Open(ing up) data

A study on the creation of openness as an institution

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"We humans must deal in fictions of our own making."
Deirdre McCloskey (1994, p. 195)

When I speak of this dissertation as a fiction, I mean it in the most appreciative way: Although I claim single authorship of the following pages, there is no doubt about the distributed agency they resulted from:

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1. Introduction

Institutional change is a theoretical construct in need for a more fine-grained understanding of agency. In organization studies institutions have developed as one of the major concepts to explain why groups of organizations adopt new practices. At first institutions served as explanans for the structural homogeneity of certain types of organizations (DiMaggio & Powell, 1983). Institutions where considered as relatively stable, their rise and fall blanked out in order to focus on, e.g., the dynamics of practice diffusion (Strang & Soule, 1998). Within the "agentic turn" (Hwang & Colyvas, 2011) institutions switched sides, moved from explanans to explanandum. The "taken-for-grantedness" (Scott, 1995) – defining characteristic of institutions – was not taken-for-granted anymore. Scholars began to study the conditions under and the practices through which actors are able to change institutions. Early actor-centered accounts of institutional change focused on heroic acts of resourceful and skilled organizations and individuals (Garud, Jain, & Kumaraswamy, 2002; Levy & Scully, 2007).

The focus on heroic stories of change can best be understood as a strategic move of *concept entrepreneurs* within institutional theory itself, not as teleological terminal: As much as early studies have emphasized the monolithic nature and tremendous stability of institutions, as heroic the "institutional entrepreneur" (DiMaggio & Zucker, 1988) needed to be to stage a *credible* story of institutional change (Lincoln & Guba, 1985). Recent research on institutional change has retired heroic institutional entrepreneurship in favor of the post-heroic concept of "institutional work", which is supposed to capture the more subtle, unglamorous and incremental aspects of institutional change (Lawrence, Suddaby, & Leca, 2009). The goal of this dissertation is to contribute to an understanding of institutional change that allows for (yet not presupposes) greater explanatory complexity, without loosing its political perspective (Munir, 2015); an understanding of institutions that loosens up its deterministic imprint without dissolving it into the "chasm of contingency" (Ortmann, 2016, p. 2 own translation).

Computerization, datafication and interconnection of workplaces challenge our traditional understanding of organizational boundaries as clear-cut and unambiguous lines of demarcation between organization and environment. In need for a more elaborate understanding of these transformations, we have settled on the concept (*Denkfigur*) of organizational openness. To date, most attempts to understand why organizations adopt practices of openness (e.g., open innovation, open source software, open strategy) have emphasized the instrumental rationality of these actors (Chesbrough, 2006; Hippel & Krogh, 2003; Whittington, Cailluet, & Yakis-Douglas, 2011). Organizational openness has oftentimes been described as a form of strategic behavior. Recent literature from transparency studies however casts substantial doubt on the merely strategic nature of organizational openness (Hansen & Flyverbom, 2015; Hood & Heald, 2006; Neyland, 2007a). Organizational openness, I thus propose, is a phenomenon in need for institutional analysis – not at all as a substitution to strategic accounts, but as a complementary theoretical lens. "Whenever a theory appears to you as the only possible one, take this as a sign that you have neither understood the theory nor the problem which it was intended to solve." (Popper, 1971, p. 266) The creation of openness as an institution is an ideal case to study institutional creation as a distributed and ambiguous process, infused with

competing socio-technical imaginaries (Beckert, 2016). Institutional analysis allows us to understand openness not as a strategic choice alone, but as an outcome of inter-organizational contestation and struggle: the "politics of openness" (Tkacz, 2014).

The practice, whose emergence I use to illustrate this process of institutionalization, is commonly referred to as *open data*. When opening up data, organizations make digitized documents, spreadsheets and entire databases available on the Internet, in machine-readable formats, and under licenses that allow anyone to modify, redistribute, and use it for commercial purposes. The institutionalization of open data will be reconstructed, polyphonically narrated, and eventually condensed to a causal chain of events for the fields that span around the city administrations of New York City, London and Berlin. In analogy to my practice theoretical approach (institutional work) aiming at the reconciliation of the ostensibly divided realms of structure and agency, my methodological approach can be understood as an "interested pluralism" (Dobusch & Kapeller, 2012) that understands narrative epistemologies (Czarniawska-Joerges, 1995) and epistemological relativism (Mayntz, 2009) not only as compatible, but potentially mutually enriching.

2. Organizational openness

A study on the process of "opening up" organizations must be situated between an understanding of what makes a closed and an open organization. In this chapter I take a historical-hermeneutical look at the ways in which organizational scholars have used the concepts of "closed" and "open" when studying organizations. I show how the model-view of organizations has developed from hermetically closed systems towards permeable open system that interact with their environment. Within this present paradigm of open systems I subsequently zoom into the contemporary literature on open innovation and open strategy, two schools that claim to have identified new and even more open practices of organizational openness. To add to these schools and to provide a foundation for my empirical investigations I subsequently situate the emerging phenomenon of open data within these existing middle-range theories.

2.1 Studying organizations: From closed to open systems

In 1916 Frederick Taylor published his treatise *The Principles of Scientific Management*. Trained as a mechanical engineer, Taylor was content that organizations can be optimized more or less the same way machines can. He therefore developed a set of prescriptive rules, which, as he claimed, could be

> "applied with equal force to all social activities: to the management of our homes; the management of our farms; the management of the business of our tradesmen, large and small; of our churches, our philanthropic institutions our universities, and our governmental departments." (1916, p. 3)

These rules included the division of labor in mental-managerial and physical tasks, the division of physical labor in small monotonous tasks, and the creation of highly demanding performance standards. Inherent in Taylor's idea of a "one best way" was his negligence of the organizational environment and his sole focus on modeling internal processes most efficiently (Taylor, 1916). Taylor was well aware that internal processes are based on environmental inputs and eventually customers, however he held the opinion that through generous stock-keeping and export logistics these variables can simply be excluded from the process of optimizing an organization's efficiency. Taylor assumed that organizations as social aggregates have relatively specific goals and that the organizational structure is a purposeful arrangement to best achieve these goals. Taylor, alongside authors like Fayol (1930) or Gulick and Urwick (1937), represents a closed-rational system perspective on organizations (Figure 1).

Taylor's almost mechanistic understanding of organizations was overhauled towards the middle of the 20th century by scholars who promoted closed-natural system models (Figure 1). Human relation theorists like Roethlisberger and Dickson (1939), Mayo (1945), or Gouldner (1954) still focused only on purely internal processes, yet they began to see organizational structure as more complex and flexible, goals as more diffuse and conflicting than the consensual conceptions of rational system models. Elton Mayo, trained as a psychologist, is considered one of the founders of the branch of organizational scholarship that is rooted in social psychology. Inspired by Taylor, he set up the famous Hawthorne studies, in which he tried to test for the

lighting conditions that would maximize factory workers' output. However instead of the effect between this technological variable on the workers he and his colleagues singled out the influence of the researchers themselves on the workers (Mayo, 1945) [1]. By paying attention to what actors actually do instead of what they are supposed to do, these authors adopt a natural rather than rational perspective on organizations (Scott, 2003, p. 27). Whilst the analysis of intra-organizational relations moved from a rational to a natural perspective, authors still described organizations as closed systems, which are buffered from their environment to a degree that renders it marginal within models of organizational efficiency.

The Second World War changed the global academic sphere substantially, as it triggered a migration of many European scholars to North American institutions and a tremendous growth of research budgets allocated to their laboratories, oftentimes linked to research projects with explicit or indirect military use (March, 2007). Within this academic climate of the late 1940s and 1950s, a group of scholars from diverse academic backgrounds worked on a scientific program that tried to establish the "system" as a common denominator of different academic fields[2]. The Austrian-born Ludwig von Bertalanffy (1969) summarized many of the achievements of this interdisciplinary endeavor under the concept of "general system theory". Bertalanffy, a biologist by training, was concerned with the compartmentalization of science: "The physicist, the biologist, the psychologist and the social scientist are, so to speak, encapsulated in a private universe, and it is difficult to get word from one cocoon to another." (Bertalanffy, 1969, p. 1) Systems, defined as an assemblage or combination of parts whose relations make them interdependent, he suggested, are what most sciences are concerned with. Bertalanffy assumed that finding a general language to speak about systems might bind the different sciences closer together, foster cross-fertilization, and accelerate the creation of academic knowledge in all of them. As part of his general system theory, Bertalanffy argues that the idea of closed systems might apply to static or mechanical systems, yet is inappropriate when describing living systems. For Bertalanffy, living systems have to be described as open systems, whereby he understands openness as a system's constant interaction with its environment. This interaction might be material, informational or energetic depending on the type of system.

Organizational scholars quickly incorporated the idea of organizations as open systems and directed the discipline's attention to the reciprocal relationships between

[1] In retrospect, the naturalness of the natural systems perspective had been subject to substantive criticism. Decades after their conduct authors took a closer look at the Hawthorne studies and carved out, e.g., how researchers interfered within the experiment through their authoritarian habitus. Extensive criticism was also directed at the rigid way in which researchers moved from the data at hand towards their monolithic conclusion that "there is not the slightest substantiation to the theory that the worker is primarily motivated by economic interest." (Sykes, 1965, p. 262) In response to the question "how it was possible for studies so nearly devoid of scientific merit, and conclusions so little supported by evidence, to gain so influential and respected a place within scientific disciplines and to hold this place for so long" (Carey, 1967, p. 403), Ortmann (1995, p. 16 ff.) has pointed out how the meager complexity of certain organizational narratives, makes them particularly prone to be passed on and to develop into "organizational myths".

[2] This research program was mainly driven through the annual Macy conferences that took place between 1946 and 1953 and brought together scholars like Margaret Mead, Gregory Bateson, Kurt Lewin, Heinz von Foerster, and John von Neumann. Important foundations for these conferences have been laid by Norbert Wiener's work on feedback loops to chart missile trajectories during Second World War (Bowker, 1993, p. 108 ff.).

organizations and their environment. Almost as if disciplinary history would repeat itself, the early years of this new paradigm of organizational openness in the 1960s and 1970s were characterized not by a continuation of the natural perspective, but by a rational understanding of organizations as open systems. Two of the most influential writers of this period are Herbert Simon and James March. In the beginning of his career Simon (1955) became well known for his closed system works on administrative behaviour. However, together with his colleague James March (March & Simon, 1958), he extended his work on bounded rationality and acknowledged that "organizations face environments of varying complexity, [and] that they must adjust their internal decision-making apparatus to take these variations into account." (Scott, 2003, p. 111) Contingency theorists like Lawrence and Lorsch (1967), Thompson (1967) or Woodward (1965) also recognized that organizations as open systems operate in different environmental contexts but came to the broader conclusion that in order to retain efficiency, organizations are required to adept their organizational structures to these environmental conditions. Similar to closed-rational system approaches these authors assume organizations as having clear goals and a formal structure that facilitates the attainment of these goals[3].

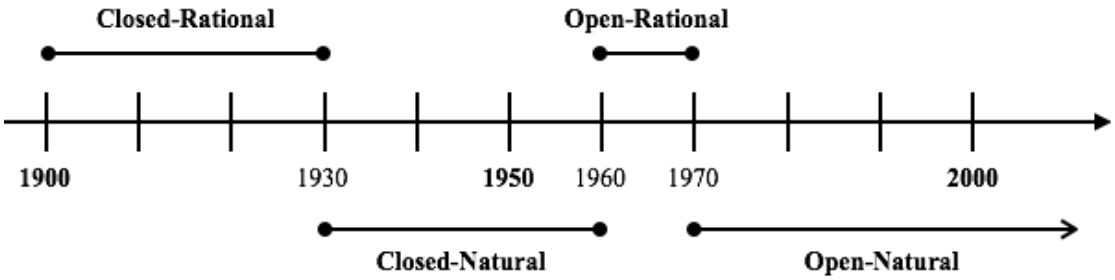
Beginning in the late 1960s the paradigm of rational-open systems is challenged and ultimately replaced by a natural view on organizations as open systems (Scott, 2003)[4]. Karl Weick's theory of "organizing" (1969) focuses on cognitive processes entailed in creating and sustaining organizations. In contrast to rational system proponents like Simon and March, Weick accounts for trial and error, chance, or superstitious learning, and embraces the evolutionary argument that organizational change does not necessarily lead to improvements in the surviving organizations. Arguably the most influential community of organizational scholars that sprung from this paradigmatic shift has become known as the "Stanford School" (Schoonhoven & Dobbin, 2010). In the late 1970s and 80s three schools emerged from this Californian institution, which have become emblematic for the paradigm of organizations as open natural systems (Figure 1). The central tenet of organizational ecology (also: population ecology), developed by Hannan and Freeman (1977, 1984) and picked up by Aldrich (1979; 1999), is based on Charles Darwin's concept of natural selection. Hannan and Freeman proposed to apply this idea to organizational populations – groups of entities that share the same structural properties – to study how these populations change over time and how individual organizations adapt or not. Resource dependence theory focused not on the mere survival and breakup of organizations, but on their dynamics of adaptation. Pfeffer and Salancik (1978) have outlined a theoretical program that stresses the power relations between organizations in the struggle to secure the resources necessary for organizational survival. This idea has been widely used within research on board interlocks (Boyd, 1990) as well as at the interface of organizational and social movement research (McCarthy & Zald, 1977; Zald & McCarthy, 1987). Finally, the Stanford School has played a significant role in the development of new institutional theory (Powell & DiMaggio, 1991). New institutionalism focuses on the effect of macro-structures in the organizational environment – institutions – on the

[3] Also Williamson's (1973, 1985) transaction cost theory accounts for the market as the organizational environment, which serves as an alternative to the intra-organizational hierarchy when performing transactions.

[4] Contingency theory, for example, was heavily shaken and potentially brought to a halt by Child's (1972) essay on organizational structure and strategic choice, in which he argues that firms can be successful by deliberately adopting different structures than other organizations in the same field.

oftentimes irrational (but natural) behaviour of organizations. Through the lens of new institutional theory, organizations "swim in this cultural soup" and continuously adopt and adapt ideas and templates, intendedly as well as inadvertently (Scott, 2003, p. 29). Over the last two decades new institutional theory has developed into a rich toolkit to describe organizational change and some authors even consider it the hegemonic or at least dominant theory in organization studies (Davis, 2010; Suddaby, 2014).

Figure 1: Timeline of organizational paradigms from *closed* to *open*



This very brief history of organizational scholarship has revealed a general trend from the perception of organizations as closed systems to open systems. What unites the different theories within the paradigm of open systems is the idea of permeability of organizational boundaries that demarcate the organization from its environment. Furthermore all theories assume that this permeability serves as an explanans for the explanandum of organizational behavior. When focusing on the three theoretical strands that sprung from the Stanford School, I find a number of dimensions along which this openness/permeability can be studied in greater depth.

In population ecology theory Hannan and Freeman propose to model populations of organizations that are exposed to "environmental circumstances" (1977, p. 940) and subsequently either get eliminated or adapt to them. At several places, the authors suggest that these circumstances are best to be understood as the availability of resources. What differentiates organizations is their ability to secure these resources. In terms of permeability and openness their theory highlights that the openness of a system can be understood as the ability to incorporate something external, but does not directly touch upon the question of outbound permeability. Furthermore, by speaking about resources their theory of openness raises the question if everything that permeates in and out of an organization has to be understood as a resource, or if there are other elements that may permeate as well. Finally Hannan and Freeman present a rather mechanic understanding of the environment and exclude the question whether environmental actors (holding the resources) have diverse and ambiguous preferences whereto their resources shall be directed.

In resource dependence theory we find a similarity to population ecology, as its main interest lies on the inbound permeability of organizations trying to acquire resources. Particularly interesting in resource dependence theory is the normative differentiation between inbound and outbound permeability. In their chapter on collective structures and inter-organizational action, Pfeffer and Salancik argue that "the most direct method for controlling dependence is to control the source of that dependence." (1978, p. 143) They argue that organizations reduce uncertainty and thereby increase their efficiency when they transgress their own boundaries, reaching into another

organization in order to gain some control. In many cases these interlocks are reciprocal, however they leave little doubt that organizations would prefer expanding their control without getting controlled at the same time. For the study of openness this leads to interesting questions about the normativity of openness, its limits and its tradeoffs against closedness. Furthermore, resource dependence theory raises awareness about the role of information (e.g., obtained through board interlocks) in contrast to resources that serve as immediate input factors for the core processes of organizations (e.g., production).

