

# Conditions of E-democracy

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*Introducing configurational analysis in the study of e-democracy*

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**ABSTRACT:** *This paper introduces configurational analysis in the study of e-democracy through fuzzy set qualitative comparative analysis. On the basis of an inquiry into Dutch local e-democracy, it is shown that the relationships indicated by standard correlational analysis can be understood more thoroughly by means of this new approach. Conditions taken into account are policy competition/learning, municipality size, political color of the government, citizen pressure and electoral turnout. While none of these conditions are necessary to explain e-democratic development, combined they can amount to a sufficient explanation in some cases. In contrast, municipality size and a low turnout are necessary conditions for explaining a lack of digital democratic development. In conclusion, it is noted that the e-democracy literature advances by letting go of simplifying causal assumptions and exploring causal complexity.*

*With special thanks to:*

*Renata Heezemans*

*Fiet Kuijpers*

*Mirko Jouamer*

*Sjors Heezemans*

*Anne Lommers*

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*Masterthesis Comparative and European Politics*

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*Under the guidance of dr. K. T. E. Jacobs*

*Date: August 9<sup>th</sup> 2013*

*Wordcount: 31,824*

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## 1.0 Introduction

Increasingly, citizens in representative democracies seem to be turning away from the institutions once taken to represent their interests (Hibbing & Theiss Morse, 2002; Schmitter, 2011). For example, research shows a growing gap between political parties and their constituents, evidenced by developments such as rising voter volatility and decreased citizen campaign activity (Dalton, MacAllister & Wattenberg, 2000). In an attempt to regain the trust of citizens, governments are increasingly experimenting with direct democratic or deliberative experiments (Scarrow, 2001; Fahy et al., 2012). At the same time, internet technologies have been spreading around the globe, offering new opportunities and threats to established modes of governance (Chadwick, 2006). In light of these developments, a discourse has developed which states that these developments should go hand in hand. Proponents argue that governments *should* democratize and become more citizen-oriented with the use of the internet (Herman, Tapscott & Williams, 2008; O'Reilly, 2010; Berlo, 2012). Although these ideas are criticized by some (Morison, 2010; Kuijpers, 2011), they are nevertheless influencing governments to experiment in various ways with employing the internet in their attempt to reach out to citizens (Chadwick, 2006; Meijer, Boersma & Wagenaar, 2009).

Scholars who study the intersection between the democratization and digitalization of government make sense of these developments by differentiating between *e-government* and *e-democracy* (Coleman & Norris, 2005; Chadwick, 2006; Lee, Chang & Berry, 2011). Many definitions of this distinction exist, as will be made clear later in this paper. In spite of this, in general one can say that both concepts refer to digitally enhanced citizen influence on politics. E-government refers to the impact of digitalization on the executive branch of government, while e-democracy means its influence on the legislative branch. The amount of research on e-government is more numerous than that on e-democracy. One of the many reasons why this is the case might be that e-government is a more widespread phenomenon (Mahrer & Krimmer, 2005). Furthermore, possibly because of the fact that e-democracy is relatively in its infancy, much of the literature on it is normative (Nchise, 2012). It deals with possible or desirable developments of e-democracy. In addition, the small amount of empirical investigation that is undertaken usually has a specific focus. Most of the time, researchers inquire into the consequences of e-democratic policy. Questions include whether or not it is effective, and how citizens actually use e-democracy instruments<sup>1</sup>. In contrast, the antecedents of e-democracy policy are hardly ever investigated. Nevertheless, why scarce tax money is spent on developments like e-democracy is still a valuable question. To increase our understanding of e-democracy, this inquiry will focus on understanding the dynamics which drive its development. It will achieve this by focusing on the following question:

*How can the development of e-democracy found among Dutch municipalities be explained?*

The inquiry is aimed at Dutch municipalities. The main reason for choosing this country is that the Netherlands is known as a digital pioneer (Hoff, Horrocks & Tops, 2000a). To study e-democratic development, there first must be such a thing as a developed e-democracy. The Netherlands is one of the few countries where such developments are most likely to be found.<sup>2</sup> The reason to focus on the municipal level of government follows a similar logic. First, initiatives at democratization are most prominent at the local level of politics (Scarrow, 2001). Second, local administrators are closer to the citizens compared to those of other governmental levels. In the Netherlands, local governments account for approximately 70 percent of all government service transactions (Hoogwout, 2003). Therefore, they carry a lot of the burden of e-government as well (Shellong, 2009). Although these two aspects of local governance do not amount to e-democracy, they certainly are related to it. Thus, it is not unreasonable to expect that one is likely to find e-democracy at the Dutch local level of government. I will shed more light onto the reasons for selecting the Netherlands and the specific municipalities which are studied when the case selection is discussed.

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<sup>1</sup> For an interesting strategic viewpoint on e-democracy, see for example Watson & Mundy, 2001.

<sup>2</sup> Other countries which are well known for use of digital tools for government and democracy are Estonia (Charles, 2009), the United Kingdom and Denmark (Hoff, Horrocks & Tops, 2000a; 5).

In addition to investigating a relatively unexplored question, this inquiry adds to the research effort in other ways as well. First, the analysis will be carried out with a state-of-the-art method, namely Fuzzy Set Qualitative Comparative Analysis (fsQCA). This is useful because it offers a new way to look at cross-case analysis, one which does not study correlation. Therefore, it does not have to assume symmetric and homogeneous causality (Ragin & Rihoux, 2004; Ragin, 2000, 2008b). This means that it does not delve into the effect of *variables* on the outcome, *ceteris paribus*. Instead, the focus lies on finding *combinations of conditions* which might be part of a necessary or sufficient configuration for either the presence, or the absence of the outcome. Because causality is not assumed to be symmetric, the absence of the outcome is not necessarily explained by the same conditions as its presence (Ibid.). In other words, such a *configurational* approach leaves room for causal complexity. This is useful in cases where simplifying assumptions blur our view of complex realities.

Second, the field is criticized for its lack of actual empirical investigation. Many e-democracy scholars do not rely on case specific knowledge of the sample they are studying. Instead, they show a reckless trust in large-N datasets (Heeks & Bailur, 2006). This work will improve upon that, due to the case oriented nature of the chosen methodology. As the analysis shows, this leads to more empirically solid but also less broad explanations. However, this lack of generalization should not concern us. In traditional statistical analyses, the relation between the population and the sample is a mechanically feature of the analysis. The effect of a certain independent variable on the dependent variable is *assumed* to be homogenous. It is thus relatively independent from other factors, including those which might make up the context of the inquiry<sup>3</sup>. In contrast, fsQCA does not deal with generalization in such a mechanical way. It is up to the researcher to *decide* on the likeness of his sample to other cases. Any generalizations which *might* be made are dependent on the context and cases under study. In brief, fsQCA relies more on *choice*, and is therefore both more empirically informed and transparent.

Finally, the inquiry is firmly rooted in theory. This is in contrast with much of the earlier empirical work in the field of e-democracy and e-government (Heeks & Bailur, 2006). Moreover, the theories under scrutiny are derived both from the e-democracy and the offline participatory engineering literature. This is done because much e-democracy research emphasizes the link with e-government. Contrary to this, the connection with offline democratization initiatives is relatively undertheorized.

As a result of the research question and the methodology, this work is built around two main propositions. The first is that e-democracy is a complex process. It is shown that prominent explanatory variables in the e-democracy literature are only capable of explaining e-democratic development under very specific circumstances. Due to the prominence of these variables, this is a surprising result. The conditions which are studied are as follows: policy diffusion, citizen pressure (Lee, Chang & Berry, 2011), the political color of the municipal government (Borge, Colombo & Welp, 2009), municipality size (Ibid.), and finally electoral turnout (Ibid.; Svensson & van der Graft, 2006). More specifically, the investigation shows that none of the factors under study are *necessary* for e-democratic development. Only when many of them work together are they sufficient to explain e-democratic development for a *very small* proportion of the sample. Moreover, only a small municipality size and a high electoral turnout are necessary conditions for explaining e-democratic underdevelopment. When these necessary conditions are combined with a democratically reformist government and a low proportion of highly educated citizens, they do amount to a sufficient explanation of e-democratic underdevelopment. In light of these findings, assuming homogeneity, additivity and symmetry of causal relations seems unreasonable. Nevertheless, all these simplifying assumptions with regard to causality are built into correlational approaches. Therefore, the second argument which is central to this work is that the configurational approach deepens our understanding of social phenomena. The ability to analyze complex causality demonstrates the added value of the configurational approach. Through explicit comparison with ordinary least squares regression, this paper shows that scholars of e-democracy would be wise to add configurational approaches to their arsenal of methods.

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<sup>3</sup> Some statistical techniques, such as Multi-Level Analysis, allow for the interaction between certain variables and context. However, the contextual variables are treated the same as any other. Thus they still are assumed to have independent and additive effects (Steenbergen & Jones, 2002).

The remainder of this work follows a relatively standard format. To start with, some basic concepts are explained. This section deals with how e-democracy is embedded in democracy, and what its digital components are. In chapter 2, the theoretical framework of this paper is outlined. Both the definition and causal explanation of e-democracy are based on a broad overview of relevant literature. Insofar the conditions under study are derived directly from the e-democracy literature, they can be associated with a social constructivist theoretical perspective (Parvez & Ahmed, 2007). Chapter 3 deals with methods and measurements. Since this paper is one of the first attempts to introduce fsQCA in the study of e-democracy, many readers will be unfamiliar with this method. Therefore, an explanation of relevant concepts is necessary to grasp the logic of the inquiry. Chapters 4 and 5 deal with respectively the analysis and its theoretical interpretation. Afterwards, the results are compared with an ordinary least squares regression on the same data. In chapter 5, I discuss the implications this investigation has for the way we explain and study e-democracy. This study's impact is naturally curtailed by its limitations. Therefore, I reflect upon the shortcomings of this investigation at the end of this work.

## 1.1 Basic Concepts

Before moving on to definitions and explanations of e-democracy, it is useful to clarify the notions of democracy and the Internet which will inform the choices made in this research. After all, these concepts are the basis for understanding e-democracy as the intersection of democratization and digitalization.

### 1.1.1 Democracy

What is the relationship between e-democracy and its offline sibling(s)? Some authors prefer to view concrete democracies as the actualization of different “models” of democracy (Held, 2006). Rather than one sibling, e-democracy might have many different brothers and sisters. E-democracy scholars who hold such a view will study e-democracy in a way that corresponds to this understanding of democracy. An example is the work of Christine Bellamy, in which she tries to clarify the relation between e-democracy and several other models of democracy (Bellamy, 2000). The models which she distinguishes are the consumer democratic model, the demo-elitists model, the neo-republican model and finally the cyberdemocratic model (Ibid.; 41-9). Despite the theoretical existence of these discrete models, their application in reality can have unintended and unexpected consequences. Stavros Zouridis and Victor Bekkers argue that the adoption of the consumerist democratic model by Dutch municipalities promotes multiple models of democracy at the same time. It is not even clear whether the models which it promotes are a departure of the traditional, constitutional model of democracy or not (Zouridis & Bekkers, 2000; 123-9). Due to this conclusion, the editors of the volume in which both works are published question the usefulness of discrete models of democracy (Hoff, Horrocks & Tops, 2000b; 187). In sum, the discrete model approach leads to a theoretical maze. In order to avoid these murky distinctions, I view e-democracy as continuous with existing democracies.

In pursuance of a coherent notion of e-democracy, I rely on Charles Tilly's definition of democracy. The decision to choose this definition over others, stem from reasons which become apparent after his work is discussed. He designates a regime as democratic *in so far* relations between citizens, the state and other political actors are characterized by broad, equal, protected and mutually binding consultation (Tilly, 2007). Broadness refers to the scope of political inclusion and participation. Furthermore, the consultation should not only be protected from state actors, but also against non-state actors such as organization, businesses and other citizens (Ibid.). Finally, I interpret the mutual bindingness of the consultation not in a contractual sense. This is because many democratic institutions in a state, including direct, deliberative or online instruments, have to deal with the bond between the citizen and their representative in the legislature. This central relationship cannot be contractual, because the representative creates laws for the entire nation and not merely for his or her constituency. The representative has to deal with the common interest and not any particular one (Urbinati, 2011). In contrast, it should be recognized that “bindingness” is a lived experience which is found in varying degrees in many political relationship (Saward, 2011). Thus, a formally non-binding referendum may still feel very definitive for certain political actors. The fruitfulness of utilizing this definition is based on numerous reasons. First, it clarifies that the consultation is between citizens and *political* actors. Debating the scope of who counts as a political actor in this context is part and parcel of the e-democracy

literature. This question is central in the e-government versus e-democracy debate. Second, the centrality of consultation underscores its importance of mediation between citizens and their polity. Democratic processes rely on information flows and communicative practices (Hilbert, 2013). E-democracy initiatives are embedded in this communicative framework of representative democracy. This is an important point since it influences *who* develops e-democracy instruments and *why* they do so. Finally, because a regime can only be democratic to a certain degree, it emphasizes the importance of e-democracy for democracy itself. The development of e-democracy becomes not a question of *which* democracy, but *how much* democracy.

### 1.1.2 E-democracy: The Internet, the Web, and Web 2.0

The internet is the defining medium of what has been labeled the information age (Hacker & van Dijk, 2000; Anttiroiko, 2003; Chadwick, 2006). This technology led us into an era of communicative abundance, which alters the way democracy does, can and should work (Ibid.; Coleman & Norris, 2005; Keane, 2011). Even though the internet is usually thought of as a unified whole, it actually consists of multiple *virtual spaces*. The first of these separate spaces was the *World Wide Web* (Chadwick, 2006). Secondly, recent developments led to a new virtual space called *Web 2.0* (O'Reilly, 2010). Understanding these digital components of the internet is crucial for understanding e-democracy (Hilbert, 2009; Chadwick, 2009). This is because e-democracy does not only take place in the *political* context of democracy, but also in the *technical* context of virtual reality. These spaces define what e-democracy can and does look like. Therefore, they also determine what e-democracy can and cannot be. In this section, the origin and make-up of these virtual spaces is discussed.

Technically, the internet is a network-of-networks which is relatively decentralized and organized around common standards and protocols in a global realm (Chadwick, 2006). It is the Transmission Control Protocol/Internet Protocol (TCP/IP), which enables the core characteristics of the internet. These are (a) its possibilities of limitless expansion, (b) its robust yet flexible nature to accommodate free-standing networks and finally (c) the difficulty of centralized control and surveillance (Leiner et al., 2000). In spite of this potential for expansion, the early internet was created by and for those with the technical skills to navigate it. This slight elitism decreased when several technical innovations, like the Domain Name System (DNS) and Hypertext Markup Language (HTML) radically increased the user-friendliness of the internet. These caused a subset of the internet, called the World Wide Web, to be compatible with graphical browsers. Browsers could be operated without intimate knowledge of technical details. Gradually, the global network started to feature a global, mass user base (Chadwick, 2006; 44-6). It is this global character which the Web is most known for. This is not surprising, since it is precisely this feature that sets it apart from traditional electronic media like television and radio. These are tied to geographic areas and more reliant on national gatekeepers (Dutton, 2005). Another difference with traditional mass media is that the internet created its own categories of communication. Many-to-many and many-to-one communication became possible next to the traditional categories of one-to-one and one-to-many (Ibid.; Dutton, 2005). For example, people who visit an internet forum produce and consume information with many others at the same time.

The peculiarities of this medium are necessarily a part of e-democratic instruments. However, in order to understand e-democracy, we also have to look at more recent developments. This is because some authors contend that a section of the World Wide Web radically changed in the early 21<sup>st</sup> century. These authors refer to Web 2.0 to signify the rediscovered potential of the Web after the crash of the dotcom bubble at the turn of the millennium (Herman, Tapscott, Williams, 2008; O'Reilly, 2010). This Web 2.0 increasingly takes up virtual space alongside digital technologies as the Web and the Internet. It differs from its predecessors in numerous ways. First, Web 2.0 relies on the understanding that the web is a platform and not a commodity. Rather than static, product-like web pages, it contains ever evolving software services such as social networks (O'Reilly, 2005). Second, it entails the idea that many amateurs with simple tools can produce value superior to a select number of experts with complex tools. This idea is known as collective intelligence, an example of which is the online encyclopedia Wikipedia (O'Leary, 2005). Third, users are treated as co-developers to constantly refine the services offered (O'Reilly, 2005). Finally, the notion of "innovation in assembly" means that an abundance of components is used to create something new, either by or for users (Ibid.). These characteristics results in a communicative environment in which synchronous and asynchronous communication overlap and which offers many thresholds of participation (Chadwick, 2009; Hilbert,



2009). The development of Web 2.0 is crucial for a contemporary notion of e-democracy. This is e-democracy takes place simultaneously on the World Wide Web and Web 2.0. As we will see later on, certain characteristics of each are transferred onto e-democratic initiatives, depending on where the instruments are located.

In brief, the internet is an increasingly accessible and salient medium for many people. This is underscored by the fact that traditional media increasingly depend on it for their own functioning (Wheatley, 2012; Bapna, 2013). Therefore, to study its influences on the communicative practices at the heart of democracy is an important task. In the next section, I cover the theoretical discourses which investigate this.

## 2.0 Previous Research and Theory

Research on the subject of e-democracy pursues a variety of academic ends. Theoretically inclined work is concerned with a proper definition of e-democracy and assessing its desirability. Empirically engaged researchers attempt to map its development, and construct theories which make sense of this development (Nchise, 2012). First, I address several definitions of e-democracy. This investigation clarifies the differences with e-government, and the challenge brought about by the technical development towards Web 2.0. The resulting findings provide the foundation for the conceptual definition of e-democracy that is used in this work. Second, I review theoretical approaches that attempt to explain the diffusion and development of e-democracy. These and other theories of democratic development function as the resources for the conceptual hypotheses guiding the analysis.

### 2.1 Defining E-democracy

#### 2.1.1 The difference with e-government

Although in general it can be said that all definitions of e-democracy include some transformatory relationship between the use of the internet and the enhancement of democracy, there are substantial differences regarding the understanding of this relationship. In fact, in a conference held at the Oxford Internet Institute (OII) in May 2004, the lack of a consensus on a proper definition of e-democracy was seen as one of the major political barriers to its success (Coleman & Norris, 2005). During that conference, e-democracy was defined in such varying ways as:

- “[E-democracy is] a means for disseminating more political information and for enhancing communication and participation, as well as hopefully in the long run for the transformation of the political debate and the political culture.” (Ibid.; 6)
- “[E-democracy is] anything that governments do to facilitate greater participation in government using digital or electronic means. [...] any form of ‘digital engagement’.” (Ibid.; 7).

These definitions are very general or normative. Therefore, they are rather unhelpful. In contrast, a more specific definition which touched upon the difference between e-democracy and e-government is the following:

- “E-democracy [...] covers those arrangements by which electronic communications are used by those in power and the citizens they serve to interact with each other in order to inform and modify the way that power is used. [...] a way of empowering citizens in the process of making major national decisions.” (Ibid.; 7).

In this conceptualization, e-democracy is explicitly concerned with major national decisions. In addition, citizens should not only be informed, but also empowered. This implies that political participation is a central feature of e-democracy. These features *implicitly* distinguish it from e-government, which is usually associated with citizen influence on the implementation of government decisions. Nevertheless, the definition is still too vague. It states that e-democracy should modify the way that power is used, while it is unclear *how much* modification of *whose* power is necessary or sufficient to count as e-democracy. Furthermore, the word “major” is problematic since it is unclear *for whom* it should be a major decision.

The distinction between e-democracy and e-government is explicitly considered by Andrew Chadwick. He defines e-government as the use of internet by government agencies to improve efficiency, cut costs, and change their interactions with citizens (Chadwick, 2006; 178). Democratization might sometimes be an instrumentally valued

side-effect of the pursuit of these administrative goals (Ibid.; 197). In contrast, e-democracy is explicitly concerned with the online promotion of political participation outside elections (Ibid.; 84). Its theoretical foundations are found in Robert Putnam's theory of social capital and Jürgen Habermas' ideas on the ideal public sphere. These theories provide the causal and normative beliefs underlying e-democracy instruments (Ibid.; 90).

On the other hand, Lawrence Pratchett problematizes the distinction between e-government and e-democracy. He argues that it is a false distinction for two reasons. First, citizens do not distinguish between routine interactions with the political administration and other forms of political engagement. Second, government employees use the same technologies to communicate with citizens, colleagues and other agencies (Pratchett, 2007; 4). However, these reasons are questionable on a number of grounds. First, citizens do distinguish between political participation and routine interaction with the governmental administration. For example, participants in a citizen initiative might be moved by feelings of injustice and inadequacy of the law. It simply requires too much creativity to attribute this motivation to someone filling in her tax forms. Second, even though government employees might use the same technologies for a variety of ends, this does nothing to illuminate *how* they use *which* technologies for *which* ends. For example, a paradigmatic e-democratic instrument is the *community network*. This is a digital network, usually a forum or message board, designed to meet the social needs of a geographically defined group of citizens (Chadwick, 2006; 90). It is this specific way of using the technology what interests us as researchers, not that it is written in the same code as the site of the governmental administration. In the next section, it is made clear that the *specific* use of online technologies to promote political participation is what e-democracy is all about. In fact, due to this necessary specific nature, e-democracy has become a moving target for scholars with the development of Web 2.0.

