

Comparing Apples and Oranges: Introduction to Qualitative Comparative Analysis



Syllabus and Reading Guide

<u>Semester:</u>	Winter 2015/2016
<u>Program:</u>	Master of Arts in Political Science
<u>Schwerpunkt:</u>	Governance of Innovative and Complex Technological Systems
<u>Module:</u>	Hauptseminar, Steuerung Technischer Systeme III
<u>Instructor:</u>	Dr. Stefan Verweij
<u>Time and Place:</u>	Wednesday, 16:00h-18:00h, FMA/01.19
<u>Start Date:</u>	October 14th, 2015
<u>Note:</u>	This course is in English

Description

This seminar series for qualitative research methods introduces students to Qualitative Comparative Analysis (QCA). This method is designed for comparison of dissimilar cases, using qualitative data. This course is valuable for all students who are considering using qualitative methods, for example in their thesis projects.

One of the main advantages of QCA is that it strikes a balance between complexity and generalization. As students of the governance of complex systems, we often use case study methods and rich qualitative data to analyze and understand our objects of study. These in-depth studies allow us to capture the unique complexities of the cases. For example, a case study into the development of a road or rail system, using series of in-depth interviews and/or project documents, allows us to understand the difficulties of cooperation between governments and market actors (e.g. construction companies), that have very different institutional logics, in a particular project that is being implemented in a unique complex socio-physical environment. But such studies have a problem: they often lack generalizability exactly because they delve into the complexity of a particular case, which makes cases difficult to compare. So, how can we compare dissimilar cases; how can we compare apples and oranges? How can we learn from the study of the governance of one complex system for the governance of another complex system? This course introduces QCA as a method to deal with this problem.

In this hands-on seminar series, you will learn how, and to what extent, QCA is a suitable method for studying the governance of complex systems. You will do this by designing a research project in which you apply QCA.

Course Objectives

There are various types of learning objectives, which can be hierarchically organized in six levels:¹ remembering (level 1), understanding (level 2), applying (level 3), analyzing (level 4), evaluating (level 5), and creating (level 6). This course covers the variety thereof, as detailed below.

<i>Level</i>	<i>Objective</i>
2. Understanding	Explaining the basic properties of the governance of complex systems and the requirements that this imposes on a method for studying these systems.
3. Applying	Conducting a QCA research project.
4. Analyzing	Identifying and interpreting necessary and/or sufficient (combinations of) conditions for the (in)effective governance of complex systems.
5. Evaluating	Appraising the advantages and limits of QCA for studying the governance of complex systems.
6. Creating	Designing a QCA research project.

Mandatory Course Materials

- Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. This book can be bought via the website of Cambridge University Press or at online booksellers.
- Academic articles or book chapters, which will be made available through Virtual Campus.
- QCA software, available through www.compass.org.

Please note that it is important that you have read the prescribed literature prior to the classes.

Further reading (non-mandatory):

- Verweij (2015). *Once the shovel hits the ground: Evaluating the management of complex implementation processes of public-private partnership infrastructure projects with qualitative comparative analysis*. PhD-thesis. Rotterdam: Erasmus University Rotterdam. The book is freely available at: www.researchgate.net/profile/Stefan_Verweij or at www.stefanverweij.eu.

Workload Estimation

<u>Workload:</u>	8 ECTS, 240 hours, 15 lectures
<u>Calculation:</u>	Class attendance (15x2h) approx. 30 hours
	Preparing classes (15x4h) approx. 60 hours (reading, making presentations)
	Research project approx. 150 hours

Contact Details

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The syllabus may be subject to changes by the instructor

¹ See e.g. Kallenberg et al. (2014). *Leren (en) doceren in het hogere onderwijs*. Den Haag: Boom Lemma Uitgevers.

Research Project and Grading

To successfully conclude the course, you are asked to actively participate in the classes, to read the prescribed literature prior to each class, and to pass the final exam in the form of a report, written in proper English, about your research project. The report will be graded.