Amongst the three Stanford theories new institutionalism is the most specific one in terms of permeability. In its initial form (especially Meyer & Rowan, 1977), new institutionalism focuses on the "cultural soup" (Scott, 2003, p. 29) that surrounds organizations, permeates their boundary and eventually leads to changes in the organizational structure. As a cultural theory new institutionalism redirects the question of openness from the field of access rights (attached to resources) to the permeation of highly elusive information and interpretations, making it hard to pin down what it is that actually permeated into or out of an organization. As a roadmap for the further investigation of openness in organizational theory I propose the following five questions: (1) What permeates through the boundary? (2) How does it permeate? (3) In which direction does it permeate? (4) Why does it permeate? (5) What are the limits of permeation and the role of closedness?

In the following chapter I turn to a group of emerging theories of organizational openness, discuss their specificity within a broader paradigm of open organizations and review them along my set of questions.

2.2 Forms of openness: On boundaries and what they demarcate

The concept of organizational openness is inextricably linked to that of organizational boundaries, whereby openness and closedness can be understood as properties of organizational boundaries. On the first look, the organizational boundary is clear-cut: It is the demarcation line that delineates the system from its environment. When we apply this concept to empirical data, it quickly becomes clear that boundaries are more problematic and less clear-cut than expected: There is not one but many boundaries to an organization. Some boundaries might include actors, resources or artifacts that are excluded by other boundaries (Santos & Eisenhardt, 2005). Lamont and Molnár (2002) have explored boundaries across social phenomena and came up with two general types: symbolic boundaries and social boundaries. Symbolic boundaries are "conceptual distinctions made by social actors to categorize objects, people, practices, and even time and space." (2002, p. 168) Actors create symbolic boundaries to find a shared understanding of their reality and eventually compete for the predominance of this classification system over another (Bowker & Star, 1999). Social boundaries are "objectified forms of social differences manifested in unequal access to and unequal distribution of resources (material and nonmaterial) and social opportunities." (Lamont & Molnár, 2002, p. 168) When a social group widely agrees upon a symbolic boundary, it turns into a social boundary, which has the power to structure social life. Following Lamont and Molnár we can understand organizational boundaries as lines of demarcation that distribute various material and nonmaterial resources to either the system or the environment. In the following I sketch out some

of the organizational boundaries that have been studies with regards to their permeability.

In recent years, inclusiveness and exclusiveness have become vibrant issues in organizational scholarship. Scholars in this field study the boundary that demarcates members of the organization from non-members by focusing on the structural conditions that allow certain groups of people to permeate this boundary more easily than others. Many scholars have studied the performance of different approaches to promoting diversity, for example by comparing awareness programs, managerial training, and support groups against the increase in the share of white women, black women, and black men in management as a dependent variable (Kalev, Dobbin, & Kelly, 2006). Mor-Barack and Cherin (1998) for example have found that although due to legislative reform the permeability of organizational has become more equal, inequality in the form of discrimination has moved to "post employment" issues like age discrimination, sexual harassment, wrongful termination or pregnancy/maternity leave. In her conceptual study Laura Dobusch (2014, p. 220) takes a discursive perspective and argues that the concept of what makes an inclusive organization should transcend the performance metrics of diversity quotas and affirmative action programs and pay more attention to the "excluding effects of including measures and resulting changes in power relations." Already against the backdrop of this glimpse into the literature on the boundary of membership, it becomes clear that the openness and closedness of organizations does not end at the organizational boundary, but is intricately linked to intra-organizational processes (like workplace discrimination) as well.

Another organizational boundary, closely linked but not identical to that of membership, is the one that distributes the ability to participate in some organizational processes or not. Similar to inclusion scholars, participation scholars affirm that "the term participation has a variety of meanings across investigators" and that the existing literature "cuts across micro and macro issues" (Dachler & Wilpert, 1978, p. 1). Particularly interesting for the study of organizational openness are new organizational forms that seem to increase participation from actors outside the boundary of membership. Some while ago authors began to diagnose a trend towards production in project networks (Christopherson, 2002; Windeler & Sydow, 2001) whereby certain forms of production are moved outside the boundary of an organization itself. From a boundary perspective we can argue that this "projectification" (Midler, 1995) has expanded the boundary of participation way beyond the boundary of membership. In an effort to make sense of this discrepancy, other authors have argued that his re-location of decisions in turn leads to the creation of new but oftentimes only partial boundaries (Ahrne & Brunsson, 2011). Recently Dobusch and Schoeneborn (2015) have used the case of the hacker collective Anonymous to illustrate how organizations might struggle in their effort to even determine, which actions have happened as part of their system and which others are part of the environment. With their work on the fluidity of organizational boundaries the authors venture into the middle ground where open boundaries might loose their ability to demarcate and create organizationality.

Finally organizational scholars from various communities are interested in the organizational boundaries that demarcate individuals with access to organizational information from those who have no access. Empirically this boundary is oftentimes

studied through the lens of information sharing and transparency. A lot of the literature on transparency applies a normative perspective and tries to approach the question how processes of governance and accountability can be improved (Garsten & Montoya, 2008). As a recent example of this instructive strand of literature Schnackenberg and Tomlinson (2014) argue that transparency practices contribute to trust in organization-stakeholder relationships and eventually develop several mechanisms, which organizations can employ to influence transparency perceptions[5]. Recently there has been a more critical performative turn in research on information-based boundaries and organizational transparency in which scholars began to study what organizations *actually do* when they do transparency (Neyland, 2007a). Many of these works are inspired by the famous dictum of anthropologist Marilyn Strathern (2000, p. 309) that there is "nothing innocent about making the invisible visible." Hansen and Flyverbom (2015) for example have studied the role of mediating technologies in the production of transparency and found that different "disclosure devices" (e.g., qualitative due diligence or quantitative rankings) lead to different forms of knowledge in organizational settings. Costas and Grey (2014) studied the information boundary from the opposite perspective. Using a micro political lens they provide a practice-based account of organizational secrecy as the "ongoing formal and informal social processes of intentional concealment of information from actors by actors in organizations." (Costas & Grey, 2014, p. 1423)

Over the last decades developments in information technology have changed the way in which information can be created, processed and transferred drastically. The impact of information technologies on organizations is particularly hard to determine as, unlike more mechanical technologies, they are not only used, but *created in use*. Due to the versatile use of information technology, organizations only slowly begin to realize the different way in which information technology affects their boundaries. In the remainder of this study I will therefore focus in organizational openness in relation to the boundary that demarcates who has access to information and who does not.

2.3 Information-centered theories of openness

The idea of organizations as open systems appears pleasing at first, yet it is not specific enough to delineate and more deeply understand the different ways in which organizations interact with their environment. Without hiding his suspicion of general system theory, Karl Weick has argued that "too many investigators think they have said something important when they assert that 'an organization is an open system'." (1974, p. 357) As a way forward he proposes to move open systems thinking from a grand theory towards middle-range theories, each of which only applies to a limited range of data. The idea of "middle-range theories" goes back to sociologist Robert Merton (1967) who suggested to locate empirical research in the realm between pure descriptions and the desire for universal laws of the social. By studying and theorizing on empirical phenomena, we might be able to draw more abstract theoretical conclusions at some point, but in any case end up with tangible theories for tangible phenomena. Lately, scholars noted the emergence of practices through which "traditional" organizations engage with their environment more intensely (e.g., Irani, 2015; O'Mahony & Bechky, 2008), as well as "new" more fluid organizational forms

[5] Following Luhmann (1979), Möllering (2006) develops the diametrical argument that an increase in transparency reduces the need for trust as a "leap of faith", not vice versa.

that are exposed to ever changing, increasingly complex and volatile environments (e.g., Schreyögg & Sydow, 2010; Whitley, 2006). Both observations can serve as tangible phenomena in the Mertonian sense. In line with Merton and Weick I describe these efforts as middle-range theories of organizational openness. In the following section I first present two particularly vibrant middle-range theories of organizational openness. Subsequently I assemble and review the emerging literature on open data and situate it between the other more developed middle-range theories. To draw comparisons between the different theories, I make use of the checklist developed in Chapter 2.1.

2.3.1 Open innovation

In 2003 the consultant and organizational theorist Henry Chesbrough coined the term open innovation. The subtitle of his homonymous book describes the concept as "the new imperative for creating and profiting from technology." (Chesbrough, 2006) Based on case studies from some of the largest technology companies in the United States, Chesbrough defines the phenomenon of open innovation as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation." (Chesbrough, 2006, p. 2) According to Chesbrough firms turn to open innovation to adapt to changes in their economic environment and to ultimately increase the success rate of their innovations. Chesbrough contrasts this "open" model with what he describes as the traditional "closed" model of innovation. In the traditional model research projects are launched from the science and technology base of the firm and pass through a process at which end some of them are eventually chosen to enter the market. In the open model in contrast, research projects are constantly fuelled by external sources of knowledge and might as well be released to the public at different stages of the innovation process. Chesbrough's idea has attracted criticism from several sides. On the one hand he gets entangled in problems related to organizational contingency theory. When he argues that because he empirically witnesses the adoption of open innovation practices, this makes these practices the best way for firms to adapt to changes in their environment, he neglects the role of strategic choice and the advantages that might come with deliberate maintenance of the traditional innovation model (Child, 1972; Oliver, 1991). Furthermore, by promoting open innovation as an imperative for managers based on its empirical occurrence, Chesbrough misses out on reflecting the self-fulfilling power of his own work (Ferraro, Pfeffer, & Sutton, 2005; Merton, 1948)[6]. Others have criticized open innovation scholarship for repackaging "old wine in new bottles" (Trott & Hartmann, 2009, p. 715). According to these critics, many of the processes described as open innovation have been gradually increasing since at least the 1960s. With regards to middle-range theories of organizational openness this argument has to be put from its head back on its feet, as it is exactly this *longue durée* of the practice that makes it interesting to study and that demarcates it from short-lived management fads and fashions (Kieser, 1997).

[6] In the philosophy of science this issue is described as a "naturalistic fallacy", the logical mistake that one can deduce an "ought" from an "is" (Donaldson & Dunfee, 1994, p. 253; Moore, 1903, p. 10 ff.). I this regard it seems at least problematic to promote openness as the "secret sauce" of innovation without any reference to the organizational goals: "'Would you tell me, please, which way I ought to go from here?' Alice asked the Cheshire Cat. 'That depends a good deal on where you want to get to,' said the Cat. 'I don't much care where' said Alice. 'Then it doesn't matter which way you go,' said the Cat." (Carroll, 1983, p. 72)

Since Chesbrough introduced the concept, open innovation scholars have studied a large array of practices under this umbrella. In an effort to disentangle this array, Dahlander and Gann (2010) have conducted a systematic review of the literature on open innovation and differentiated practices of innovating openly as being either inbound or outbound, and either pecuniary or non-pecuniary. The two inbound practices are the pecuniary "acquiring", and the non-pecuniary "sourcing". When companies engage in the inbound "acquiring", they buy external knowledge or products from their environment to integrate into their own innovation process. When companies engage in the inbound "sourcing", they integrate freely available knowledge from their environment into their innovation process. The two outbound practices are the pecuniary "selling", as well as the non-pecuniary "revealing". When companies perform the outbound "selling", they sell or license innovations from different stages of the innovation process. When they perform the outbound "revealing" they share their resources without a direct, but an indirect financial reward. This reward usually manifests in the form of new business models (Dahlander & Gann, 2010).

Dobusch, Seidl and Werle (2015) argue that what unites different practices of open innovation is the purposefully inbound and outbound flow of information, which relates to innovation processes. More precisely they find that this information oftentimes comes in the form of intellectual property. In contrast to the general concept of organizational openness, open innovation thereby limits the elements that permeate to informational resources (under IP protection or not). I furthermore find it particularly interesting that the authors highlight the purposeful nature of open innovation. By linking open innovation to purposeful flows, they somehow imply that the ways in which external information influences the traditional innovation process, are less purposeful, less standardized or subconscious. In this regards we could understand the open innovation process as a more "reflexive" (Giddens, 1984) process, in which the innovation agents become more self-aware of the process in which they gather the information that leads to new products or services. We furthermore can assume that between the four types of information flows described by Dahlander and Gann (2010) all kinds of relations are possible and exist empirically. Henkel (2006), for example, shows how organizations first source freely available Linux code, use this code for their internal innovation process and later on reveal some of their findings back to the Linux community. In this example we find a direct link between two practices of open innovation (sourcing and revealing), however there might also be cases in which firms only perform open innovation in one direction or in which inbound and outbound practices are not linked.

In their recent open innovation review Dobusch, Seidl and Werle (2015) group a number of keystone studies along what their authors found to be the purpose of openness in their respective case. The three dimensions they find are research and development, standardization and ecosystem development, and impression management. In some studies open innovation practices are portrayed with the single purpose of improving the outcomes of research and development processes. Fey and Birkinshaw (2005) for example explore different governance modes of external research and development initiatives in large firms based in the United Kingdom and Sweden. Piller and Walcher (2006) have studied how the large sports equipment manufacturer Adidas has included potential customers into the development process

of a new product. Ideas have been collected via an online platform and selected in a tournament-like competition. Other studies describe how firms open up their innovation process not only to source new ideas but to create ecosystems around their existing products and platforms. West (2003) has studied how Apple, IBM, and Sun developed customized open source licenses and made some of their source code available in order to foster the development of complementary assets by other organizations. On a similar note Fichter (2009) has shown how companies like BASF and IBM have created open innovation communities, not only as an individual practice, but as a relatively stable network for sharing information. Finally there is a group of studies that describe open innovation as impression management. Henkel, Schöberl and Alexy (2014) have shown that by releasing some of their source code under free and open software licenses, embedded component manufacturers were able to increase their reputation and visibility. Similarly, in his study on firm-developed innovations within embedded Linux, Henkel (2006, p. 961) found that wanting to "appear as a good player in the open source community" is one of the most important motives for revealing software code. What unites these and many other keystone studies on open innovation is that this middle-range theory describes opening up first and foremost as a strategic decision and as an organizational means to an end.

2.3.2 Open strategy

The popularity of open innovation as a research program stimulated the emergence of another middle-range theory: open strategy. Chesbrough himself brings the two realms together when he invites his readers to engage in a more open way of strategizing that "balances the tenets of traditional business strategy with the promise of open innovation." (Chesbrough & Appleyard, 2007, p. 58) A few years later Whittington, Cailluet and Yakis-Douglas (2011) took stock of the empirical occurrences of open strategy and grouped the existing forms of the phenomenon along two dimensions: openness in terms of transparency and openness in terms of inclusiveness. Transparency, according to the authors, refers to "the visibility of information about an organization's strategy, potentially during the formulation process but particularly with regard to the strategy finally produced." (Whittington et al., 2011, p. 536) In the taxonomy of open innovation this description seems closely related to the outbound non-pecuniary practice of revealing. Inclusion on the other hand refers to the quantity and quality to which external actors can participate in the strategizing process, namely "the exchanges of information, views and proposals intended to shape the continued evolution of an organization's strategy." (Whittington et al, 2011:536) Again, in the terms of open innovation, these open strategy practices remain non-pecuniary and include the inbound sourcing as well as the outbound revealing[7]. Transparent strategizing is a necessary but not a sufficient condition for inclusive strategizing. There can be no inclusiveness without transparency, but transparent strategizing does not have to be inclusive at all. Finally the authors emphasize that inclusion as well as transparency remain in the realm of informing and

[7] With open strategy it seems less obvious than with open innovation to categorize the existing literature as "information-centered". Some of the studies in this chapter could also be categorized as participation-centered (following my taxonomy from Chapter 2.2). These participatory elements of open strategy however seem to focus on intra-organizational openness, e.g., opening up strategy to middle managers or regular employees (Mantere, 2008). However as the inter-organizational aspects of open strategy that I am interested in mainly involve the sharing or sourcing of information, I categorized open strategy as information-centered.

do not extend to the "transfer of decision rights with regard to strategy." (Whittington et al., 2011, p. 535) Whittington and his colleagues also differentiate between internal and external openness in strategizing. When opening up the strategy making process internally, the "elite staff" (Williamson, 1970, p. 125) of strategic planners makes the strategizing process transparent and/or inclusive towards other employees. In these practices, decision rights might be partially transferred or not. However, as I am primarily interested in the relations between organizations and their environment, I focus on the external aspects of open strategy. Some examples might illustrate the external practices of transparent and inclusive strategizing:

Gegenhuber and Dobusch (2016) describe corporate blogging as a means to inform outsiders of strategy related issues. More specifically, they find that young firms engage in strategy blogging to overcome liabilities of newness (Freeman, Carroll, & Hannan, 1983). Although their case studies highlight the transparency aspect of blogging, they also show signs of inclusiveness, as customers and potential customers are able to leave comments on the strategy-related blog posts. As a more traditional example Whittington and colleagues (2011) describe more official "strategy updates", which are published annually on firms' Internet sites. Oftentimes these publications come with limited ways for externals to ask questions to the managerial staff. A modern example for external inclusion into the strategy process is the use of crowd-sourcing campaigns that reach out to users and potential customers (Bauer & Gegenhuber, 2015). Dobusch and Kapeller (2013) show how Wikimedia, the non-profit organization running Wikipedia, crowd-sourced its entire strategy online, in a process that spanned several months and included several hundred participants. Through a more historical lens, the rise of strategy consulting and thereby the creation of a market for strategy ideas (Ghemawat, 2002) can be considered as a form of inclusive strategizing as well. By analogy to open innovation, hiring strategy consultants represents the pecuniary acquiring of strategy information. On the same note the pecuniary "selling" of strategy information is evident in cases where managers, besides their main occupation, offer their strategic insights to other executives in the form of seminars or workshops.