### 2.1.2 E-democracy and Web 2.0

To put it rather dramatically, Web 2.0 has solved the problem which haunted older e-democracy instruments inspired by deliberative theory: the inverse relation between the number of participants and the depth of participation (Hilbert, 2009). In addition, the deliberative assumptions about human online behavior are falsified by the way humans use Web 2.0. For example, one of the assumptions was that in the online realm people will rationally debate with one another. Sites would be most successful if they offered opportunities for this kind of interaction (Chadwick, 2009). In contrast, social networks are so successful precisely because they do *not* assume the activity of rational debate. Rather, their success is based on blending possibilities to debate with less demanding activities focused at self-expression and lifestyle (Olsthoorn, 2011). This is problematic for e-democracy research, because precisely these deliberative assumptions were used in previous attempts to both judge and measure e-democratic development (Chadwick, 2009). In addition to this, the opportunities offered by the development of Web 2.0, such as social media, are already recognized by politicians who want to digitally reach out to citizens. As early as 2006, Christine Williams and Girish Gulati reported a huge increase in the social networking and blogging of U.S. political candidates (Williams & Gulati, 2007). Moreover, the candidate's Facebook support actually had a significant and independent effect on their final vote shares in the 2006 mid-term elections (Ibid.; 14-16). Second, the Web 2.0 theme of "innovation in assembly" is also used in the political sphere. An example is the Dutch site *verbeterdebuurt.nl*. Via this site, any user can report and vote on a problem they have with the public space. Problems with sufficient votes are used as input in the development of municipal policy (CreativeCrowds, 2013). It is a typical Web 2.0 characteristic that these sites rely on the input from visitors for its value. Finally, Web 2.0's granular multimedia character is also noticed by political actors. An example is the *vlog* Webcameron, which played a big role in the 2010 national elections of the U.K. (NOS, 2010). This *vlog* offered both audiovisual and textual interactions between the candidate and the public. Citizens who thought a video response was too much of a hassle, could leave a comment or simply "like" the reaction made by someone else.

These developments in the virtual public sphere challenge the study of e-democracy in a number of ways. First of all, they show the inadequacy of a notion of e-democracy based on deliberation. On the contemporary internet, it seems foolish to view development as simply offering the deepest possible participation in rational debate. Rather, offering participation on many levels is what should count towards a developed e-democracy. Second, it invites researchers to look for e-democracy in places which were previously unexplored. Community

networks or government sponsored forums are the traditional crime scenes of e-democracy scholars. A singular focus on these digital spaces to identify e-democracy would blind us to the fact that representatives nowadays also reach out to citizens in other virtual spaces, such as social networks. With these caveats in mind, we can now move on to define e-democracy conceptually.

### 2.1.3 E-democracy: a conceptual definition

To reiterate, the notion of e-democracy which is used in this paper is built upon Tilly's definition of democracy. This definition allows us to place e-democracy within the practices of consultation between citizens and their polities. More specifically, it can be seen as one of the ways in which this consultation process can be enhanced in terms of its broadness, equality or bindingness. The distinction with e-government alerts us to the fact that this consultation has to influence the actual policy decisions of a community. It is the trademark of democracy that citizens can influence *these* decisions rather than those relating to an efficient implementation. Finally, the development of Web 2.0 implies that we should not narrow e-democracy to government sponsored sites or community networks. Alternate routes to online consultation are open to both representatives and their citizens. In light of these considerations, I define e-democracy as follows:

*An infrastructure of democratic consultation between citizens and their polities enabled by digital ICTs such as the Internet, the World Wide Web and Web 2.0.*

First of all, it is important to note that e-democracy is an infrastructure. In this sense, it is similar to offline forms of democratic consultation. Perhaps it is best explained by comparing it to the political vote. A country which facilitates equal opportunities to vote for everyone is not suddenly less democratic when its turnout rates drop. Rather, it can be considered less democratic when a certain proportion of the population is declined the opportunity to vote. Thus, while the actual *use* influences its *legitimacy*, it is the *infrastructure* which determines its *degree* of democracy. Similarly, a government that is open to all forms of digital communication can be considered a highly developed e-democracy.

Moving on, democratic consultation describes a continuum between unilateral transmission and reflexive interaction (Pratchett, 2007). The one end of the continuum describes the *provision* of politically relevant information to citizens. The other end describes, more or less politically binding, *reciprocal communication* between citizens and their representatives. In order to account for the value of granularity, no demands are placed on this communication. E-democratic development is not captured by how close the instrument under study approaches to ideal of complex deliberation between citizens and representatives. Rather, e-democracy on the contemporary internet should be seen in terms of its user-friendliness and offering various thresholds of participation (Chadwick, 2009). Therefore, transmission and interaction are equally important for a notion of developed e-democracy. This is not only because varying thresholds of interaction are placed on various points on the continuum between transmission and interaction. Just as important is that e-democracy exclusively refers to *ICT enabled* democratic consultation. This means that it must be embedded in the structure of offline democracy. Consequently, mere digital transmission can have huge consequences in the offline world. For example, the publication of the precise voting behavior of members of parliament on issues is definitely a simple transmission. Nevertheless, citizens who need to make an informed decision when they must vote for one or another party, are greatly helped by this information. This very non-interactive communication can still be very important to them. The current definition of e-democracy takes all these considerations into account.

## 2.2 Explaining E-democratic Development

All inquiries into the dynamics behind e-democracy must answer a simple yet fundamental question: Which factors are taken into account? The answers to these questions are numerous of course, but all lie somewhere on the continuum between social determinism on the one hand, and technological determinism on the other (Heeks & Bailur, 2006). The former refers to the idea that social practices are largely shaped by inherent technological properties. These properties, once developed, are structural components beyond the reach of human agency. Contrary to this, social determinism posits that technology itself is nothing more than the product of underlying

social factors. Thus, the technology itself has no effect whatsoever, only the social forces are important for explaining phenomena (Ibid.; 19). Unlike these two extreme positions, e-democracy theory occupies the middle ground. Both technological and social factors are taken into account, albeit in varying degrees. Zahid Parvez and Pervais Ahmed (2007) differentiate between four different perspectives in the literature. These approaches to explaining e-democracy are: soft technological determinism, informatization, social shaping of technology and social constructivism.

In this paper, most hypotheses are derived from the social constructivist perspective. Therefore, I first explain the other approaches shortly, before attending to social constructivism more extensively. After this, some literature on offline participatory engineering is discussed as well. This discourse deals more thoroughly with conditions which are only implicitly or superficially taken into account by the e-democracy literature<sup>4</sup>. The conceptual hypotheses formulated based on these approaches will be dealt with after this broad overview of the relevant literature. These are discussed on a condition by condition basis. This is because the relevance and causal properties of some conditions are supported by multiple theories.

### 2.2.1 Other perspectives

To start off, I discuss the soft technological determinist approach. In general, scholars in this strand of thought focus on the new ways people are able to communicate using the internet, and the effect these new possibilities have on existing social arrangements (Parvez & Ahmed, 2007). Many authors in this strand of thought believe that the tranformatory path e-democracy follows is quite standard and context-independent. This belief stems from the assumption that e-democracy is mainly driven by an universal progress in technology. Thus, the governments' integration will mimic that of the private sector (Wescot, 2001). Setting up a digital network leads directly and predictably to a fully joined up government, due to the attractiveness of these new technologies (Ibid.; 6-13). This joined up government is horizontally integrated, which means that it presents itself seamlessly to the public (Ibid.; 13). In addition, some scholars argue that this horizontal integration leads to vertical integration. Familiarity with the internet and awareness of its benefits leads the public to demand the integration of higher and lower level of government as well. In the end, the government truly will become a one-stop shop (Layne & Lee, 2001). Obviously, no one has ever seen such an integrated government pop up. Therefore, it is not surprising that this perspective is often criticized for its normative basis and the inaccuracy of its predictions (Coursey & Norris, 2008; ter Hedde & Svensson, 2009).

Second, the informatization perspective focuses on the way e-democracy is shaped as an information system. This means that its development is mostly affected by the needs for information flows in and between organizations. Scholars who study e-democracy from an informatization perspective, focus on the way ICTs are being used to alter flows of information between governments, citizens and organizations. The utilization of ICTs affects these flows in intended and unintended ways (Parvez & Ahmed, 2007). Despite this perspectives' strong support in the public administration discipline, it can be criticized for its apolitical character. This means that it does not study the vested interests in a certain polity, or the competition that takes place between networks associated with policy making itself (Hudson, 1999).

Third, the perspective which Parvez and Ahmed label "social shaping of technology" focuses on the macro-level societal forces which influence the need for certain technologies (Parvez & Ahmed, 2007). For example, Albert Meijer, Kees Boersma and Pieter Wagenaar locate the development of governmental ICT initiatives in the hypes surrounding new technologies. These hypes stress the potential of the new technologies and trigger modernization desires (Meijer, Boersma, Wagenaar, 2009). In particular, the development of e-democracy was on the one hand reinforced by the widespread belief that political participation outside formal elections had to be strengthened, and the faith in the employed technologies on the other (Chadwick, 2006; 84-90). The theoretical foundations for these beliefs are found in Robert Putnam's concept of social capital and Jürgen Habermas' public sphere. According to this view, e-democratic initiatives try to increase participation by advocating a new communitarian ethic. As demonstrated by the theory of social capital, this should lead to increased dissemination of positive values. This

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<sup>4</sup> This was precisely the criterion for selecting relevant participatory engineering literature. The approach taken was to search for findings and theories which were complementary to the e-democracy literature.

diffusion brings about increased social reciprocity, rising political efficacy and widespread political participation (Ibid.; 86-7). Furthermore, these initiatives are inspired by the idea that the internet is the perfect medium to create a Habermasian autonomous sphere of rational and power-free deliberation (Ibid.; 89). In contrast, the development of e-government was strengthened by the New Public Management discourse. The citizen was framed as consumer, which demanded high end service delivery from the executive (Ibid.; 182). In brief, this view focuses on the broad social forces which shaped previous e-democracy instruments. Although these broad social forces are interesting, their influences on the variation of e-democratic development between regionally concentrated local governments are probably very indirect. Therefore, it might be more fruitful to focus first on the immediate social context surrounding e-democracy instruments. The social constructivist perspective illuminates precisely this.

### 2.2.2 The social constructivist perspective

Social constructivism focuses on the role of human agency in the shaping of technological systems. It tries to explain how actors want to achieve certain objectives, within certain immediate constraints, with the development and use of technology (Parvez & Ahmed, 2007).

An example of this approach is the study conducted by Chung-pin Lee, Kaiju Chang and Frances Stokes Berry (2011), who investigate the global diffusion and development of both e-democracy and e-government at the national level. They are unique in that they study the separate development of these two concepts. To do this, the authors use four public policy adoption models. The adoption of certain policies might happen through (a) policy competition between states, or by (b) learning from other states. These factors are directly related to adoption through policy diffusion. Factors more internal to states are also taken into account, namely (c) normative pressures and (d) citizen pressures (Ibid.; 446-7). The competition model posits that the aims and developments of neighboring states will lead to adaptive pressures experienced by crucial state actors. Adjacent countries feel the pressure to keep up with each other and they devise policies to avoid any competitive disadvantages. Thus, the average level of e-government and e-democratic development of adjacent countries is expected to be positively related to these developments in a country (Ibid.; 446). The second model centers on the learning effects between actors. The strength of these effects depends on the place an actor has in the network. The more central an actor is to the network of early adopters of technology, the more likely that an actor learns from their mistakes and success. In turn, this reduces uncertainty and thus lowers barriers to implementation and development of that technology. As such, the authors expect that the more a state participates in international organizations, the higher its level of e-government and e-democratic development will be (Ibid.; 447). Third, policy development can occur due to the pressure derived from normative mandates. These arise from the degree to which a state is perceived to put effort into increasing transparency, freedom and democracy. The authors argue that states that are perceived to perform better on these well-accepted policy standards experience greater pressures to adopt and develop e-government and e-democratic institutions. This is because they are seen as normative leaders on the world stage (Ibid.; 447). Finally, pressures from public opinion may also push state actors to develop more extensive e-government of e-democratic institutions. The citizen pressure model of policy adoption leads the authors to expect that a state with a higher educated population and greater internet diffusion has a more advanced e-government and e-democracy. This is because such a population is more likely to know about popular policies in other states (Ibid.; 447).

The result of their inquiry is that e-democratic development is only explained by the policy development models related to normative mandates and citizen pressure. Interestingly, e-government development is explained by *all* four of these factors (Ibid.; 448). This leads the authors to conclude that e-government is more externally driven compared to e-democracy. Government leaders compete for having an efficient and modern bureaucracy. In contrast, e-democracy seems to be dependent upon the presence of strong normative beliefs within a country. They conclude that e-democracy norms are not sufficiently diffused on an international level to shape pressures external to states (Ibid.; 449-50).

As has become obvious from the discussion above, many e-democracy scholars try to answer questions why governments try to enhance their democracies specifically through the use of new communication technologies. Unfortunately, the question why democracy is enhanced *at all* is rarely taken into account. This leads the literature to overemphasize the link with e-government, and downplay the link with offline democratization initiatives. This is



problematic since many valuable insights can be offered by this literature. After all, e-democracy is not only about internet usage. It is also about engineering with democratic consultation.

### 2.2.3 E-democracy and democratization

One of the few attempts to link e-democracy with offline participatory engineering is the work of Rosa Borge, Clelia Colombo and Yanina Welp. They studied the on- and offline democratization of Spanish municipalities simultaneously. To synthesize these two concepts, the authors developed a scale which goes from informing the citizen via help desk or website to binding online and offline deliberation, such as online forums or citizen juries. This way, they are able to explain the variation in the empowerment of the citizen in determining political outcomes regardless of the medium (Borge, Colombo & Welp, 2009; 899-905). Moreover, they explicitly take municipality size into account. Whenever this condition is included in e-democracy or e-government literature, it mostly is held constant. The causal chain linking size and participation is not elaborated, but based on previously discovered correlations the authors expect a positive association (Ibid.; 907). Furthermore, the political composition of the local government enters the analysis as well. Their expectation is based on the empirical finding that municipalities with more initiatives belong to the left of the political ideological spectrum (Ibid.). The authors find that the political color of the municipal government does not explain e-democratic or offline democratic development. They attribute this to the fact that municipality size 'explains' this condition: larger municipalities have a tendency to be leftist. Third, the authors hypothesize that municipalities with higher electoral abstention rates develop more participatory initiatives. This is because there is a greater perceived need to regenerate civic participation. Fourth, factors relating to demand are taken into account by looking into the variation in the number of internet users in a municipality. Finally, a positive relation is expected between empowerment and several socio-economic variables. These include the level of education, and the wealth and employment status of citizens (Ibid.). Their analysis demonstrates that municipality size has the greatest independent effect. In addition, only very strong abstention rates have a significant positive effect on participatory initiatives (Ibid.; 915-8). Interestingly, the finding that abstention rates only have an effect when they are extreme is collaborated by the study of Dutch local e-democracy by Jürgen Svensson and Paul van der Graft. They found a small but significant effect on municipal e-democracy from abstention rates higher than half of the voting population (Svensson & Graft, 2006; 126). Apparently, the need to bring civic participation back to life must be quite urgent before governments act on it.

In addition to studying different conditions, the broader participatory engineering literature has to offer us something else as well. In the study conducted by Borge, Colombo & Welp, socio-economic variables only entered the equation as control variables. Nevertheless, they might actually have an explanatory role. Lee, Chang & Berry linked one of these variables, namely education, to citizen pressure. As has been discussed, they demonstrated that a larger group of higher educated citizens in a state led to more pressures for e-democracy because these citizens know and desire policies from other states (Lee, Chang & Berry, 2011). This is a very specific causal mechanism, which can be generalized thanks to the literature which explicitly studies the demand for reform.

The question why citizens call for a more transparent and more responsive government seems to have at least two answers. As it turns out, the answer citizens give depends for a great deal on their level of education. The first answer is that democracy is valued by citizens who hold new post-materialist values and are more engaged with politics (Bowler, Donovan & Karp, 2007). These *critical citizens* usually have enjoyed a relatively high level of education. This points out that desire might to a certain extent be based on capability. Critical citizens are more likely to possess the resources and skills to navigate policy decisions (Ibid.; 354). Therefore, critical citizens do not only demand more participation, they also display a willingness to participate. In contrast, the second possible answer is usually given by citizens who like to keep their distance from political processes (Hibbing & Theiss-Morse, 2002). Their answer stems from a feeling of disaffection with the way modern democracies function. These *stealth democrats* do demand more say in politics. However, the only time they would want to use the desired instruments is when they feel excluded or betrayed by politicians (Ibid.; 129-59). This democratic divide by educational attainment is also visible in the Dutch local political context. Research shows that both higher and lower educated citizens demand more opportunities for participation, with 66% of the higher educated indicating this want, and 70% of the lower educated. As is expected by theories above, these groups are differentiated by their willingness to take

action. Only 47% of the lower educated reporting such a willingness versus 63% of the higher educated (Leyenaar & Jacobs, 2001; 93). This suggests that both critical citizens as well stealth democrats are present in society when it comes to local government. In fact, the numbers are remarkably close with an estimate of 38% critical citizens and 31% stealth democrats (Ibid.; 92-3). The critical citizen vs. stealth democrat debate provides us with a more solid base than offered by Lee, Chang & Berry to link education to citizen pressure. After all, merely knowing policies of neighboring states might not immediately imply a desire for them.

In the next section, the above discussion is applied to this paper in order to derive hypothesis with regard to the relevant conditions and the outcome. The relevant conditions were selected on their prominence in the e-democracy literature. In search for some supplementary conditions or causal mechanisms, some participatory engineering theory was studied as well. The resulting mix of conditions and theoretical bases is summarized below.

**Table 1: Explanatory conditions and their theoretical basis**

<i>Condition</i>	<i>E-democracy literature</i>	<i>Participatory engineering literature</i>
<b>Policy diffusion:</b>		
Taken into account	Yes	n/a
Causal mechanism	Yes	n/a
<b>Citizen pressure:</b>		
Taken into account	Yes	Yes
Causal mechanism	Partly.	Yes
<b>Electoral turnout:</b>		
Taken into account	Yes	Yes
Causal mechanism	No	Yes
<b>Political color of government:</b>		
Taken into account	No	Yes
Causal mechanism	No	No
<b>Municipality size:</b>		
Taken into account	Implicitly	Yes
Causal mechanism	No	No

### 2.3 Application and Hypotheses

Before we can derive hypotheses from the theories discussed above, we first have to solve a certain problem. This problem is figuring out a way to translate correlational findings into configurational hypotheses. Therefore, I first briefly explain the way in which the configurational approach links conditions with outcomes. Of course, the discussion of other relevant aspects of this approach is postponed until Chapter 3.

In short, the configurational approach aims at providing set theoretic statements between cases belonging to instances of the outcome and those cases belonging to instances of certain conditions (Ragin & Rihoux, 2004; Rihoux & Ragin, 2009; Ragin, 2000, 2008a, 2008b). The most important relation two sets can have is the subset relation. To put it simply, when one finds that instances of the outcome are a proper subset of instances of a certain condition, one can conclude that this condition is *necessary* for the outcome. It means that the condition is *always* present when the outcome occurs. On the other hand, when one finds that instances of a certain combination of conditions are a subset of the outcome, it leads to the conclusion that this combination is *sufficient* for the outcome to occur. In other words, the outcome *always* occurs when the combination of conditions is present (Ragin, 2008a; 18). Each condition is considered as part of a configuration, which is a technical term for a certain constellation of conditions. However, unlike the correlational approach, sufficient or necessary *configurations* do not have to consist of the same *conditions*. Multiple causal “paths” to the outcome are possible, this is called the principle of equifinality (Ibid.; 15). It is not unthinkable that in some configurations the presence of a condition might be conducive to the outcome, while in another context it is rather its absence which makes the outcome occur.<sup>5</sup>

<sup>5</sup> As an example, consider a hypothetical relation between the availability of funds and successful strikers of factory workers. Correlational analysis might point out that strikers who have funds and media sympathy are more likely to be successful. However, it might be the case that under certain conditions having no funds is conducive to a successful strike as well. When the

In this work, the correlational inferences reviewed above are re-written to fit the configurational logic. In this endeavor, findings as “In general, X is positively associated with Y” were interpreted as two sentences in one. First, it can be read as “X is part of at least one configuration leading to the outcome”. After all, the researcher who discovered this found that condition to be conducive to the outcome in at least a sufficient subset of her sample. The finding is not a claim for the complete sufficiency, nor necessity, of that single condition. In fact, the correlational approach does not distinguish between these possibilities. Therefore, the *necessity* of any condition for the outcome is still unknown. Remember that when a condition is necessary it automatically appears in all configurations leading to the outcome. In sum, conditions can be part of at least one sufficient configuration in two ways. Either as a *necessary* condition, or together with others as a sufficient but unnecessary condition. In the latter case, I call a condition *jointly sufficient*. Second, an alternative reading of a correlational statement is possible. This is due to the assumption of causal symmetry made by correlational analyses. A positively correlated inference also implies that “The negative of X is part of at least one configuration leading to the negative of the outcome”. With the configurational approach, this assumption of causal symmetry can be tested. Based on theory, hypotheses can be constructed which link the negatives of certain conditions with the negative of the outcome (Ibid.). Whatever the negative of a concept is, and what fills the dimension between the positive and the negative depends upon the concept itself (Goertz, 2006). With regard to studying the negatives of the causal relations, *necessity* and *sufficiency* are treated in the same way as in the previous situation.

Now that we have some preliminary understanding the configurational way of thinking, we can properly interpret configurational hypotheses. However, before we can move on to the actual hypotheses, the negative pole of the outcome must be discussed first. Fortunately, this is a relatively straightforward exercise. It follows directly from idea of e-democratic *development*. Since development refers to a certain relative standard of elaboration or complexity, the negative of it is obviously *underdevelopment*. Therefore, what will be of interest to us is the extent to which municipalities vary in their *degree of development* of e-democracy instruments. The configurational hypotheses are discussed on a condition by condition basis for two reasons. First, several conditions are supported by multiple works and theoretical approaches. Second, the negative pole of each condition requires separate thought and elaboration.

