Unless QCA realists have definitions of these four terms that again deviate from the Boolean-algebraic definitions under propositional logic, QCA realists move in circles. Nowhere does Schneider present a meaningful conception of "conceptual meaningfulness".

The other two criteria are "empirical consistency" and "empirical relevance", the first of which I also use in my article. If QCA realists are supposedly able to deal with messy as well as ideal data, whereas QCA idealists are only able to deal with ideal, but not messy data, all of QCA realists' procedures should work also for ideal data. After all, what is the sense of having procedures that mess it up when the data are free of problems? At least I do not know any empirical researcher who would prefer low-quality data over high-quality data. The following example will be made deliberately extreme in order to bring out the core point, but any other example would do as well.

Suppose there are ten exogenous factors A to J, and an endogenous factor Z. The outcome to be analyzed is Z{1}. However, there are only two cases which we have data on, call them *a* and *b*. Using the fs/QCA software by Ragin and Davey (2017), which around 90 per cent of all applied QCA researchers have relied on so far (according to my database of 946 published QCA applications), you will see the following after importing this small data set:



Case	A	B	C	D	E	F	G	H	I	J	Z
a	1	0	0	1	1	1	0	1	1	0	1
b	1	0	0	1	1	1	0	1	1	1	0

Cases *a* and *b* are exactly alike, except on variables J and Z. By all standards of empirical data analysis for causal inference, and particularly by all standards of INUS causation, it is immediately obvious that J is the only factor which causal relevance can be ascribed to with respect to Z: Z changes from 1 to 0 when J changes from 0 to 1 in the

presence of the other conditions (A{1}, B{0}, C{0}, …), but no other factor varies.[3] Therefore, it can be inferred that J{0} must be part of the causal recipe explaining Z{1}. Expressed functionally in the Boolean language of QCA, J{0} ↔ Z{1}, or, more accurately J{0}Φ ∨ Ψ ↔ Z{1}, where Φ simply represents further, as yet unknown conditions of the conjunction involving J{0}, and Ψ all further conjunctions that are minimally sufficient for Z{1} yet also still unknown (cf. Mackie's concept of "gappy" knowledge).

Schneider, however, would first conduct a test for necessity, which would reveal all atomic conditions that characterize case *a* to be necessary for Z{1}: A{1}, B{0}, C{0}, D{1}, E{1}, F{1}, G{0}, H{1}, I{1}, and J{0}. All these conditions show perfect empirical consistency, and Boolean algebra would have nothing more to offer here. By the laws of Boolean algebra, all these conditions are necessary for Z{1}. Since empirical relevance was nowhere mentioned in Schneider and Wagemann (2013)—the main work on T/ESA—T/ESA is forced to produce the conservative solution, which I referred to as the CONSOL effect. Bar Quine-MCluskey from access to all remainders that show the negation of these ten conditions, and A{1}B{0}C{0}D{1}E{1}F{1}G{0}H{1}I{1}J{0} ↔ Z{1} results as the conservative solution. As should be obvious at this stage, however, this cannot possibly be correct. Not mainly because an inference about ten causal relevancies from only two cases should sound alarm to any methodologist, irrespective of whether s/he is proficient in QCA or not, but because nine of the ten exogenous factors listed in the solution do not even vary! Strangely enough, QCA realists, who "often base their analysis on the intermediate or conservative solution" (Schneider 2018: 252), would have no reservations presenting such a solution to their readers.[4]

Since the publication of Schneider and Wagemann (2013), however, QCA realists have apparently also decided, in parallel to their adherence to conservative solutions, that the laws of Boolean algebra cannot be trusted anymore, at least not fully, or at least not when these laws do not work in the direction QCA realists would like them to work. So they have added another formal criterion before agreeing that a condition is necessary for some outcome: empirical relevance, as measured by coverage (and/or the so-called Relevance of Necessity Score) (Schneider 2018: 248; Schneider and Wagemann 2012: 236).

Now, as the consistency and coverage of only J{0} reach acceptable levels (unity for both measures), QCA realists should present J{0} ↔ Z{1} as the solution. That solution, however, is something that would also have been achieved by any straightforward standard application of Quine-McCluskey, or any other optimization algorithm. In other words, half-a-century old wine has been put into new bottles, and sold to applied researchers as cutting-edge QCA methodology. What QCA realists do is nothing more than identifying INUS conditions