Dobusch, Werle and Seidl (2015) analyzed the relatively small corpus of literature on open strategy and identified three purposes for which organizations opened up their strategy making process: to pursue joint sensemaking, to increase commitment and ownership, and as impression management. They find that in most studies open strategy is associated with joint sensemaking. Werle and Seidl (2012) for example have explored cases in which groups of organizations come together in order to explore strategic issues of global scale that reached beyond their own sensemaking capacities. Similarly, Schmitt (2011) describes how in a multinational company strategy is crafted more collectively than before in order to create and co-construct shared understanding among stakeholders in the face of "wicked issues" (Schmitt, 2011, p. 11). Open strategy can, in addition to joint sensemaking, foster commitment of parties involved in the process. Stieger and colleagues studied strategy crowdsourcing and described how the two-way communication between management end employees led to "identification and understanding" as well as "stronger commitment" and "effective implementation" (2012: 46). Eventually researchers have found firms that experimented with open strategy as a new impression management tactic. In the study of Yakis-Douglas and colleagues (forthcoming), they find how organizations whose strategy deviates from the industry norm are more likely to

reveal information on their M&A activities. Through these means of impression management the firms try to counterbalance other reports that might get published by financial analysts discussing their unorthodox strategy.

More precisely than Chesbrough (2006), Whittington and colleagues (2011) describe the greater societal forces that have led to the increased transparency and inclusiveness of strategizing. Referring to the work of Andrew Abbott (1988), the authors claim that the interrelation of organizational, societal, cultural and technological changes since the end of Second World War have triggered changes towards greater openness in the already "precarious profession" of corporate strategy making (Whittington et al., 2011, p. 532). They argue that openness is linked to the "particular variant of managerial capitalism that originated in the liberal democracy of the post-war USA" in which the corporate strategy making was gradually opened up from the individual hands of personal capitalists into the group of employed managers. In a further development since the 1980s, the "crumbling of organizational boundaries and hierarchies; a societal shift towards managerial egalitarianism and mobility; a cultural popularization of strategy; and new technologies that set information free" pushed organizations towards greater transparency and inclusiveness (Whittington et al., 2011, p. 538).

Differentiating the middle-range theory of open strategy from open innovation helps to carve out different facets of openness. In both theories the elements that permeate the organizational boundary are informational resources. In open innovation these resources oftentimes take the form of fairly well defined "knowledge", sometimes even covered by IP. In open strategy, this information rather takes the form of "opinions, ideas and interpretations, rather than [...] defined knowledge." (Dobusch et al., 2015, p. 18) When zooming into the micro-practices of open strategy it seems like the flows of strategy information are intentional and fairly rational decision to create transparency and inclusiveness, and to foster sensemaking and commitment. However, when zooming out to the macro level, we find that many of these practices are shaped by large societal changes (e.g., managerial capitalism) that constrain the strategy makers' choices. In terms of direction I found examples for both inbound as well as outbound permeation of opinions, ideas, and interpretations. Most of the examples are non-pecuniary in nature, however strategy consulting could be classified as an important pecuniary form of inbound inclusion. Dobusch and colleagues (2015) argue that in open innovation the main purpose of information flows is the creation of new products or services. In open strategy, however, information flows have the primary purpose of sensemaking between multiple parties and the maintenance of legitimacy, which partly explains the primacy of non-pecuniary practices. However, when zooming out to macro trends of digital labor (e.g., Scholz, 2012), it does not seem too far fetched to assume that in the future even more crowd-funding mechanisms could be complemented by pecuniary incentives for participants, e.g., through platforms like Amazon's Mechanical Turk.

2.4 Norms of openness and the phenomenon of open data

Within the middle-range theories of openness outlined above, studies on open innovation have primarily focused on rational choice explanations of why actors organize the innovation process more openly (Baldwin & von Hippel, 2011; Henkel et al., 2014). Probably the most prominent explanation from this strand of literature is

the "private-collective" innovation model of Open Source Software communities as described by Hippel and Krogh (2003). Whereby many studies on open innovation have portrayed it as an efficient practice for high-tech companies, other studies have certified its usefulness for more traditional and mature industries as well (Chesbrough & Crowther, 2006). Within the literature on open strategy I find some initial attempts that complement the concepts of rational choice and usefulness by understanding practices of openness against the backdrop of changing norms. Whittington, Cailuet and Yakis-Douglas (2011) for example argue that the rise of formal and informal disclosure norms has increased over the past decades, pushing firms to make more of their strategy documents available to the public. Furthermore they argue that technological developments, e.g., whistleblower platforms like Wikileaks (see also Weiskopf & Willmott, 2013), increase the public pressure resulting from misconduct and push organizations towards preventive transparency measures (Miethe & Rothschild, 1994).

Looking beyond innovation and strategy literature, we find explanations for openness that cast substantial doubt on its strategic nature. Tallberg (2016) finds that over the last two to three decades international organizations (e.g., WTO, World Bank) have become more open to non-state actors in terms of policy-making. One part of his explanation for this development is that these organizations have been socialized into a new "openness norm" in global governance (2016, p. 22). Tallberg argues that this norm is correlated with the growing political authority of international organizations, which increases the need to legitimate their decision making process towards civil society. If an international organization looses public legitimacy, Tallberg argues, decision-making processes are likely to be disrupted, the completion of programs jeopardized and funding from member governments cut back. To prevent this from happening, policy-makers offer access to documents in order to strengthen input and procedural legitimacy towards the external environment. As examples for this process Tallberg reminds the reader of the social movement groups, which in the 1990s criticized organizations like the WTO, IMF, World Bank, or EU for pursuing a neoliberal agenda and for their opaque decision-making procedures (2016, p. 11). Similar to Tallberg yet more explicit, Peled (2011, p. 5) argues that on a global level certain actors have successfully created a strong "openness norm" through which transparency has become an "almost religious dogma".

Against this backdrop I find it surprising that the majority of authors has studied practices of openness through the lens of a teleological theory of action, in which actors strategically choose openness as the best available option to reach their goals and to gain advantage towards their relevant others. Only little attention has been paid to openness through the lens of norm-regulated theories of action, in which openness is practiced because actors perceive it as the most legitimate behavior within their inter-subjective realm (Habermas, 1981, p. 129 ff.). To gain a deeper understanding of practices of openness, it therefore seems necessary to contrast the homo economicus who chooses openness in order to maximize its own utility with the homo sociologicus who practices openness in order to comply with the social norms of its environment (Mayntz, 1999).

Over the last years researchers began to document another phenomenon of organizational openness that leans itself to a norm-centered study of openness: open data. In the case of open innovation and open strategy, the label "open" was

developed by academics to describe a bundle of practices that shared certain characteristics. In the case of open data, the label "open" was developed by organizational practitioners to describe their own practices. In the most general sense, organizations that practice open data make some of their data sets available to people outside the organization. Availability hereby means that organizations upload data sets to the Internet where users can download them free of charge, in machine-readable format, and licensed in a way that allows users to modify and use them for any purpose, including commercial use. A data set can be everything from a single-page document to an enormous data set from experimental research. Within the framework developed above open data represents an outbound flow of information, from an organization to its environment. When zooming into this practice, I find that the rationale to perform open data as well as its form differs between types of organizations, including academic institutions, research-intensive firms, public administration and other public sector organizations.

Historically, the idea of open data originated in data-intensive scientific communities of the natural sciences and was first brought to popular attention through the Human Genome Project. By sharing their openly licensed data sets, researchers from different institutes around the world were able to win the race for DNA sequencing against competing projects that had the explicit intention to claim intellectual property on the human DNA sequence in case they would decode it first (Williams, 2010; Yu & Robinson, 2012). Peter Murray-Rust (2008), a chemist working at the University of Cambridge, describes his own motivation to practice open data, as being motivated intrinsically by the desire to accelerate scientific progress. Based on his experiences with likeminded scholars he provides a list of popular arguments brought forward in favour of open data. These arguments range from ethical ones like "[d]ata belongs to the human race" to more instrumental ones like "[i]n scientific research, the rate of discovery is accelerated by better access to data." (Murray-Rust, 2008, p. 55)

Perkmann and Schildt (2015) focus on open data practices in an adjacent field and describe how more and more science-intensive firms engage in open data research collaborations with external scientists. In these collaborations, the firms issue problem statements to the scientific community and provide resources to tackle them. To incentivize the scientists the firms agree that results are published without any copyright restrictions. The authors describe the difficulties for such companies to capture value out of these collaborations and show how firms try to tackle this problem by structuring these university-to-industry partnerships as boundary organizations (O'Mahony & Bechky, 2008). These arrangements, they find, are particularly adept at generating productive outcomes while mitigating the firms' challenges (Perkmann & Schildt, 2015, p. 1134). Boundary organizations hereby enable two nested forms of open data: On the one hand scientists publish the data sets, which they use for their research, as open data once the research is finished. This resonates with the practices that Murray-Rust (2008) has described. This research, however, is done using initial data sets that get released by the participating firms. In order not to reveal all of the firms' R&D problems, a boundary organization pools data from several firms, anonymizes it and passes it on to the researchers. This is what Perkmann and Schildt call "mediated revealing" (2015, p. 1139). Simeth and Raffo (2013) have analyzed the reasons why firms agree to open data practices in their R&D process and found that "firms are more likely to adopt academic principles if they need to access scientific knowledge that is considered important for their innovation

development, whereas the mere existence of collaborative links with academic institutions is not a strong determinant." (Simeth & Raffo, 2013, p. 1531) Already this small number of studies shows the variety of forms within the practice of open data. Developed as a practice within data-intensive academic communities, open data has diffused to research-intensive firms, which modified the practice in order not to release too much of their R&D results to the public domain.

Besides academic institutions and research-intensive firms, open data has been found within governmental and public sector organizations. These organizations range from federal government ministries over city and regional administrations to small local public service providers (Heimstädt, Saunderson, & Heath, 2014). The adoption of new practices in public organizations has to be studied with an eye on formal policies and political climates (Janssen, 2011). Zuiderwijk and Janssen (2014) compare Dutch open data political policies and differentiate between an overall national policy, policies on the ministerial level and the lower level of national bureaucracy. The authors come to the conclusion that across these levels a variety of open data policies exists, that organizations face conflicting demands between them, and that these conflicts lead to very different attitudes towards open data across public sector organizations:

> "Some organizations are truly motivated to become more open by creating an open data policy, whereas others seem to view the creation of an open data policy more as an obligation and are wary of its risks, such as legal liability, the possible misuse and misinterpretation of data, and possible reputation damage." (Zuiderwijk & Janssen, 2014, p. 27)

Worthy (2013) has studied the regulatory changes in England that coerced all local government bodies to publish data sets with all their spending items of more than 500 Pounds. He argues that open data practices can lead to an "illusion of openness" (Nam, 2012, p. 91) and finds that the opening up of local spending data has only eased the work of actors already engaged in monitoring, yet has not enabled new actors to effectively monitor governments (Worthy, 2013, p. 2). It seems apparent that the effect of the practice does not necessarily overlap with the discursive rationalization of its adoption (e.g., by political actors). Political scientist Alon Peled has analyzed the open data policy of U.S. President Barack Obama that launched in early 2009. The author comes to the critical conclusion that although the "open data architects" were able to create worldwide public-relations buzz around the policy, "most federal agencies have adopted a passive–aggressive attitude toward this program by appearing to cooperate with the program while in fact effectively ignoring it." (Peled, 2011, p. 1 ff.) Peled argues that data sets, like all other computational resources, "are inextricably tied to political power struggles between bureaucratic agencies." (Peled, 2011, p. 5) When the access to data sets is a matter of power, opening up the most valuable data sets can thereby mean to give away valuable bargaining chips.

A majority of open data studies focus on federal policies and national administrative organizations. However there are a few studies, which take a closer look at open data in local or regional organizations. Hellberg and Hedström (2015) provide an account of a Swedish municipal government that has opened up some of its data sets. A focal element in this process are innovation competitions (Yoo, Henfridsson, & Lyytinen,

2010), events in which members of public agencies and potential users of open data (individuals and local businesses) come together to discuss potential use-cases of open data. Interestingly, the authors describe the diverse motivations of the different parties that took part in these competitions:

> "We, as researchers, wanted to contribute to research on public open data, the department of external relations thought that it was in line with their existing work with open innovations, the municipality participated because the municipality saw open data as a strategically important question, the County Administrative Board was involved because of their work with the Digital Agenda, and the local IT business saw it as an opportunity to promote the own company and brand." (Hellberg & Hedström, 2015, p. 38)

After having reviewed the variety of studies on open data practices in different organizational types, I can now come back to the checklist to situate open data amongst the other middle-range theories of openness. With open data it seems the question about what it is that permeates the organizational boundary can be answered fairly precisely. In all the examples at hand members of an organization made some form of digital information available to individuals outside the organization[8]. In the cases I reviewed so far, this availability was created by uploading the information to a freely accessible location on the Internet. The digital nature of the information made it easy for outsiders to duplicate and redistribute the information, hence once released the issuing organization had no control over the data anymore. On the one hand these data sets share similarities with the "defined knowledge" (Dobusch et al., 2015) that permeates the boundary when innovating openly. In some cases external organizations have successfully used openly released data sets to create new products and services, particularly through "infomediary business models" (Janssen & Zuiderwijk, 2014). It seems that some forms of open data might overlap with the outbound revealing found in open innovation. One should also not be deluded by the structure of datasets, which with their columns and rows might appear to be more objective than textual information. Within the specific phenomenon of open data, Denis and Goëta (2014) have shown how individuals deliberately manipulated data sets after they knew that they had to publish them as open data. More broadly speaking Bowker (2005) reminds us that the mere term "raw data" is nothing more than an oxymoron, as every form of data collected already includes assumptions about the world. Mark Fenster (2015) even argues that not only the idea of raw governmental data is an illusion but also that the idea of government transparency is implausible in its normative goals and as theoretical construct. At the core of his argument lies the insight that any corpus of information can always only imperfectly represent official action and motivation rather than perfectly reproduce it – in other words, that the map is not and can never be the territory (Korzybski, 1933):

> "Transparency's promise that the state will be unveiled through the release of its information assumes that disclosure will allow the public to view an unmediated state. Information will offer a thorough and truthful representation of government action through documents that provide an unexpurgated,

[8] Oftentimes the terms digitization and digitalization are used interchangeably. In this study I use the former to describe tangible processes of converting analogue streams of information into digital bits, and the latter to capture more abstract ways in which many domains of social life are restructured around digital communication and media infrastructures (Brennen & Kreiss, 2016).