### 2.3.1 Policy diffusion

The public policy diffusion model as used by Lee, Chang and Berry cannot be directly translated to the level of municipalities. First, with regard to the mandate model, they focused on *normative* mandates. This is understandable considering the relations between states (Waltz, 1979; Wendt, 1999; Keohane, 2005). In addition, the original mandate model as it is developed by Frances Stokes Berry and William Berry also recognizes *coercive* mandates. This means that the pressures to conform to certain standards are derived from other organizations which have authority over the actor in question (Berry & Berry, 2007). In contrast to the state, the municipality is subjected to the authority of higher levels of government. In the Netherlands, there are two of such levels: The national and provincial level of government. The provinces form the intermediate level of government and are mainly responsible for environmental and spatial planning (Kuijper, 2009). Pressure on municipalities to meet e-democracy standards are likely to vary from province to province, since not all provinces are equally committed to e-democracy or e-government (Rijksoverheid, 2013). In order to keep this pressure constant, all municipalities in the dataset are located in a single province. The province which is selected for this inquiry is Noord-Brabant. Why this decision was made is dealt with later in this paper, when the case selection is discussed.

Second, their model distinguishes between policy innovation through competition and through learning. This is possible because not all networks between cooperating states are regionally determined. In contrast, due to the spatial character of municipality authority in the Netherlands, their cooperative bonds are mainly with surrounding municipalities (VNG, 2013). Therefore, they are most likely to learn from their neighbors, which are also considered their competitors in the model. Despite this inability to test these models *separately*, a valid approach is still possible. Theoretically, municipalities are likely to mostly learn from *and* compete with surrounding municipalities.

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organizers of the strike are competent, they might sell themselves as the underdog and gain media attention that way. Unfortunately, correlational analysis treats such instances as contradictory.



Therefore, the level of e-democracy of surrounding municipalities matters a great deal. The expectation is that when surrounding municipalities have more advanced e-democracies, this leads the municipality under study to perceive fewer barriers *and* have more incentives to develop an advanced e-democracy. They have fewer barriers because they learn about the mistakes and successes of those municipalities they interact most with. At the same time, they also have more incentives, because they experience competition with these same municipalities to keep up with modernity. This expectation leads to the following hypotheses:

*H1a: The condition of developed e-democracy in surrounding municipalities is part of a sufficient configuration for a developed e-democracy in a municipality.*

*H1b: The condition of underdeveloped e-democracy in surrounding municipalities is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.*

This set of hypotheses makes the most of the advantages of configuration analysis over correlational analysis. To reiterate, the simple correlation between the levels of e-democracy in a municipality and the level of e-democracy in surrounding municipalities says little about the *necessity* or *sufficiency* of this condition, nor whether the causality is symmetric. In order to test the symmetry of the relation, the negative condition has been linked to a negative outcome. Since the negative of a developed e-democracy is an underdeveloped e-democracy, this logic extends to the average level of e-democracy of surrounding municipalities.

### 2.3.2 Citizen pressure

The study of Lee, Chang and Berry also demonstrated that citizen pressure was a relevant factor in explaining e-democracy policy. Their logic for measurement of this pressure, namely the level of education in a country, is supported by the literature on citizen pressure and democratic reform. The highly educated citizens demand participatory initiatives because they intent to use them. In contrast, although lower educated citizens also demand a voice, they have no interest to actively participate in politics. Although this is an interesting relation in its own right, in this paper it will only be used to justify the association between the highest completed education of a citizen and the pressure she is assumed to exert on government. In the aggregate, more highly educated citizens in a municipality translate in to a greater experienced citizen pressure by local government. The hypotheses which test this relation are the following:

*H2a: A high percentage of highly educated citizens in a municipality is part of a sufficient configuration for a developed e-democracy in a municipality.*

*H2b: A low percentage of highly educated citizens in a municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.*

In these hypotheses, the negative of high is simply taken to be low. The discussion of actual thresholds for the categories, and the allocation of in-between cases depend in part on the empirical distribution of the data. These issues are part and parcel of fsQCA, and are dealt with in the appropriate section.

### 2.3.3 Electoral turnout

Just like citizen pressure, electoral turnout is also an important factor for explaining e-democracy advancement which is based on both the e-democracy and offline participatory engineering literature. Moreover, works from both theoretical discourses point out that electoral turnout only has a significant effect when it is extremely low. In this work, I assume that it are the municipal elections which are relevant for establishing this relation. This is because it are these elections which determine the popular legitimacy of *local* government. These elections are therefore of more concern for local politicians than national or provincial elections. Governments are considered most likely to feel pressure to reconnect with the citizens of their community when many of them do not seem to care about the composition of local government. The hypotheses pertaining to this expected relationship are as follows:

H3a: *A low percentage of electoral turnout at local elections in a municipality is part of a sufficient configuration for a developed e-democracy in a municipality.*

H3b: *A high percentage of electoral turnout at local elections in a municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.*

### 2.3.4 Political color of the municipal government

In taking the political color of municipal government into account, Borge, Colombo & Welp order parties from left to right in a traditional way. This approach mainly devotes attention to the *economical* dimensions of ideology (Borge, Colombo & Welp, 2009, 915-8). This might make some sense when one keeps in mind that leftist parties are associated with liberty and equality, and rightist parties authority and hierarchy (Heywood, 2007). However, it is not *solely* their economical dimensions which cause these associations. Therefore, studying other dimensions as well seems promising for the study of e-democracy. The famous definition of ideology proposed by Melvin Hinich and Michael Munger direct our attention to the fact that there are at least *three* dimensions to any ideology. Their definition is as follows:

*Ideology: an internally consistent set of propositions that makes both proscriptive and prescriptive demands on human behavior. All ideologies have implications for (a) what is ethically good, and (therefore) what is bad; (b) how society's resources should be distributed; and (c) where power appropriately resides. (Hinich & Munger, 1996; 11).*<sup>6</sup>

Thus ideology deals with *morality, economic equality and power*. In studying the effect of ideology on the development of e-democracy, it makes a lot more sense to take *power* rather than *economic equality* into account. After all, e-democracy does not serve any explicit economical or redistributive goal. Rather, e-democracy is about enhancing democratic consultation and thus about *power*. While no extensive literature on a *democracy policy dimension* or something similar exists, there is a vast body of literature linking parties and electoral reform<sup>7</sup>. The link between the political color of a party and its willingness to promote electoral reform in favor of public participation might serve as a good proxy of the *power* dimensions of ideology. Therefore, rather than ordering parties on the traditional left-right spectrum, in this analysis they are ordered on a democracy policy dimension. This spectrum ranges from *democratically reformist* to *democratically conservative* parties. The hypotheses relating the political color of the municipal government with its policy adoption are the following:

H4a: *A democratically reformist municipal government is part of a sufficient configuration for a developed e-democracy in a municipality.*

H4b: *A democratically conservative municipal government is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.*

### 2.3.5 Municipality size

The literature points out that larger municipalities engage in more e-democratic and participatory initiatives. Unfortunately, the specific relation between municipality size and e-democracy remains unknown. In contrast, this study will examine this relation explicitly through its presence or absence in specific configurations. The following hypotheses guide that analysis:

H5a: *Being a large municipality is part of a sufficient configuration for a developed e-democracy in a municipality.*

H5b: *Being a small municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.*

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<sup>6</sup> Naturally, this is neither the only nor the conclusive definition of ideology. Nevertheless, it suffices for this paper, since it invites an alternative view of ordering parties in political dimensions. For an overview of the many ways in which ideology can be conceptualized see Jost, Federico & Napier (2009).

<sup>7</sup> For a proper introduction in deliberative and direct democratic electoral reform see Fishkin (1991) and Renwick (2010).

### 3.0 Method and Measurement

The configurational approach taken up in this paper sheds light on issues not illuminated by the standard correlational approach. The paradigmatic method for analyzing data with a configurational approach is using Qualitative Comparative Analysis (QCA). It addresses the limited availability of cases in the social sciences by rooting itself in the method of agreement and the method of difference. These methods were concerned with the deliberative picking, matching and comparing of cases in order to establish causal relations by elimination of every other explanation possible. However, these archaic methods are uncompromising in that they try to find one single factor which accounts for an entire phenomenon. In contrast, QCA identifies and narrows down conditions of occurrence (Berg-Schlösser et al., 2009; 2-4). Its focus on multiple conditions at the same time provides multiple benefits.

First, it views cases holistically and relies both on theoretical deduction and empirical induction (Ibid.). Correlational net-effect analysis does a poor job of evaluating cases as configurations. The interaction effect between variables is seen as special, because independency is assumed. The challenge posed by configurational thinking is not see conditions as rival variables in the struggle to explain variation in the dependent variable. Rather, they should be seen as potential collaborators in the production of the outcome (Ibid.; 113-4). Second, as a result of this holistic view, QCA explicitly confronts the problem of *limited diversity*. This refers to the fact that the social world does not present us with cases exhibiting all logically possible combinations of relevant causal conditions (Ragin, 2008a; 147). Conventional correlational approaches circumvent this problem by assuming an unrealistically simple model of causality, namely that causal relations are homogeneous, additive and symmetric (Ibid.; 156-7). In contrast, the configurational approach allows for the possibility of more complex causal relations. As has been demonstrated in the previous section, causality can be conceptualized far more rigorously. Moreover, the distinction between necessity and sufficiency allows for the view that multiple “paths” a certain outcome exist. This is because the *sufficiency* of a certain configuration does not imply its *necessity*. Other causal “recipes” might also produce the outcome (Rihoux & Ragin, 2009). Finally, and related to the second, the explicit confrontation of the problem of limited diversity increases the transparency of the research. The researcher will have to rely on explicit assumptions about counterfactuals (called *logical remainders* in QCA terminology). The plausibility of the assumptions, which mostly deal with the identification of irrelevant conditions, depends on the state of the relevant theoretical and substantive knowledge. Utilizing this knowledge, the researcher can search for a solution which strikes a balance between parsimony and complexity (Ragin, 2008a). This contrasts with the rigid, but nevertheless important, assumptions about non-observed cases by correlational methods.

In the configurational approaches, conditions can be linked by several *set theoretic* relations. The most important one, the subset relation, has already been discussed in the previous section. This relation is the most important, because it can indicate causal properties of the relation. In contrast, the other two relations deal with how we combine conditions to come to certain configurations. Perhaps they are best explained using a hypothetical example. Let us say that A is a *necessary* but *insufficient* condition for Y. In addition to A, either B or C must occur before Y can happen. Verbally, we would say that A and B or C is *sufficient* for Y. In set theoretic notions, we would say that Y lies in the *union* of the *intersection* of A plus B, and A plus C. QCA utilizes Boolean notation to indicate these relationships. The intersection is noted as the Boolean AND, and the union is noted as the Boolean OR. There are written as \* and + respectively, and adhere to the same distributive laws as their algebraic counterparts (Rihoux & Ragin, 2009). Thus, our hypothetical example would look like this:

$$A*B+A*C \rightarrow Y$$

$$A*(B+C) \rightarrow Y$$

All different variants of configurational analysis use the logic described above. Nevertheless, there exist different flavors of QCA which are available to researchers. These different variants are *Crisp Set* QCA (csQCA), *Multi Value* QCA (mvQCA), and *Fuzzy Set* QCA (fsQCA). In this analysis, fsQCA is used. This decision was made because of the comparative advantage of fsQCA to other methods, as is outlined below. The advantages are mainly concerned with the way sets are constructed with the use of conditions. Therefore, the discussion of these advantages will pave the way for understanding the way conditions must be calibrated in fsQCA to construct certain sets.

### 3.1 Method: Fuzzy-Set Qualitative Comparative Analysis

The different flavors of QCA differ mostly on the way they attribute cases to sets. The most straightforward configurational approach is csQCA. This method requires dichotomization of the conditions in order to assign cases to certain sets. A case gets a value of 1 when it is a member of a certain set, for example that of rich countries, and 0 when it is not a member of that set. Next, the differences and similarities between these sets are assessed using a Venn diagram or a truth table (Rihoux & Ragin, 2009). One of the criticisms this method has had to endure is the arbitrary nature of dichotomization (Ragin, 2008a; 99). In an attempt to deal with this criticism, mvQCA allows for the possibilities of more than two categories. For example, with regard to the wealth of a country, a case can be coded poor, average, or rich. The problem with this approach is that it exacerbates the problem of limited diversity (Rihoux & Ragin, 2009; 119). This is a result of the fact that the number of categories increases, while the availability of cases is still limited. Furthermore, mvQCA still simply allocates cases definitely to certain sets. In contrast, by employing *fuzzy* set theory rather than ordinary *crisp* set theory one can incorporate *degrees* of membership in sets. This leads to some general advantages, to which we will now turn.

#### 3.1.1 General advantages of fsQCA

The first benefit of fsQCA is that conditions do not need to be cut up in discrete blocs (Ibid.). Instead, conditions are *calibrated*. Rather than pointing out a crisp boundary which indicates the border between full *and* non-membership in the set, three cut off points are of importance. This is the boundary indicating full membership, the one indicating non-membership and the cross-over point (Ragin, 2008a). There is a direct, and an indirect method of calibration. In the direct method, the researcher specifies the three values directly based on a specification of the target set. After that, using a metric of log odds, membership values are assigned to cases (Ibid.; 89-90). Cases on the value indicating full membership and above are assigned a membership value of 1. Those cases on the value indicating non-membership or below are coded as 0. Finally, the other membership scores are allocated based on the position of the cross-over value, which indicates a membership value of 0.5. This value symbolizes maximum ambiguity with regard to whether the case is a member of the relevant set or not. The use of log odds means that the membership scores are dictated by the three values in a logistic fashion, and thus represent an s-curve (Ibid.; 92)<sup>8</sup>. If the researcher chooses to use the indirect method, the membership scores are the result of the manual grouping of cases. The researcher assigns certain key membership values to certain cases based on substantive and theoretical knowledge (Ibid.; 95). For example, Ragin proposes the following six categories:

1. *In the target set (1.0)*
2. *Mostly but not fully in the target set (0.8)*
3. *More in than out of the target set (0.6)*
4. *More out than in the target set (0.4)*
5. *Mostly but not fully out of the target set (0.2)*
6. *Out of the target set (0.0)* (Ibid. ; 95).

In this paper, calibration mainly relies on the direct method. This is done because directly choosing three values is more straightforward than choosing a certain number of categories. There is less room for error and controversy in the decisions relating to the calibration. This is all the more important since previous research on e-democracy is correlational rather than configurational. This means that there is hardly any knowledge with regard to relevant sets, and the relation certain conditions have to these sets. This work is the first step in that direction. Only in the case of the political color of the municipal government, the indirect method was applied. This decision was made due to the limited number of parties involved and their varying ideological distances from one another. A final but important remark which has to be made about calibration is that it is not simply a rescaling of a variable. For

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<sup>8</sup> It should be noted that in principle the full and non membership thresholds can be swapped. This might be useful when one is interested in the *absence* of a certain condition. However, I consider this approach to be unintuitive since 1 is always *more* than 0. Therefore, full-membership scores are always attributed to values *higher* than the cut-off point and the non-membership threshold.

example, national GDP does make sense as a variable, but it makes no sense as indicating membership of the set of rich countries without external criteria. The membership values reflect the imposition of these external criteria (Ibid.; 83-91) In sum, it is not about more versus less, but about a lot versus a little (Ibid.; 103).

The other advantages fsQCA has over its rivals has to do with the way the analysis is conducted. In csQCA and mvQCA, cases are absolutely allocated to sets, rather than given a degree of membership. This allows for an easy construction of what is called a *truth table*. Basically, this is a table which groups cases with similar configurations and determines whether they have similar outcomes or not (Rihoux & Ragin, 2009). When some cases that have the same configuration are all instances of the outcome, a *sufficient* configuration has been found. When this approach would be directly copied to fsQCA, a problem would occur. This problem exists because degrees of membership can vary between 0 and 1. It is therefore very unlikely that cases will have *completely* similar configurations (Ibid.; 87-9). In order to deal with this problem, an alternative approach has been developed, which is based on three pillars. The first pillar is the *correspondence* between the rows of a crisp truth table, and the corners of the vector space defined by fuzzy degrees of membership (Ragin, 2008a; 129). Take, for example, two conditions A and B. With crisp membership, the possible values would be (0,0), (0,1), (1,0), (1,1). When we allow for fuzzy membership, the degree of membership of any case can be described by a point on a *unit square*. The corners would be indicated by the values above, and the exact center of the square by the value (0.5,0.5). Although cases cannot simply be allocated to a corner, they *all* do have a *degree* of membership in a certain corner. Because the existence of this degree of membership is so crucial, it is called the second pillar of fuzzy truth table analysis (Ibid.; 128). Insofar that degree of membership in a corner can said to be a subset of degree of membership in the outcome, the *consistency* of the claim that it is a *sufficient* configuration for the outcome is established (Ibid.; 130). This consistency measures the *degree* to which membership in this corner of the vector space is a *consistent* (i.e. proper) subset of degree of membership in the outcome. This possibility for assessing this degree of consistency is the third crucial pillar of fuzzy truth table analysis (Ibid.; 134-5).

Several additional advantages arise from the specific approach fsQCA has with regard to truth table construction. First, the assessment of consistency (and thus of necessity and sufficiency) is more empirical and demanding. In contrast to csQCA and mvQCA, it allows relations between sets and conditions to vary. Second, due to the increased granularity, it is also more demanding. Where a membership score of 0.98 on a configuration and 0.51 on the outcome would be considered *consistent* in crisp set analysis (both are rounded off to 1), they are *inconsistent* in fuzzy set analysis (Rihoux & Ragin, 2009; 119). Third, the assessment of consistency takes into account *all* cases in the sample, rather than only those belonging to a certain configuration. This follows from the second pillar of truth table construction, all cases have a *degree* of membership in any corner of the *unit square*.<sup>9</sup> Thus, the claim that a certain configuration is a subset of the outcome, and thus sufficient, is based on more information than in either csQCA or mvQCA (Ibid.).

### 3.1.2 The advantages of fsQCA for this inquiry

The above advantages could all be reasons to favor fsQCA over csQCA or mvQCA in general. Nevertheless, there are also specific reasons why fsQCA is more suitable for this inquiry than the other methods. All these reasons have to do with the fact that the advantages of fsQCA translate well into the research design of this study. First, almost all conditions under study can be measured on an interval or ratio scale. With the exception of the political color of a government, they all capture aggregate quantitative data. This includes the measurement of e-democratic development, and therefore also those of surrounding municipalities, as we will see in the next section. Fuzzy set analysis takes advantage of this granularity in the data. Second, as we will see in the next section, the analysis is based on a relatively large sample of 61 cases. Using csQCA would almost certainly lead to a high number of *conflicting configurations*. These are situations in which positive and negative cases share the same configurations (Rihoux & Ragin, 2009; 148-55). This is likely, because dichotomization creates similarity where there actually is reason to expect difference. In contrast, fuzzy set QCA allows us to attend to the uniqueness of each of these cases.

<sup>9</sup> Mathematically, such areas are called *vector spaces*. In the two dimensional example, a vector space indeed represents a square. However, every added condition increases the number of dimension by one. When we speak of *n-dimensional* vector spaces, the square analogy breaks down. For more information on vector algebra, see Curtis (1984).



This means that we can differentiate between *relevant* and *irrelevant* variation in the conditions. Furthermore, the wealth of information these cases provide is entirely incorporated into the truth table analysis.

Moving on, now that the employed method is clear, the way conditions are measured can be dealt with. This is done in the next section. In addition, the data which was used to obtain these measurements is discussed, in order to offer maximum transparency.

### 3.2 Measurement: Operationalization and Data Collection

To start with, the operationalization and measurement of the outcome will be discussed first. Due to the fact that an accurate measurement of e-democratic development is most important for the validity of the investigation, the discussion will be relatively in depth. After that, the measurement of the causal conditions is dealt with. When it is clear *how* the conditions and the outcomes are measured, I shortly discuss *where* they will be measured. In other words: which cases are (not) taken into account and why. Finally, the conditions are calibrated. These calibrated conditions determine the sets on which the analysis is based.

#### 3.2.1 Measuring e-democratic development

Luckily for scholars of Dutch e-democracy, the Department of the Interior ordered several research agencies to construct the Overheid.nl Monitor (e-overheid.nl; 2013). This monitor maps the online development of many governmental organizations, including municipalities (Flos, de Jager-de Lange & van Rens, 2009). The annual research started in 1999, in which only 29 percent of all municipalities even had a website. In contrast, the most recent annual research wave is 2009, conducted by *Daadkracht* in collaboration with *TNS NIPO* (e-overheid.nl; 2013). Through the years, the monitor developed from simply checking governmental websites for the presence of certain features to increasing qualitative measures relating to the way the site was designed. Furthermore, an increasing number of instruments were used to assess the online transparency of governmental agencies (Flos & de Jager-de Lange, 2011). In this study the most recent annual checklist will be used. This checklist is composed of the following subjects: Standards, Transparency, Service Delivery, Citizen Centrality, Interactive references and Accessibility. For municipalities, these have the following weights:

**Table 2: Relative weight subjects of Overheid.nl Monitor 2009**

<i>Subject</i>	<i>Weight in percentages</i>	<i>Number of Questions</i>
<b>Standards</b>	17	13
<b>Transparency</b>	15	12
<b>Service Delivery</b>	25	33
<b>Citizen Centrality</b>	25	29
<b>Interactive references</b>	3	7
<b>Accessibility</b>	15	7
<b>Total</b>	100	101

Source: Adjusted from Flos, de Jager-de Lange & van Rens, 2009; 7.