In the research project, all the different learning objectives of the course are covered. You will learn the basics of creating a QCA study, and of applying QCA for the study of the governance of complex systems, focusing on infrastructure projects as specific cases of such systems. The comparative analysis of the cases allows us to identify necessary and/or sufficient (combinations of) conditions for explaining the effective or ineffective governance of the projects. Based on your acquired hands-on experience with the method, and based on the reading of literature, we will be able to evaluate the pros and cons of (various) QCA (types and techniques), and understand how and to what extent QCA is an appropriate method for the study of complex systems.

Substance of the research project: Infrastructure projects

In the research project, we will focus on a specific kind of complex system: infrastructure projects. These projects often cost large sums of public money, take a long time to be completed, require many public and private organizations with different interests to cooperate, and have significant economic, social, and environmental impacts that go beyond the boundaries of the project itself. For instance, the Øresund Link between Denmark and Sweden cost over € 4 billion, took 15 years from initiation to completion, and led to fierce public debates about the environmental impacts of the project.² The project does not only have a significant impact on its environment; the environment also influences the project. For instance, as people and organizations are affected by the project, they may try to block it, or otherwise try to influence its development. The complex combination of all these factors makes the effective planning, organization and management of these projects a daunting task. By comparing multiple projects, we will explore which (combinations) of such project and context factors may be necessary and/or sufficient for (in)effective governance.

You are not restricted in your choices for cases and case data by these suggestions, but some starting points and ideas can be found, for example, here:

- The [OMEGA Project](#) at the Bartlett School of Planning.
- The European Union [Cost Action on Megaprojects](#).
- The [NETLIPSE](#) program.

Content of the research report

The research report contains at least, but is not necessarily limited to, the following four elements:

- The introduction to the research project. This contains the research objective(s) and question(s) of the study.
- The research design. The research design, of course, depends on the research objective(s) and question(s). Don't forget to explain this link in your report. The design concerns a description and substantiation of (a) the theories or concepts that have been used, (b) the

² Dimitriou (2014). What constitutes a 'successful' mega transport project? *Planning Theory and Practice* 15 (1), 389-392. See also: Khan, Petterson, and Holmberg (2014). Constructive conflicts in the case of the Öresund Link. *Planning Theory and Practice* 15 (1), 418-423.

case selection, (c) the ‘casing’ (i.e. selection of conditions and outcome that constitute a case), and (d) the approach, methods, and techniques (including software) that have been used for data-collection and -analysis.

- The analysis. This concerns a description and substantiation of the various choices in the QCA process, concerning at least (a) calibration (and recalibration), (b) truth table analysis (and reanalysis), and (c) the interpretation of the results.
- Discussion and conclusions. This is based on (the course) literature and on your experience in the research project. It contains at least (a) the conclusions and limitations of the research, (b) a reflection as to how and to what extent QCA is suitable *for studying the governance of complex systems*, and (c) a reflection on the advantages and limits of the (specific) QCA approaches and techniques that you used.
- A bibliography with the referenced literature and the empirical sources used in the research.

There are no requirements regarding the length of the report; the quality of the content is the main determinant for a good research report. The report should demonstrate an informed and well thought-through study.

Organization and planning

- You will have ample freedom to pursue your own interests: you will formulate your own research questions, and select your own cases and conditions (see the above suggestions for cases and case data).
- To keep the research project manageable, I advise you to keep the number of cases and conditions limited: around 10 cases and about 3 or 4 (but no more than 5) conditions.
- The deadline for the final report is **February 12th, 2016**. We will have plenary interim discussions about the progress of your research projects at two moments.
 - Week 8, December 2nd. Send me your work no later than **November 28th, 2015**.
 - Week 16, January 27th. Send me your work no later than **January 23rd, 2016**.

