A springboard for delving into deeper waters

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BOOK REVIEW COLLECTION

A springboard for delving into deeper waters

Cronqvist, Lasse, Qualitative Comparative Analysis (QCA). Eine Einführung mit TOSMANA und dem QCA Add-In [An Introduction with TOSMANA and the QCA Add-In], by Rainer Hampp Verlag, Augsburg, München (Germany), Sozialwissenschaftliche Forschungsmethoden, 2019, 114 pp., €19.80 (paper); €17.99 (e-book pdf), ISBN 978-3-95710-250-8

Review 1

Sofia Pagliarin, research associate

I approached the book having already previous knowledge about QCA. Therefore, albeit my basic understanding of German, I could follow Lasse Cronqvist's new book with ease. His two main stated goals for writing the book, which are also reflected in the title, are first, to introduce configurational comparative methods (CCM), and specifically Qualitative Comparative Analysis (hereafter: QCA) [Qualitative Comparative Analysis (QCA). Eine Einführung], and second, to offer guidance on the use of the TOSMANA software (https://tosmana.net/) [mit TOSMANA und dem QCA Add-In]. Lasse Cronquist created TOSMANA in the early 2000s and, since then, many scholars, researchers and students made extensive use of this freely available software, both as support tool in training courses for learning QCA and also in published research.

The structure of the book reflects these two main goals: after the brief introduction (chapter 1), chapters 2 and 3 introduce the reader to set-theory and to the underlying logic of QCA, while chapters 4 to 7 cover the application with TOSMANA of all QCA-types (crisp-set *csQCA*, multi-value *mvQCA* and fuzzy-set *fsQCA*). Chapter 8 is about the use of the new add-in to perform QCA in Microsoft Excel, and the solutions to exercises are included in chapter 9. I appreciated how Cronqvist also puts forward self-reflexive comments about his own book, for instance, if his *Einführung* should be considered only as a methodological handbook (p. 10) or to what extent QCA is a qualitative method (p. 23).

In terms of content, the book satisfies fully the two stated goals. Regarding the first goal, Lasse Cronqvist describes what configurational comparative methods (CCM) are and advocates why researchers may embark on their use in their research (chapter 2). Cronqvist is keen in making clear to the readers that a strong theoretical background has to support the use of set-theoretical methods in the social sciences. In particular, Cronqvist emphasises that QCA should not only be used as a technique when we do not have enough cases for statistical analysis or too many for case-based research (small/intermediate-n, see Greckhamer et al. 2013). Causal complexity inherent to configurational comparative methods (CCM) using set-theory is succinctly explained by covering the concepts of sufficiency, necessity and INUS conditions (see Mackie, 1965).

In chapter 3, Cronqvist guides the reader through the main workings of QCA. The didactical nature of the book is reinforced by the inclusion of several practical examples and exercises, as well as solutions, to help the reader 'play with' the logic of QCA. The examples presented by Cronqvist are intuitive (e.g., comparatively assessing some attributes of runners in the face of their

performance), and not discipline specific, which I believe is key to get beginners closer to set-theory and QCA (see Review 2). However, Cronqvist does not shun more technical details, and includes examples of how to perform minimisation 'by hand' (p. 30).

Regarding the second goal of the book, chapters 4 to 7 deal with the performance of QCA with TOSMANA. Through the help of screen shots, Cronqvist shows how to carry out data management with the software and how it can be a key tool in empirical research. I particularly appreciated the discussion on the 'Boolean calculator' (p. 42) to spot untenable assumptions, to avoid the use of logically possible configurations that are not observed empirically ('logical remainders') and that are however incoherent or implausible (e.g., 'pregnant man' or 'Buddhist European country'; see Schneider & Wagemann, 2012, sections 8.2.1–8.2.3).

Naturally, Lasse Cronqvist also highlights the 'star' of the TOSMANA software, that is the 'threshold setter'. This tool allows to plot the empirical distribution of the set-membership values for all cases for each condition and the outcome, and proposes thresholds (lower, cross-over and upper value) to calibrate the data. Calibration is a key step and a characterising aspect of the workings of QCA: the researcher qualitatively assesses the membership of cases to sets (conditions and outcome) by setting quantitative threshold to differentiate cases in kind and degree (see Ragin 2000, 2008). The 'threshold setter' is popular among researchers and has been widely used in published research.