The subject of Standards refers to the adoption of nationwide norms for publishing governmental information online. Many of these standards are mandatory, and are taken up in legislation (Flos, de Jager-de Lange & van Rens, 2009; 11). Transparency deals with the online information provision by municipalities. Interestingly, the publication of reports of meetings from the Mayor and his Aldermen is insufficient for reaching a positive score. Disclosure of reports of the decisions and minutes of the Municipal Council, which is composed of the local representatives of citizens, is a necessary condition for a positive score on this part (Ibid.; 24). The part which is denoted as Service Delivery obviously deals with the online delivery of municipal public services. In the case of outsourced services, the government should provide clear information who is responsible for the service as well as a link to the website of the relevant organization. Furthermore, it also contains separate parts for the service delivery to companies (Ibid.; 33-51). The subject of Citizen Centrality ('De Burger Centraal') is specifically aimed at the transparency offered to citizens (Ibid.; 52). This part contains questions regarding the way citizens can use the internet to contact their representatives and determine the political agenda. For example through the citizen initiative and citizen panels (Ibid.; 67). Interactive references is a very small part of the monitor. It captures the

outcentrality of the governmental website. Does it refer to other websites which might be of interest to the citizen? (Ibid.; 71). Finally, accessibility measures the ease with which citizens can find and use the site. It is based on international recognized rules and internet protocols and contains aspects such as search functions (Ibid.; 74).

Clearly, this index measures much more than simply e-democracy. Therefore, it first will have to be adapted to become a valid measurement of e-democracy.<sup>10</sup> Several steps were undertaken to achieve this. First, the items relating to e-government were deleted from the index. Obviously, this involved the removal of the part of the index called service delivery. Additionally, it also resulted in removal of the first twelve question of the section Citizen Centrality. Second, the remaining components were coded either T for *transmission*, or I for *interaction* based on the distinction made by Pratchett (2007). This coding was done on face value, and can be checked in Appendix B. This resulted in the following distribution of T and I parts:

**Table 3: number of questions of the Overheid.nl index coded T and I**

<i>Subject</i>	<i>Total # Questions</i>	<i># Transmission</i>	<i># Interaction</i>
<b>Standards (A)</b>	13	13	0
<b>Transparency (B)</b>	12	11	0
<b>Citizen Centrality (D)</b>	17	13	4
<b>Interactive references (E)</b>	7	7	0
<b>Accessibility (F)</b>	7	7	0
<b>Total</b>	56	52	4

Source: Adjusted from Flos, de Jager-de Lange & van Rens, 2009; 6.

**Table 4: number of points of the Overheid.nl Index allocated to T and I**

<i>Subject</i>	<i>Total # points</i>	<i># Transmission</i>	<i># Interaction</i>
<b>Standards (A)</b>	100	100	0
<b>Transparency (B)</b>	100	90	0
<b>Citizen Centrality (D)</b>	54	44	10
<b>Interactive references (E)</b>	100	100	0
<b>Accessibility (F)</b>	100	100	0
<b>Total</b>	454	444	10
<b>Multiplier</b>	-	0.51126	22.7
<b>Relative weight</b>	1.0	0.5	0.5

As one can see from these tables, the Overheid.nl is more about offering transparency rather than interaction. Nevertheless, the small part which measures interaction captures important e-democracy elements. For example, it measures to what degree the municipality allows digital joint decision making with citizens. The monitor even takes Web 2.0 developments into account. It measures to what extent the municipality utilizes social media and whether or not they accept information from the Dutch site *verbeterdebuurt.nl*. As has been explained in the introductory section of this paper, this site is a paradigmatic case of the Web 2.0 principle “innovation in assembly”.

One might wonder why transmission should be incorporated at all, considering that the interaction parts cover such important elements. However, as was mentioned when e-democracy was defined in this paper, transmission and interaction are equally important. To reiterate a little, this is the case for two reasons. First, Web 2.0 sites are successful because they allow multiple thresholds for participation. These thresholds all are placed on different points in the continuum between transmission and interaction. Second, e-democracy is continuous with offline democracy. This means that it is not necessarily in competition with offline participatory initiatives. On the contrary, it can even be complementary. A good example of how mere digital transmission can be very

<sup>10</sup> This is exactly the idea which Svensson & van der Graft had in their study of e-democratic development among Dutch municipalities. They deleted the pieces of this index which had to deal with service delivery. These parts were used as an independent variable, representing e-government, and the effect which it had on e-democracy was measured. They found it to be the single most powerful variable in their simple statistical model (Svensson & van der Graft, 2006; 130). This is not very surprising, since it is doubtful that one part of the index is fully independent of another part of the index. Furthermore, such an uncritical use of the index obscures what one is actually measuring. In order to improve upon their work, I take a more complex and transparent approach.

democratically relevant is in one of the items of the monitor. This item establishes whether or not the municipality uploads the meetings of the municipal council in audiovisual format. Even though this item clearly is about *transmission*, it makes the political decision making of the municipality much more transparent. Citizens can use this information when they want to engage in politics through other participatory channels, such as a citizens' initiative. When one views e-democracy strictly as a competing model of democracy alongside representative democracy, the value of such items cannot be seen. In order to give equal weight to *transmission* and *interaction* the weights had to be altered. These weights applied to the number of points given for each item, rather than the number of question. This required some basic algebra, as can be seen from Figure 4 and appendix B.

### 3.2.2 Measuring the conditions

The condition which was the most straightforward to measure was the average e-democratic development score of surrounding municipalities. The scores of these municipalities were recalculated exactly the same way as above. Afterwards, the arithmetic mean of the scores of the surrounding municipalities was attributed to the municipality in question. The list of surrounding municipalities which were taken into account is taken up in Appendix A. Municipalities belonging to other provinces than Noord-Brabant, such as Gelderland and Limburg, also are included. This is because provincial borders do not have any impact on municipal cooperation (VNG, 2013).

Second, citizen pressure was measured by the proportion of higher educated citizens in a municipality. Fortunately, such general statistics are available for public use. This data was accessed via the software Statline, developed by the Central Bureau for Statistics (CBS) (CBS, 2013). It should be noted that the definition of highly educated citizens is those which have completed the *Hoger Beroeps Onderwijs* or University. To take temporality into account, data had to be gathered that was prior to 2009. Therefore, the used proportions are those collected between 2007 and 2009 by the CBS.

Third, electoral turnout rates were derived from the municipal elections of 2006. These were the elections which were held closest but prior to 2009. The data was provided by *Kiesraad* via email (Kiesraad, 2013).

Fourth, the political color of the municipal government is assessed by the political party to which the mayor of the relevant municipality belongs. This is a very imperfect measurement, since he or she is merely the head of the municipal council. Why were the parties in the municipal council not simply coded as democratically reformist or conservative? This was considered to not be a fruitful route of action, because nearly all of the municipal councils in the sample are dominated by local parties (CBS, 2013). These are parties which are unaffiliated with a national party (Boogers, Lucardie & Voerman, 2006). Coding all those parties is not only a very daunting task due to the sheer number of parties which have to be coded. It is also difficult because many of these parties are truly "local". This means that the majority of these local parties are driven by the idea that local political should be pragmatic. These parties see politics as chasing optimal solutions to practical problems rather than an ideological battlefield (Ibid.; 12-4). Therefore, these parties lack any holistic ideology and cannot be ranked on those terms. In contrast, the mayor of a municipality is an acceptable proxy, because he or she is *de facto* appointed by the municipal council, and relies on their support for his functioning (Andeweg & Irwin, 2005). Furthermore, he or she usually does belong to one of the national parties. Placing these on an ideological spectrum is a less controversial task, one that has been taken up by organizations such as *Kieskompas* and *StemWijzer* (Kieskompas, 2013; StemWijzer, 2013). The party to which the mayor active in 2009 belonged to was found out using the digital archives of the local broadcaster *Omroep Brabant* (Omroep Brabant, 2013). In addition, these findings were double checked using the archives of *Overheid in Brabant* (Overheid in Brabant, 2013).

All the relevant mayors belonged to the VVD, CDA, D66 or PvdA. The stance of these parties with regard to electoral reform can serve as a basis for ordering them on a *democracy policy dimension*. Kristof Jacobs' extensive study of the electoral reform during the Dutch Kok II and Balkenende II government periods served as the basis for the construction of this dimension. This led to the following ordering of parties from *democratically reformist* to *democratically conservative*: D66, PvdA, VVD, CDA (Jacobs, 2011; 169-205). In the dataset, these parties are coded from 4 to 1 respectively. Naturally, the ideological difference between these parties is not similar. Therefore, this coding should not be seen as the construction of a variable. It is simply a way to enter this uncalibrated data in the software.



Finally, municipality size was measured by the population size of a municipality. Data on how populous a municipality was in 2009 was provided in the Overheid.nl dataset. Nevertheless, this information was double checked using the Statline software (CBS, 2013).

### 3.2.3 Case Selection

This research questions directs attention to municipal governments in the Netherlands, since this is one of the pioneering countries in its use of ICTs in governance (Hoff, Horrocks & Tops, 2000a). Dutch governmental agencies rapidly embraced the Web as the means to improve its functioning, with a specific focus on service delivery (Pieterson, 2009). As early as 1994, a government program was started in which the Web was taken to be crucial for government both internally and externally. This program was called *Elektronische Snelwegen* (Electronic Highways), and thus dealt with both efficiency and the relationship between government and its citizens (Tweede Kamer, 1994). Moreover, during the hype years around the turn of the millennium several governmental advisory reports stressed the potential revolutionary effects of ICTs present in many technological determinist accounts of e-governance and e-democracy (Kuijper, 2009). Even the vertical integration of government was considered, suggesting that the three-level structure would require redesigning (WRR, 1998; Commissie ICT en Overheid, 2001). Finally, the central government also invested heavily in municipal level e-government development. However, the constitutional relations in the Netherlands give much autonomy to local governments. Therefore, the central government had to rely on a PR campaign and proper incentives. One of these incentives came through the program of *Super Pilots*. This program directly subsidized three promising alternatives in Enschede, The Hague and Eindhoven (Hoogwout, 2003). These cities were given large sums of money to develop rich electronic counters for government services. In return, they should publish the blueprints of their designs for free. This program eventually had limited success because the results were very hard to copy by other governments (Ibid.; 86). In spite of this, the main value of these pilots was that they created awareness (Ibid.; 89).

The futuristic vision of the central government notwithstanding, the three-level structure is still present in Dutch society. As already has been mentioned, this study needs to take the provincial level into account due to the possible influence of coercive mandates and the fact that provinces differ in their approach to ICT. This will be done by keeping the province constant. In order to select a relevant province, a brief overview of provincial ICT policy up until 2009 is in order. In contrast to the central government, the provinces were slow to pick up on the new possibilities offered by the Internet and the Web. Only as late as 2000, general awareness and ICT policy was present at the provincial level. Provinces who had European Structural Funds for regional development at their disposal were the ones which showed the most initiative in this area. This was the case with Overijssel, Limburg and Noord-Brabant (Kuijper, 2009). When the internet bubble burst, many of the provincial Internet initiatives were halted. Despite this, a few provinces managed to continue their ambitious ICT policy through 2003. Two examples are Overijssel and Noord-Brabant, which both had very ambitious ICT programs. Overijssel focused more on service delivery, while Noord-Brabant was particularly concerned with awareness, participation and stimulating ICT use in society (Ibid.). Both provinces cooperated with their municipalities, which led to an exchange of knowledge and experience. Nevertheless, neither province continued their ICT program after the first evaluation. The conclusion was that the ambitions were too visionary for the tenacity of reality. Up until the year 2009, the provinces were mainly investing in their own “niche”. Since their authority principally lies with spatial and environmental planning, this involves focusing on strengthening their capacity in geo-information systems (Ibid.).

Because of the relative convergence between provincial policies in the years leading up to 2009, the expected differences between provinces are very minor. Nevertheless, some small deviations might still be present from the early 21<sup>st</sup> century. Out of all these provinces, Noord-Brabant seems to be the most interesting case. This is because its ICT policy was less strictly confined to e-government. Perhaps the exchange of knowledge and experience with municipalities was beneficial for their e-democratic development in later years. Furthermore, Eindhoven was one of the cities in the *Super Pilot* project. Therefore, considerable regional differences between ICT experiences can be expected. Finally, Noord-Brabant’s distribution of small and large municipalities reflects that of the Netherlands. There are a few large ones, a few middle sized municipalities, and many small ones (CBS, 2000).

With regard to the intra-provincial case selection of municipalities, the selection was designed to be as inclusive as possible. First, all Noord-Brabant municipalities were included in the dataset. Unfortunately, due to missing data a few cases had to be dropped. However, with 61 cases left, we still have a respectable dataset. The missing cases were either really small or did not exist anymore.<sup>11</sup> Moreover, the remaining distribution of large and small municipalities still reflects the situation in the Netherlands. Finally, this regional selection of municipalities guarantees that our case selection is consistent with the QCA principle of the “area of homogeneity”. This refers to the fact that cases must be sufficiently similar to allow comparison (Rihoux & Ragin, 2009; 20). Adherence to this principle does lower the possibilities for generalization, due to the very specific scope conditions. These scope conditions refer to the idea that cases outside of our dataset also have to be sufficiently similar to our dataset to warrant generalization. Only when this similarity can be established, can we be certain that the causal processes work the same (Mahoney & Goertz, 2004). The demands which the configurational approach placed on this similarity are very high, due to the possibility of causal complexity. Every change in the context might also indicate a change in causal processes, since no condition is *a priori* independent from another. Therefore, the question to what extent other cases resemble the ones in this sample is up to the researcher who is familiar with those cases.

### 3.3 Calibration

The final step before the actual analysis can be carried out is calibration. In this step, the conditions must be translated into sets, so that membership scores can be allocated to cases. In defining these sets, it is prudent to take substantive and theoretical knowledge into account as much as possible. Unfortunately, due to the youth of the field of e-democracy, this could not always be achieved. Furthermore, the direct method of set definition was used with almost all of the conditions. Only the condition of a democratic reformist government was calibrated using the indirect method. In the table below, the chosen membership thresholds for the other conditions are summarized.

**Table 5: Defining thresholds of relevant sets**

Set	Full membership	Cross-over	Non-membership
<b>Developed e-democracy (E)</b>	130	100	75
<b>Surrounding Developed e-democracies (SE)</b>	117.99	103.52	89.20
<b>Large Municipality (LM)</b>	100,000	70,000	50,000
<b>Democratic Reformist Government (DRG)</b>	n/a	n/a	n/a
<b>High Proportion of Highly Educated Citizens (HC)</b>	25%	22.54%	19.14%
<b>High Electoral Turnout (HET)</b>	58	54	50

First of all, all negative conditions are absent from the table. This is simply because they are the perfect inverse of the positive conditions. Only the positive sets will be discussed, since the negative ones are determined by the same thresholds<sup>12</sup>. Starting with the set of developed e-democracies, the thresholds are set up around qualitative breaks in the data. A QCA textbook example of such a qualitative break is a large gap (Ragin & Rihoux, 2004). Such a gap is taken to be a *natural cut-off point*, since it might indicate that the cases above it are significantly different from those below the gap (Ibid.).<sup>13</sup> Unfortunately, the data with regard to the e-democracy scores was very evenly distributed, and no obvious gaps were present. Nevertheless, other qualitative breaks could be used. Above the full-membership threshold of 130, the e-democracy scores of municipalities rise a lot quicker than below that score. Inversely, the scores below the non-membership threshold drop rapidly as well. This means that the cases in the middle are relatively clustered, and it is less clear to which sets they belong. Therefore, it is logical to locate the

<sup>11</sup> All the municipalities which had to be dropped were still included in the measurement of policy diffusion. This could be done because they lacked data on certain conditions rather than on the outcome. Furthermore, they all bordered municipalities which were still in the relevant dataset. The dropped cases are: Aalburg, Alphen-Chaam, Baarle-Nassau, Boekel, Lith, Maasdonk, Mill & St. Hubert.

<sup>12</sup> The precise membership scores of all cases can be checked in Appendix B.

<sup>13</sup> This logic will be unintuitive for statisticians, who are perhaps more inclined to think that these gaps are in our sample rather than in the population. However, QCA methods treat their sample as a population. This is because no mechanical inferences are made to a larger (hypothetical) population.

fuzzy boundary between e-democratic development and underdevelopment in these regions. Thus, the full and non-membership thresholds mark the borders of this clustered area. With that in mind, the cross-over value was chosen to be near the mean of the sample.

Second, the average e-democracy score of surrounding municipalities was taken as a proxy of policy diffusion. Unfortunately, this data did not show any qualitative breaks. Therefore, the thresholds are purely determined by relative criteria. The full membership threshold is placed on the third quartile, whereas the non-membership threshold is placed on the first quartile of the data. In a similar vein, the cross-over value is identical to the mean. These relative criteria were selected before the scores were rounded off to the nearest hundredth.

Third, determining the relevant thresholds for municipality size is a straightforward task. This is something which has already been done many times before. The lower boundary is based on the definition of the CBS, which categorizes municipalities into large, medium and small according to the boundaries 50,000 and 200,000 (CBS, 2000). In this investigation the upper boundary was lowered due to the specific context of Noord-Brabant. With a full membership threshold of 200,000 only Tilburg and Eindhoven could be defined as large municipalities. The advantage of choosing a boundary of 100,000 is that Breda and 's-Hertogenbosch can also be considered large. Within the province of Noord-Brabant, this is certainly the case.

Fourth, with regard to the political color of the municipal government, one might recall that the parties D66, PvdA, VVD and CDA were coded from 4 to 1 respectively. Even though this coding is an ordinal scale, the ideological distance these parties have to each other is important when it comes to calibration. The following distances are based on an interpretation of Jacobs' study of Dutch electoral reform policy (2011). The VVD and CDA are both considered conservative when it comes to democracy policy. Cases in which the mayor belonged to either of these parties get a membership score of 0. Considering the PvdA's lukewarm commitment to democratization of representative democracy, it is considered more in than out of the set of democratic reformist parties. Charles Ragin's proposes a score of 0.8 for cases which are *mostly in the target set*. (Ragin, 2008a; 95). This qualification seems too strong, while a score of 0.6 is too close to the cross-over point. Therefore, a membership score of 0.7 is assigned to that party. Finally, D66 is considered a paradigmatic reformist party when it comes to supporting democratization policy. The corresponding membership score is 1.

Fifth, the thresholds which determine membership in the set of municipalities with a large proportion of highly educated citizens are based on relative thresholds. The full membership threshold, the cross-over value and the non-membership threshold are placed on the third quartile, the mean, and the first quartile respectively. Coincidentally, the percentages rise really quickly after the third quartile compared to the step wise growth before that value. This gives some qualitative weight to the full membership threshold. The municipalities which have a large proportion of highly educated citizens are for some reason less clustered than those which are partially or fully out of this set.

Finally, the mean electoral turnout in the 2006 municipal elections in Noord-Brabant was 58 percent. This was chosen as an upper boundary because the theory states that only extremely low turnout rates have any effect on e-democratic development (Svensson & Graft, 2006; Borge, Colombo & Welp, 2009). Specifically, Svensson & van der Graft point out that only abstention rates which reached 50 percent or more were strong enough to explain e-democratic development (2006; 126). Therefore, the non-membership threshold was placed at this value. The cross-over point was chosen to minimize the number of cases which have maximum ambiguity with regard to set membership.

For those unfamiliar with QCA analysis, these boundaries might seem rather arbitrary. In order to come to terms with this criticism, robustness tests in QCA analysis usually entails shifting the boundaries. When the results of the analysis do not change a great deal, the confidence in their empirical solidity is enhanced. Therefore, several robustness tests were conducted. These robustness tests will be discussed at the very end of chapter 4.

## 4.0 Analysis

We now turn to the actual analysis of this inquiry. This is done in several steps. First, the analysis focuses on the relation between the conditions and e-democratic development. After that, the analysis examines the way back. What is the relation between the negative conditions and e-democratic underdevelopment? Furthermore, both of these analyses are divided up in two parts: an analysis of *necessity*, and one of *sufficiency*. The *necessity* of certain conditions for the (negative of) outcome needs to be tested first. As we already have seen, necessary conditions appear in *every* sufficient configuration. Therefore, conditions which are found to be necessary can be omitted from the test of sufficiency. In the test of necessity, we assess to what degree the outcome can be considered a *subset* of a certain condition. Conversely, in the test of sufficiency, we assess to what degree a certain configuration can be considered a *subset* of the outcome (Ragin, 2008a). In sum, the analysis is conducted in four parts. First, the test of necessary conditions for e-democratic development. Second, the test of sufficient configurations for e-democratic development. Third, I examine whether or not certain conditions are necessary for e-democratic underdevelopment. The final test illuminates whether certain configurations are sufficient to explain this lack of e-democratic development.

All analyses are evaluated using two measurements: the consistency and coverage of the subset relation in question. The consistency is a measure between 0 and 1, which indicates the degree to which the relation is a proper subset (Ibid.; 44). A straightforward measurement of consistency is the ratio of the consistent membership scores in a configuration to the total membership scores in a configuration (Ibid.; 50). Fortunately, the algorithm in the software fsQCA, which will be used in this inquiry, offers a refinement of this method. This refinement gives penalties for wider misses and credits to near misses. It achieves this by adding to the numerator the part of each inconsistent causal membership score that is consistent with the outcome it (Ibid.; 51-2). In the analysis, a certain consistency threshold is chosen above which the subset relation has been established. Ragin recommends a threshold of 0.85, and states that 0.75 is the lowest acceptable standard (Ibid.; 135-6). Because the exact threshold partly depends upon the distribution of the data, these will vary. Moving on, the coverage is also a number between 0 and 1. This value denotes the empirical relevance of the configuration in question. This number simply indicates for what proportion of the cases the relevant relation holds. The formula is identical to the formula for the consistency of the outcome as a subset of the configuration (Ibid.; 55-8). In sum, consistency is important for the validity of the results. This measure will therefore be the most important. The coverage will indicate the empirical weight, and thus the generalizability of the results.