You can of course always drop me an [email](#) or consult me during the classes or speaking hours if you have additional questions or need help with the research project.

Program and Reading Guide

This program and reading guide briefly describes the content of each class. It also states the objectives for each class, and to which of the five course objectives (see above) these sub-objectives are primarily related. Please note that you are expected to have read the below prescribed literature prior to the classes. In addition to the mandatory literature, some suggestions for further reading (non-mandatory) are also provided. During the course you are exposed to a variety of examples of QCA research in the field of infrastructure projects, which can help you to form ideas for your research project and which show you the different ways in which QCA can be used.

1. Oct 14th *Introduction: The challenge of studying the governance of complex systems*

This is the introductory session. We will talk about the content and goals of this seminar series and why this series matters. You will gain a first flavor of the course. In addition, we will also discuss the administrative details of the program including planning, assignment, and grading.

2. Oct 21st *QCA research approach: Complex systems and configurational analysis*

What makes studying the governance of complex systems, such as infrastructure projects, so challenging? In this class we will delve into this question. We will discuss features of complexity, and aim to comprehend why QCA is suitable to study the governance of complex systems.

Class objectives:

Level Objective

1. Describing the basic properties of the governance of complex systems.
2. Explaining the methodological challenges resulting from the properties.
1. Describing the basic features of QCA.
- 2/5. Explaining how and to what extent QCA answers to the methodological challenges.

Related course objectives: 2 and 5

Literature:

Verweij and Gerrits (2013). Understanding and researching complexity with qualitative comparative analysis: Evaluating transportation infrastructure projects. *Evaluation 19 (1)*, 40-55.

Befani (2013). Between complexity and generalization: Addressing evaluation challenges with QCA. *Evaluation 19 (3)*, 269-283.

Further reading:

Verweij (2015). *Once the shovel hits the ground: Evaluating the management of complex implementation processes of public-private partnership infrastructure projects with qualitative comparative analysis*. Rotterdam: Erasmus University Rotterdam. Part: Section 8.1 to 8.4.

Byrne (2005). Complexity, configurations and cases. *Theory, Culture & Society 22 (5)*, 95-111.

Gerrits and Verweij (2013). Critical realism as a meta-framework for understanding the relationships between complexity and qualitative comparative analysis. *Journal of Critical Realism 12 (2)*, 166-182.

3. Oct 28th *QCA research approach: The process of doing a qualitative comparative analysis*

QCA is first and foremost a research approach. It involves a research cycle of multiple, iterative steps that lead to increasing knowledge of the governance of complex systems. We will discuss two different examples of QCA studies (the prescribed articles below) in order to get a first hold on the basic rhythm of a QCA process.

Class objectives:

Level Objective

1. Describing the basic steps involved in a QCA research process.
2. Explaining how the steps in the QCA research process help the study of the governance of complex systems.
2. Identifying design requirements for the QCA research project associated with the steps in the QCA process.

Related course objectives: 3, 5, and 6.

Literature:

Delhi, Mahalingam, and Palukuri (2012). Governance issues in BOT based PPP infrastructure projects in India. *Built Environment Project and Asset Management 2 (2)*, 234-249.
Verweij and Gerrits (2015). How satisfaction is achieved in the implementation phase of large transportation infrastructure projects: A qualitative comparative analysis into the A2 tunnel project. *Public Works Management & Policy 20 (1)*, 5-28.

Further reading:

Rihoux and Lobe (2009). The case for qualitative comparative analysis (QCA): Adding leverage for thick cross-case comparison. In: *The sage handbook of case-based methods*. London: Sage.

4. Nov 4th *No class*

There is no class this week. You can use this time to start exploring cases and case data for your research project, and to start setting up your project (research objective/question and research design – see the above description of the research project). What are research questions and infrastructure project cases that you find interesting?