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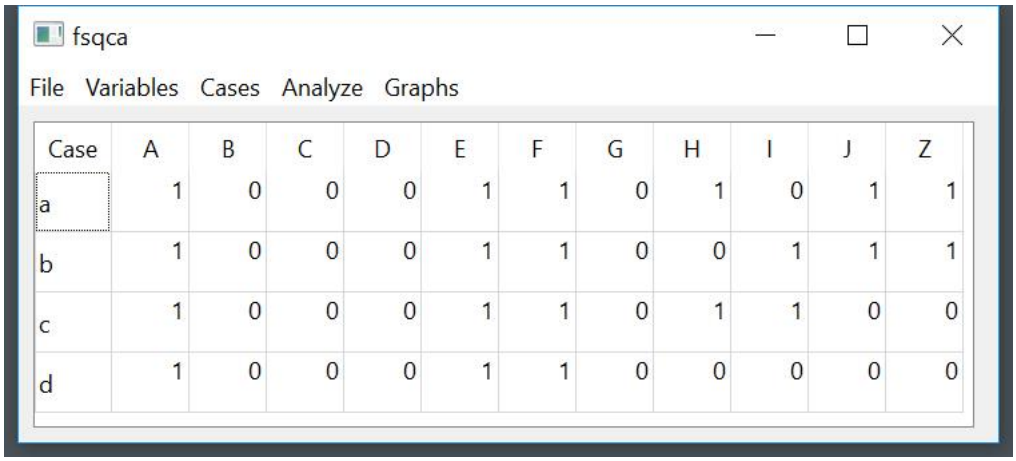
[3] Sometimes, proponents of QCA argue that QCA has nothing to do with the INUS theory of causation. For example, in a recent review I got, a reviewer wrote: "…the author appears to misunderstand the underlying logic of QCA. […] INUS causation is not central to QCA." Such claims are, of course, non-sense to all researchers who are familiar with the INUS theory as well as QCA (e.g., Cartwright 2007:34-35; Reiss 2009:23). And if that does not convince someone, maybe Ragin's own words do: "… QCA allows for causal complexity—for the possibility that no single cause may be either necessary or sufficient. Instead, causes are viewed as INUS conditions […]" (Ragin and Strand 2008:431-432).

[4] I have shown elsewhere that conservative solutions are prone to regularly present such unwarranted causal inference and thus commit causal fallacies (Baumgartner and Thiem 2017), and I have explained why this is the case (Thiem 2017).

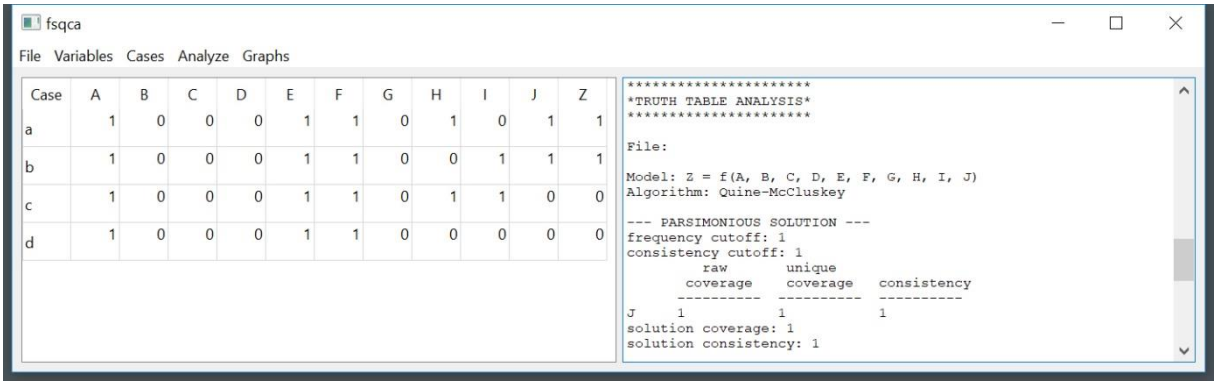
that are also necessary for the outcome, and as Mackie has already mentioned that "it is not part of the definition of an INUS condition that it should *not* be necessary…", QCA realists have simply reinvented the wheel that many others have been turning for decades.

While the previous example had no analytical consequences for QCA realists as far as the final solution was concerned, the following data set serves to show how QCA *realists* can easily be led to quite *unreal* conclusions:



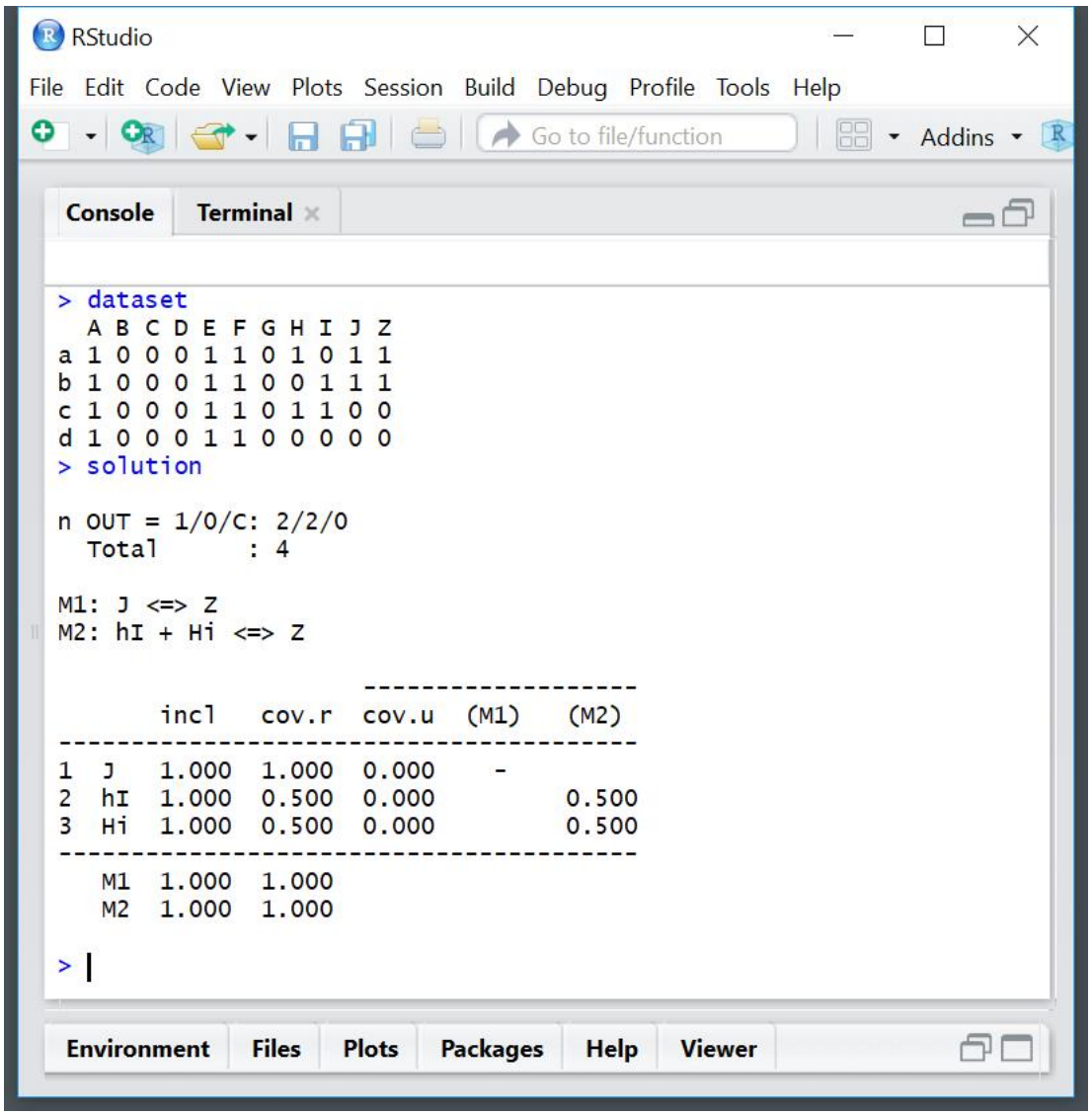
Case	A	B	C	D	E	F	G	H	I	J	Z
a	1	0	0	0	1	1	0	1	0	1	1
b	1	0	0	0	1	1	0	0	1	1	1
c	1	0	0	0	1	1	0	1	1	0	0
d	1	0	0	0	1	1	0	0	0	0	0

To increase the vividness of the example, suppose "Z" denotes "feeling extremely unwell", "H" the swallowing of a base in considerable quantity, "I" the swallowing of an acid in considerably quantity, and "J" whether a person gets at least eight hours of calm sleep a night. What would QCA realists make of these data? Clearly, J{1} is not only perfectly consistent but also perfectly relevant for Z{1}. Thus, QCA realists would conclude that the QCA solution must be J{1} ↔ Z{1} as shown below, that getting at least eight hours of calm sleep per night causes people to feel extremely unwell. I suppose QCA realists would already have problems selling this story to themselves.



What would an "idealist" analysis that rejects T/ESA and all its premises, for instance with the QCApro package by Thiem (2018), derive? The output from such an analysis is shown below. It would discover the same, implausible story that also realists would produce, but it would, in addition, provide an alternative story, one that is much more convincing, but contains no necessary conditions whatsoever: feeling extremely unwell would result from taking either a considerable quantity of a base but not a considerable quantity of an acid, or

vice versa, but not from taking equal quantities of both (because they neutralize each other) or neither.



In other words, QCA realists, unlike QCA idealists, often have no chance of uncovering the real story behind their data, which turns Schneider's argument on its head. At the end of the day, it remains the choice of applied researchers which template to follow, but I am certainly happy to see that some researchers have already decided to employ the "idealist" template, and have succeeded in publishing such studies (e.g., Andreas *et al*. 2017).