## 4.2 Analysis of E-democratic Development

In the following analysis, the hypotheses with regard to e-democratic development are tested. Starting with the test of necessity, which will indicate to what degree the membership scores in the outcome are consistently less than or equal to corresponding membership scores in the condition (Ragin, 2008a). After that, we move on to whether or not certain configurations can be considered sufficient for e-democratic development.

### 4.2.1 Necessary conditions for e-democratic development

The test of necessity is conducted with all conditions pointing in the right (i.e. expected) direction. Because the set of municipalities with a high turnout is the only condition which is negatively associated with the outcome, this condition is reversed. As is common practice, the presence of conditions is denoted by capital letters. On the other hand, the negative of conditions is represented by writing them in small letters. Thus, “LM” should be read as being a large municipality. Conversely, “het” should be read as having a low electoral turnout.

**Table 6: Necessary conditions for a developed e-democracy<sup>14</sup>**

<i>Condition</i>	<i>Consistency</i>	<i>Coverage</i>
<b>SE</b>	0.552	0.521
<b>LM</b>	0.201	0.874
<b>DRG</b>	0.449	0.533
<b>HC</b>	0.568	0.631
<b>het</b>	0.339	0.760

The table shows that none of the conditions come even close to any acceptable level of consistency. Therefore, the coverage of these relationships can be disregarded. At this point of the analysis we can conclude that *none* of the conditions under study is a necessary condition for e-democratic development. This leaves only one option open through which these conditions can be part of a sufficient configuration for e-democratic developed: joint sufficiency.

#### 4.2.2 Sufficient configurations for e-democratic development

In order to illuminate which combination of these conditions might be sufficient to explain e-democratic development a fuzzy truth table analysis was conducted. In this investigation, any conditions which were found to be necessary for the relevant outcome can be deleted. This is because they artificially enlarge the number of logical remainders (Ragin, 2008a, 2008b). For the current analysis, this rule has no consequences. After all, none of the conditions were found to be necessary for e-democratic development. The construction of such a truth table is a quite straightforward procedure, therefore the actual tables can be found in appendix D. A much more interesting step is the inclusion of unobserved cases.

The fuzzy truth table algorithm of fsQCA produces three answers: a complex solution, a parsimonious one and finally an intermediate solution. These solutions differ in their treatment of generalizations. The complex solution does not take any logical remainders into account. This means it makes no simplifying assumptions with regard to the unobserved configurations. In contrast to this, the parsimonious solutions treat logical remainders in a completely utilitarian fashion. Thus, when an assumption with regard to a certain unobserved configuration is beneficial to the briefness of the explanation it is accepted. In this solution, it is irrelevant whether the configuration is assumed to lead to the presence, rather than the absence, of the outcome. Finally, the intermediate solution is an attempt to balance complexity and parsimony. Its configuration is always a superset of the complex solution, and a subset of the parsimonious solution. It includes logical remainders based on the hypothesized relation between the conditions and the outcome in question (Ragin, 2008a; 163-7). Due to these features, the intermediate solution is always preferred (Ibid.; 175).

Finally, the truth table analysis distinguished between “raw” and “unique” coverage when multiple configurations are sufficient. This data can be used to assess their relative empirical weight. The unique coverage is reached by subtracting the overlap of the configurations in their case membership from the raw coverage (Ibid.; 63-4). This is analogous to partitioning explained variation in standard correlational analysis. The conducted analysis is summarized in the table below. A consistency threshold of 0.8 was used, based on the truth table<sup>15</sup>.

**Table 7: Sufficient configurations for a developed e-democracy**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
<b>LM*drg*het</b>	0.144	0.093	0.953
<b>SE*LM*HC*het</b>	0.093	0.041	0.812
<b>Solution</b>	0.186		0.896

Cases with greater than 0.5 membership in LM\*drg\*het: ‘s-Hertogenbosch, Helmond, Roosendaal

Cases with greater than 0.5 membership in SE\*LM\*HC\*het: Breda, Tilburg

<sup>14</sup> In these and the following tables, the consistency and coverage scores are rounded to the nearest thousandths. Any smaller fractions were interpreted as non-significant figures.

<sup>15</sup> Alternatively, a threshold of 0.75 is also defensible based on the truth table. However, the corresponding analysis is not documented here since there is no significant difference with the current analysis. This alternative analysis can be found in Appendix D.

The intermediate solution of fsQCA produced two sufficient configurations. Both of these configurations are within reasonable boundaries of consistency. This means that when it comes to e-democratic development, equifinality has been established. First, I examine the solution SE\*LM\*HC\*het. This configuration is perfectly consistent with the theory. Verbally, it says that certain municipalities in the set of cases have a developed e-democracy *because* they are large municipalities which are surrounded by developed e-democracies, have a high proportion of highly educated citizens and a low electoral turnout. Unfortunately for the theory, only very few cases are explained by this configuration, the coverage is a mere 4.1 percent. Specifically, only Breda and Tilburg have a membership score of more than 0.5 in this combination of conditions. This gap between the coverage of a certain configuration and the cases with high membership in it can be explained by the way QCA works. For the analysis of sufficiency it is important that the membership scores in the outcome are consistently lower than those of a certain configuration. Thus, a case with 0.3 membership score in the outcome and which has 0.4 membership score in this certain configuration is still a part of the subset relation. Moving on, with the help of the conditions under study another set of cases could be explained as well. Large municipalities, which have an democratically conservative government and low electoral turnout are almost a perfect subset of those which have developed e-democracies. This finding is contradictory with the theoretical expectations derived from the literature. After all, e-democracy was expected to be developed by democratically reformist governments. It seems that, under these conditions, democratically conservative governments are drawn to e-democratic instruments. Moreover, although this configuration has a higher coverage than the previous one, it is still pretty low. This subset relation holds for 9.2 percent of the cases, and 's-Hertogenbosch, Helmond and Roosendaal have high membership in this set.

The low coverage of both solutions can be explained by the way sets have been defined. In both configurations, being a large municipality is jointly sufficient for the outcome. However, the Netherlands has a very uneven distribution of municipalities by size. This is no different in Noord-Brabant, where there are very few large municipalities, and a lot which are classified as small. All these small municipalities got a membership score of 0 in this condition and are thus automatically left out of these configurations. Note that this does not mean that only large municipalities have develop e-democracies. After all, a large size is a jointly sufficient but unnecessary condition. Smaller municipalities with developed e-democracies exist, but are not explained by these conditions.

### 4.3 Analysis of E-democratic Underdevelopment

Now, we turn to the analysis of underdeveloped e-democracies. In addition to shedding light on the actual causal processes behind e-democracy, this part of the analysis has a specific advantage over standard correlational analysis. Through examining the inverse of the hypothesized relationships, we can test the assumption made by correlational analysis that causality is *always* symmetric. This part of the analysis will proceed analogous to the previous section. Thus, necessity is examined before sufficiency.

#### 4.3.2 Necessary conditions for e-democratic underdevelopment

Like the previous analysis, all the conditions will have to point in the right direction to make any theoretical sense. Therefore, all the conditions are reversed in the following analysis. This makes them coherent with the hypotheses outlined in the theoretical section.

**Table 8: Necessary conditions for an underdeveloped e-democracy**

Condition	Consistency	Coverage
se	0.527	0.558
lm	0.973	0.566
drg	0.632	0.552
hc	0.690	0.631
HET	0.901	0.593

One quick glance at this table reveals that the assumption of symmetric causality is false when it comes to municipal level e-democracy. Being a small municipality or having a high turnout are *necessary* conditions for e-



democratic underdevelopment. Both of their consistency scores are well over the threshold of 0.85. Moreover, these relations are empirically relevant. Each of them accounts for more than half of the sample. The coverage of the necessity of smallness is 56.6 percent. That of the relation between municipalities with a high turnout at local elections and underdeveloped e-democracies is 59.3 percent. However, to properly assess the empirical weight of these findings we have to look at the take into account how much these sets overlap. Simple descriptive analysis points out that the union of these sets is equal to 65.5 percent of the sample. Thus, there is considerable overlap between these two conditions. Nevertheless, coverage of nearly two-thirds of the sample is still enormous. Due to their necessary nature, these two conditions are deleted in the following analysis of sufficiency.

#### 4.3.2 Sufficient configurations for e-democratic underdevelopment

This analysis of sufficiency is carried out with only three explanatory conditions left. These are surrounding underdeveloped e-democracies, a low percentage of highly educated citizens and a democratically conservative municipal government. Based on the truth table, a consistency threshold of 0.8 was appropriate. The results of the analysis are summarized in the table below.

**Table 9: Sufficient configurations for an underdeveloped e-democracy**

Configuration	Coverage	Consistency
<b>DRG*hc</b>	0.275	0.844

Cases with greater than 0.5 membership in DRG\*hc: Loon op Zand, Woensdrecht, Bernheze, Halderberge, Oirschot, Someren, Werkendam, Laarbeek, Schijndel, Oss, Waalwijk, Geertruidenberg, Cuijk, Moerdijk, Bergen op Zoom.

To start with, the analysis only produced one consistent sufficient configuration. Furthermore, this configuration has a considerable amount of coverage. However, the fact that only one configuration was produced does not mean that equifinality has no place in explaining e-democratic underdevelopment. This is because this solution does not have full coverage. To explain other cases of e-democratic underdevelopment, we simply need to look at different conditions. The configuration states that a substantial proportion of the e-democratically underdeveloped municipalities in the sample suffered that condition because they had a democratically reformist government and a low percentage of highly educated citizens. Together with the necessary conditions which were discovered in the previous analysis, the sufficient configuration for e-democratic development becomes as follows:

$$HET*Im*(DRG*hc) \rightarrow e$$

In other words, small municipalities with a democratically reformist government, a high electoral turnout and a low percentage of highly educated citizens are characterized by e-democratic underdevelopment *because of* these features. Three of the four relevant conditions are consistent with the theory covered in this work. In contrast, the analysis points out that e-democratic underdevelopment is explained by the presence of a democratically reformist government. Apparently, under certain conditions e-democracy is *not* seen as a valuable addition to our democratic system. Despite the fact that this finding is contradictory with theory, it is consistent with a configuration identified in the analysis of e-democratic development. There, it was found that under certain conditions democratically conservative governments promote e-democracy. In conclusion, we can say that this conditions works precisely opposite than conceived by theory.

#### 4.3.3 Summary

The table below summarizes the results of the analysis in terms of the theoretical expectations with which it was started. In addition, when a hypothesis is accepted it is valuable to note why this is the case. In other words, was the condition present in a certain configuration through *necessity* or joint *sufficiency*.

**Table 10: Schematic summary of tested hypotheses**

<i>Hypothesis</i>	<i>Result</i>	<i>Reason</i>
<b>H1a:</b> <i>The condition of developed e-democracy in surrounding municipalities is part of a sufficient configuration for a developed e-democracy in a municipality.</i>	Accepted	Jointly sufficient
<b>H1b:</b> <i>The condition of underdeveloped e-democracy in surrounding municipalities is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.</i>	Rejected	Rejected
<b>H2a:</b> <i>A high percentage of highly educated citizens in a municipality is part of a sufficient configuration for a developed e-democracy in a municipality.</i>	Accepted	Jointly sufficient
<b>H2b:</b> <i>A low percentage of highly educated citizens in a municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.</i>	Accepted	Jointly sufficient
<b>H3a:</b> <i>A low percentage of electoral turnout at local elections in a municipality is part of a sufficient configuration for a developed e-democracy in a municipality.</i>	Accepted	Jointly sufficient
<b>H3b:</b> <i>A high percentage of electoral turnout at local elections in a municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.</i>	Accepted	Necessity
<b>H4a:</b> <i>A democratically reformist municipal government is part of a sufficient configuration for a developed e-democracy in a municipality.</i>	Rejected	Rejected
<b>H4b:</b> <i>A democratically conservative municipal government is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.</i>	Rejected	Rejected
<b>H5a:</b> <i>Being a large municipality is part of a sufficient configuration for a developed e-democracy in a municipality.</i>	Accepted	Jointly sufficient
<b>H5b:</b> <i>Being a small municipality is part of a sufficient configuration for an underdeveloped e-democracy in a municipality.</i>	Accepted	Necessary

This summary shows that the results are a mixed bag. With regard to some conditions, the theory was pretty much in the right direction and the analysis helped to illuminate the details of the relationship. This is true for the condition of a high/low percentage of highly educated citizens, a high/low percentage of electoral turnout and a large/small municipality. First, the analysis of e-democratic development pointed out that a high percentage of highly educated citizens is a *jointly sufficient* but unnecessary condition for the outcome. This relation is the same between a low percentage of educated citizens and e-democratic underdevelopment. Nevertheless, it would be too quick to validate the assumption of causal symmetry. This is because the analysis also showed that both conditions appeared in different configurations. This means that they interact with different conditions and therefore possibly work through different mechanisms. Second, with regard to electoral turnout, the difference between the positive and the negative causal relationship is even bigger. In the former case, low turnout was an unnecessary condition but nevertheless appeared in multiple configurations. In contrast, high turnout is a *necessary* condition for e-democratic underdevelopment. Finally, this same difference between the positive and negative relationship exist when it comes to municipality size. These differences point the way to an interpretation of the causal mechanisms behind this condition. This is in contrast with many previous correlational analyses, which accepted it mainly as an empirical peculiarity.

Moving on, there are also conditions on which our theoretical expectations with regard to their relation to the outcome missed the mark. To start with, this is the case with the condition of policy diffusion. Having developed e-democracies as neighboring municipalities is certainly conducive to e-democratic development under certain specific conditions. Nevertheless, this does not mean that a municipality will lack development in e-democracy because it lacks such neighbors. Furthermore, two robustness tests were carried out with this condition and all led to the same general result.<sup>16</sup> Finally, the theoretical expectations with regard to the political color of the municipal

<sup>16</sup> The first robustness test entailed shifting the boundaries of SE to align with the few small gaps in the data which could be found. The second robustness test involved using the maximum rather than the average level of e-democratic development of surrounding municipalities. This second test was deemed necessary, since there were no preconceived notions of *how* policy diffusion through learning/competition works. Relevant actors can either be influenced by all the surrounding municipalities, or simply from the most advanced one in their proximity. Nevertheless, the small differences between the three analyses means that we cannot make any conclusive statement with regard to this question. More details of the robustness tests can be found in Appendix D.



government were most erroneous. Based on the literature, it was hypothesized that a *democracy policy dimension* would be relevant when it comes to explaining e-democracy. This analysis showed that it indeed is relevant, so that intuition was correct. Nevertheless, under certain conditions, it seems to work exactly opposite to how it was expected. A few municipalities had developed e-democracies precisely because they had democratically conservative governments. In contrast, a more numerous group of other municipalities had underdeveloped e-democracies because they had democratically reformist governments.

In the following section, I deal with the questions that result from this analysis. What does all this mean for e-democracy theory? Finally, in order to fully grasp the consequences of using a configurational approach, the analysis is compared with an ordinary least squares regression on the same dataset.

## 4.4 Interpretation of the Analysis

### 4.4.1 Making sense of e-democratic development

To start with, the coverage of the configurations for e-democratic development are rather low. Thus the results are not very general in nature, but deal with very specific circumstances. Nevertheless, when it comes to the actual explanation of e-democratic development in these cases, two causal pathways are identified. First, the development of e-democracy in large municipalities can be explained by their size, a low electoral turnout and the presence of a democratically conservative government. Second, other large municipalities had developed e-democracies because of their size, a high proportion of highly educated citizens, by being surrounded by advanced e-democracies and having a low electoral turnout. Although the actual causal process is not illuminated by this analysis, the theory behind to selection of these conditions leads to the following interpretation.

To begin with, the theory states that low turnout rates cause governments to put their own legitimacy into question. This perceived gap between governments and their citizens puts pressures on relevant actors to develop e-democracy. The current analysis supports this hypothesis. After all, low turnout is present in both causal recipes. Because the relation between turnout rates and the perceived legitimacy of government is so well established, it is reasonable that this condition to works the same in both configurations. However, the fact that it appears in multiple context means that the pressure to close the citizen-government gap can run through different conductors.

First, let us focus on the different conditions present in the first configuration. Apparently, when the municipality is big and it experiences problems with its legitimacy, democratically conservative governments are the ones which encourage e-democratic development. Despite this, it is likely that these conservative governments would prefer the most conservative options to fix their legitimacy. Thus, their e-democracy tools are probably not that revolutionary. Therefore, the conception of e-democracy as an alternative model with radically different power relations seems to be empirically incorrect. Furthermore, even the more modest view expressed in this paper that e-democracy is necessarily connected with democratization should be taken very lightly in these cases. In contrast, for the municipalities covered by this configuration, e-democracy seems to be an infrastructure of democratic consultation which is relatively consistent with the status-quo. However, labeling e-democracy as an inherently conservative model of democracy seems incorrect as well. After all, the coverage of this configuration is so low that generalizations are very difficult to make. Adding to this, the political color of municipal government does not play a role in the other configuration. Therefore, it seems more plausible that its character might depend on *who* develops it and *why*<sup>17</sup>. Even though many intrinsic characterizations of e-democracy exist, it might actually be a more fluid concept than conceived by theory. In contrast to some inherently deliberative or direct democratic offline alternatives, e-democracy is what governments make of it.

Moving on to the second configuration, e-democracy is also developed in large municipalities which have a large proportion of highly educated citizens and by are surrounded by developed e-democracies. It is interesting that it is precisely the combination of these conditions which is important, since the theories behind them synchronize well. First, the critical citizen thesis claims that educated citizens are likely to pressure government to be more responsive. After all, they would like to have more say in government affairs (Leyenaar & Jacobs, 2001). Second, Lee,

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<sup>17</sup> As one can see in Appendix B, this idea is supported by the fact that the e-democracy scores of different municipalities all have a very different make up.

Chang & Berry hypothesized that more educated citizens might offer more pressure to develop e-government and e-democracy because they know about similar policies in different states (2011; 447). It seems that policy diffusion and citizen pressure can work through several routes. First, it might be that relevant actors experience regional pressures directly. These pressures might either consist of a compulsion to compete, a willingness to learn or both at the same time. Second, policy diffusion might work through the pressure offered by critical citizens. These citizens who push for a more digitally responsive government might have increased chances of success when their government is a regional laggard. They might even make use of this knowledge when they pose their demands. Finally, citizen pressure might also have an independent effect. Citizens are not obliged to use information about policies in different areas, nor are they necessarily unsuccessful when they do not. Because both of these conditions are only jointly sufficient, it is important to remember that these paths policy diffusion and citizen pressure can take are not mutually exclusive. In contrast to correlational analyses which might focus on the competition between these conditions to explain as much variance as possible, the configurational approach allows us to view these paths as collaborators in producing the outcome. In fact, perhaps the low coverage of this configuration might indicate that *only* their collaboration is *sufficient* to create enough pressure to install developed e-democracies.

Finally, there is another condition which appears in both configurations which we have not addressed yet; municipality size. Why is it that in all the explanations above we only talk about large municipalities? It is unfortunate that for the condition of municipality size, no explicit hypothesized causal mechanism exists. Rather, its inclusion in previous e-democracy work is mostly based on an empirical correlation without a theoretical link. Nevertheless, the analysis gives some leads as to what the causal mechanism might be. After all, even though it appears in both configurations, it is by far not a *necessary* condition. A consistent explanation would be that municipalities of a large enough size get more value for their investments in e-democracy. This is reasonable because the worth of e-democracy is, like other mass media, partly determined by its synchronization value. This value refers to the growing utility of such a medium it is embedded in a larger network (Liebowitz & Margolis, 1998). When there is a sufficiently small network of people, no amount of digital magic will help increase the value of e-democracy. Municipality size relates to these network effects in two ways. First, larger municipalities simply house more people. The *potential* user community is therefore bigger. Second, in small communities, even during a legitimacy crisis, there are more alternatives to (re)connect with the citizenry. The *actual* user community will therefore also be smaller. Policy actors who experience pressure to reconnect with their constituency might find their solutions in the offline, rather than the online world. On the other hand, in larger communities governments cannot actually meet a substantial part of their constituency. Therefore, they do turn to the internet to engage with their citizenry.

These hypothesized mechanisms apply to a small proportion of the sample, exemplified by the low coverage of the solutions. These conditions prevalent in the e-democracy literature only amount to a sufficient explanation in large municipalities who suffer from low turnout rates. Despite this, these conditions are not necessary to explain e-democratic development. Thus other, possibly more general, paths are open to the outcome. In illuminating these alternative paths lies a big task for future research.

#### 4.4.2 Making sense of e-democratic underdevelopment

The analysis of necessity showed that all underdeveloped e-democracies had two things in common. First, they were all small municipalities. Second, none of them suffered from a low turnout. The first condition links back to the disadvantage of relying on mass media in small communities. In addition to this, decent turnout rates mean that the municipal government can feel relatively secure with regard to their legitimacy. There is no perceived urgency to get back in touch with the electorate. Only when this perceived urgency is missing and other channels of communication are more advantageous to policy actors, is there a solid foundation to disregard e-democracy. Although these two conditions are by no means sufficient, they have a high coverage. Therefore, they can be considered relatively general explanations of e-democratic underdevelopment. These general factors need to be supplemented by other conditions in order to form a sufficient explanation of e-democratic development in specific cases.