5. Nov 11th *QCA research approach: Set-theory*

In the previous class we gained an idea of the basic process of QCA. In this class, we will start to delve into the underlying theoretical ideas of QCA: set-theory and Boolean and fuzzy algebra. We will talk about what sets are, how cases have membership in sets, calibration, and the notations of and operations between sets.

Class objectives:

Level Objective

2. Explaining what sets are, how cases have membership in sets, and how set membership is calibrated.
2. Explaining the notations and operations in set theory.

Related course objectives: 3 and 6.

Literature:

- Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Introduction.
- Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 1.
- Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 2.

6. Nov 18th *QCA research approach: Complex causality*

Now that we know that QCA is a set-theoretic approach, we come to one of the most interesting features of set-theory for the study of complex systems: it allows us to study complex causality. In this class we will learn what complex causality is, and how it is fundamentally different from, say, correlations.

Class objectives:

Level Objective

2. Explaining and identifying sufficient conditions.
2. Explaining and identifying necessary conditions.
2. Explaining and identifying complex causality.

Related course objectives: 3 and 4.

Literature:

- Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 3.

Further reading:

- Grofman and Schneider (2009). An introduction to crisp set QCA, with a comparison to binary logistic regression. *Political Research Quarterly* 62 (4), 662-672.

7. Nov 25th *QCA: Truth tables 1*

In this class, we will further familiarize ourselves with one of the key elements in QCA, the point at which ‘QCA as an approach’ (classes 2 to 6) meets ‘QCA as a technique’: the truth table. From the previous class we learned what complex causality is, and now we will learn how it can be analyzed across cases.

Class objectives:

<i>Level</i>	<i>Objective</i>
2.	Explaining what a truth table is.
3.	Constructing a truth table.
3/4.	Analyzing a truth table.

Related course objectives: 3, 4, and 6.

Literature: Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 4.

8. Dec 2nd *Research project: Presentations and discussion*

So far, we learned about the basic aspects of the QCA research approach, and how QCA might aid our study of the governance of complex systems. In this class, you will present your plans (the first two elements of the [content of the research report](#)) for your QCA research project into infrastructure projects, which we will discuss with each other. Your concept reports will be distributed amongst the class members on **November 28th, 2015**.

Class objectives:

<i>Level</i>	<i>Objective</i>
6.	Composing a QCA research question.
6.	Composing a QCA research design.
5.	Evaluating the quality of QCA research questions and designs.

Related course objectives: 3 and 6.

Literature: Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Section 11.1 to 11.1.4 and Section 11.3 to 11.3.2.
Rihoux and Lobe (2009). The case for qualitative comparative analysis (QCA): Adding leverage for thick cross-case comparison. In: *The sage handbook of case-based methods*. London: Sage.

9. Dec 9th *QCA: Truth tables 2*

When we analyze truth tables, we often run into problems because truth table rows are covered by cases that have contradictory outcomes (logical contradictions), or because they are not covered by (enough) cases (limited diversity). Utilizing an example (see prescribed article below), in this class we will learn to identify and deal with the first problem: logical contradictions.

Class objectives:

Level Objective

2. Explaining and identifying logical contradictions.
2. Explaining consistency and coverage.
3. Calculating consistency and coverage.
3. Dealing with logical contradictions.

Related course objectives: 3 and 4.

Literature:

Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Section 5.1 to 5.3 and Section 5.6.

Verweij (2015). Producing satisfactory outcomes in the implementation phase of PPP infrastructure projects: A fuzzy set qualitative comparative analysis of 27 road constructions in the Netherlands. *International Journal of Project Management*.

Further reading:

Ragin (2006). Set relations in social research: Evaluating their consistency and coverage. *Political Analysis* 14 (3), 291-310.

10. Dec 16th *QCA: Truth tables 3*

In the previous meeting we discussed the issue of logical contradictions in analyzing a truth table. Today, utilizing another example (see prescribed article below), we will delve into the issue of limited diversity.