However, while acknowledging the introductory character of the book, the synthetic didactical style used by the author leaves some dimensions and challenges of QCA as research approach and method in the shadows (see also Reviews 3 and 4 below). In particular, I would like to highlight here the relative lightness through which the author presents the process of calibration, which is central to QCA and which entails the translation of values into set-membership scores through the identification of thresholds in the data. More specifically, although Lasse Cronqvist discusses about 'good calibration' (*eine gute Kalibrierung*, p. 67), I would have expected a broader examination of the challenges that calibration as an iterative process poses to researchers, for instance, the difficulty to identify meaningful thresholds in empirical data (see Review 4) or the use of the threshold setter to 'mechanically' calibrate data by using only the empirical distribution of the data. Furthermore, even when the calibration is done, researchers might need to iteratively revise their calibration strategy to solve 'logical contradictions' in the 'truth table' summarising their data. Additionally, although the use of both quantitative and categorical data in QCA is mentioned (p. 24), in my view insufficient room is given to the specific challenges that researcher encounter when calibrating qualitative data (for instance, De Block & Vis, 2018 is not cited in the reference list; cp. Review 4).

Furthermore, as a non-German speaker it is not entirely clear to me why Cronqvist decided to write the book in German and not in English, as a wider readership could have been reached and since a textbook in German already exists (C.Q. Schneider & Wagemann, 2007; cp. Review 3). On the other hand, Cronqvist's book can be considered an effort to provide accessible material on CCM and QCA in other languages than English, as done for instance, by Medina et al. (2017) in Spanish, which is also a pathway towards reaching a broader audience.

To conclude, the book is certainly worth reading. It is a concise and user-friendly introduction to CCM and QCA, coupled with a practical guide on how to use the TOSMANA software. Nevertheless, in my point of view it appears to be a somewhat simplified view of QCA as a research method and approach that, while appealing for beginners (but see Review 2 below for a critical appraisal on this), might leave out some key aspects related to the practical performance of QCA with 'real' data, e.g., in relationship to calibration (see above), analytical steps in the QCA process (see Review 3) and downplaying current debates on the method within the QCA community (see Review 4).

Review 2

Svenja Marie Schrader, student assistant

Cronqvist's book 'Qualitative Comparative Analysis (QCA) – Eine Einführung mit TOSMANA und dem QCA Add-In' offers a basic understanding of configurational comparative methods (CCM) and seeks in particular to enable readers to apply QCA in practice. An advantage of the book is that readers can immediately apply the new knowledge acquired about QCA by replicating the exercises presented in each chapter. Cronqvist holds a clear idea of the type of audience that the book tries to reach: besides QCA students and researchers, Cronqvist addresses more in general qualitative social scientists, who might be less used to think 'in numbers'.

As a beginner in QCA, my review is about an evaluation of the performance of the book first, in enabling (under)graduate students to apply QCA in their first encounter with the method (i), both concerning its theoretical foundations (i.i) and also regarding the practicalities of its empirical application (i.ii), and second, in reaching the targeted audience (ii).

Regarding the presentation of the theoretical foundations of the method (i.i), Cronqvist briefly introduces in the second chapter configurational comparative methods (CCM) and he contrasts QCA solutions to a regression model to distinguish the set-theoretic logic of the method from variable-based methodological approaches in social research. Albeit practical, the use of formulae is possibly premature, as Cronqvist does not give a detailed explanation of the logical operators used in QCA until chapter 3. Thus, the meaning of the comparison of the two formulae cannot be thoroughly appreciated by beginners. It might also intimidate beginners and qualitative researchers that might be less acquainted with mathematical formalisation. Furthermore, Cronqvist introduces the analysis of necessary and sufficient conditions rather late (page 44), even though it composes the standard procedure of QCA (see Review 3). Possibly, a more intuitive explanation of the characteristics of QCA and the difference to statistical methods could have been offered, as done, for instance, by Schneider and Wagemann ([2007]).