Two of the conditions which can be added to these necessary conditions were present in the current analysis. The municipality must be characterized by a low proportion of highly educated citizens and must be

governed by a democratically reformist government. In theory, this first condition is connected to a lack of citizen pressure through the critical citizen thesis. Lower educated citizens do not show the same willingness to participate in politics as their higher educated peers. This means that offering interactive digital options, or digital information which might be useful for other forms of participation, is less required of policy actors. The second condition of the configuration is contradictory to theory. The expectation was that democratically reformist governments would be more willing to spend their time and resources on e-democracy, and therefore should be conducive to its development. Nevertheless, the fact that this finding is embedded in a specific configuration opens up several possibilities. First, it might be related to the size of the municipality. When other options for democratic consultation are more advantageous in smaller communities, it is not unreasonable that precisely reformist governments are more inclined to make use of these possibilities. Therefore, developing an extensive e-democracy would be quite redundant. Another option is that reformist governments might be more willing to listen to their whole electorate. This increased willingness would enhance the influence of the many lowly educated citizens in the municipality. These lower educated citizens are more likely to be in favor of stealth democracy (Hibbing & Theiss-Morse, 2002 ; Leyenaar & Jacobs, 2011). Therefore, not much participatory schemes would be facilitated. Rather, such government might offer options for the citizen to show direct disagreement with government policy, such as referenda. In sum, these options indicate that reformist governments might see e-democracy as nothing more but a slight add-on to their offline democracy. Moreover, the coverage of this solution is a lot larger than the one which linked political color to e-democratic development. This means that reformist government are much more consistent in showing a reluctance in developing e-democracy than conservative governments are in promoting it.

The configuration which led to e-democratic underdevelopment has a decent coverage of nearly one-third of the sample. Unfortunately, no other configurations can be constructed with these conditions. Therefore, when we want to explain e-democratic underdevelopment in different cases, other conditions will have to be studied. The analysis above provides some good starting points for where prospective research might look for explanations. Chapter 5 deals with the ways in which future researchers can use this investigation as their point of departure. After that, I discuss the limitation of this work and how it could be improved. Nevertheless, in spite of its flaws this paper still has to offer a great deal. To illustrate this even further, the inquiry above will now be compared to a standard ordinary least squares regression analysis.

#### 4.4.3 Comparative Analysis

The reported findings are what they are due to the configurational approach. The question remains what this approach has to add to the correlational approach. Would we have reached different conclusions when we relied on statistics? In order to make the contrast as clear as possible, I present a standard OLS regression of the same sample below. Note that this is not simply a rhetorical trick. Due to the size and scope of the sample, and the interval level nature of most of the measurements this would have actually been a valid route for empirical inference. Furthermore, the case selection was as inclusive as possible, only cases on which data was missing were dropped. This is common practice in statistical analyses as well. Therefore, little changes had to be made to the original dataset. Only the political color of the municipal council, which was an ordinal variable with four categories, had to be coded as a dummy variable. This because a proper ordinal variable has at least five categories (Newsom, 2012), which was obviously not the case. Furthermore, the parties are not equidistant. Therefore D66 and PvdA were coded as 1, and VVD and CDA as 0. The coding reflects the large gap between the reformist and conservative parties. Although some granularity has been lost, it is not so mayor as to influence the analysis a great deal. For this regression analysis the raw data were used, membership calibration has no place in this method.

**Table 11: OLS regression of the sample under study**

<i>Variable</i>	<i>Coefficient</i>	<i>Standardized coefficient</i>
E-democracy surrounding municipalities	0.285	0.121
Population	0.001***	0.518
Democratic Reformist Party	-22.07	-0.226
Percentage highly educated citizens	-0.831	-0.102
Electoral turnout	-1.036	-0.102
Constant	135.248	
R <sup>2</sup>	0.306	
n	61	

Dependent variable: Recalculated municipal e-democracy score

\*\*\* = significant at the 0.01 level

There are some similarities and some contrasts offered by the comparison between these methods. One similarity is that municipality size is also an important factor from a correlational standpoint. It has a large and significant positive effect. A statistician would conclude that the larger a municipality, the more likely it has a developed e-democracy. At the same time, this would imply that the smaller a municipality, the more likely it is to have an underdeveloped e-democracy. His belief in this finding is strengthened by the relatively large proportion of variation which is explained by this model. Note this high explained variation is not a product from bias in our sample. Surely, the decision to keep the province constant did add some non-random element from the sample. However, practices which aim to control the context of the study are not uncommon in much statistical research either.

Based on the configurational analysis, there is some merit to the statistical view. As we have seen, municipality size plays a role both in explaining both e-democratic development and underdevelopment. Unfortunately for the statistician, there is little else which can be concluded from this analysis. In contrast to this, the configurational analysis can precisely point out *when* municipality size plays *what* role with regard to *which* cases. Unlike the statistician, we know that municipality size is only a jointly sufficient but unnecessary condition in a handful of cases. This means that there certainly are configurations which explain e-democratic development while excluding the size of a municipality. Conversely, a small size is a necessary condition for cases which lack e-democratic development. Finally, the configuration in which several conditions appeared offered some points for an interpretation of the precise causal process underlying this relationship. All these advantages are left out if we simply conducted statistical analysis of the same data.

Finally, the statistician might reply that his methods at least look at the actual *values of measured variables*, rather than scores calibrated by the researcher. Although he would technically be correct, the practical import of his criticism would be naught. As the robustness test at the end of appendix D point out, the precise placement of thresholds do not matter a great deal for the results. Different thresholds for calibrating e-democracy and that of surrounding e-democracies were used, and the results were not significantly different.

## 5.0 Conclusion and Discussion

In this paper, it is shown that e-democratic development is more complex than conceived by previous research. Not only has it become a moving target through development of Web 2.0, it also is a difficult to make sense of through sweeping generalizations. Two causal paths were identified which led to e-democratic development. The first involved large municipalities which suffered from low turnout rates, were characterized by a high proportion of highly educated citizens and which are surrounded by developed e-democracies. These conditions all worked according to the theoretically derived expectations. The second causal path was more surprising, since it showed that certain large municipalities with low turnout rates had a developed e-democracy because the government was democratically conservative. Although these explanations might be pretty solid, they are tied to very specific

circumstances and are therefore heavily context dependent. Another reason why e-democratic development might be seen as complex is that it is subject to asymmetrical causality. The examination of underdeveloped e-democracies resulted in a reasonably general explanation which involved two necessary conditions: a small municipality size and a high turnout. In addition, political ideology once again worked contrary to theory. It turned out that democratically reformist governments were less inclined to develop e-democracy. Based on this asymmetrical process, conjectures could be formulated on the mechanics which link municipality size and political ideology to e-democracy. A larger municipality has increased benefits of e-democracy associated with network effects. In contrast, smaller municipalities might see more value in alternative solutions to close the gaps between citizens and government. Second, the role of e-democracy is hypothesized to vary with the ideology of its designers and its synchronization with offline political arrangements. Conservative governments in larger municipalities might developed it for its value, and the fact that it can be perfectly customized to fit with their view of how democracy should function. On the other hand, reformist governments in smaller municipalities might forego e-democracy because they already invest in alternative, more valuable, arrangements.

Future research can build upon these findings in a number of ways. The most obvious one is analyzing the conjectures which were used to properly interpret the data. After all, the role of municipality size and political ideology are based on the assumption that offline democratization matters for e-democratic (under)development. Specifically, this interpretation implies that larger municipalities with conservative governments have less offline instruments of local democracy than smaller municipalities with reformist governments. This is a straightforward proposition which is easily analyzed with various methods. Second, the coverage of the found solutions for e-democratic development was really low. This implies that alternative conditions are necessary to explain it. Future studied could include different conditions in their investigations and compare the coverage of the found explanations. This way, it could illuminate which conditions matter in what contexts.

Finally, this work has shown something else as well. It has introduced the configurational approach in e-democracy research and proved its value. After all, the findings above would have been artificially simple and straightforward when we would have relied on a simple correlational approach. Therefore, future researchers would do well to add this method to their arsenal of investigation. Examining *why* e-democracy gets developed *or not*, sheds light on its empirical form and what actors expect from it. These finding could potentially impact many areas of study, such as defining or designing e-democracy. Coming up with explanations for this empirical phenomenon has been a relatively niche field of inquiry. This new method could help in the development from the e-democracy literature from conceptual and normative theory, towards empirical engagement.

### 5.0.1 Limitations

Despite the fact that this research has been conducted with the utmost care, it is also a human effort and therefore fallible. Here, I discuss some of the more obvious limitations of this inquiry. First, the external validity of the findings is hard to assess with the chosen methods. This is due to the fact that configurational approaches place more emphasis on internal validity and case sensitivity (Ragin, 2000, 2008a). Sweeping generalizations require a simplification of the model of causality on which this model is based. For example, we cannot simply study municipalities from another province the same way and expect the same results. This would be acceptable from a correlational standpoint, since the influence of coercive mandates is still controlled. However, due to the centrality of interaction effects in the configurational approach, we would expect that the connections run differently in different contexts. Therefore, future research could improve upon this study by taking a broader scope and studying multiple contexts at the same time.

Second, several measurements of concepts are far from perfect. The measurement of e-democracy relied on the 2009 Overheid.nl monitor, since it was the most recent. The project was cancelled at that time because it came under heavy criticism from municipalities due to its simplicity (Sanders, 2009). Therefore, it is possibly a relatively crude measurement of e-democracy. In addition, using the political party of the mayor as an indicator for the political color of the government is very blunt instrument. Improving on both of these relatively simple measurements requires a more in depth investigation, which possibly focuses on fewer cases. What is more, the link between the proportion of higher educated citizens and citizen pressure could only be made through the critical

citizen thesis. Unfortunately, this is only a correlational statement meaning that higher educated citizens are *more likely* to be critical citizens than lower educated citizens. However, in this analysis the assumption was made that a high education is a *sufficient* condition for being a critical citizen. Until this claim has been tested with a configurational approach, this remains an assumption whose reality is unchecked.

Third, the selection of conditions which could be tested was naturally limited, while studying other conditions would be interesting as well. As already has been discussed, the analysis lacks a condition which captured the offline democratization attempts of municipalities. Including this condition in the analysis would be beneficial in at least two ways. First, the interpretation relied on the idea that other alternatives to (re)connect with citizens would be more advantageous in smaller municipalities. An actual measure of participatory instruments could shed light on whether smaller municipalities actually develop such alternatives. Second, when it comes to the political color of the municipal government, the variance of e-democratic development was seen to depend on the willingness of the government for democratic reform. As it turned out, the relation was there but it was completely opposite to what was expected. Therefore, it would be interesting to see how conservative or reformist governments align their e-democratic instruments with other forms of democratic consultation.



## Appendices

### Appendix A Raw Data

**Table A1: The raw dataset**

<i>Municipality</i>	<i>E-democracy</i>	<i>Average surrounding e-democracy</i>	<i>Maximum surrounding e-democracy</i>	<i>Population</i>	<i>Party</i>	<i>Percentage higher educated</i>	<i>Turnout in percentages</i>
Asten	104,81	99,49	231,60	16363	2	22,33	65
Bergeijk	178,84	80,27	103,79	18087	1	21,19	61
Bernheze	101,74	95,40	170,35	29615	4	20,09	58
Best	108,39	90,82	178,84	29017	4	30,94	56
Bladel	101,23	107,86	178,84	19129	2	20,57	60
Boxmeer	67,49	72,98	103,27	28609	2	19,25	67
Boxtel	64,42	91,58	170,35	30281	3	25,62	59
Bergen op Zoom	54,71	89,06	128,84	65582	4	22,43	53
Breda	106,34	125,51	253,07	171916	3	33,3	50
Cranendonck	39,37	65,78	74,64	20272	1	20,29	56
Cuijk	79,76	72,47	94,07	24309	3	20,81	58
's-Hertogenbosch	171,89	101,86	170,35	137775	1	30,82	51
Deurne	73,62	103,77	231,60	31466	1	20,19	58
Dongen	66,98	132,67	253,07	25411	1	19,02	58
Drimmelen	121,68	110,31	254,91	26624	3	22,65	62
Eersel	103,79	122,80	189,27	18104	1	22,94	62
Eindhoven	189,27	76,43	108,39	212269	3	33,93	47
Etten-Leur	134,56	102,87	136,61	40997	1	20,29	53
Gemert-bakel	105,22	100,85	231,60	28508	1	17,48	59
Geldrop-Mierlo	92,54	118,94	231,60	37669	1	23,6	55
Goirle	160,13	172,55	253,07	22466	2	29,33	58
Gilze en Rijen	253,07	118,54	244,89	25789	1	25	60
Grave	83,85	108,65	224,24	12673	2	21,25	63
Geertruidenberg	82,82	78,43	121,68	20794	3	19,01	54
Haaren	88,96	119,33	244,89	13711	1	19,75	52
Helmond	231,60	93,24	152,25	87757	1	20,78	51
Heusden	116,57	113,45	244,89	43060	3	22,84	56
Hilvarenbeek	115,54	130,20	244,89	15041	2	21,6	64
Heeze-Leende	49,59	62,89	92,54	15194	2	25,96	62
Halderberge	41,41	116,08	134,56	29271	3	16,1	56
Laarbeek	152,25	106,32	231,60	21717	3	16,34	58
Landerd	84,87	90,39	111,97	14805	1	22,94	69
Loon op Zand	73,62	128,45	244,89	22934	4	14,18	56
Moerdijk	99,70	128,77	254,91	36648	3	22,36	55
Nuenen, Gerwen en Nederwetten	51,13	134,72	231,60	22437	3	36,18	63
Oirschot	57,77	112,49	189,27	17806	3	18,27	65
Oisterwijk	104,81	114,32	244,89	25738	1	23,5	58
Oosterhout	56,24	126,18	253,07	54198	2	24,3	56
Oss	60,33	96,54	105,32	77097	3	20,63	57

Reusel-De Mierden	83,34	108,40	115,54	12432	1	20	56
Roosendaal	128,84	78,84	111,45	77482	1	18,48	50
Rucphen	111,45	110,36	136,61	22549	2	9,47	62
St. Anthonis	44,48	77,38	105,22	11786	1	19,28	65
Schijndel	85,38	103,94	170,35	22889	3	15,58	57
St. Michielsgestel	170,35	89,34	171,89	28267	1	25,14	57
Son en Breugel	80,27	102,79	189,27	15527	2	37,5	60
St. Oedenrode	62,37	99,18	170,35	17427	1	24,56	61
Someren	73,11	107,58	231,60	18229	3	16,26	64
Steenbergen	105,83	84,39	128,84	23229	2	16,79	56
Tilburg	244,89	122,46	253,07	203464	3	29,69	50
Uden	111,97	74,47	101,74	40360	3	23,6	57
Veghel	81,29	94,19	152,25	37125	2	20,25	58
Veldhoven	86,91	133,31	189,27	43007	2	27,11	53
Valkenswaard	48,06	96,59	178,84	30871	1	25	60
Vught	65,95	122,44	171,89	25228	2	27,86	59
Waalre	61,35	110,53	189,27	16543	2	40,59	61
Waalwijk	85,38	88,96	131,91	45774	3	20,2	51
Werkendam	61,86	106,83	254,91	26409	3	16,27	64
Woensdrecht	80,78	84,70	128,84	21700	4	18,52	59
Woudrichem	70,55	87,55	131,91	14378	1	21,01	66
Zundert	136,61	117,45	134,56	21083	1	13,87	56

## 2. Bordering municipalities

Municipalities from other provinces are in *cursive* font

**Aalburg:** Heusden, Waalwijk, Werkendam, Woudrichem, *Zaltbommel*

**Alphen-Chaam:** Baarle-Nassau, Breda, Gilze en Rijen, Goirle, Zundert

**Asten:** Deurne, Helmond, Someren, *Nederweert*

**Baarle-Nassau:** Alphen-Chaam

**Bergeijk:** Bladel, Eersel, Valkenswaard, Veldhoven, Waalre

**Bergen op Zoom:** Roosendaal, Steenbergen, Woensdrecht, *Reimerswaal, Tholen*

**Bernheze:** Landerd, Maasdonk, Oss, Schijndel, St.-Michielsgestel, Uden, Veghel

**Best:** Boxtel, Eindhoven, Oirschot, Son en Breugel, St. Oedenrode

**Bladel:** Bergeijk, Hilvarenbeek, Eersel, Oirschot, Reusel-De Mierden

**Boekel:** Gemert-Bakel, St. Anthonis, Uden, Veghel

**Boxmeer:** Cuijk, St. Anthonis, *Bergen, Gennep*

**Boxtel:** Best, Haaren, Oirschot, Oisterwijk, Schijndel, Son en Breugel, St. Michielsgestel, St. Oedenrode, Vught

**Breda:** Alphen-Chaam, Drimmelen, Etten-Leur, Gilze en Rijen, Moerdijk, Oosterhout, Zundert

**Cranendonck:** Heeze-Leende, Someren, *Nederweert, Weert*

**Cuijk:** Boxmeer, Grave, Mill en St. Hubert, Sint Anthonis

**Deurne:** Astén, Gemert-Bakel, Helmond, *Horst a.d. Maas, Peel en Maas (missing), Venray*

**Dongen:** Geertruidenberg, Gilze en Rijen, Loon op Zand, Oosterhout, Tilburg, Waalwijk

**Drimmelen:** Breda, Geertruidenberg, Moerdijk, Oosterhout, Werkendam, *Dordrecht*

**Eersel:** Bergeijk, Bladel, Eindhoven, Oirschot, Veldhoven

**Eindhoven:** Best, Eersel, Geldrop-Mierlo, Heeze-Leende, Nuenen + Gerwen en Nederwetten, Oirschot, Veldhoven, Waalre

**Etten-Leur:** Breda, Drimmelen, Halderberge,, Moerdijk, Rucphen, Zundert

**Geertruidenberg:** Dongen, Drimmelen, Oosterhout, Waalwijk, Werkendam



**Geldrop-Mierlo:** Eindhoven, Heeze-Leende, Helmond, Nuenen + Gerwen en Nederwetten, Someren

**Gemert-Bakel:** Boekel, Deurne, Helmond, Laarbeek, Sint Anthonis, Veghel, *Venray*

**Gilze en Rijen:** Alphen-Chaam, Breda, Dongen, Goirle, Tilburg, Oosterhout

**Goirle:** Alphen-Chaam, Gilze en Rijen, Hilvarenbeek, Tilburg

**Grave:** Cuijk, Landerd, Mill en St. Hubert, Oss, *Heumen*

**Haaren:** Boxtel, Heusden, Oisterwijk, Tilburg, Vught

**Halderberge:** Etten-Leur, Moerdijk, Roosendaal, Rucphen, Steenbergen

**Heeze-Leende:** Cranendonck, Geldrop-Mierlo, Someren, Valkenswaard, Waalre

**Helmond:** Asten, Deurne, Geldrop-Mierlo, Gemert-Bakel, Laarbeek, Nuenen + Gerwen en Nederwetten, Someren

**'s-Hertogenbosch:** Heusden, Lith, Maasdonk, St. Michielsgestel, Vught, *Maasdriel*

**Heusden:** Haaren, 's-Hertogenbosch, Loon op Zand, Tilburg, Vught, Waalwijk, *Maasdriel, Zaltbommel*

**Hilvarenbeek:** Goirle, Oirschot, Oisterwijk, Reusel-De Mierden, Tilburg

**Laarbeek:** Gemert-Bakel, Helmond, Nuenen + Gerwen en Nederwetten, St. Oedenrode, Veghel

**Landerd:** Bernheze, Grave, Mill en St. Hubert, Oss, Uden

**Lith:** 's-Hertogenbosch, Maasdonk, Oss, *Maasdriel, West Maas en Waal*

**Loon op Zand:** Dongen, Heusden, Tilburg, Waalwijk

**Maasdonk:** Bernheze, 's-Hertogenbosch, Lith, Oss, St. Michielsgestel

**Mill en Sint Hubert:** Cuijk, Grave, Landerd, Sint Anthonis, Uden

**Moerdijk:** Breda, Drimmelen, Etten-Leur, Halderberge, Steenbergen, *Comstrijen, Dordrecht, Oostflakkee, Strijen*

**Nuenen, Gerwen en Nederwetten:** Eindhoven, Geldrop-Mierlo, Helmond, Laarbeek, Son en Breugel, St. Oedenrode

**Oirschot:** Best, Bladel, Boxtel, Eersel, Eindhoven, Hilvarenbeek, Oisterwijk

**Oisterwijk:** Boxtel, Haaren, Hilvarenbeek, Oirschot, Tilburg

**Oosterhout:** Breda, Dongen, Drimmelen, Geertuidenberg, Gilze en Rijen

**Oss:** Bernheze, Grave, Landerd, Lith, Maasdonk, *West Maas en Waal, Wijchen*

**Reusel-De Mierden:** Bladel, Hilvarenbeek

**Roosendaal:** Bergen op Zoom, Halderberge, Rucphen, Steenbergen, Woensdrecht

**Rucphen:** Etten-leur, Halderberge, Roosendaal, Zundert

**Schijndel:** Bernheze, St. Oedenrode, St. Michielsgestel, Veghel

**Sint Anthonis:** Boekel, Boxmeer, Cuijk, Gemert-Bakel, Mill en St. Hubert

**Sint-Michielsgestel:** Bernheze, Boxtel, 's-Hertogenbosch, Maasdonk, Schijndel, St. Oedenrode, Vught

**Sint-Oedenrode:** Best, Boxtel, Laarbeek, Nuenen + Gerwen en Nederwetten, Schijndel, Son en Breugel, St. Michielsgestel, Veghel