Class objectives:

Level Objective

2. Explaining and identifying limited diversity.
2. Explaining and identifying the sources of limited diversity.
3. Dealing with limited diversity.

Related course objectives: 3 and 4.

Literature:

Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 6.

Gross and Garvin (2011). Structuring PPP toll-road contracts to achieve public pricing objectives. *Engineering Project Organization Journal* 1 (2), 143-156.

11. Dec 23rd *No class: Christmas & New-Year's Holidays*

There is no class this week but you might use this time to work on your research project. I advise you to not postpone your work on the research project to the final weeks; this will get you into trouble with the deadline.

12. Dec 30th *No class: Christmas & New-Year's Holidays*

See the note from the previous week.

13. Jan 6th *No class: Epiphany*

See the note from the previous week.

14. Jan 13th *QCA software: Tosmana*

Up to this point, we have dealt with all the basic steps and elements of the QCA research process. Today, we will go through the technical parts of the process (i.e. from data matrix to solution formula; Chapter 7 in Schneider and Wagemann's book) with the Tosmana software, one of the available QCA software packages, by reproducing an existing analysis (see prescribed article below).

Note: download the Tosmana software (see www.compass.org) on your laptop and bring it with you to class.

Class objectives:

Level Objective

- 3. Constructing a truth table with Tosmana.
- 3/4. Analyzing a truth table with Tosmana.
- 2/5. Discussing the pros and cons of the Tosmana software.

Related course objectives: 3, 4, and 5.

Literature:

Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 7.

Verweij (2015). Achieving satisfaction when implementing PPP transportation infrastructure projects: A qualitative comparative analysis of the A15 highway DBFM project. *International Journal of Project Management* 33 (1), 189-200.

15. Jan 20th *QCA software: Fs/QCA*

Today, we will familiarize us with the fs/QCA software, the most used program by QCA researchers. Fs/QCA can be used for crisp-set and fuzzy-set analyses. Today, we attempt to reproduce an example of an fsQCA research (see prescribed article below).

Note: it is important that you have looked through the [fs/QCA User's Guide](#) prior to class, and that you have downloaded the fs/QCA software (see www.compass.org) on your laptop and bring it with you to class.

Class objectives:

Level Objective

3. Constructing a truth table with fs/QCA.
- 3/4. Analyzing a truth table with fs/QCA.
- 2/5. Discussing the pros and cons of the fs/QCA software.

Related course objectives: 3, 4, and 5.

Literature:

Ragin and Davey (2008). *User's guide to fuzzy-set qualitative comparative analysis*. Available here: <http://www.socsci.uci.edu/~cragin/fsQCA/>.

Verweij, Klijn, Edelenbos, and Van Buuren (2013). What makes governance networks work? A fuzzy set qualitative comparative analysis of 14 Dutch spatial planning projects. *Public Administration* 91 (4), 1035-1055.

16. Jan 27th *Research project: Presentations and discussion*

Today, you will present about your research projects so far. On **January 23rd, 2016** your concept research reports will be distributed amongst the class members. Your concepts reports and presentations will be reviewed by your colleague students, by assessing your QCA research projects against the standards of good practice in QCA.

Class objectives:

Level Objective

5. Evaluating the quality of a QCA research project.
5. Evaluating the strengths and weaknesses of QCA for the study of the governance of complex systems.

Related course objectives: 3, 5, and 6.

Literature:

Schneider and Wagemann (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press. Part: Chapter 11 up to Section 11.3.

Schneider and Wagemann (2010). Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. *Comparative Sociology* 9 (3), 397-418.

Further reading:

Rihoux and Lobe (2009). The case for qualitative comparative analysis (QCA): Adding leverage for thick cross-case comparison. In: *The sage handbook of case-based methods*. London: Sage.

17. February 3rd Wrapping up

In today's meeting, we will wrap things up and we address any remaining issues towards the completion of your research projects. The deadline for submitting your research reports is **February 12th, 2016**.