> authentic historical record. The state will operate without walls, its every action and motivation in full view. But the documents that open government laws, whistleblowers, and vigilante leakers like WikiLeaks disclose are not comprehensive. They can provide a snapshot of a period of time from some part of the state, but not of the entire state." (Fenster, 2015, p. 157)

Not all data sets that are shared are released as a means to fulfill an innovation agenda, but organizations also release data sets that contain information, which serves their legitimacy towards external actors. One example are the spending data sets released by UK municipalities (Worthy, 2013). In these instances open data practices resemble practices of open strategy, as they release trust-building information (Möllering, 2006)[9]. The most significant difference between open data and openness in strategizing and innovating is the direction in which the information permeates through the boundary. In open innovation the practices of inbound and outbound permeation seem to be balanced, or at least there is no argument why one direction shall generally overshadow the other. The same holds true for open strategy, in which information is revealed to build legitimacy and sourced in order to – broadly speaking – fit organizational supply to environmental demand. When practicing open data, most of the information flows seem to lead out of the organization and into the environment. As I have shown organizations develop internal structures to regularly upload and update the data sets on the Internet. In contrast to open innovation, there is little evidence that organizations, which show structures to reveal data sets, also have structures or even interest in sourcing data sets. On the other hand, organizations that source data sets (e.g., private firms) do not seem to be great revealers of data sets themselves. As I have shown, the purpose of why organizations practice open data is highly contingent on the type of organization. In the case of academic institutes open data is published in order to strengthen the profession in itself (Murray-Rust, 2008). In the case of private sector firms open data is performed with a primarily financial purpose. As we have seen in science-intensive firms, open data is practiced to lower the failure rate of new innovations or to be able to attract public sector funds to match the private funds of the company (Perkmann & Schildt, 2015). Studies on open data in public sector organizations paint the most complex and riddled picture of practice adoption. On the one hand, these organizations have hierarchical relations to political actors, who use the ambiguity of open data to frame it as a powerful instrument for accountability, efficiency and economic stimulation (Heimstädt et al., 2014). On the other hand, public sector organizations use data sets as a source of power towards other agencies or the citizens they interact with. In his reflections on the introduction of open data in Vancouver, political activist David Eaves explicates the closedness between city agencies when it comes to information sharing:

> "At first my assumption was that you can only get access to a lot of data when you are part of the administration. This assumption turned out to be mostly inaccurate. When you work for the building authority, you don't have access to data from the social welfare agency. When you work for the social welfare agency you cannot access data from the police. […] Open data in this regards drives a cultural change within the administrative complex." (2011, p. 248)

[9] Although spending data in the UK was released by municipalities in response to informal norms and formal regulation (see Chapter 6.3 Case: London), it has spurred innovative software solutions in the field of data visualization (e.g., *Where does my money go to?* by Open Knowledge Foundation).

As a way to mediate the tension between political will and personal interest, members of public sector organizations have found ways to create “illusions of openness” (Nam, 2012) by revealing only selected data sets (Henkel, 2006; Henkel et al., 2014), manipulating data sets (Denis & Goëta, 2014), or slicing data sets up (Peled, 2011). Especially these last examples show the intricate relationship between individual and organizational goals, and external expectations.

3. Openness as an institution

In this chapter I first provide a general introduction to the role of institutions in social analysis. In the second part I outline what has become known as the new institutional theory in organizational analysis since the early 1980s. This lens helps us to understand openness as an institution affecting organizational structures. In the third part of this chapter I zoom into the role of agents in creating and changing institutions. At the end of this chapter I am able to formulate my research program and specific research question against the backdrop of these theoretical premises.

3.1 Institutions in social analysis

The most fundamental concepts in social analysis have endured decades of definitions and redefinitions up to a point where they have sometimes lost their explanatory power to the threat of vagueness. To overcome this threat I will ground my understanding of what makes an institution in selected works from the classical sociological canon. Émile Durkheim, founding father of sociology as an academic profession, described institutions as

> "any way of acting, whether fixed or not, capable of exerting over the individual an external constraint [...] which is general over the whole of a given society whilst having an existence of its own [...]." (Durkheim, 1895, p. 59)

Durkheim understands institutions as patterns of social behavior that are produced and reproduced by humans, but at the same time experienced by them as something objective and taken-for-granted. This taken-for-grantedness guides and enables social behaviour, but constrains it at the same time (Scott, 1995). Through institutions, which can be understood as mental patterns, individuals are certain about what to do and what not to do under certain circumstances. Almost a century after Durkheim, the British sociologist Anthony Giddens defines institutions – simple yet compelling – as the "more enduring features of social life" (Giddens, 1984, p. 23). Giddens builds on Durkheim's definition of institutions, but sensitizes us for their contingency. "More enduring" on the one hand means that forms of behaviour only become institutionalized when they are performed over a longer period of time. Some contemporary authors have described behaviour and mental patterns during these periods of habitualization as *proto*-institutions (Lawrence, Hardy, & Phillips, 2002). On the other hand, "more enduring" also points to the fact that institutions can cease to exist.

After their scholarly popularity had been dwindling, institutions experienced a renaissance by the middle of the 20th century across different academic disciplines. This renaissance followed an intellectual period that was overly fascinated by the idea of rational actors and social action as a chain of rational decisions. The new countervailing streams, united by a "common skepticism toward atomistic accounts of social processes" (Powell & DiMaggio, 1991, p. 3), were subsumed and discussed under the label of *new institutionalism*. Whilst the different schools of new institutionalism share a common skepticism and generally agree upon the constraining character of institutions, they have developed different understandings of how these institutions are created by human actors. *Rational-choice institutionalists* regard

institutions as rationally constructed tools that ease transactions of any kind. A prime-example for rational-choice institutionalism is Williamson's (1973) theory of organizations and markets, as institutions that govern economic transactions. According to his theory all transactions that are more efficiently performed within organizations, will be performed within organizations. Any kind of routinized behaviour that would decide to perform the transaction in the market instead of the organization would necessarily contradict Williamson's theory, but would fit very well with a second stream of new institutionalism: *Social-constructivist institutionalism* acknowledges the idea that institutions are outcomes of human behaviour but "not *necessarily* the products of conscious design." (Powell & DiMaggio, 1991, p. 8, emphasis added) In contrast to rational-choice institutionalism, this strand of institutional theory focuses on the messy, irrational, or subconscious elements of human action, as well as the unintended consequences that can play an important part in the construction of institutions. Although rational-choice institutionalism found many followers in economics and political science departments, the social-constructivist lens has stimulated research programs like historical institutionalism (Capoccia & Kelemen, 2007; Streeck, 2010; Thelen, 1999), the "traditional" new institutionalism in political sciences (Mahoney, 2000) or the communicative turn in political science in the form of discursive institutionalism (Risse, 2000; Schmidt, 2008). The foundation for any form of social-constructivist institutionalism can be traced back to sociologists Peter Berger and Thomas Luckmann (1966) and their groundbreaking book *The Social Construction of Reality*[10]. Influenced by social anthropology, Berger and Luckmann unpack how humans create their every-day reality in the process of "institutionalization" (1966, p. 33). Berger and Luckmann build upon Durkheim's descriptive account of institutions and their functioning, but transcend his work and shed more light on the actual creation and maintenance of institutionalized knowledge.

Berger and Luckmann (1966) describe institutionalization, the creation of social reality, as a circular process of externalization, objectification and internalization. In the process of externalization, human beings bring order to all of their sensual impressions by attaching sense and meaning to them. As an example we can imagine that a person makes a strange encounter with another person, and retrospectively settles on an explanation why this encounter was strange. In the following process of objectification, a meaning system (e.g., the explanation) is brought into distance from the individual that once created it. This objectification is achieved through semantic systems such as signs, symbols and language. As an example, we can imagine that the person who had the strange encounter decides to write a book on it. By writing this book the individually constructed social reality becomes independent from this person. In the final stage, the internalization, the objectified interpretation of the world acts back on the human consciousness of individuals who have not directly witnessed the process of objectification. In our example someone who had a strange encounter as well gets hold of the book, finds an explanation and accepts this explanation as an accurate description of the world. In the future this person will interpret further strange encounters according to this book. The knowledge about strange encounters becomes taken-for-granted or: institutionalized.

[10] In 1998 the International Sociological Association voted Berger and Luckmann's *The Social Construction of Reality* as the fifth most influential sociological book in the 20th century.

Berger and Luckmann describe the process of institutionalization from the perspective of the individual human actor and its behaviour. Starting in the late 1970 scholars have translated these ideas to collective actors and began to study how organizations construct their social reality.

3.2 Institutions and organizations

Based on the vast amount of literature that has developed under the banner of new institutional theory (NIT), I will be very selective when carving out the elements that help me understand the institutionalization of organizational openness. In this chapter I therefore progress in three steps. First, I introduce the fundamental assumptions of NIT that rationalized myths influence organizational structure and practices. Second, I present research on organizational legitimacy as this sheds light on the mechanisms that make organizations adopt practices of openness. Third, I dive into theories of organizational fields to show how NIT scholars have delineated their object of study.

3.2.1 Rationalized myths

In 1977 John Meyer and Brian Rowan published their seminal paper *Institutionalized Organizations: Formal Structure as Myth and Ceremony* in which they argue that the ostensibly growing rationalization of organizations might oftentimes be more of a ceremonial illusion of rationalized behaviour. They argue that certain groups of organizations share a general understanding of what structures and practices are necessary to be efficient. They call these understandings "rationalized myths" (1977, p. 343). Organizations hence adapt their formal structure to what they assume their relevant environment believes to be an efficient structure. By adopting these structures, organizations indicate to their environment their effort to act efficient, and subsequently receive resources needed for their survival. Organizations, whose technologies are "not clearly linked to given outcomes and whose outputs are difficult to evaluate" (e.g., because they are not distributed through a market) are more likely to seek compliance with rationalized myths than other organizations (Greenwood, Oliver, Suddaby, & Sahlin-Andersson, 2008, p. 4). In the following I treat these rationalized myths as equivalent to what I have previously introduced as institutions. The degree to which these rationalized myths are shared and internalized is their "degree of institutionalization" (Zucker, 1977).

In Chapter 3.1 I have pointed at the trade-off between institutions as a theoretical construct with great generalizability and its precision when explaining social phenomena. This problem has been transposed to economic and organizational analysis with rather vague definitions of institutions as the "rules of the game" (North, 1990, p. 3) or "more-or-less taken-for-granted repetitive social behaviour" (Greenwood et al., 2008, p. 4). Within organizational studies Scott (1995) has proposed a model to zoom into different aspects of institutions. Scott describes institutions as consisting of a regulative, normative and cultural-cognitive pillar. Each of these pillars contains different rules and regulations that constrain, but also guide and thereby enable human behaviour. The regulative pillar encompasses all explicitly regulatory processes, like rule setting, monitoring and sanctioning. Scott highlights that scholars should not necessarily equate laws with regulative institutional pressure, as in many cases laws are effectively breached on a regular basis without any sanctioning. The normative pillar consists of socially binding expectations about ends and the legitimate means to pursue these ends. In Scott's words the normative system

entails the legitimate goal to "win a game" as well as specifications about "rules of how the game is to be played" (1995, p. 55). Empirically one can identify this normative pillar in situations when organizations seek formal accreditation or certification. Scott and other authors have described the cultural-cognitive pillar as the most fundamental one, which underlies the other two and entails an actor's internal representation of the world. Scott describes this internal representation as "the shared conceptions that constitute the nature of social reality and the frames through which meaning is made" (2008:57) and thereby leans closely on Berger and Luckmann's (1966) idea of an internalized social reality. By framing this pillar the cultural *and* cognitive one, Scott explains that he wants to highlight the external (cultural) impact on an actor's mental (cognitive) processes. In different institutions different pillars are more or less dominant. Although the pillars are connected to different mechanisms they work in combination and complement each other.

This basic vocabulary of NIT allows me to reformulate the phenomenon of organizational openness. Organizational boundaries are organizational structures that are produced and reproduced by members of the organization (Luhmann, 1995)[11], which means that members of organizations apply taken-for-granted practices of sharing or withholding certain forms of information. Organizational members regard these practices as an objective truth and *the right thing to do*. According to Scott's three pillars, these boundary practices may be stabilized by different mechanisms. First, these practices can be constrained by laws that regulate, which information is allowed to permeate the boundary without sanctioning. In many countries, for instance, the outbound permeation of private customer information is heavily sanctioned. Second, these practices can be constrained by more informal norms and expectations about appropriate behavior. For example, a company might gain a market advantage by publishing information about a competitor, however eventually refrains from doing so because this practice violates the unwritten rules of the industry. Third, members of the organization might or might not share certain forms of information because they are deeply convinced that it is the right thing to do and in line with their professional identity. Redelfs (2005) for example describes the professional confidentiality (*Amtsgeheimnis*) as a cultural element of the German public administration, which is passed from one generation of professionals to the next without much questioning of its necessity. Even in cases in which the legal and normative situation in regards to certain information is unclear to them, they would refrain from sharing it due to their deep belief in confidentiality.

3.2.2 Legitimacy

Organizations adopt certain practices in order to conform with what they expect is expected from them. Within NIT these reciprocities have usually been subsumed

[11] Niklas Luhmann (1995, 2006) describes organizations as autopoietic systems. According to Luhmann, who himself drew on the work of Spencer-Brown (Baecker, 2015; Spencer-Brown, 1969) organizations gain and maintain organizationality by constantly creating a differentiation between them (system) and everything else around them (environment) (Luhmann, 1964). For his argument that the organizational boundary as the constituting structure of organizations can only be produced and reproduced by the organization itself, Luhmann adapted Maturana and Varela's (1987) concept of autopoiesis to sociological theory (a creative leap that has not remained unchallenged, e.g., Mingers, 2002). Initially the two cognitive biologists used the term to delineate living from non-living systems whereby the former reproduce their own elements through their own elements (Hernes, 2004; Seidl & Becker, 2006; Seidl & Mormann, 2014).

under the concept of legitimacy. Within my research interest this means that organizations increasingly share information in order to retain their legitimacy. To better understand the role of legitimacy in processes of practice change, I review the concept along three lines: First, I discuss the relational nature of legitimacy. Second, I compare different forms of legitimacy and finally I show how the organizational form determines its need for legitimacy.

The term "legitimacy" seems unambiguous on first sight, yet it has troubled organizational scholars ever since. A prominent starting point for the study of legitimacy is Max Weber and his three types of legitimate rule (Deephouse & Suchman, 2008; Weber, 1922). According to Weber, a leader is legitimate to a group of people, if this group supports the leader without being forced or threatened. Scott later on has built on Weber and clarified that "legitimacy is not a commodity to be possessed or exchanged but a condition reflecting cultural alignment, normative support, or consonance with relevant rules or laws." (Scott, 1995, p. 45) A completely legitimate organization is one "about which no question could be raised." (Meyer, 1983, p. 201) Hence, similar to the concept of power (Emerson, 1962), there can be no atomistic but only a relational understanding of legitimacy – the legitimacy of one subject towards another. This relational understanding or legitimacy also implies that actors can be legitimate towards one actor, but less or more legitimate towards another. Furthermore, legitimacy relations can span between different social aggregates, e.g., between an individual person and an organization[12].

In their review chapter in the *SAGE Handbook of Organizational Institutionalism*, Deephouse and Suchman (2008, p. 50) find that literature on legitimacy holds "a plethora of definitions, measures, and theoretical propositions, not all of which are fully compatible with one another." Many of these definitions spring from articles that look at legitimacy as an inter-organizational relation, which firms are able to manage strategically (Suchman, 1995). Aldrich and Fiol (1994) for example have distinguished between sociopolitical and cognitive legitimacy, which entrepreneurs in nascent industries need to achieve in order to overcome liabilities of newness. Entrepreneurs seek cognitive legitimation by spreading knowledge about their new venture. Legitimacy is hence merely understood as making someone aware about the onset of a new organization. When entrepreneurs seek to achieve sociopolitical legitimation, they try to convince key stakeholders, the general public, key opinion leaders, or government officials to accept them as appropriate within the existing norms and laws. More generally, this form of legitimacy is the "generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." (Suchman, 1995, p. 574) Most interesting regarding this form is that legitimacy is not necessarily achieved when certain norms and laws are met, but when the relevant actors think that they are met by the one seeking legitimacy. In this regard the struggle for legitimacy might result in an almost theatrical performance of impression management, where one party tries to create the illusion that they are what they are not (Elsbach & Sutton, 1992; Goffman, 1959) and the other party behaves "as if" they would be certain about the other's compliance (Ortmann, 2004). Several authors have picked up these ideas of cognitive and sociopolitical legitimacy and

[12] Deephouse and Suchman (2008, p. 54), after comprehensively reviewing the literature on organizational legitimacy, come to the moderately helpful yet strikingly plausible conclusion "that almost anything can be a subject of legitimation."

transferred them to other domains. One example for this is the work by Kostova and Zaheer (1999) who have studied how multinational enterprises retain legitimacy in their home country as well as in their different subsidiaries.

Based on my interest in open data practices, I need to carve out the differences between the legitimizing behavior of public organizations in contrast to other, more market-oriented forms of organizations as described above. Meyer and Rowan (1977) have pointed towards the bipartite conditions for organizational survival: legitimacy as well as technical efficiency. The have suggested that the relative importance of these conditions to secure organizational survival varies, e.g., depending on whether an organization is more or less embedded into a market environment. Organizations that generate income through market-based exchange are strongly dependent on the competitiveness of their products and services. If, due to shortcomings in their technical efficiency, they are unable to attract customers, they are most likely not able to make up for this through a high degree of legitimacy. In many cases their need for legitimacy it limited towards regulators, as well as organizations and individuals that they maintain direct economic exchange with (Aldrich & Fiol, 1994). The need for market-based organizations to manage these legitimacy relations has been shown in studies on investor activism (David, Bloom, & Hillman, 2007), consumer boycotts (Post, 1985) or social movements as cultural innovators (Rao, Morrill, & Zald, 2000).