**Someren:** Asten, Cranendonck, Geldrop-Mierlo, Heeze-Leende, Helmond, *West Maas en Waal, Wijchen*

**Son en Breugel:** Best, Eindhoven, Nuenen + Gerwen en Nederwetten, St. Oedenrode

**Steenbergen:** Bergen op Zoom, Moerdijk, Halderberge, Roosendaal, *Oostflakkee, Tholen*

**Tilburg:** Dongen, Gilze en Rijen, Goirle, Haaren, Heusden, Hilvarenbeek, Loon op Zand, Oisterwijk

**Uden:** Bernheze, Boekel, Landerd, Mill en St. Hubert, Sint Anthonis, Veghel

**Valkenswaard:** Bergeijk, Heeze-Leende, Waalre

**Veghel:** Bernheze, Boekel, Gemert-Bakel, Laarbeek, Schijndel, St. Oedenrode, Uden

**Veldhoven:** Bergeijk, Eersel, Eindhoven, Waalre

**Vught:** Boxtel, Haaren, 's-Hertogenbosch, Heusden, St. Michielsgestel

**Waalre:** Bergeijk, Eindhoven, Heeze-Leende, Valkenswaard, Veldhoven

**Waalwijk:** Aalburg, Dongen, Geertuidenberg, Heusden, Loon op Zand, Werkendam

**Werkendam:** Aalburg, Drimmelen, Geertuidenberg, Waalwijk, Woudrichem, *Dordrecht, Gorichem, Hardinxveld-Giessendam*

**Woensdrecht:** Bergen op Zoom, Roosendaal, *Reimerswaal*

**Woudrichem:** Aalburg, Werkendam, *Gorichem, Zaltbommel*

**Zundert:** Breda, Etten-Leur, Rucphen

## Appendix B: Measurement and Coding

### 1. Coding of Overheid.nl index

Category T denotes Transmission, while category I denotes Interaction

#### Subject A

Question	Category
1. Publiceert de overheidsorganisatie op haar website de periodieke bekendmakingen conform de landelijke standaard? (6)	T
2. Kunnen bezoekers van de website van de overheidsorganisatie zich abonneren op een proactieve attenderingsfunctie inzake deze bekendmakingen? (4)	T
3. Publiceert de overheidsorganisatie op haar website vergunningen conform de landelijke standaard? (10)	T
4. Publiceert de overheidsorganisatie alle geldende algemeen verbindende voorschriften (regelingen/verordeningen) conform de landelijke standaard? (12)	T
5. Publiceert de overheidsorganisatie op haar website alle geldende algemeen verbindende voorschriften (regelingen/verordeningen) conform de actuele versie van de landelijke standaard? (3)	T
6. Is de overheidsorganisatie aangesloten op de landelijke standaard voor Samenwerkende Catalogi? (5)	T
7. Om te voldoen aan de Europese Dienstenrichtlijn dient de overheidsorganisatie zich aan te sluiten op (o.a.) de Berichtenbox van <i>Antwoord@</i> voor bedrijven. Is de overheidsorganisatie aangesloten op de Berichtenbox van <i>Antwoord@</i> voor bedrijven? (5)	T
8. Voldoet de overheidsorganisatie aan de belangrijkste elektronische voorwaarden van de Europese Dienstenrichtlijn: aansluiting op Samenwerkende Catalogi, de Berichtenbox en het Interne Markt Informatie Systeem? (5)	T
9. Is de overheidsorganisatie aangesloten op de standaard voor MijnOverheid.nl? (12)	T
10. Publiceert de overheidsorganisatie één of meer ruimtelijke plannen volgens de landelijke standaarden (DURP-standaard 2006 en/of de RO-Standaard 2008)? (10)	T
11. Ontsluit de overheidsorganisatie haar welstandsnota via de landelijke standaard WelstandTransparant? (8)	T
12. Biedt de overheidsorganisatie de <i>Antwoord@</i> Contentcollectie op haar website aan? (10)	T
13. Is de overheidsorganisatie aangesloten op <a href="http://www.regelhulp.nl">www.regelhulp.nl</a> ? (10)	T

#### Subject B

Question	Category
1. Ontsluit de overheidsorganisatie op haar website een bestuursinformatiesysteem? (8)	T
2. Ontsluit de overheidsorganisatie tekstueel de verslagen van de vergaderingen van de volksvertegenwoordiging? (8)	T
3. Biedt de overheidsorganisatie de actuele begroting op haar website aan? (10)	T
4. Ontsluit de overheidsorganisatie de (verslagen van de) vergaderingen van de volksvertegenwoordiging in beeld en/of geluid? (6)	T
5. Geeft de overheidsorganisatie aan op welke wijze een burger een WOB-verzoek (Wet Openbaarheid van Bestuur) moet of kan indienen? (10)	T
6. Heeft de overheidsorganisatie een interactieve verwijzing (hyperlink) tussen haar producten en de relevante regelgeving en omgekeerd van de regelgeving naar relevante producten? (10)	T
7. Biedt de website een overzicht van de nevenfuncties van één of meer bestuurders? (6)	T
8. Is het stemgedrag van de volksvertegenwoordigers op een structurele en duidelijke wijze te volgen op, of via de website van de overheidsorganisatie? (10)	T
9. Geeft de overheidsorganisatie inzicht in de wijze waarop de rekenkamerfunctie is ingericht? (10)	T
10. Publiceert de overheidsorganisatie op haar website een actueel financieel jaarverslag en / of Burgerjaarverslag? (6)	T
11. Publiceert de overheidsorganisatie op haar website tenminste één geldend bestemmingsplan? (10)	T
12. Stelt de overheidsorganisatie via haar website haar ruimtelijke informatie voorzien van metadata vrij beschikbaar voor hergebruik? (6)	T

## Subject D

Question	Category
1. Kunnen bezoekers van de website van de overheidsorganisatie zich aanmelden voor een e-mail nieuwsbrief? (3)	T
2. Biedt de overheidsorganisatie de bezoeker op haar website de mogelijkheid zich te 'abonneren' op RSS-feeds? (3)	T
3. Biedt de overheidsorganisatie op haar website snel en eenvoudig alle relevante contactinformatie (bezoekadres, postadres, openingstijden, telefoonnummer(s) en mailadres) en is deze contactinformatie met één klik vanaf iedere pagina bereikbaar? (3)	T
4. Publiceert de overheidsorganisatie op haar website het '14+ netnummer' als de centrale telefonische toegang voor de gehele gemeentelijke dienstverlening (KCC, Klant Contact Centrum)? (5)	T
5. Is het voor een bezoeker van de website van de overheidsorganisatie mogelijk om direct via de website live in contact te komen met de overheidsorganisatie? (3)	I
6. Bevat de website een privacystatement? (4)	T
7. Publiceert de overheidsorganisatie op haar website een proclamer? (4)	T
8. Publiceert de overheidsorganisatie op haar website een Kwaliteitshandvest? (3)	T
9. Bevat de website van de overheidsorganisatie een expliciete vermelding van de responstijden op e-mails? (3)	T
10. Publiceert de overheidsorganisatie op haar website informatie over de klachtenprocedure? (4)	T
11. Heeft de overheidsorganisatie een lokaal meldpunt administratieve lastenverlichting? (3)	T
12. Biedt de overheidsorganisatie op haar website informatie over de wijze waarop burgers een onderwerp op de agenda van het vertegenwoordigend orgaan kunnen krijgen (burgerinitiatief)? (3)	T
13. Maakt de overheidsorganisatie gebruik van nieuwe media om interactief met burgers/bedrijven te communiceren over bestuurlijke of beleidsrelevante thema's? (3)	I
14. Biedt de overheidsorganisatie digitale inspraakmogelijkheden op het gebied van ruimtelijke of visuele plannen? (2)	I
15. Heeft de overheidsorganisatie een burgerpanel én biedt ze daar informatie over aan? (3)	T
16. Accepteert de overheidsorganisatie meldingen van Verbeterdebuurt.nl? (2)	I
17. 29. Publiceert de overheidsorganisatie op haar website een actueel klanttevredenheidsonderzoek?	T

## Subject E

Question	Category
1. Heeft de overheidsorganisatie een MijnOverheid.nl-banner op haar website, in haar digitale loket? (10)	T
2. Heeft de overheidsorganisatie een banner naar <i>Antwoord@</i> voor Bedrijven in haar eigen digitale (bedrijven)loket? (10)	T
3. Biedt de overheidsorganisatie een interactieve verwijzing (hyperlink) naar Berekenuwrecht.nl? (10)	T
4. Biedt de overheidsorganisatie een interactieve verwijzing (hyperlink) naar het Digitaal Klantdossier Werk en Inkomen? (20)	T
5. Biedt de overheidsorganisatie een interactieve verwijzing (hyperlink) naar <a href="http://www.nederlandtegenterrorisme.nl">www.nederlandtegenterrorisme.nl</a> en/of <a href="http://www.nctb.nl">www.nctb.nl</a> ? (10)	T
6. Biedt de overheidsorganisatie een interactieve verwijzing (hyperlink) naar <a href="http://www.lastvandeoverheid.nl">www.lastvandeoverheid.nl</a> ? (20)	T
7. Biedt de overheidsorganisatie een interactieve verwijzing (hyperlink) naar de nationale ombudsman op <a href="http://www.ombudsman.nl">www.ombudsman.nl</a> en/of naar de lokale ombudsman? (20)	T

## Subject F

Question	Category
1. Score automatische webrichtlijnen-toets (47 van de 125 webrichtlijnen) (47)	T
2. Heeft de overheidsorganisatie een claim op haar website staan ten aanzien van de Webrichtlijnen of toegankelijkheid en kan ze deze onderbouwen (een conformiteitsverklaring door de eigenaar of maker van een website)? (10)	T

3. Zijn de bekendmakingen van de overheidsorganisatie specifiek doorzoekbaar? (10)	<b>T</b>
4. Zijn de vergunningen van de overheidsorganisatie doorzoekbaar? (10)	<b>T</b>
5. Zijn de regelingen van de overheidsorganisatie doorzoekbaar? (10)	<b>T</b>
6. Ontsluit de overheidsorganisatie op haar website de overheidsbrede zoekdienst van Overheid.nl?	<b>T</b>
7. Is het bestuursinformatiesysteem apart doorzoekbaar? (8)	<b>T</b>

## 2. Recalculation of e-democracy scores

**Table B1: Distribution of points**

Subject	Total # points	# Transmission	# Interaction
Standards (A)	100	100	0
Transparency (B)	100	100	0
Citizen Centrality (D)	54	44	10
Interactive references (E)	100	100	0
Accessibility (F)	100	100	0
Total	454	444	10
Multiplier	-	0.51126	22.7
Relative weight	1.0	0.5	0.5

**Table B2: Recalculated scores per municipality**

Municipality	Score A	Score B	Score D: transmission	Score D: interaction	Score E	Score F	Total score
Aalburg	28	66	20	2	80	62	156,60
Alphen-Chaam	21	32	11	1	30	55	89,28
Asten	5	51	17	3	80	49	139,71
Baarle-Nassau	23	50	11	2	80	25	121,56
Bergeijk	35	56	10	7	100	55	213,35
Bergen op Zoom	18	37	4	0	10	38	55,97
Bernheze	33	51	23	7	50	35	179,88
Best	5	53	14	4	90	46	154,20
Bladel	35	60	9	3	50	41	136,04
Boekel	16	28	4	2	0	29	62,98
Boxmeer	5	44	7	5	30	41	123,18
Boxtel	13	40	3	3	40	27	98,39
Breda	29	56	15	8	60	40	195,41
Cranendonck	15	31	3	0	0	28	40,27
Cuijk	10	58	13	4	30	41	124,90
Deurne	21	47	9	4	20	43	118,63
Dongen	12	47	9	3	30	30	101,00
Drimmelen	25	42	17	5	100	49	178,62
Eersel	35	54	16	7	50	41	181,97
Eindhoven	19	50	26	13	90	42	266,29
Etten-Leur	23	40	3	3	30	34	102,05
Geertruidenberg	29	45	12	5	30	41	138,87
Geldrop-Mierlo	33	52	9	2	50	35	116,33
Gemert-Bakel	13	33	15	2	10	46	83,90
Gilze en Rijen	43	52	17	10	100	56	253,68
Goirle	19	60	20	5	40	39	149,85
Grave	29	47	7	5	40	36	139,92
Haaren	37	56	14	5	30	32	145,15
Halderberge	9	32	0	5	0	35	96,50
Heeze-Leende	10	33	11	2	10	31	72,39
Helmond	30	56	33	15	50	52	285,85
's-Hertogenbosch	24	51	14	10	50	57	216,02
Heusden	22	51	20	7	70	58	195,05
Hilvarenbeek	28	59	20	7	60	52	194,00

<i>Municipality</i>	<i>Score A</i>	<i>Score B</i>	<i>Score D: transmission</i>	<i>Score D: interaction</i>	<i>Score E</i>	<i>Score F</i>	<i>Total score</i>
Laarbeek	20	48	17	5	70	51	164,50
Landerd	20	53	17	7	40	29	162,62
Loon op Zand	21	36	3	5	20	59	129,46
Maasdonk	5	30	13	4	50	42	118,63
Mill en St. Hubert	5	38	15	3	80	43	128,72
Moerdijk	31	49	14	4	50	47	145,30
Nuenen, Gerwen en Nederwetten	19	20	4	2	20	35	73,96
Oirschot	26	45	7	1	0	34	69,93
Oisterwijk	32	42	20	5	60	46	161,36
Oosterhout	18	44	7	2	0	39	79,19
Oss	9	35	4	6	20	44	126,68
Reusel-De Mierden	28	64	14	2	20	35	106,91
Roosendaal	47	65	13	10	70	47	240,08
Rucphen	25	52	19	3	70	49	146,51
Schijndel	15	48	13	7	20	64	163,14
St. Anthonis	8	28	0	3	10	38	77,99
St. Michielsgestel	25	70	16	10	50	32	214,45
St. Oedenrode	25	30	7	1	10	49	74,64
Somerens	4	47	8	3	30	51	107,28
Son en Breugel	27	41	16	7	30	36	157,91
Steenbergen	21	49	22	5	70	40	162,41
Tilburg	29	61	19	15	80	58	299,45
Uden	29	54	20	2	70	44	136,20
Valkenswaard	10	32	2	5	10	35	103,30
Veghel	25	20	10	2	60	42	104,82
Veldhoven	15	56	9	7	40	43	164,71
Vught	5	43	11	2	20	48	89,13
Waalre	33	35	9	7	0	36	156,60
Waalwijk	20	29	9	3	70	36	89,28
Werkendam	18	50	11	2	10	30	139,71
Woensdrecht	25	44	12	3	40	34	121,56
Woudrichem	29	27	10	2	20	50	213,35
Zundert	15	41	3	8	30	40	55,97

## Appendix C: Membership Thresholds and Values

### 1. Membership Thresholds

**Table C1: Membership thresholds of sets**

<i>Set</i>	<i>Full membership</i>	<i>Cross-over</i>	<i>Non-membership</i>
Advanced e-democracy (E)	130	100	75
Surrounding Advanced e-democracies (SE)	117.9989	103.5239	89.2003
Large Municipality (LM)	100 000	70 000	50 000
Democratic Reformist Government (DRG)	n/a	n/a	n/a
High Proportion of Highly Educated Citizens (HC)	25%	22.54%	19.14%
High Electoral Turnout (HET)	58	54	50

## 2. Membership values

Due to reasons of space, the membership values relating to the robustness tests are presented here as well. For more information on the actual thresholds and truth tables of these robustness tests, see Appendix D.

**Table C2: Membership values set of advanced e-democracies (E) and (E2)**

<i>Municipality</i>	<i>E-democracy score</i>	<i>Membership E</i>	<i>Membership E2</i>
Gilze en Rijen	253,07	1	1
Tilburg	244,89	1	1
Helmond	231,60	1	1
Eindhoven	189,27	1	1
Bergeijk	178,84	1	1
's-Hertogenbosch	171,89	1	1
St. Michielsgestel	170,35	1	1
Goirle	160,13	1	1
Laarbeek	152,25	0,99	1
Zundert	136,61	0,97	1
Etten-Leur	134,56	0,97	1
Roosendaal	128,84	0,95	1
Drimmelen	121,68	0,9	0,99
Heusden	116,57	0,84	0,97
Hilvarenbeek	115,54	0,83	0,97
Uden	111,97	0,77	0,93
Rucphen	111,45	0,76	0,92
Best	108,39	0,7	0,86
Breda	106,34	0,65	0,8
Steenbergen	105,83	0,64	0,78
Gemert-Bakel	105,22	0,63	0,75
Oisterwijk	104,81	0,62	0,74
Asten	104,81	0,62	0,74
Eersel	103,79	0,59	0,69
Bernheze	101,74	0,54	0,58
Bladel	101,23	0,53	0,56
Moerdijk	99,70	0,49	0,49
Geldrop-Mierlo	92,54	0,29	0,34
Haaren	88,96	0,21	0,27
Veldhoven	86,91	0,17	0,23
Schijndel	85,38	0,15	0,21
Waalwijk	85,38	0,15	0,21
Landerd	84,87	0,14	0,2
Grave	83,85	0,13	0,19
Reusel-De Mierden	83,34	0,12	0,18
Geertruidenberg	82,82	0,11	0,18
Veghel	81,29	0,1	0,16
Woensdrecht	80,78	0,09	0,15
Son en Breugel	80,27	0,09	0,15
Cuijk	79,76	0,08	0,14
Loon op Zand	73,62	0,04	0,09
Deurne	73,62	0,04	0,09
Somereren	73,11	0,04	0,08
Woudrichem	70,55	0,03	0,07
Boxmeer	67,49	0,02	0,05
Dongen	66,98	0,02	0,05
Vught	65,95	0,02	0,05
Boxtel	64,42	0,01	0,04
St. Oedenrode	62,37	0,01	0,03



<i>Municipality</i>	<i>E-democracy score</i>	<i>Membership E</i>	<i>Membership E2</i>
Werkendam	61,86	0,01	0,03
Waalre	61,35	0,01	0,03
Oss	60,33	0,01	0,03
Oirschot	57,77	0,01	0,02
Oosterhout	56,24	0,01	0,02
Bergen op Zoom	54,70	0	0,02
Nuenen, Gerwen en Nederwetten	51,13	0	0,01
Heeze-Leende	49,59	0	0,01
Valkenswaard	48,06	0	0,01
St. Anthonis	44,48	0	0,01
Halderberge	41,41	0	0,01
Cranendonck	39,37	0	0

**Table C3: Membership values set of municipalities surrounded by advanced e-democracies.**

Average used with (SE) and (SE2). Maximum used with (ME).