When it comes to the application of QCA (i.ii), chapter 4 depicts the essential functions of TOSMANA. The author supplements the explanations about the workings of the software with screenshots, which facilitates readers to get familiar with the programme. However, the presentation of the exercises is at times not consistent. In some exercises the employed dataset is mentioned above the text (page 34); in other examples, the reader needs to find the information about the dataset within the text (e.g., pages 72, 82). Furthermore, some small imprecisions in the labelling of the screenshots and the corresponding captions make the reading of the text a bit unclear. While on some screenshots of the TOSMANA software the options that need to be selected by the readers in the computer application are marked with progressive numbers, on page 85 and 86 these numbers are missing in the picture but are used in the text. A uniform presentation layout would have been preferable for beginners. Additionally, in the exercise on page 34, the screenshots do not show the solution to the given task with the corresponding dataset; instead, the screenshot shows the solution the readers would get, following the same procedure but with a different datasets.

Chapters 5 to 7 introduce the reader to csQCA, mvQCA and fsQCA. The three chapters consecutively build up the understanding of the three QCA types for the reader, including the reduction rules for csQCA and mvQCA. I found particularly helpful that Cronqvist uses the same examples and graphics throughout the book to illustrate specific characteristics or issues in the application of each QCA type. For example, he consistently uses and adapts a dataset about runners in a competition, or a dataset with real data on the population of the German *Bundesländer*. Furthermore, I appreciated that within each of these chapters specific issues concerning the application of QCA are explained, and Cronqvist proposes possible methodological solutions, for example, how to handle the problem of limited diversity and the possible use of hypothetical cases. Additionally, the exercises presented in the book are all well-chosen, and the solutions included in chapter 9 are adequate. However, I found exercises 5.1 and 6.2, where the minimisation for csQCA and fsQCA need be worked out by hand, slightly complicated, although I acknowledge they are very

useful to give beginners an idea of the technical workings of the method, i.e. logical reduction rules. In this way Cronqvist also provides readers with 'methodological challenges' to solve by themselves, which is an attractive character of the book.

However, and I come here to the performance of the book in reaching the targeted audience (ii), at times there is a missed link to the audience, meaning that the level of detail possibly outperforms the knowledge obtained by beginners through the book. An illustration is the solution for exercise 6.1, where the *Bundesländer* are grouped in classes (calibration). Cronqvist performs a cluster analysis in R to show that there is a cluster of *Bundesländer* with more than 6 million inhabitants. Even in this relatively simple exercise, qualitative researchers and students that might not be so familiar with quantitative analyses or R might not be able to solve the exercise as foreseen. Nevertheless, the overall explanation of the logic of QCA and its different types (csQCA, mvQCA and fsQCA) is clear and understandable. After having read the book I feel I gained a basic understanding of the different QCA types.

In conclusion, the book provides a useful overview and introduction to QCA for beginners and qualitative researchers. Thanks to the well-chosen examples, graphics and practical exercises, the book can be used to quickly look-up information when applying QCA. However, some imprecisions and technical details at time hinder the approachability of the book by the target readership. Nevertheless, I also acknowledge that the main challenge in the writing of introductory books is to find a balance between a simple explanation and more advanced technicalities (see Reviews 3 and 4). The book is hence a good reference to understand how QCA as a research approach and method for beginners and for researchers and students without far-reaching programming skills.

Review 3

Fabio Bothner, research assistant

Lasse Cronqvist's new book offers a user-friendly introduction to Qualitative Comparative Analysis (QCA) and the correlated TOSMANA software. Cronqvist himself is a leading scholar in the field of QCA. With the development of multi-value-QCA (mvQCA) and the TOSMANA software (Cronqvist, 2003), he has made significant contributions to the development of QCA.