On the other hand, organizations that generate less or no income through market-based transactions tend to have a greater need to manage their legitimacy. In these organizations, e.g., public organizations or non-profits, the means-end connections are less clear than those in market-based organizations. In order to justify their practices towards the state or other funders, they have little ability to point to the efficiency of their technical processes, because there is no market as an external evaluative criterion. In recent years legitimation efforts by these kinds of organizations have been studied through the lens of transnational governance. Scholars from various fields have approached the question how state and non-state actors produced and maintained legitimacy in the process of transnational rule making and standardization, oftentimes in the absence of formal democratic representation in this processes (Botzem & Dobusch, 2012; Dobusch & Quack, 2013; Hallström & Boström, 2010; Quack, 2010).

Many of the authors differentiate between input and output legitimacy and the practices that actors apply to achieve it[13]. When seeking legitimacy through output-oriented approaches, actors point towards the ability of a given solution to produce effective solutions for public policy problems. Based on Mayntz (2010), Botzem and Dobusch (2012, p. 741) argue that output legitimacy can be summarized as "a functional imperative of minimizing transaction costs." As a form of signaling behavior actors who seek output legitimacy point towards the technical, professional, epistemic and bureaucratic expertise that has been involved in the decision-making process (Quack, 2010, p. 7). Output legitimacy thereby overlaps greatly with the type of legitimacy behavior of market-bound organizations described above. Much different, and more prominent in market-distant organizations are practices to create input legitimacy. Mayntz (2010, p. 10) describes input legitimacy "as given if those

[13] Scharpf (1999) and Risse and Kleine (2007) furthermore differentiate between input and procedural legitimacy. In this work I follow Mayntz (2010) by not making this differentiation, as I see it subordinate to the differentiation between output and input legitimacy.

who are subject to a regulation participate in devising it." Participation hereby includes not only the ability to make one heard in the process, but as well that decision-makers demonstrate responsiveness towards these voices. In this regard input legitimacy is closely linked to the participants perception that the process they are involved in is fair and impartial (Quack, 2010). In their study on transnational standardization cycles Botzem and Dobusch (2012) explore the interplay of input and output legitimacy in macro-social rule making. The authors carve out the reciprocal linkage of the formation and diffusion of rules, whereby different forms of legitimacy serve as feedback mechanism: Great input legitimacy in the phase of rule making has a positive impact on the diffusion of the rule. Great diffusion of the rule in turn increases its effectiveness, which eventually has repercussions on future procedures of rule (re-)formation. Although Botzem and Dobusch tie their findings to literature on standardization in transnational arenas, it seems particularly useful to be adapted for the study of institutional creation in the complex amalgamation of stakeholders in the public sector.

As outlined in Chapter 2.2.3, open data is a practice increasingly found in public organizations. Based on the literature on legitimacy I can deduce some assumptions about these occurrences. Although some public organizations compete on markets, many of them are rather detached from this evaluative instrument and have to rely more on their legitimacy. On the first sight public organizations only have to retain legitimacy towards some kind of government (understood as an organizational actor) that sets their budget and allocates funds. At second glance the relationship turns out to be more complicated and public agencies also have to manage their legitimacy towards citizens, businesses or the media that are able to exert power on the government and thereby indirectly influence the flow of funding. When it comes to the form of legitimacy, I assume that public organizations are mainly concerned with assuring external stakeholders that their operations are in the public interest and that they need certain resources to maintain these operations. The flow of information out of public organizations could therefore be at the same time beneficial but also harmful to the goal of increasing legitimacy. The more information the public has on the inner workings of this public organization, the more different interpretations can emerge whether these workings are (a) in the public interest, and (b) performed in the most efficient way. Hence, whether greater openness increases or decreases legitimacy might heavily depend on the processes of information disclosure, interpretation and feedback. Same as in recent literature on inter-organizational trust (Nikolova, Möllering, & Reihlen, 2015), legitimacy needs to be understood processual rather than as a singular practice.

3.2.3 Organizational fields

The focal argument of NIT is a cultural one: Organizations do not exist in a vacuum but alongside other organizations. Through mutual exchange these organizations create shared meanings, beliefs, norms – ergo, culture. The idea of shared meanings, however, evokes the question: shared by whom? In this section I introduce the concept of an organizational field as the macro social structure in which to study the creation and influence of institutions. I provide an overview on the evolution of these field concepts and eventually determine which elements are useful to study the emergence of open data.

The concept of a field is grounded in the canonical sociological literature. French sociologist Pierre Bourdieu (1977, 1984) popularized the idea that the social action of an individual is shaped by its social relations. According to Bourdieu, a field is the social structure in which agents and their social positions are situated. This idea of relationships as the constituting factor for an actor's every-day reality was quickly transferred to the study of organizations. DiMaggio and Powell (1983, p. 148) initially defined the organizational field as "those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products." For the study of organizational openness, this concept has two major shortcomings. First, by drawing on areas of institutional life, it takes into focus only well established organizations, whose relations are already strongly structurated (Giddens, 1979, 1984). It thereby leaves little room for nascent organizations and their emerging or ambiguous relations. Furthermore this definition claims that all organizations that produce similar products and services share a field. I find this assumption rather problematic and would argue that similar products or services do not deterministically lead to a social relation between organizations. Scott later on closed these gaps and defines organizational field as a "community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field." (1995, p. 56) Scott thereby defines field constituting social relations through frequency and fatefulness of interaction. He also claims that organizations in a field share a certain worldview, however he remains vague whether a worldview is shared when actors use the same symbols, signs and language or whether they have to agree on what they express to each other. The definition by DiMaggio and Powell is clearly designed to describe market-based groups of organizations. Scott broadens this scope and includes all actors that may create a coercive, normative or mimetic influence on an organization. In recent years scholars have expanded Scott's notion of frequent and fateful interaction, by beginning to take "space into account" (Sydow, 2002) and by paying attention to the geographical proximity of organizations and the temporal co-presence of their members. Davis and Greve (1997) for example show that the legitimacy of a practice varies depending on the geographic distance among managers and members of the board of director. Recent literature on field-configuring events (Hardy & Maguire, 2010; Lampel & Meyer, 2008; Schüssler, Rüling, & Wittneben, 2014) highlights the role of vis-a-vis interaction and temporal co-presence for the structuration of fields.

Starting in the late 1990, organizational scholars increasingly paid attention to agency, politics and change in organizational fields and redefined the criterion based on which the field of interest was delineated (DiMaggio, 1995; Hirsch & Lounsbury, 1997; Michael Lounsbury, Ventresca, & Hirsch, 2003). In homogeneity studies the field was constructed around organizations with a common technology, market, or meaning system in a very broad sense (DiMaggio, 1991; Fligstein, 1985; Greenwood, Hinings, & Suddaby, 2002). In particular, Hoffman (1999) fruitfully turned the idea of what makes a meaning system inside-out. In his study on corporate institutionalism in the US he introduced the concept of organizational fields that form "around *issues* that bring together various field constituents with disparate purposes." (Hoffman, 1999, p. 352, emphasis added) Through the introduction of such issue fields, organizational fields moved from a group of relatively equal organizations competing against each other, to "arenas of power relations" (Brint & Karabel, 1989, p. 355) in which actors

with disparate goals and resources engage in conflict and contestation over the definition of issues and the form of institutions (Hoffman, 1999).

Building on these notions Fligstein and McAdam have taken stock of the comprehensive literature on organizational fields and social movement studies and propose to subsume both under the idea of collective strategic action that takes place in "strategic action fields" (2011, p. 2). The authors define strategic action fields as "socially constructed arenas within which actors with varying resource endowments vie for advantage." Membership in those fields depends more on "standing" than on objective criteria. More explicit than with issue fields, membership in strategic action fields required the reciprocal cognition of actors; mere interest in an issue is not enough. For example, in the realm of multinational climate conferences described by Schüssler and colleagues (2014), many organizations around the world identify with the issue of climate change, yet only those parties that get recognized by the focal actors in the field – the conference organizers – can participate in meaningful and potentially field-configuring strategic action. Fligstein and McAdam discuss the question how processes of institutional change are initiated and introduce the idea of the broader field environment. They argue that a strategic action field is embedded in many other fields and that "a significant change in any given strategic action field is like a stone thrown in a still pond, sending ripples outward to all proximate fields." (Fligstein & McAdam, 2011, p. 8 ff.) Fields, they argue, can be adjacent in the horizontal as well as the vertical dimension, providing different starting points for potential institutional change (e.g., the introduction of open data).

Within strategic action fields Fligstein and McAdam sort actors in two general groups depending on their position towards the status quo: incumbents and challengers. They describe incumbents as those actors who "wield disproportionate influence within a field and whose interests and views tend to be heavily reflected in the dominant organization of the strategic action field." Hereby it is important to differentiate between the particular and day-to-day interests of actors and the general more fundamental and long-standing interests of actor groups. Again in the example of climate conferences, large industrial states might vary in their day-to-day interest in smaller issues, but all share more fundamental interests compared to, e.g., environmental NGOs protesting in the streets. Opposed to the incumbents are the challengers, which "occupy less privileged niches within the field and ordinarily wield little influence over its operation." (Fligstein & McAdam, 2011, p. 6) What ties them to incumbents, however, is their alternative vision of the field and their position in it[14]. Challengers might not necessarily demand open revolt and press for aggressive conflict, but might very well "conform to the prevailing order" most of the time, "taking what the system gives them and awaiting new opportunities to challenge the structure and logic of the system." (Fligstein & McAdam, 2011, p. 6) These concepts prove helpful when describing the phenomenon of open data: The struggle for openness is performed within strategic action fields that group around the issue of

[14] This claim seems intuitive on first sight, but is contrasted by diverging empirical findings in recent years. One famous example for this is the transnational Occupy movement (Halvorsen, 2012), which expressed a general discontent with the status quo without explicitly formulating an alternative vision (Tufekci, 2014). In the case of the famous hacker collective anonymous, the group effectively operates as a challenger for various incumbents, but due to it rhizomatic structure (Deleuze & Guattari, 1988; Weiskopf, 2002) and fluid organizationality (Dobusch & Schoeneborn, 2015) does not articulate one clear vision.

data sets held by public organizations. Members of the field are all organizations that generate and hold these data sets (incumbents), as well as all other organizations that have an interest in these data sets, and that achieve to make themselves heard (challengers).

3.3 Agency and (distributed) institutional work

Why do some structures and practices become legitimized whilst others do not? Who is able to achieve successful legitimation? Many scholars have pursued these questions in their studies on agency and institutional change. Most broadly Strang and Sine (2002) differentiate between naturalistic and agent-based accounts of institutional change. In naturalistic accounts, they argue, new institutions develop through rather undirected collective sensemaking. Agent-based accounts try to identify one or several focal actors, which are able to deliberately alter the institutional arrangement due to their powerful position in the field. The ability to successfully alter an institutional arrangement (e.g., in my case defining the legitimate forms of sharing information) is what I understand as an actor's agency (Emirbayer & Mische, 1998). Most of the literature in organizational institutionalism has followed the agent-based perspective. In the remainder of this chapter I review a selection of these accounts and eventually delve into the more naturalistic concept of institutional work as a "third way" between completely emergent and overly simplistic agent-based accounts, which I find particularly fruitful for the analysis of openness as an institution.

Introduced by Eisenstadt (1980), DiMaggio (1988) popularized the "institutional entrepreneur" as a type of actor who – qua its position in the social field – is able to alter the institutional arrangement. In addition to Bourdieu's (1984) notion of the field, the concept is rooted in Schumpeter's (1911) description of the entrepreneur who performs "creative destruction" and subsequent recombination of economic arrangements. Transferred to social fields, this destruction and recombination is directed at institutional arrangements (Maguire, Hardy, & Lawrence, 2004). To explain why some individual actors can realize the agency to actually reformulate the rules of the game, authors like Julie Battilana (2006) have pointed towards the actor's social positions, expressed through the different forms of Bourdieuian capital (Bourdieu, 1977, 1984). More broadly, organizational researchers within this "actor-centered institutionalism" (Mayntz, 1999, 2009) have focused their analyses on the interests and goals of collective actors, the norms that demand or prohibit certain strategic behavior and the cognitive frames, which determine which actions are even perceived as potential alternatives (Mayntz & Scharpf, 1995).

Institutional entrepreneurship, as an Ayn Randian concept of "hypermuscular" change agents (Lawrence et al., 2009, p. 1), has attracted great popularity and culminated in several special issues in leading journals of organizational analysis (e.g., Dacin, Goodstein, & Scott, 2002; Garud, Hardy, & Maguire, 2007)[15]. After these and countless other publications on the heroic institutional entrepreneur have stretched the boundaries of believability of individually agency, some scholars decided to refocus their attention to more nuanced studies of institutional change.

[15] For a comprehensive review of studies on institutional entrepreneurship I can refer to the review by Battilana, Leca and Boxenbaum (2009).

These efforts have since then been subsumed under the umbrella term of institutional work. The term already appeared in earlier essays (e.g., DiMaggio & Zucker, 1988), but became popular through a book chapter in the *SAGE Handbook of Organization Studies*. In their chapter, Tom Lawrence and Roy Suddaby (2006, p. 216) vaguely define institutional work as the "broad category of purposive action aimed at creating, maintaining and disrupting institutions", but highlight that in contrast to studies on institutional entrepreneurship, the concept shall foremost capture the subtle, unglamorous and incremental aspects of these processes[16]. Lawrence and Suddaby further explicitly ground institutional work in the sociology of practice (Bourdieu, 1977, 1980; Giddens, 1984) and existing practice theories in organizational analysis (Orlikowski, 2000; Pentland, 1992; Whittington, 2003). By paying attention to the "situated actions of individuals and groups as they cope with and attempt to respond to the demands of their everyday lives" (2006, p. 218) they hope that scholars become more alert to the micro-foundations of macro-level institutional change. A great example for this level-spanning approach to institutions is the work of Dacin, Munir and Tracey (2010) who show how the interplay of several dining rituals at the University of Cambridge help maintaining the class awareness and division in England.

Lawrence and Suddaby (2006) reviewed 15 years of NIT literature from three leading journals and identified general practices that actors perform to alter institutional arrangements. In many of these papers authors have focused on quite specific practices and illustrated their contribution to institutional stability and change. In this dissertation I am interested in the body of different practices and their interplay that led to the institutionalization of openness. I therefore briefly introduce this catalogue of practice before discussing other dynamics of institutional work. Whilst some of the practices (in Table 1) are relatively universal, others seem to target specific pillars of institutions. When actors engage in advocacy work, they deliberately engage with political and regulatory actors in order to modify formal regulatory frameworks (Elsbach & Sutton, 1992; Russo, 2001). Advocacy practices are likely to be at work in the struggle for organizational openness, as many forms of information exchange between organizations and outsiders underlie formal regulation. To strengthen or change the normative pillar of an institution, actors can redefine the connection between certain practices and their moral and cultural foundations or try to establish new inter-organizational networks that ensure normative sanctioning for a certain behavior (Lawrence et al., 2002; Zilber, 2002). In the case of openness it is likely that actors try to link practices of openness to legitimizing principles of organizations, like their economic viability (for for-profit organizations) or their contribution to the public interest (for public organizations). Actors that engage in theorizing or educating, deliberately influence the deeply rooted templates of other actors by affecting the content and context of their socialization (Kitchener, 2002; Lounsbury, 2001). When it comes to practices of information exchange it appears a promising route for institutional change agents to incorporate the principle of openness to the

[16] Möllering (2011, p. 464) notes that "with a certain irony", by re-using the term institutional work, these authors pursue the institutionalization of the concept itself. In this regard institutional work is a highly performative concept. Every time a scholar uses the concept to describe some kind of institutionalization practice, this act in itself helps to institutionalize the concept of institutional work (see also Boxenbaum & Strandgaard-Pedersen, 2009). The institutionalization of institutional work has eventually turned out quite successful and cumulated in an edited volume (Lawrence, Suddaby, & Leca, 2009), as well as a special issue in Organization Studies (Lawrence, Leca, & Zilber, 2013).

curricula of professional education[17]. When performing mimicry, actors associate new practices with existing sets of taken-for-granted practices in order to ease the adoption (Hargadon & Douglas, 2001; Jones, 2001). For open data I therefore assume that actors try to liken the sharing of data sets to other forms of information sharing, e.g., press material or other forms of corporate communication. Inspiring insights for these practices can also be found in the literature on comparison and commensuration within the field of science and technology studies, which shows how social relations and isomorphic pressures are created through technologies of comparability (e.g., Espeland & Sauder, 2007; Law & Mol, 2002; Pollock & D'Adderio, 2012).