<i>Municipality</i>	<i>Average surrounding</i>	<i>Membership SE</i>	<i>Membership SE2</i>	<i>Maximum surrounding</i>	<i>Membership ME</i>
Goirle	172,55	1	1	253,07	0,99
Nuenen, Gerwen en Nederwetten	134,72	1	0,99	231,60	0,95
Veldhoven	133,31	1	0,98	189,27	0,38
Dongen	132,67	1	0,98	253,07	0,99
Hilvarenbeek	130,20	1	0,98	244,89	0,99
Moerdijk	128,77	0,99	0,97	254,91	0,99
Loon op Zand	128,45	0,99	0,97	244,89	0,99
Oosterhout	126,18	0,99	0,96	253,07	0,99
Breda	125,51	0,99	0,96	253,07	0,99
Eersel	122,80	0,98	0,94	189,27	0,38
Tilburg	122,46	0,98	0,93	253,07	0,99
Vught	122,44	0,98	0,93	171,89	0,21
Haaren	119,33	0,96	0,9	244,89	0,99
Geldrop-Mierlo	118,94	0,96	0,9	231,60	0,95
Gilze en Rijen	118,54	0,96	0,89	244,89	0,99
Zundert	117,45	0,95	0,88	134,56	0,04
Halderberge	116,08	0,93	0,86	134,56	0,04
Oisterwijk	114,32	0,9	0,82	244,89	0,99
Heusden	113,45	0,89	0,81	244,89	0,99
Oirschot	112,49	0,87	0,78	189,27	0,38
Waalre	110,53	0,81	0,74	189,27	0,38
Rucphen	110,36	0,8	0,73	136,61	0,05
Drimmelen	110,31	0,8	0,73	254,91	0,99
Grave	108,65	0,74	0,68	224,24	0,91
Reusel-De Mierden	108,40	0,73	0,68	115,54	0,02
Bladel	107,86	0,71	0,66	178,84	0,27
Someren	107,58	0,7	0,65	231,60	0,95
Werkendam	106,83	0,66	0,63	254,91	0,99
Laarbeek	106,32	0,64	0,61	231,60	0,95
Schijndel	103,94	0,52	0,53	170,35	0,2
Deurne	103,77	0,51	0,53	231,60	0,95
Etten-Leur	102,87	0,47	0,5	136,61	0,05
Son en Breugel	102,79	0,46	0,49	189,27	0,38
's-Hertogenbosch	101,86	0,41	0,46	170,35	0,2
Gemert-Bakel	100,85	0,36	0,43	231,60	0,95
Asten	99,49	0,3	0,39	231,60	0,95

<i>Municipality</i>	<i>Average surrounding</i>	<i>Membership SE</i>	<i>Membership SE2</i>	<i>Maximum surrounding</i>	<i>Membership ME</i>
St. Oedenrode	99,18	0,29	0,38	170,35	0,2
Valkenswaard	96,59	0,19	0,3	178,84	0,27
Oss	96,54	0,19	0,3	105,32	0,01
Bernheze	95,40	0,15	0,27	170,35	0,2
Veghel	94,19	0,12	0,24	152,25	0,09
Helmond	93,24	0,1	0,22	152,25	0,09
Boxtel	91,58	0,08	0,18	170,35	0,2
Best	90,82	0,07	0,17	178,84	0,27
Landerd	90,39	0,06	0,16	111,97	0,02
St. Michielsgestel	89,34	0,05	0,14	171,89	0,21
Bergen op Zoom	89,06	0,05	0,14	128,84	0,03
Waalwijk	88,96	0,05	0,14	131,91	0,04
Woudrichem	87,55	0,03	0,12	131,91	0,04
Woensdrecht	84,70	0,02	0,08	128,84	0,03
Steenbergen	84,39	0,02	0,08	128,84	0,03
Bergeijk	80,27	0,01	0,05	103,79	0,01
Roosendaal	78,84	0,01	0,04	111,45	0,01
Geertruidenberg	78,43	0,01	0,04	121,68	0,02
St. Anthonis	77,38	0	0,03	105,22	0,01
Eindhoven	76,43	0	0,03	108,39	0,01
Uden	74,47	0	0,02	101,74	0,01
Boxmeer	72,98	0	0,02	103,27	0,01
Cuijk	72,47	0	0,02	94,07	0,01
Cranendonck	65,78	0	0,01	74,64	0
Heeze-Leende	62,89	0	0,01	92,54	0,01

**Table C4: Membership values set of large municipalities (LM)**

<i>Municipality</i>	<i>Population</i>	<i>Membership LM</i>
Eindhoven	212269	1
Tilburg	203464	1
Breda	171916	1
's-Hertogenbosch	137775	1
Helmond	87757	0,86
Roosendaal	77482	0,68
Oss	77097	0,67
Bergen op Zoom	65582	0,34
Oosterhout	54198	0,09
Waalwijk	45774	0,03
Heusden	43060	0,02
Veldhoven	43007	0,02
Etten-Leur	40997	0,01
Uden	40360	0,01
Geldrop-Mierlo	37669	0,01
Veghel	37125	0,01
Moerdijk	36648	0,01
Deurne	31466	0
Valkenswaard	30871	0
Boxtel	30281	0
Bernheze	29615	0
Halderberge	29271	0
Best	29017	0
Boxmeer	28609	0
Gemert-Bakel	28508	0
St. Michielsgestel	28267	0

<i>Municipality</i>	<i>Population</i>	<i>Membership LM</i>
Drimmelen	26624	0
Werkendam	26409	0
Gilze en Rijen	25789	0
Oisterwijk	25738	0
Dongen	25411	0
Vught	25228	0
Cuijk	24309	0
Steenbergen	23229	0
Loon op Zand	22934	0
Schijndel	22889	0
Rucphen	22549	0
Goirle	22466	0
Nuenen, Gerwen en Nederwetten	22437	0
Laarbeek	21717	0
Woensdrecht	21700	0
Zundert	21083	0
Geertruidenberg	20794	0
Cranendonck	20272	0
Bladel	19129	0
Someren	18229	0
Eersel	18104	0
Bergeijk	18087	0
Oirschot	17806	0
St. Oedenrode	17427	0
Waalre	16543	0
Asten	16363	0
Son en Breugel	15527	0
Heeze-Leende	15194	0
Hilvarenbeek	15041	0
Landerd	14805	0
Woudrichem	14378	0
Haaren	13711	0
Grave	12673	0
Reusel-De Mierden	12432	0
St. Anthonis	11786	0

**Table C5: Membership values set of democratic reformist governments (DRG)**

<i>Municipality</i>	<i>Political party mayor</i>	<i>Membership DRG</i>
Bergen op Zoom	D66	1
Bernheze	D66	1
Best	D66	1
Loon op Zand	D66	1
Woensdrecht	PvdA	1
Eindhoven	PvdA	0,7
Tilburg	PvdA	0,7
Breda	PvdA	0,7
Oss	PvdA	0,7
Waalwijk	PvdA	0,7
Heusden	PvdA	0,7
Uden	PvdA	0,7
Moerdijk	PvdA	0,7
Boxtel	PvdA	0,7
Halderberge	PvdA	0,7

<i>Municipality</i>	<i>Political party mayor</i>	<i>Membership DRG</i>
Drimmelen	PvdA	0,7
Werkendam	PvdA	0,7
Cuijk	PvdA	0,7
Schijndel	PvdA	0,7
Nuenen, Gerwen en Nederwetten	PvdA	0,7
Laarbeek	PvdA	0,7
Geertruidenberg	PvdA	0,7
Someren	PvdA	0,7
Oirschot	PvdA	0,7
Oosterhout	VVD	0
Veldhoven	VVD	0
Veghel	VVD	0
Boxmeer	VVD	0
Vught	VVD	0
Steenbergen	VVD	0
Rucphen	VVD	0
Goirle	VVD	0
Bladel	VVD	0
Waalre	VVD	0
Asten	VVD	0
Son en Breugel	VVD	0
Heeze-Leende	VVD	0
Hilvarenbeek	VVD	0
Grave	VVD	0
's-Hertogenbosch	CDA	0
Helmond	CDA	0
Roosendaal	CDA	0
Etten-Leur	CDA	0
Geldrop-Mierlo	CDA	0
Deurne	CDA	0
Valkenswaard	CDA	0
Gemert-Bakel	CDA	0
St. Michielsgestel	CDA	0
Gilze en Rijen	CDA	0
Oisterwijk	CDA	0
Dongen	CDA	0
Zundert	CDA	0
Cranendonck	CDA	0
Eersel	CDA	0
Bergeijk	CDA	0
St. Oedenrode	CDA	0
Landerd	CDA	0
Woudrichem	CDA	0
Haaren	CDA	0
Reusel-De Mierden	CDA	0
St. Anthonis	CDA	0

**Table C6: Membership values set of municipalities with a large proportion of highly educated citizens (HC)**

<i>Municipality</i>	<i>Percentage highly educated citizens</i>	<i>Membership HC</i>
Waalre	40,59	1
Son en Breugel	37,5	1
Nuenen, Gerwen en Nederwetten	36,18	1

<i>Municipality</i>	<i>Percentage highly educated citizens</i>	<i>Membership HC</i>
Eindhoven	33,93	1
Breda	33,3	1
Best	30,94	1
's-Hertogenbosch	30,82	1
Tilburg	29,69	1
Goirle	29,33	1
Vught	27,86	1
Veldhoven	27,11	1
Heeze-Leende	25,96	0,98
Boxtel	25,62	0,98
St. Michielsgestel	25,14	0,96
Valkenswaard	25	0,95
Gilze en Rijen	25	0,95
St. Oedenrode	24,56	0,92
Oosterhout	24,3	0,9
Uden	23,6	0,78
Geldrop-Mierlo	23,6	0,78
Oisterwijk	23,5	0,76
Eersel	22,94	0,62
Landerd	22,94	0,62
Heusden	22,84	0,59
DRIM	22,65	0,53
Bergen op Zoom	22,43	0,48
Moerdijk	22,36	0,46
Asten	22,33	0,45
Hilvarenbeek	21,6	0,3
Grave	21,25	0,24
Bergeijk	21,19	0,23
Woudrichem	21,01	0,21
Cuijk	20,81	0,18
Helmond	20,78	0,17
Oss	20,63	0,16
Bladel	20,57	0,15
Etten-Leur	20,29	0,12
Cranendonck	20,29	0,12
Veghel	20,25	0,12
Waalwijk	20,2	0,11
Deurne	20,19	0,11
Bernheze	20,09	0,1
Reusel-De Mierden	20	0,1
Haaren	19,75	0,08
St. Anthonis	19,28	0,05
Boxmeer	19,25	0,05
Dongen	19,02	0,04
Geertruidenberg	19,01	0,04
Woensdrecht	18,52	0,03
Roosendaal	18,48	0,03
Oirschot	18,27	0,02
Gemert-Bakel	17,48	0,01
Steenbergen	16,79	0,01
Laarbeek	16,34	0
Werkendam	16,27	0
Somerens	16,26	0
Halderberge	16,1	0
Schijndel	15,58	0

<i>Municipality</i>	<i>Percentage highly educated citizens</i>	<i>Membership HC</i>
Loon op Zand	14,18	0
Zundert	13,87	0
Rucphen	9,47	0

**Table C7: Membership values set of municipalities with high electoral turnout (HET)**

<i>Municipality</i>	<i>Electoral Turnout '06</i>	<i>Membership HET</i>
Landerd	69	1
Boxmeer	67	1
Woudrichem	66	1
Asten	65	1
St. Anthonis	65	1
Oirschot	65	1
Hilvarenbeek	64	1
Werkendam	64	1
Someren	64	1
Nuenen, Gerwen & Nederwetten	63	1
Grave	63	1
Heeze-Leende	62	1
Eersel	62	1
Drimmelen	62	1
Rucphen	62	1
Waalre	61	0,99
St. Oedenrode	61	0,99
Bergeijk	61	0,99
Son en Breugel	60	0,99
Valkenswaard	60	0,99
Gilze en Rijen	60	0,99
Bladel	60	0,99
Vught	59	0,98
Boxtel	59	0,98
Woensdrecht	59	0,98
Gemert-Bakel	59	0,98
Goirle	58	0,95
Oisterwijk	58	0,95
Cuijk	58	0,95
Veghel	58	0,95
Deurne	58	0,95
Bernheze	58	0,95
Dongen	58	0,95
Laarbeek	58	0,95
St. Michielsgestel	57	0,9
Uden	57	0,9
Oss	57	0,9
Schijndel	57	0,9
Best	56	0,82
Oosterhout	56	0,82
Heusden	56	0,82
Cranendonck	56	0,82
Reusel-De Mierden	56	0,82
Steenbergen	56	0,82
Halderberge	56	0,82
Loon op Zand	56	0,82
Zundert	56	0,82



<i>Municipality</i>	<i>Electoral Turnout '06</i>	<i>Membership HET</i>
Geldrop-Mierlo	55	0,68
Moerdijk	55	0,68
Geertruidenberg	54	0,5
Veldhoven	53	0,32
Bergen op Zoom	53	0,32
Etten-Leur	53	0,32
Haaren	52	0,18
's-Hertogenbosch	51	0,1
Helmond	51	0,1
Waalwijk	51	0,1
Breda	50	0,05
Tilburg	50	0,05
Roosendaal	50	0,05
Eindhoven	47	0,01

## *Appendix D: Truth Tables and Robustness Tests*

### 1. Truth tables

Although the truth table procedure is very straightforward, sometimes a human decision had to be made. In certain cases, it was necessary to choose a proper prime implicant. A prime implicant is a configuration which results from minimization. However, often there are more prime implicants than needed to cover all the relevant configurations (Ragin, 2008b; 41). In that case, the fsQCA software allows the user to select which prime implicants it will use to arrive at a solution. It is good practice to select the fewest number of prime implicants which cover most of the configurations (Ibid.). Therefore, two criteria were used to select prime implicants: (a) Size: smaller prime implicants take priority over larger expressions, and (b) Theoretical consistency: theoretically consistent prime implicants take priority over theoretically inconsistent ones. When prime implicant selection was necessary, this is reported above the table of solutions in question.

**Table D1: Standard Analysis: sufficient conditions for a developed e-democracy.**

<i>SE</i>	<i>LM</i>	<i>HC</i>	<i>DRG</i>	<i>HET</i>	<i>Number of Cases</i>	<i>E</i>	<i>Consistency</i>
0	1	0	0	0	2	1	0.948
0	1	1	0	0	1	1	0.923
1	1	1	1	0	2	1	0.882
0	0	0	0	0	1	1/0	0.755
1	0	0	0	0	1	0	0.679
1	0	1	0	0	1	0	0.679
1	0	1	1	1	3	0	0.655
0	1	1	1	0	1	0	0.653
1	0	0	0	1	8	0	0.608
0	0	1	1	1	3	0	0.602
1	0	1	0	1	8	0	0.565
0	0	0	0	1	9	0	0.449
0	0	1	0	1	6	0	0.446
1	0	0	1	1	8	0	0.377
0	0	0	1	1	3	0	0.342
0	0	0	1	0	2	0	0.324
0	1	0	1	1	1	0	0.075

**Table D2: Standard Analysis: sufficient conditions for an underdeveloped e-democracy.**

<i>SE</i>	<i>LFT</i>	<i>HC</i>	<i>Number of cases</i>	<i>e</i>	<i>Consistency</i>
0	1	0	7	1	0.878
1	1	0	8	1	0.808
0	0	1	7	0	0.726
1	0	0	9	0	0.711
0	0	0	12	0	0.701
1	0	1	9	0	0.679
0	1	1	4	0	0.573
1	1	1	5	0	0.549

### 3. Robustness Tests

Robustness test 1: Maximum instead of average level of e-democracy in surrounding municipalities

Robustness test 2: Different boundaries: average level of surrounding e-democratic development

Robustness test 3: Different boundaries: e-democratic development

**Table D3: Adjusted thresholds**

<i>Set</i>	<i>Full Membership</i>	<i>Cross-Over</i>	<i>Non-Membership</i>
Surrounding maximum e-democracy (ME)	231,6011	200	136,6088
Advanced e-democracy 2 (E2)	113,7554	100,1953	66,4638
Surrounding advanced e-democracy 2 (SE2)	125	103	80

Necessary conditions:

**Table D4: Necessary conditions robustness test 1**

<i>Condition</i>	<i>Consistency</i>	<i>Coverage</i>
ME	0.534	0.491
me	0.638	0.677

**Table D5: Necessary conditions robustness test 2**

<i>Condition</i>	<i>Consistency</i>	<i>Coverage</i>
SE2	0.624	0.485
se2	0.566	0.698

**Table D6: Necessary conditions robustness test 3 (E2)**

<i>Condition</i>	<i>Consistency</i>	<i>Coverage</i>
SE	0.578	0.515
LM	0.204	0.818
DRG	0.297	0.439
HC	0.557	0.571
het	0.372	0.683

**Table D7: Necessary conditions robustness test 3 (e2)**

<i>Condition</i>	<i>Consistency</i>	<i>Coverage</i>
se	0.565	0.626
lm	0.964	0.602
drg	0.697	0.553
hc	0.664	0.652
HET	0.897	0.634

Truth Tables:

**Table D8: Truth table robustness test 1 (E)**

<i>ME</i>	<i>LM</i>	<i>DRG</i>	<i>HC</i>	<i>HET</i>	<i>Number of cases</i>	<i>E</i>	<i>Consistency</i>
0	1	0	0	0	2	1	0.947
1	1	1	1	0	2	1	0.947
0	1	0	1	0	1	1	0.942
0	0	0	0	0	1	0	0.739
1	0	1	1	1	3	0	0.692
1	0	0	0	0	1	0	0.676
0	0	0	1	0	1	0	0.652
0	1	1	1	0	1	0	0.648
1	0	0	1	1	5	0	0.639
1	0	0	0	1	6	0	0.581
0	0	1	1	1	3	0	0.573
1	0	1	0	1	5	0	0.497
0	0	0	0	1	11	0	0.449
0	0	0	1	1	9	0	0.372
0	0	1	0	0	2	0	0.281
0	0	1	0	1	6	0	0.238
0	1	1	0	1	1	0	0.067

**Table D9: Truth table robustness test 1 (e)**

<i>ME</i>	<i>DRG</i>	<i>HC</i>	<i>Number of cases</i>	<i>e</i>	<i>Consistency</i>
0	1	0	10	1	0.941
1	0	0	7	0	0.776
0	0	1	11	0	0.759
1	1	0	5	0	0.751
1	0	1	5	0	0.653
0	0	0	14	0	0.630
0	1	1	4	0	0.602
1	1	1	5	0	0.567

**Table D10: Truth table robustness test 2 (E)**

<i>SE2</i>	<i>LM</i>	<i>DRG</i>	<i>HC</i>	<i>HET</i>	<i>Number of cases</i>	<i>E</i>	<i>Consistency</i>
0	1	0	0	0	2	1	0.929
0	1	0	1	0	1	1	0.915
1	1	1	1	0	2	1	0.839
1	0	0	0	0	1	0	0.705
1	0	0	1	0	1	0	0.703
0	1	1	1	0	1	0	0.674
1	0	1	1	1	3	0	0.641
0	0	1	1	1	3	0	0.619
1	0	0	0	1	8	0	0.613

1	0	0	1	1	8	0	0.562
0	0	0	1	1	6	0	0.479
0	0	0	0	1	9	0	0.469
1	0	1	0	1	8	0	0.394
0	0	1	0	1	3	0	0.362
0	0	1	0	0	2	0	0.344
0	1	1	0	1	1	0	0.075

**Table D11: Truth table robustness test 2 (e)**

<i>SE2</i>	<i>DRG</i>	<i>HC</i>	<i>Number of cases</i>	<i>e</i>	<i>Consistency</i>
0	1	0	7	1	0.888
1	1	0	8	1	0.826
0	0	1	7	0	0.728
1	0	0	9	0	0.724
0	0	0	11	0	0.712
1	0	1	9	0	0.685
1	1	1	5	0	0.587
0	1	1	4	0	0.577

**Table D12: Truth table robustness test 3 (E2)**

<i>SE</i>	<i>LM</i>	<i>HC</i>	<i>HET</i>	<i>DRG</i>	<i>Number of Cases</i>	<i>E2</i>	<i>Consistency</i>
0	1	0	0	0	2	1	0.959
0	1	1	0	0	1	1	0.947
1	1	1	0	1	2	1	0.938
0	0	0	0	0	1	1	0.834
1	0	0	0	0	1	0	0.744
1	0	1	0	0	1	0	0.743
1	0	1	1	1	3	0	0.687
0	1	1	0	1	1	0	0.685
0	1	1	0	1	1	0	0.685
0	0	1	1	1	3	0	0.676
1	0	0	1	0	8	0	0.651
1	0	1	1	0	8	0	0.621
0	0	0	1	0	9	0	0.516
0	0	1	1	0	6	0	0.506
1	0	0	1	1	8	0	0.414
0	0	0	1	1	3	0	0.412
0	0	0	0	1	2	0	0.402
0	1	0	1	1	1	0	0.113

**Table D13: Truth table robustness test 3 (e2)**

<i>SE</i>	<i>HC</i>	<i>DRG</i>	<i>Number of Cases</i>	<i>e2</i>	<i>Consistency</i>
0	0	1	7	1	0.820
1	0	1	8	1	0.767
0	1	0	7	0	0.673
1	0	0	9	0	0.638
0	0	0	12	0	0.610
1	1	0	9	0	0.610
0	1	1	4	0	0.464
1	1	1	5	0	0.462

Analysis of sufficiency:

**Table D14: Robustness test 1 (E)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
LM*drg*het	0.144	0.101	0.953
ME*LM*HC*het	0.085	0.041	0.833
Solution	0.186		0.899

Cases LM\*drg\*het: 's-Hertogenbosch, Helmond, Roosendaal

Cases: ME\*LM\*HC\*het: Breda, Tilburg

Consistency threshold: 0.9

Prime implicants: ME\*LM

**Table D15: Robustness test 1 (e)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
DRG*hc*me	0.191	0.191	0.941
Solution	0.191		0.941

Cases DRG\*hc\*me: Woensdrecht, Bernheze, Halderberge, Schijndel, Oss, Waalwijk, Geertruidenberg, Cuijk, Oirschot, Bergen op Zoom

Consistency threshold: 0.9

Comparing this truth table with the one of the standard analysis might yield the conclusion that *me* works differently than *se*. After all, the solution is completely similar save the presence of *me*. However, due to this enormous similarity, it is probable that it is simply a result of the fact that many municipalities bordered at least one municipality with a highly developed e-democracy.

**Table D16: Robustness test 2 (E)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
LM*drg*het	0.144	0.085	0.953
SE2*LM*HC*het	0.100	0.041	0.798
Solution	0.185		0.879

Cases LM\*drg\*het: 's-Hertogenbosch, Helmond, Roosendaal

Cases SE2\*LM\*HC\*het: Breda, Tilburg

Consistency threshold: 0.8

Prime implicants: SE2\*LM and LM\*Ift.

Unfortunately, prime implicant LM\*Ift contradicts our theory. Nevertheless, the other option was Ift\*het\*se2. Thus, LM\*Ift was chosen coherent with the first selection criterion.

**Table D17: Robustness test 2 (e)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
DRG*hc	0.276	0.276	0.844
Solution	0.276		0.844

Cases DRG\*hc: Loon op Zand, Woensdrecht, Bernheze, Werkendam, Someren, Laarbeek, Oirschot, Schijndel, Halderberge, Waalwijk, Geertruidenberg, Oss, Cuijk, Moerdijk, Bergen op Zoom

Consistency threshold: 0.8

**Table D18: Robustness test 3 (E2)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
se*drg*het	0.185	0.181	0.906
SE*LM*HC*DRG*het	0.056	0.051	0.938
Solution	0.237		0.921

Cases se\*drg\*het: Roosendaal, Helmond, 's-Hertogenbosch, Etten-Leur

Cases: SE\*LM\*HC\*DRG\*het: Breda, Tilburg

Consistency threshold: 0.9

**Table D19: Robustness test 3 (e2)**

<i>Configuration</i>	<i>Raw Coverage</i>	<i>Unique Coverage</i>	<i>Consistency</i>
DRG*hc	0.285	0.285	0.800
Solution	0.285		0.800

Cases: Loon op Zand, Woensdrecht, Bernheze, Halderberge, Oirschot, Someren, Werkendam, Laarbeek, Schijndel, Oss, Waalwijk, Geertruidenberg, Cuijk, Moerdijk, Bergen op Zoom

Consistency threshold: 0.75



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