References

Andreas J-J, Burns C and Touza J. (2017) Renewable Energy as a Luxury? A Qualitative Comparative Analysis of the Role of the Economy in the EU's Renewable Energy Transitions During the 'Double Crisis'. *Ecological Economics* 142: 81-90.

Baumgartner M and Thiem A. (2017) Often Trusted but Never (Properly) Tested: Evaluating Qualitative Comparative Analysis. *Sociological Methods & Research*. Advance online publication. DOI: 10.1177/0049124117701487.

Cartwright N. (2007) *Hunting Causes and Using them: Approaches in Philosophy and Economics,* Cambridge: Cambridge University Press.

Haesebrouck T and Thiem A. (2017) Burden Sharing in CSDP Military Operations. *Defence and Peace Economics*. Advance online publication. DOI: 10.1080/10242694.2017.1320183.

Kuhn TS. ([1962] 2012) *The Structure of Scientific Revolutions,* Chicago: The University of Chicago Press.

Lucas SR and Szatrowski A. (2014) Qualitative Comparative Analysis in Critical Perspective. *Sociological Methodology* 44: 1-79.

Ragin CC. (1987) *The Comparative Method: Moving beyond Qualitative and Quantitative Strategies,* Berkeley: University of California Press.

Ragin CC. (2008) *Redesigning Social Inquiry: Fuzzy Sets and Beyond*, Chicago: University of Chicago Press.

Ragin CC and Strand SI. (2008) Using Qualitative Comparative Analysis to Study Causal Order: Comment on Caren and Panofsky (2005). *Sociological Methods & Research* 36: 431-441.

Ragin CC and Davey S. (2017) *fs/QCA: Fuzzy-Set/Qualitative Comparative Analysis, Version 3.0 [Computer Program],* Irvine: Department of Sociology, University of California.

Reiss J. (2009) Causation in the Social Sciences: Evidence, Inference, and Purpose. *Philosophy of the Social Sciences* 39: 20-40.

Rihoux B. (2006) Qualitative Comparative Analysis (QCA) and Related Systematic Comparative Methods: Recent Advances and Remaining Challenges for Social Science Research. *International Sociology* 21: 679-706.

Schneider CQ. (2016) Real Differences and Overlooked Similarities: Set-Methods in Comparative Perspective. *Comparative Political Studies* 49: 781-792.

Schneider CQ. (2018) Realists and Idealists in QCA. *Political Analysis* 26: 246-254.

Schneider CQ and Rohlfing I. (2016) Case Studies Nested in Fuzzy-set QCA on Sufficiency: Formalizing Case Selection and Causal Inference. *Sociological Methods & Research* 45: 526-568.

Schneider CQ and Wagemann C. (2012) *Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis (QCA)*, Cambridge: Cambridge University Press.

Schneider CQ and Wagemann C. (2013) Doing Justice to Logical Remainders in QCA: Moving Beyond the Standard Analysis. *Political Research Quarterly* 66: 211-220.

Thiem A. (2011) Conditions of Intergovernmental Armaments Cooperation in Western Europe, 1996-2006. *European Political Science Review* 3: 1-33.

Thiem A. (2013) Clearly Crisp, and Not Fuzzy: A Reassessment of the (Putative) Pitfalls of Multi-Value QCA. *Field Methods* 25: 197-207.

Thiem A. (2014) Navigating the Complexities of Qualitative Comparative Analysis: Case Numbers, Necessity Relations, and Model Ambiguities. *Evaluation Review* 38: 487-513.

Thiem A. (2016) Standards of Good Practice and the Methodology of Necessary Conditions in Qualitative Comparative Analysis. *Political Analysis* 24: 478-484.

Thiem, A. (2017) *Beyond the Facts: Limited Empirical Diversity and the Incorrectness of Qualitative Comparative Analysis (QCA)*. Paper presented at the 7th Annual General Conference of the European Political Science Association, Milan, Italy, 22-24 June. URL: https://www.researchgate.net/profile/Alrik_Thiem

Thiem A. (2018) *QCApro: Advanced Functionality for Performing and Evaluating Qualitative Comparative Analysis, R Package Version 1.1-2*, URL: http://www.alrik-thiem.net/software/.

Thiem A and Baumgartner M. (2016) Back to Square One: A Reply to Munck, Paine, and Schneider. *Comparative Political Studies* 49: 801-806.

Thiem A, Baumgartner M and Bol D. (2016) Still Lost in Translation! A Correction of Three Misunderstandings Between Configurational Comparativists and Regressional Analysts. *Comparative Political Studies* 49: 742-774.

Wagemann C and Schneider CQ. (2015) Transparency Standards in Qualitative Comparative Analysis. *Qualitative & Multi-Method Research* 13: 38-42.