Table 1: Practices of institutional work[18]

Forms of institutional work	**Definition**	**Key reference for empirical examples**
Advocacy	The mobilization of political and regulatory support through direct and deliberate techniques of social suasion	Elsbach and Sutton (1992); Galvin (2002)
Defining	The construction of rule systems that confer status or identity, define boundaries of membership or create status hierarchies within a field	Fox-Wolfgramm et al. (1998)
Vesting	The creation of rule structures that confer property rights	Russo (2001)
Constructing identities	Defining the relationship between an actor and the field in which that actor operates	Lounsbury (2001); Oakes et al. (1998)
Changing normative associations	Re-making the connections between sets of practices and the moral and cultural foundations for those practices	Townley (1997); Zilber (2002)
Constructing normative networks	Constructing of inter-organizational connections through which practices become normatively sanctioned and which form the relevant peer group with respect to compliance, monitoring, and evaluation	Lawrence et al. (2002) Orsato et al. (2002)
Mimicry	Associating new practices with existing sets of taken-for-granted practices, technologies, and rules in order to ease adoption	Hargadon and Douglas (2001); Jones (2001)
Theorizing	The development and specification of abstract categories and the elaboration of chains of cause and effect	Kitchener (2002); Orsato et al. (2002)
Educating	The educating of actors in skills and knowledge necessary to support the new institution	Lounsbury (2001); Woywode (2002)

The research agenda around institutional work sensitizes us for the fuzzy, ambiguous and distributed process in which institutional change can happen. Some scholars within this "third-wave institutionalism" (Whittle, Suhomlinova, & Mueller, 2011) have already looked at institutional change as a process of distributed agency. Distributed agency is hereby understood as the entirety of actions through which several actors contribute to an institutional change in coordinated and uncoordinated ways (Lawrence, Suddaby, & Leca, 2011). The distributed aspects of organizational phenomena have previously been highlighted in works on distributed cognition (Hutchins, 2000), or distributed framing (Hardie & Mackenzie, 2007). In their study on distributed entrepreneurial agency, Garud and Karnøe (2003, p. 277) focus on the

[17] By writing this dissertation I thereby inevitably perform institutional work towards organizational openness, as I (hopefully) stimulate future discussions about the concept within the education of business and management students. Although I refrain from judging the value or merit of openness itself (the realm of morale, not epistemology) I create a connection between openness and organizations, a template, that did not exist beforehand.

[18] Adapted from Lawrence and Suddaby (2006).

path from an idea to a final product on the market and find that "skills and resources [...] have to be mobilized by drawing upon the generative impulses of actors from multiple domains." Even in non-distributed forms of entrepreneurial agency the outcome oftentimes deviates from the initial idea. As Garud and Karnøe show, this effect might even be amplified when multiple actors come together; however, this distribution might at the same time increase the likelihood for success of the entire endeavor.

In regards to the institutional realm, some authors have studied distributed agency in terms of market making (Möllering, 2010), in the process of intra-organizational responses to institutional change (Whittle et al., 2011), or recently in controversial innovation that transgresses established codes (Delacour & Leca, forthcoming). Quack (2007) has studied distributed agency in the process of transnational law making. She describes how in this widely uncharted field, the means-end relations of individual action are opaque. This makes it difficult for focal actors to intentionally influence rule-systems in ways that favour their own position – a precondition for much of the traditional literature on institutional entrepreneurship. Quack divides institutional work into two horizons of action. In the practical horizon, actors influence new transnational laws when they engage in ad hoc professional problem-solving, for example when they "creatively apply ambivalent legal rules to solve their clients' problems." (Quack, 2007, p. 656) In conditions of unclear means-end relations – as given in the field of transnational law – these acts of ad hoc professional problem-solving may affect or influence institutional structures while being associated with some other intentions (Lawrence, 1999). Thereby the day-to-day practical problem solving can contribute unintentionally to the creation of new institutional arrangements. In the political horizon actors "engage in deliberate strategies aimed to shape and modify the institutional rules under which they operate in their everyday problem-solving." (Quack, 2007, p. 647) For the case of transnational law making, Quack illustrates how law firms deliberately engage in lobby work towards their peers and governmental bodies to create new legally binding regulations. Through this kind of political intervention legal professionals engage in deliberate and intentional creation of new institutions. As Quack concludes, these two forms of institutional work reciprocally support each other and it is likely that practices from one actor in one horizon have cross-effects on the same or the other horizon (see also Holm, 1995).

Looking at the preconditions for distributedness and cross-effects between different forms of institutional work, Djelic and Quack (2003, p. 309) find that institutionalization processes in emerging and opportunity hazy fields (Dorado, 2005) are potentially complex and hard to control, as small and gradually accumulating variations of practices with incidental or unintended results can affect the developing institution significantly. Carruthers and Halliday (1998) furthermore have made the discovery that in contexts with a diversity of actors and partially overlapping institutional rules, emergent rules can be picked up by more powerful actors to use them in pursuing more deliberate institutional strategies. This also resonates with what Möllering (2010) finds when he describes a process of distributed institutional agency in which some actors have a more central and others a more peripheral position in the field.

The review of actors and agency in institutional creation makes it necessary to sharpen the classification in naturalistic and agent based accounts (Strang & Sine, 2002). Instead of a dichotomy I find it more helpful to think of institutional change as a continuum along three categories: (1) heroic, (2) distributed, and (3) emergent processes. Within this typology, change is characterized based on the relation between actors, their interests in institutional change and the institution that results from the process. In heroic accounts of institutional change, the created institution largely reflects the intention of one or a few likeminded actors. This type of change has been narrated in breadth as stories of institutional entrepreneurship (e.g., Hardy & Maguire, 2008; Lawrence & Phillips, 2004; Levy & Scully, 2007; Munir & Phillips, 2005). In accounts of distributed institutionalization, the newly created institution has different properties that can be associated with different actors who have been involved in the process. Whereby none of the actors was able to incorporate all of its interests in the final institution (this would be a heroic ability in my understanding) all of the institution's properties can be traced back to interests of involved actors. Various stories of institutional work have tried to capture and display this type of change (e.g., Currie, Lockett, Finn, Martin, & Waring, 2012; Currie, Lockett, & Suhomlinova, 2009; Lounsbury & Crumley, 2007). The third type of change is the theoretically most interesting, yet empirically most difficult one to capture and display. The issues of emergence is debated within and intersects various academic disciplines, including practice-oriented studies of management and organizations (Dougherty, 2016). The philosopher and physicist Mario Bunge (2003) has argued that any system consists of multiple integrated elements. Systems can therefore have properties, which they "inherit" from their elements. However they can also have new properties, which none of their elements has, and which result from the specific interaction of elements in the system. These are what Bunge calls "emergent properties". The systems we are looking at are institutions and at this point we can argue that the properties of institutions are the rules, norms and cognitive templates inscribed into them. Emergent properties of institutions are therefore rules norms or templates that do not directly correspond to the interests of any of the involved actors but which have developed as an outcome of the institutionalization struggle. As an example we can imagine an institutionalization process in which the actors A and B cannot agree whether to inscribe rule 'a' or 'b' to a new institution. Eventually they agree on rule 'c' as a compromise, although there was no actor C that brought this rule "to the table" initially. Recently scholars have called for an increased attention to cases of emergence in institutional work (Lawrence et al., 2011), yet little results have been presented. The institutionalization studies that probably match my understanding of emergence the most are ones on unintended consequences (Khan, Munir, & Willmott, 2007; Reinecke, Manning, & Hagen, 2012) and non-linear change (Blackler & Regan, 2006; Meyer, Gaba, & Colwell, 2005).

3.4 Research question

Contemporary descriptions of the organized world increasingly focus on aspects of openness within and between organizations. As I have outlines, questions of openness cover many of the focal areas of organizations, from membership, over decisions, to information, yet openness is a concept in need of a theory. With this dissertation I want to contribute to the overarching research program:

Why and how do organizations become more open?

This research program tackles questions of organizational boundaries in general, but also takes into perspective empirical phenomena like shifts in the form and relation between openness and closedness. Barbara Geddes (2003) has coined the well-known research advice to work on "little answers for big questions". She argues that on the one hand big questions are needed to demonstrate the relevance of ones work, and on the other hand that small answers are needed to demonstrate ones rigor. By carving out individual mechanisms one after the other, piecing together a bigger answer over time and across research projects. The main research question I intend to answer in this study thus reads as follows:

How do actors institutionalize organizational openness on the field-level?

According to Mayntz (2009) we can broadly differentiate between theoretical, normative and practical research questions, which either want to explain, enlighten the recipients about, or change a social fact. My main interest with this research is to produce a value-free description of organizational openness[19]. However, the public discourse on organizational openness and information sharing oftentimes presents and celebrates the phenomenon as a teleology that has finally been enabled through new forms of information technology. Representative for this perspective on openness are famous Silicon Valley slogans like the one that "information wants to be free" (initially coined by Steward Brand, popularized by William Barlow). Against the backdrop of this affirmative bias, my research might therefore also be interpreted as an enlightening piece of work, debunking a "law of nature" as a social construction.

[19] Whether this is generally possible or desirable has already been discussed in greater length, one of the most prominent debates being that between Habermas and Luhmann (1971).

4. Paradigm: Interpretative process research

Every examination of the social is inevitably based on ontological and epistemological axioms. Certain configurations of axioms have become more widely accepted than others. We can call them research paradigms. The question, which research paradigm to follow, is a "generally undecidable" (Foerster, 1993) one[20]. As there is no right or wrong to this decision, we have to make a choice based purely on our taste. In this chapter I thus elaborate on my taste, first regarding my ontological standpoint of social reality as process and subsequently with regards to my interpretative epistemological standpoint.

4.1 Ontology: The social world as process

The metaphor that "into the same river no man can step twice" (e.g., Bateson, 1972) oftentimes serves as a starting point for scholars who express their belief that the world, whether social or natural, is not to be understood as a stable state, but as being in constant flux[21]. Even things that appear stable to us would therefore just gain this robustness through stable and recurring processes (Mayntz, 2009). The metaphor is ascribed to the antique dispute between the pre-Socratic philosophers Democritus and Heraclitus. Democritus, as a proponent of the atomic theory of the universe, believed the world to consist of stable material substance. In cases of change, the substance does not change in itself, yet its relation to other substances is changed. For his antagonist Heraclitus however, the fundamental principle of the world was not stability but process: "The river is not an *object,* but a continuing flow; the sun is not a *thing,* but an enduring fire." (quoted after Rescher, 2000, p. 5) In pre-Socratic Greece Heraclitus was living the life of an outsider and so for a long time did his ontological ideas. However, since the late 19th century, his idea of everything being in flow has reappeared in the works of pragmatists and process philosophers. In the early 20th century Alfred North Whitehead picked up the Heraclitean notion that nature is a process rather than a configuration of atomic substance. For Whitehead, this process consists of events, which he called "actual occasions" or "actual entities" (Rescher, 1996, p. 20)[22]. The contemporary process theorist Nicolas Rescher argues that a substance-ontology in the sense of Democritus leaves us with the open question for coordination between the things and objects that make the world: "How do all hydrogen atoms learn how to behave like hydrogen atoms?" (2000, p. 11) Understanding nature in contrast as "the substantiation of a family of operative principles" (2000:11) provides a solution for this problem:

> "Modern physics teaches us that at the level of the very small there are no ongoing *things* (substances, objects) at all in nature – no particulars with a continuing descriptive identity of their own. There are only patterns of process

[20] Heinz von Foerster differentiates between generally decidable questions and generally undecidable questions. He argues that the former ones are in a way no real questions, as the way in which they are posed already incorporates the answer or at least the corridor in which to look for it (Seidl & Becker, 2006). He gives the example that, the question about one's age is generally decidable, the question about the age of the universe is generally undecidable; its answer is to search in the realm of metaphysics (Gente, Paris, Weinmann, & Foerster, 2002).

[21] Yet again!

[22] Bertrand Russell, a student of Whitehead, continued his work on process philosophy, and influenced scholars like Ludwig Wittgenstein or Gregory Bateson, who in turn have been inspirational to generations of organizational scholars (Monk, 1990).

> that exhibit stabilities. (The orbit-jump of an 'electron' is not the mysterious transit of a well-defined physical object at all.) Only those stability waves of continuous process provide for any sort of continuity of existence. The development of stable 'things' begins at the subsubmicroscopic level with a buzzing proliferation of 'events' that have little if any fixed nature in themselves but only exist in reciprocal interaction with each other, and which have no stable characteristics in and of themselves but only come to exhibit spatiotemporally stable aspects at the level of statistical aggregates." (Rescher, 2000, p. 12)

One has to be careful when translating ontological principles from the inanimate world to the one of social action, as it might lead to overly simplistic explanations of human conduct[23]. A process-ontology of the social world first and foremost needs to answer how the events that make the process are understood. Within my research paradigm, I understand these events against the backdrop of practice theory.

In recent years, practice theories have developed as a lager trend in social science in general (Miettinen, Samra-Fredericks, & Yanow, 2009; Schatzki, Knorr-Cetina, & Savigny, 2001) and as a new "vista" for the study of organizations in particular (Nicolini, 2012, p. 2). For many authors, and for me as well, they are tempting as they provide an alternative to the traditional form of describing the social world in terms of irreducible dualisms between actor/system, or agency/structure (Miettinen et al., 2009; Nicolini, 2012). Reckwitz (2002) describes practice theory as an alternative to other forms of social theories, like culturalism, mentalism, textualism or intersubjectivism, in which practices are the "place of the social" (Reckwitz, 2002, p. 246); within the aforementioned alternatives, the social is located in mental systems, textual artifacts or human communication. Reckwitz defines practices as

> "routinized [...] behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge." (2002, p. 249)[24]

Reckwitz thereby argues that within a practice lens the relative stability of social life cannot be studied at one point in time, but becomes visible when observing the relative stability of "doings and sayings" over time (Schatzki et al., 2001). To understand fields of organizations as process, I therefore need to pay particular attention to routinized action patterns in and between organizations (Feldman & Pentland, 2003; Pentland & Feldman, 2005) and their context of production, reproduction and modification (Feldman & Orlikowski, 2011). Deciding on the form in which this attention is paid, leads to the second axiomatic decision within my research paradigm.

[23] In the 1970s, Karl Weick has already warned advocates of thermodynamics-inspired general system theory to "be suspicious of thermostats" (1974, p. 360). This statement however leaves us with the metaphysical question where to draw the boundary between apparently inanimate subatomic processes and apparently animate human behavior.

[24] Any social science scholar is in one way or the other concerned with the capitalized "Practice" meaning the whole of human action. The practice scholars concern with the small-p "practice" can therefore be best understood as a specific lens through which to study Practice.

4.2 Epistemology: Knowledge through interpretation

Once we have developed a position on what the social world is "made of", we begin to wonder how we are able to describe and eventually generate new knowledge about it. In the second half of the 20th century a particularly fruitful battle waged about questions of epistemology within the philosophy of science. The great influence of this debate on contemporary social science makes it worth retracing in broad strokes.

In his *The Logic of Scientific Discovery* Karl Popper (1934) addressed the intricate problem of induction: How can we generalize on the properties of a class or a sequence of events when our judgment can only be based on a limited number of observations? – A problem oftentimes exemplified by the metaphorical black swan. Within his philosophy of critical rationalism Popper argued in favor of fallibilism, according to which scientific knowledge can only be obtained through the development of testable hypotheses, their testing, and eventual rejection. Within fallibilism, hypotheses can only be rejected, never confirmed. Hypotheses that hold up to empirical testing are in consequence not objectively true, but at least not objectively false and thereby the closest we can get to an objective truth. Slightly abbreviated Popper's critical rationalism is hence based on the belief that an objective reality exists, yet points out our human limitations of ever discovering it[25].

With *The Structure of Scientific Revolutions* Thomas Kuhn (1962) presented one of the most fruitful rejoinders to Poppers framework. By introducing the idea of "scientific paradigms", Kuhn challenged Popper's idea of a linear and cumulative development of scientific knowledge. Based on historical examples Kuhn argues that rather than in a linear fashion, science has developed in a pattern of punctuated equilibriums. In times in which more and more scientists claim the established paradigm to be in "crisis", new paradigms eventually manage to replace incumbent ones. These new paradigms might not only contradict older ones, but open up new approaches to knowledge creation that would have been considered illegitimate in previous times. The search for scientific truth, he argues, is thereby not based on the universal principle of falsification, but relativistic and pre-structured by scientific communities at given points in time. With his concepts of scientific paradigms and their replacement through phases of scientific revolution Kuhn did not contradict Popper's epistemological ideal as such, but rather constrained it to the boundaries of single scientific paradigms. Where Popper developed an instructive theory on how scientific knowledge should be obtained, Kuhn outlined a historical-naturalistic account of how scientific knowledge has been obtained over the last few centuries. Whether one agrees with Kuhn or not, his work has had significant influence on the rise of alternative epistemological paradigm within and across academic disciplines.