Given his background, it is not surprising that his new book pursues two objectives: an introduction to the QCA method and a guide to the use of the TOSMANA software. Dealing with both topics is the selling point that distinguishes the book from already existing introductory volumes like C.Q. Schneider and Wagemann (2007, 2012) or Rihoux and Ragin (2009). While this is the advantage, it is also the downside of the book. Just to be clear: it is not the combination of the two topics, but the short introduction of just about 100 pages that causes some difficulties to the targeted readers (but see Review 4). As a result, Cronqvist cannot provide the same level of detail such as other introductory volumes do. Therefore, while the book allows beginners to successfully perform QCA with TOSMANA (see Review 2), it does however not address some key theoretical and methodological issues associated with performing QCA in applied research. This runs the risk that beginners are able to perform a QCA, but may not able to critically review the results they obtain (see also Review 4).

In particular, two issues would have required further elaboration. First, the issue of necessity: against the advice of Schneider and Wagemann (2007, 2010, 2012) Cronqvist presents the analysis of necessary conditions (p. 89) after the analysis of sufficiency (chapter 8). This can create some confusion within the readership. Moreover, Cronqvist performs crisp-set-QCA (csQCA) by not differentiating the analysis of necessary and sufficient conditions (see pages 44–45). This is only possible when neither logical remainders nor contradictory rows are found in the dataset, which is however rather rare in empirical research. However, I believe that a beginners' book should discuss such a critical issue in more detail. I also found surprising that the Relevance of Necessity (RoN) value that helps scholars distinguish between 'real' and 'trivial' necessary conditions (Schneider &

Wagemann, 2012, 236ff) is not mentioned in the book. Furthermore, important measures such as consistency are addressed, in my view, too late, namely only with the presentation of fuzzy-set-QCA (fsQCA, chapter 7; see also Review 4).

Limited diversity and the related logical remainders is the second issue that could have been addressed in more detail. Cronqvist does not introduce the different possible solutions types that come along with the issue of limited diversity (conservative, parsimonious and intermediate). Although the author's aim might have been to simplify to beginners the path to the performance of QCA with TOSMANA, failing to mention and discuss the different solution types and their consequences goes against the ongoing debate about the 'right' solution type (see Schneider, 2018; Thiem, 2019; Thiem & Baumgartner, 2016).

Besides these points of criticism, the book shows great advantages especially in the application of QCA and the description of the TOSMANA software. The given exercises are well selected and help users get acquainted with the technical QCA procedures (e.g., calibration, minimization; cp. Review 1). Moreover, the Excel Add-in is a perfect tool for beginners, making it easy to run csQCA and fsQCA without installing any new additional software. The examples that come with the add-in are very helpful by giving an overview of how to perform cs- and fsQCA with Excel. However, maybe mvQCA could also be implemented into the add-in in the future.

To conclude, it is good to have this book written by the author of TOSMANA but, as I mentioned above, the advantage of the book hinges more on the description of the application of QCA (especially with the TOSMANA software) rather than a thoroughly explanation of the conceptual and methodological foundations of the method. Hence, it seems helpful for beginners to combine the book with already existing literature. For example, Schneider and Wagemann (2012) for the conceptual foundations and Cronqvist (2019) for the empirical application of QCA seem good companions.

Review 4

Nikolaus Jopke, research assistant

Despite having being around for only 30 years, QCA has stimulated scholars to develop an elaborated array of contributions and developments. However, this increasingly branching methodological discourse might hamper beginners to get started without being bothered by some important, yet quite advanced discussions. This is where Lasse Cronqvist´s *Qualitative Comparative Analysis – Eine Einführung mit TOSMANA und dem QCA Add-In* aims to make its specific contribution, namely to provide a quick-starter guide that concisely communicates the basic strands and ideas of QCA and that easily allows to apply the method. The length of the book matches this scope being quite a quick read with about 100 pages of text (cp. Review 3).