[25] In exile during Second World War, Popper transferred his epistemological thoughts into a socio-political program. In *The Open Society and Its Enemies* Popper (1945) describes closed societies as those, which are founded on collectivism and a trust in ultimate, unquestionable truth. At the time of writing, he directly addressed socialist as well as fascist regimes around the world. As an open and desirable society on the other hand he described a liberal democracy that allows its guiding principles to be tested and eventually modified, one that allows its leaders to be "falsified" through democratic elections. In a widely unnoticed study by Armbrüster and Gebert (2002) have transferred Popper's socio-political ideas on open and closed societies to management thinking. They argue that Poppers frame of reference allows evaluating whether existing management scholarship potentially reflects closed patterns of thinking and hence might propagate tenets of the closed society. I come back to their study in Chapter 7.3.

With his contribution *Against Method* Paul Feyerabend (1975) eventually built upon but went far beyond Kuhn. Feyerabend strongly objects Popper's proposition of a single prescriptive scientific method and argues for what he coined "epistemological anarchism". Like Kuhn, Feyerabend based his argument on historical accounts of revolutionary scientific discoveries (e.g., the Copernican revolution) and carves out that none of his examples has followed the legitimate scientific methods of their time. Consequently, he comes to the conclusion that methodological monism eventually limits the activities of scientists and that scientific progress is most likely if – on epistemological grounds – "anything goes". Since its beginning, scientific research on organizations has been cross-fertilized by epistemological arguments from the debates within philosophy of science. Today, organization scholars are able to draw on a wide array of epistemologies and corresponding research methods, some of them commensurable, others less so.

For the study of process and practice in and around organizations, Van de Ven and Poole (2005) have reviewed different epistemologies and identified two categories: variance and interpretative approaches[26]. Scholars working within a variance epistemology observe organizational entities according to specific dimensions and study differences that might occur over time. Variance scholars usually regard change as a dependent variable, which is explained by the statistical impact of one or more independent variables (Mohr, 1982). In an exemplary study Schoonhoven and colleagues (1990) have studied the time span in which US semiconductor startups ship their first products and identified a number of significant predictors (e.g., amount of monthly expenditures, number of competitors in the marketplace). Scholars who follow an interpretative epistemology are interested in the sequence of certain events in order to explain change (Poole, Ven, Dooley, & Holmes, 2000). Interpretative scholars usually model the change process as a narration, which should be guided by theoretical concepts, but can only insufficiently be reduced to variables. Jarzabkowski (2008) for example has studied the strategy-making processes in three universities over a time period of seven years. Instead of focusing on the final strategy as an outcome of these three processes, she carved out the structurationist pattern of shaping strategy first in the action realm and subsequently in the institutional realm.

Both epistemological approaches have their blind spots: Variance methodologies provide good explanations for continuous change driven by deterministic causation, yet the ability to unpack the social mechanisms of these causal relationships is limited (e.g., to multi-level research designs). For variance scholars, the organizational (change) processes remain a black box for which they are able to predict the output to a respective input. Interpretative scholars are able to unpack the black box and to learn about the underlying mechanisms through phenomenological, ethnographical, hermeneutical, or grounded theory inquiry (Merriam, 2009). These methodologies however lack the intersubjectivity of variance approaches. Especially when it comes to process studies, as a relatively new sub-field of interpretative studies, scholars struggle to make their process of empirical analysis accessibly for scrutiny through other researchers.

[26] As a rejoinder to Van den Ven and Poole, Hernes and Weick (2007) have drawn another distinction, that of exogenous and endogenous views of organizations as process. Although I acknowledge the precision of their argument, it seems less adept to inform my empirical research design.

For several reasons I decided to adopt an interpretative epistemology to match my process ontology. First and foremost I am interested in the complexity of causal social mechanisms (Mayntz, 2002) that drive organizational openness[27]. I am less interested in comparing the influence of one factor over another, but want to understand how actors negotiate and implement openness "on the street-level". Another rational to adopt the interpretative mode of inquiry is that in recent years some of the shortcomings of this paradigm have been complemented by features from variance research. Through tools like the inter-coder reliability (Neuendorf, 2001), or entire methodological concepts like objective hermeneutics (Oevermann, 1973) interpretative researchers increasingly try to achieve research validity as found in variance-based methods (more on this in Chapter 5.4). Finally, the knowledge obtained through interpretative approaches is not only complementary to knowledge from more positivistic epistemologies, but also keeps up with the promise of generalizability and theory building so popular in management and organization research (cf. Rosenzweig, 1994): As opposed to historical scholars with a focus on detail and singularity, interpretative organization scholars strive for generality and theory building, as shown in the comparative case study of Jarzabkowski (2008) described above. Depending on their level of abstraction, narrative methods are able to provide versatile generalization that can be adapted to other cases that differ in tempo or time span (Poole et al., 2000).

[27] With a hat tip to Wittgenstein, Mayntz (2009) argues that as social scientists we can only interpret things that "are the case". She thereby rejects the notion of radical constructivism (as well as classical positivism, which would need no hermeneutic interpretation) and proposes that interpretative social scientists should assume the existence of a "real" world, but accept that each observer only has a very limited way to perceive and understand it. I follow her proposition and assume that there is *one* way in which certain actors behaved, and that it is up to me to carve this out as best as possible.

5. Research design and methods

It is not without a certain irony that researchers who conduct interpretative process studies on the one hand understand the social world as flux, but on the other hand need to reify their thoughts in static words and diagrams (Van de Ven & Poole, 2005)[28]. In this chapter I – nonetheless – describe the methodology I use to grasp, understand, and display the process in which organizations have adopted practices of openness.

5.1 Research design and case selection

Research design

Little is known about why and how organizations become more open in recent years, even less about legitimacy-centered explanations. To contribute to this research program I set out to answer the research question: *How do actors institutionalize organizational openness on the field-level?* To answer this question I chose a qualitative comparative case study design. Within this design, researchers explore "a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection." (Creswell, 2007, p. 74) Yin (2008) emphasizes that case study research for him relates to *contemporary* phenomena within a *real-life context* and is therefore different from purely archival studies of such bounded systems (e.g., found in historical studies). To grasp as much of this real-life context as possible, case study research demands "data pluralism" (Baur, 2005, p. 268) and is open but not limited to observations, interviews, audiovisual material, documents, or artifacts. Although case studies are open to quantitative data as well, my interpretative paradigm favors qualitative methods of data collection and analysis. Van Maanen (1979, p. 520) likens the work of qualitative researchers to that of map makers: They know which territory they are interested in and delineate it from the world through temporal and spatial brackets. Afterward they describe the territory with a certain aspect in mind they want to highlight. Qualitative researchers want to find out how people make sense of the world, by understanding the different meanings they have constructed as an individual or collectively (Merriam, 2009, p. 13). Baur (2005) describes qualitative methods as open in contrast to closed quantitative ones. On the one hand, this means that there is no mutually agreed upon recipe on how to conduct qualitative research, but "[...] an array of interpretive techniques which seek to

[28] In the announcement for a 2016 EGOS conference workshop on process research, Hussenot and Franck (2016) argue that this problem of capturing the flow of process makes it difficult to publish this kind of work. However, in a less strict understanding of process, researchers already began to tackle this during the 1980 within the first wave of process research. The early decades of organization studies have been dominated by quantitative and a-temporal approaches. Examples are the decision-oriented research produced within the "Carnegie School" (e.g., Cohen, March, & Olsen, 1972) or studies on contingency theory (e.g., Woodward, 1965). With the foundation of the European Group of Organization Studies in 1973, researchers with diverse theoretical and methodological backgrounds found together to oppose the "hegemony of North American scholars" and the "glorification of quantitative analysis" (March, 2007, p. 10). Two decades later, organizational scholars look back on "a shift in organizational analysis towards the study of organizing as a process instead of organizations as entities." (Clegg, Hardy, & Nord, 1996, pp. xxi ff.) In the 1980 and 1990s, scholars of the "Warwick School" successfully advocated for a "historic turn" in organization studies (Kieser, 1994; McDonald, 1996). At the forefront of this turn were Andrew Pettigrew and Hugh Willmott, who since the early 1980s have developed, refined and tried to standardize a style of analysis in order to accredit for the importance of time, history, and process in developing theory of organizations (Pettigrew, 1997).

describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world." (Van Maanen, 1979, p. 520) On the other hand, this openness refers to the methods' inherent potential to give voice to societal groups, which due to macro-structural constraints have little opportunity to get heard otherwise (Bogdan & Biklen, 2007).

I decided to study not one but three cases. In the history of organization studies, there have been many influential analyses drawing only on a single case. A habitually cited example is Allison's (1971) study on the 1962 Cuban missile crisis. Single cases are without doubt able to fulfill explanatory and not just descriptive or exploratory function. Siggelkow however argues that only cases as revelatory as the proverbial "talking pig" are able to get the researcher through the "uphill battle to persuade their readers." (2007, p. 20) With the decision to conduct and compare three cases, I am able to carve out the most interesting and revealing aspects in each of them and hopefully attract the readers' attention not only by the individual cases, but by their comparison and connection as well[29]. Sampling for comparative case study research is distinctly different from large-N statistical sampling. Whilst large-N comparison does happen without deliberate selection (either population or random sample), small-N comparisons follow a theory-driven selection (Ebbinghaus, 2005), whereby the researcher deliberately picks cases that promise interesting results within themselves and when compared with other cases (Mahoney & Rueschemeyer, 2003)[30].

Case selection

Based on my review of existing literature on open data, I found that the phenomenon is not exclusively, but predominantly found with public sector organizations on all administrative levels (e.g., national, state, or municipal level). For theoretical and methodological reasons I decided to study open data initiatives in three "global cities". Urban sociologist Saskia Sassen (2001) coined the category of global cities, describing agglomerations, which are particularly connected through production and trade, financial markets, professional service firms, migration dynamics, and the flow and integration of information. Organizational scholar Barbara Czarniawska (2002, p. 2) has described global cities as "quintessential contemporary people producers" and "social laboratories" from which new organizational forms and practices spread to other places. I decided to study the emergence of open data practices in and around the public agencies that "run" these global cities. This brings methodological as well as practical advantages. Global cities have shown to be early adopters of open data what allows me to study the process of institutionalization in these cities relatively isolated from the isomorphic pressures exerted by other cities in the same country. On

[29] Different scholars recommend different numbers of cases: Ragin (2000) argues that for example 20 cases are too much for in-depth analysis yet too little for statistical significance, Eisenhardt (1989) recommends four to nine, Yin (2013) recommends three (see also Dyer & Wilkins, 1991).

[30] There are also studies somewhere on the border between single and multiple case studies. A famous example is Margaret Mead's (1928) study on the (sexual) behavior of young and adolescent girls in Samoa. Mead's study was motivated by the question whether the rebellious and problem-laden behavior of American girls throughout puberty has inevitable natural causes, or is influenced by the societal conditions they grow up in. Answering this question through a controlled experiment was technically and ethically impossible, hence Mead decided to study Samoa as a case in which girls grow up in a very different cultural environment than in the US. After presenting her findings, Mead tries to generalize and to build theory by comparing her findings from Samoa to the behavior of girls in the US. Hereby, she does not draw on a second ethnographic study, but somehow assumes that her readers are familiar with the struggles of young girls in Western countries.

practical grounds understanding the process of institutionalization in these large cities allows actors in smaller cities to use my findings at a point when the issue of open data has moved from the "social laboratory" (global cities) to the metaphorical "social market" (all other cities).

I decided to study the institutionalization of open data in New York City, London and Berlin. My selection of cases was informed by Yin's (2013) logic of "literal replication", which proposes to select cases that are most similar in the properties relevant to the research objectives. In order to maximize the robustness of my results I therefore decided to study global cities that are all embedded in Western democracies and home to a wide array of different organizational forms (business, research, advocacy). On pragmatic grounds my selection was constrained to cities where the official language is English or German to be able to collect all necessary data. I selected three cases in order to balance depth of the individual case studies with a number of cases sufficient for cross-case comparison and theory building. To further increase the generalizability of my results I did not choose cities from the same, but from different countries.

Most important for a study of institutional creation is to select cases in which an institution was – in fact – created. Institutions are hard to measure and there existence is best substantiated through a processual description of their creation. As Eisenhard (1989, p. 538) argues, small doses of quantitative data however can keep the researcher from getting misled by some "vivid, but false, impressions in qualitative data." I therefore analyzed the number of open data sets that have been published in each of the cities, as well as the number of city agencies that have contributed data sets. The results can be found in Figure 2, Figure 3, and Figure 4: Over the course of six years between late 2009 and late 2015 the number of open data sets in NYC grew from less than 200 to roughly 1300. In the same time the number of associated organizations grew from roughly 20 to 100. I found that over the course of five years from early 2010 to the end of 2015 the number of data sets in London grew from less than 100 to slightly more than 600. The number of contributing agencies rose from initially 20 to slightly less than 50. The Berlin open data portal started with 18 data sets from three agencies in fall 2011 and increased this number to 847 data sets from 61 agencies in late 2015.

Figure 2: Published data sets and involved agencies on *NYC Open Data*[31]

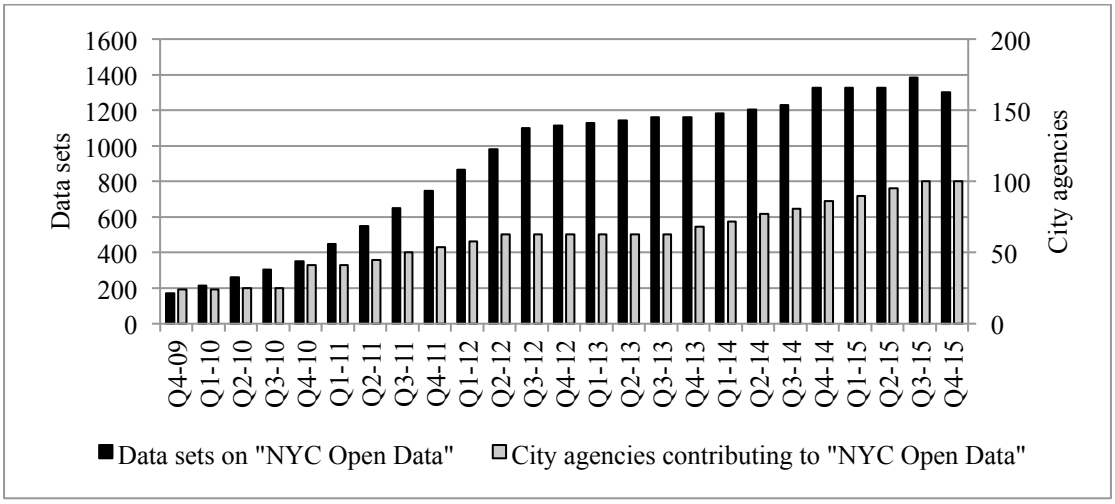
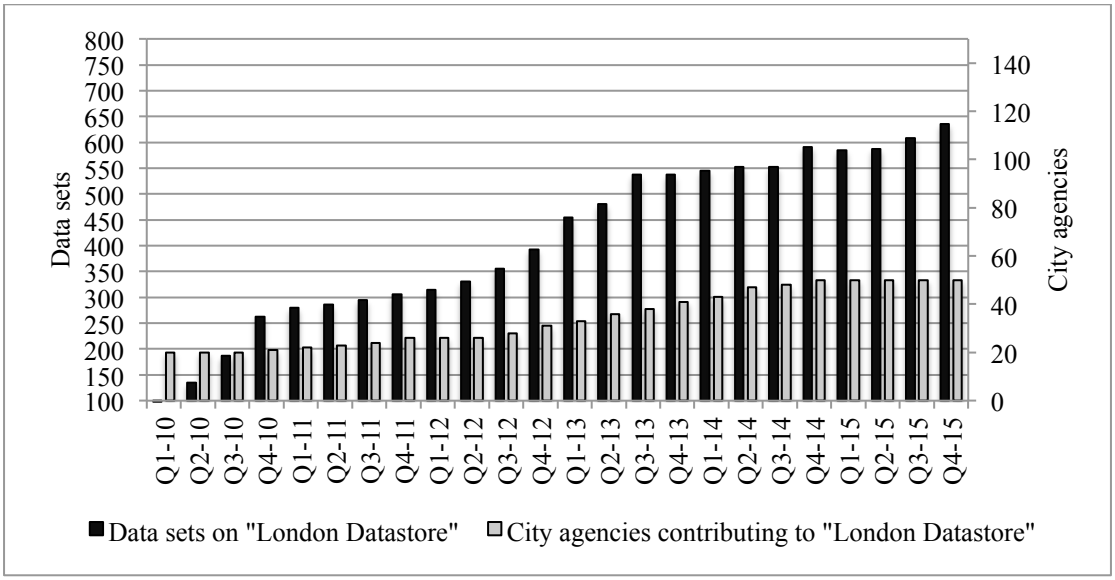