If assessed regarding this goal, the book does quite a good job by mainly focusing on the original roots of the method. Cronqvist presents QCA by remaining faithful to its creator, Charles C. Ragin, and places his own development, multi-value (mv) QCA, right in-between the two original versions, crisp-set and fuzzy-set QCA. Covering these three QCA types, the book encompasses the most important versions of QCA. The explanations are concise, yet well understandable and present QCA true to its case-based nature. While most of the examples relies on quantitative measures, the use and calibration of qualitative data in QCA are also briefly introduced (see Review 1). Throughout the book, Cronqvist indicates the qualitative rooting of QCA and repeatedly explains the importance of substantial, at best theory-based decisions in the process of handling data in QCA.

The book presents a neat step-by-step guide to apply all the three main versions of the method. The explanations and instructions cover the core-analytic process of QCA and thereby allow grasping the main workings of the different QCA types. Instead of only presenting algorithms, the book enables the reader to understand important technical procedures and conduct them by

hand (see Reviews 1 and 2). The technical steps are accompanied by detailed guidance for the freely available software TOSMANA by the same author, which is itself adequate for the operational scope of this book. Furthermore, exercises are given at the end of important sections, allowing readers to check their progressive understanding of the method. It should therefore be possible for unexperienced readers to conduct basic QCA applications from the reading of this book (see Review 2). It should be noted at this point, though, that a sound background in qualitative methods is highly recommended to apply QCA properly.

As compared to other handbooks on QCA, I would nevertheless like to highlight some critical points. To begin with, consistency, which is one of the most important measures of fit in QCA is only introduced in the section about fsQCA, withholding from the reader its use in csQCA (see also Review 3). It is hardly understandable why Cronqvist decided to restrict the use of consistency to fsQCA while it is a well-established way to deal with contradictory rows in csQCA and to assess subset-relations in general. Furthermore, mvQCA is presented as a logical expansion of csQCA, while fsQCA is displayed as the odd one out. This leaves out two aspects, which are worth mentioning to the beginner. First, and less important, the set-theoretic foundations of mvQCA are put into question by some QCA scholars. However, this debate is not mentioned by the author of the book, and founder of mvQCA. Second, and probably more pervasive, is the presentation of fsQCA as the odd one out. Cronqvist argues that fsQCA is fundamentally and, to some extent, epistemologically different from csQCA, in contrast to mvQCA that is more similar to csQCA. This assessment differs from the way fsQCA is usually conveyed in the QCA literature that Cronqvist himself cites throughout the book.

One possible reason for this surprising depiction of larger differences between cs- and fsQCA as compared to cs- and mvQCA might be rooted in the rather unusual way through which fuzzy sets are presented. This concerns primarily the presentation of the cross-over point that marks membership in a set, also called the point of maximum ambiguity (0.5). The cross-over point is only introduced in passing on page 3 about fuzzy set calibration as something that researchers 'often do', but its significance is not appropriately revealed. In this book, fuzzy set calibration appears foremost as a way to convert data along some defined anchor points on an interval between 0 and 1. In turn, regardless whether direct or indirect calibration is used for fuzzy sets, the researcher always needs to care first and foremost about the meaning of the anchor point 0.5 as it establishes difference-in-kind. It thus clearly distinguishes cases that are members of a set from those which are not. Being over or under 0.5 determines in which truth table row a case belongs and therefore greatly affects the results of a QCA. The significance of the cross-over point of a set also explains primarily why fuzzy-set scales are different from metric scales, a point that the author leaves out in the discussion of this issue, too. While Cronqvist cites all the essential literature and holds solid knowledge about QCA, his downplaying of the role and importance of the cross-over point in fuzzy-sets might be one possible reason why Cronqvist seems to consider fsQCA as significantly different from csQCA. Hence, some accompanying literature for the section about fuzzy sets is warmly recommended to readers (e.g., Schneider and Wagemann (2012); see also Review 3).

In sum, with his QCA quick-starter guide Cronqvist offers a helpful and well-conceived book for the German-speaking readership (see Review 1). As QCA might appear to beginners an unusual method for empirical research in the social sciences due to its set-theoretic nature, writing a short book to convey the basic logic of its three main strands and enabling the reader to apply those methods directly are quite remarkable goals accomplished by such a tiny book. As QCA is constantly evolving and needs considerable work to be understood in its entirety, Cronqvist's book is a valuable springboard for delving into deeper waters.

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