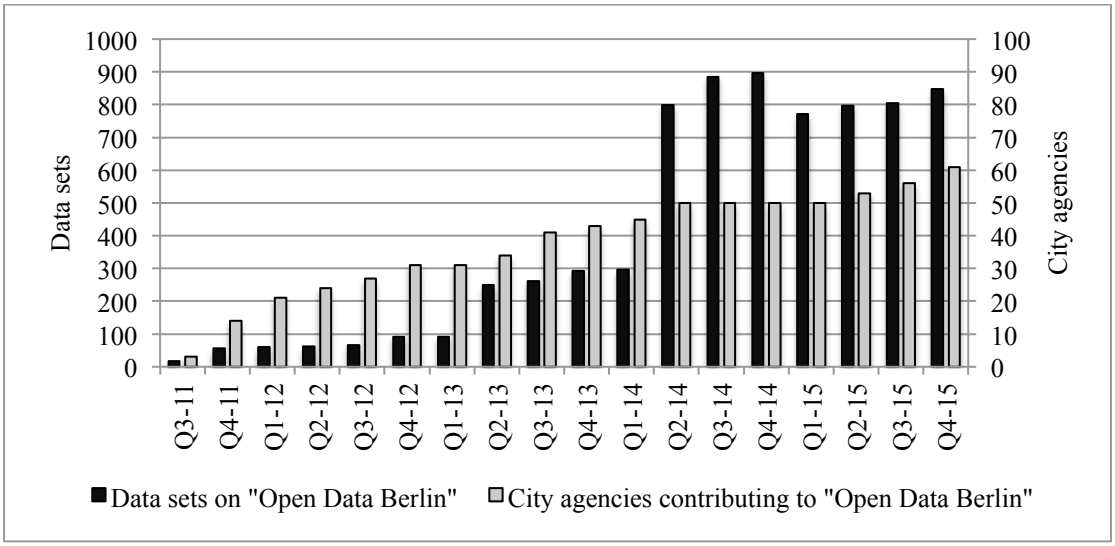
Figure 3: Published data sets and involved agencies on *London Datastore*[32]



[31] Source: https://nycopendata.socrata.com/ [Retrieved February 12th, 2016]. This figure has been assembled by visiting earlier versions of the open data portal through the Internet Archive (https://www.archive.org/).

[32] Source: http://data.london.gov.uk/ [Retrieved February 12th, 2016]. This figure has been assembled by visiting earlier versions of the open data portal through the Internet Archive (https://www.archive.org/).

Figure 4: Published data sets and involved agencies on *Open Data Berlin*[33]



5.2 Pluralistic data collection

My research question and case selection pose a methodological challenge: How can I, as a single researcher, track and trace the practices of institutionalization over time in an entire city? For each case, the number of public organizations and other organizations interested in city data widely exceeds the receptive capacity of a single researcher. As a solution I took a balancing approach (cf. Berthod, Grothe-Hammer, & Sydow, forthcoming) and combined well established methods for the study of field-level institutionalization (documents, interviews) with ethnographic methods from practice based approaches to institutions (e.g., Lok & Rond, 2013). Thereby I was able to capture the chain of critical events on the field-level and at the same time was able to zoom in on the most interesting and revealing practices. The comparison between cases eventually allows me to generalize on both dimensions. In my research, data triangulation was therefore not so much a procedural step in my data analysis, but a "way of life" that was inseparably intertwined with the process of data collection (Miles & Huberman, 1994, p. 267). When investigating a facet of one of my cases, I tried to find evidence through more than one data source, whether this source is from the same data type (e.g., two independent interviews) or different data types (e.g., an interview and a newspaper article). This pluralistic approach to data collection can sometimes lead to an overwhelming complexity when it comes to data analysis. Pettigrew warns the case study scholar about the "death by data asphyxiation", a feeling he fancifully likens to the swim in seemingly crystal-clear water that, once in, turns into opaque and viscous maple syrup (1990, p. 281). In the following section I describe how I organized and analyzed my data in order to avoid this sugary fate.

5.2.1 Documents

I used documents to gain retrospective information about a case and to understand the chain of critical events that eventually led to the field-wide adoption of open data. I

[33] Source: http://daten.berlin.de/ [Retrieved February 26th 2016] This figure has been assembled by visiting earlier versions of the open data portal through the Internet Archive (https://www.archive.org/).

also used them to confirm factual information derived from my other types of data. Mainly I consulted newspaper articles, blog posts, administrative documents and official studies. Before I contacted actors in each of the cities I did extensive search for administrative documents and newspaper articles related to the local open data process. I used these documents to develop a first timeline of events and the actors involved in them. I then reached out to these actors and used the timeline of events to guide my interviews. When the interviews revealed new events or themes, I went back to the document collection, read up on them, and updated the timeline and the list of events. Access to public documents like newspaper articles was generally easy to get through websites and archival searches (e.g., LexisNexis). These documents have the advantage that they are temporary stable, can also be accessed by other researchers at other times, and are authentic in a way that they do not origin in research situations but in the conduct of the actors' day-to-day activities (Yin, 2013). These properties make them particularly useful to form the solid "bones" of a case study, which can subsequently be used to attach the proverbial "meat". The access to internal documents of organizations was more difficult and I sometimes needed to negotiate it individually. In some cases of confidential documents I use their information as background knowledge without citing them directly, but tried to back up their content through other sources (see Patton, 2001, p. 293). All types of documents, whether confidential or public, have to be treated with care in regard to their context of creation. Mayring (2003) highlights the importance to critically reflect on the constitutive context of documents, under which circumstances they have been created, and for what purpose. In my cases I found this particularly important for the large number of semi-scientific studies on the benefits of open data, published by consultants and think tanks, and oftentimes commissioned by governments. These studies can themselves be studied as means for institutionalization (cf. "theorizing", Kitchener, 2002; Orsato, Hond, & Clegg, 2002). Table 2 provides an overview of the different documents that I used to inform my analysis.

Table 2: Case study database: Documents

Types of documents	**NYC**	**London**	**Berlin**
Media and blog articles	82	36	41
Laws, studies, administrative documents	11	15	18
Other (Tweets, slides, unofficial documents)	39	34	36
Σ	**132**	**85**	**95**

5.2.2 Interviews

I used interviews to learn more about the documented events that drove the institutionalization of open data, to learn about important but more covert events, and to explore the actors' mundane and routinized activities, which have not been recorded or written down elsewhere (Merriam, 2009; Patton, 2001). In many cases the descriptions and explanations revealed in my interviews differed from the public statements found in documents and therefore opened room for my own interpretation of this discrepancy. In all three cities I conducted semi-structured interviews (Merriam, 2009; Witzel, 2000). An interview guideline helped me interviewing several people in a systematic manner and with a comparable line of inquiry. At the same time I was able to keep the interview flexible in order to get the most relevant information out of the limited time (Patton, 2001). I used different guidelines depending on the type of actor that I was speaking to (challenger or incumbent). An

exemplary guideline can be found in Appendix B. Before each interview I took the appropriate guideline and added background facts about events and themes that I assumed the actor to have been involved with. I used different types of questions, but always tried to use open instead of closed ones. I usually started my interview with a question along the lines of "What is your personal history with open data?" to stimulate the narrative flow of my interview partner (Kühl, 2009) and to reduce the impact of ex-post rationalization (Schütze, 1983). The remainder of the interview consisted of some factual questions, but mainly on questions regarding experiences, opinions, or values. In my interviews I paid attention to the sequencing of questions (Patton, 2001). After the biographical entry-question I generally started out with non-controversial questions about very recent events. I then gradually tried to explore events within the process that date back further in the past. In some of the interviews I also used controversial questions (e.g., asking members of social movement organizations whether they feel co-opted by private sector companies). During my interviews I faced only a small number of slightly tense situations that generally emerged from these "devil's advocate questions" (Corbin & Strauss, 1990). In my interviews with city employees I was very interested in in-depth descriptions on how they handle data sets. However as handling data sets in modern-day organizations is a highly routinized task and interviewees would oftentimes spare the details out, I had to follow up on these questions quite insistently. At the end of the interview I gave the interviewees the opportunity to comment on issues that I missed and subsequently asked for other interview contacts. Besides this snowball sampling (Biernacki & Waldorf, 1981), I derived contacts from documents and (very successfully) through keyword searches on Twitter. Table 3 gives an overview of the interviews that I conducted in different types of organizations.

Table 3: Case study database: Interviews

Types of organizations	**NYC**	**London**	**Berlin**
City administration	3	3	3
Public service provider	2	1	2
City council	3	1	1
Advocacy organization	13	14	6
Private sector	3	3	2
Research institute / think tank	1	7	3
Other (e.g., federal institution, unaffiliated)	1	6	1
∑ of interviews (taped/untaped)	**26 (25/1)**	**35 (28/7)**	**18 (18/0)**
∑ Interview length in minutes	1232	1103	924
Ø Interview length in minutes	49	39	51
∑ of interviews in total (taped/untaped)		**79 (71/8)**	
∑ Interview length in minutes total		3259	
Ø Total interview length in minutes		45	

Most of the interviews were conducted face to face. Out of the taped interviews, only two (one in London and one in Berlin) were conducted through VoIP. In total I conducted 79 interviews with an average length of 45 minutes. In most cases I was allowed to record the interviews with a digital recorder that I placed visibly on the table between the interviewee and me. Albeit other researchers use mobile phone recorders, I got the impression that separate recording devices are regarded more

professional and thereby help to keep the interview on focus. All interviews have been given a unique identification code, by which they will be referenced in the remainder of this study. An explanation of the denotation logic can be found in Appendix C.

5.2.3 Organizational ethnography

My theoretical lens of institutional work is supposed to capture the duality of structure and agency (Giddens, 1984), and is concerned with the reciprocal relationship of situated practices and field-level institutions. Documents and some parts of the interviews helped me to learn about the institutions. To learn about the practices, I used other parts of the interviews, as well as an organizational ethnography conducted in each of the three cities. Since its revival in the late 1970s[34], organizational ethnography has become a well-established method of data collection in organization studies (e.g., Miettinen et al., 2009; Neyland, 2007b; Schwartzman, 1993; Watson, 2011). Organizational ethnography is rooted in the traditional anthropological idea that "exotic" cultures are best understood through deep immersion and "thick description" (Geertz, 1973). According to one of its modern pioneers, John Van Maanen, organizational ethnography helps to "uncover and explicate the ways in which people in particular work settings come to understand, account for, take action, and otherwise manage their day-to-day situation." (1979, p. 540) In this regards organizational ethnography can help us to understand new somewhat "exotic" organizational cultures and practices (Bate, 1997). For my own study I used organizational ethnography to better understand the practices through which actors try to institutionalize open data.

There is no one best way to organizational ethnography and the ways of gathering data are very much dependent on the researcher and the research context[35]. Typically organizational ethnographers have one or more uninterrupted field stays at an organization, note their observations in a field diary, conduct interviews, make audio-visual recordings, collect internal documents and oftentimes acquire tacit knowledge trough direct involvement in the organization's activities (Bachmann, 2009; Neyland, 2007b; Schwartzman, 1993; Yanow, 2009). For each of my three case studies I conducted an organizational ethnography, in order to study "practitioners at work" (Feldmann and Orlikowski, 2011:24). I wanted to study institutional work, so I was looking for organizations with a strong interest in the public administration adopting open data. I also considered which organizations would grant me the most freedom in terms of studying them. In Berlin I spent three months as a part-time intern at the civic advocacy organization Open Knowledge Foundation Germany (from now: OKFde). Despite their slightly misleading name, OKFde has no endowment funds, but at the time when I joined them ran as a mainly project and grant-funded non-profit. OKFde advocates for different forms of "open knowledge" (e.g., open access

[34] The famous Hawthorne studies from the 1920s can be seen as an early non-participant observation, as the researchers spent time on the shop floor to experience how the workers react to manipulations in their work environment. Another landmark in organizational ethnography, in the wider sense, is Whyte's (1943) "street corner society". In the 1950s researchers at the University of Manchester revived the general idea of the Hawthorne Studies and reformulated it to what they called the "Manchester shop-floor ethnographies" (Bachmann, 2009).

[35] Bachmann even argues that this dependency always includes the inherent risk of failure, and that organizational ethnography therefore might be the "last great adventure" of empirical social science (2009, p. 250).

publishing, open science tools, open source software), but has always had a focus on open data. In London I spent six weeks as a full-time intern at the Open Data Institute (from now: ODI). The organization in London was the only one that I visited in two distinct periods, first for a month in 2013 and then for another two weeks in 2015. ODI has a rather unique organizational structure. It was created in late 2012 through a grant by the British government but since then developed commercial services that make it self-sustaining. Its purpose is to – quite broadly – promote open data in the UK and around the world. In New York City I spent three month as a part-time intern at BetaNYC. BetaNYC is a volunteer group that coordinates and works through digital means and meets regularly at different places across NYC, mainly at co-working spaces. The organization is led by its only employee – the executive director – who funds himself through different grants and project work. During my time at BetaNYC I engaged in all their online communication channels, was present at all of their meetings and oftentimes worked side by side with the executive director at two different co-working spaces in Manhattan.

It is a common scenario that researchers in organizations are assigned the role of an intern, which allows them to "know nothing, ask a lot and see a lot." (Bachmann, 2009, p. 253) My roles as an intern usually came with small tasks, like picking things up in town, welcome guests, sort documents, or write email newsletters. "In return", I got access to many of the organizational documents and could participate in a multitude of meetings and events. For the organizations under study, there usually are rather more arguments that speak against accepting the researcher than speak in favour of it. The researcher therefore has to be very careful with his double role as a co-worker as well as an observer. As Bachmann (2009) argues, organizations can easily believe the researcher to be a spy, employed by a competitor, or simply a nuisance. In my three cases I encountered very different initial reactions to my person and project. In London the ODI embraced the idea of a research intern and saw it generally beneficial to their mission. My supervisor in the organization held a PhD himself and was leading a group called "evidence team". Also in NYC my offer to support the organization was unconditionally welcomed. In Berlin, some members of OKFde explicitly liked my academic engagement with their work, others were more critical towards my request and I was asked to elaborate on my research interest and what I wanted to achieve with my work[36].

During my stay at the organizations I could witness the unfolding of day-to-day activities and events at the office. I shadowed different team members during their daily work routines, participated in formal meetings and informal exchanges, and gained access to internal documentation and various channels of team communication

[36] In this discussion my conversation partner referred to a blog post in which a well-known German hacker and blogger warns his peers to let social scientists research them: "Lately there is a conspicuous accumulation of surveys and scientific studies on hackers and [members of the Pirate Party], on how the community works, and so on, even in hackerspaces and particularly in groups such as Occupy and co. If someone like that knocks at your door, *please don't tell him anything*. Just because they act friendly and nice, you don't have to cooperate. But does that mean Fefe [the author's nickname] has something against science? No. But what most are not aware of: Such 'studies' are produced by the bad guys. Behind them are public relations consulting firms, risk management companies, political advisors, think tanks. They are afraid and want to investigate us. And how do you do that? You send unsuspecting undercover agents. In this case, nerdy scientists who inquire friendly." (von Leitner, 2013 own translation) This blogpost is a great example of the reactivity of the hacker community that discusses altering its behavior after becoming aware that they are observed by social scientists.

(e.g., multiple Skype chats, internal mailing-lists). I wrote down my observations in a research diary, documenting the context, shared information, and non-verbal observations, as well as my spontaneous interpretations. When in the office, I took notes directly at my computer. When at events, I took handwritten notes, which I later on transferred into the digital research diary. Every evening, I organized the notes of the day, grouped them thematically and annotated them with my own reflections and early-stage interpretations.

Anthropological ethnographers have described the threat of "going native" (Miles & Huberman, 1994, p. 264). When "native", one is co-opted into the perceptions and explanations of the local informants, and loses one's desired look from the outside. In all of my field sites, yet particularly in Berlin, I became friends with some members of the organization. On the one hand this resulted in rather intimate "leisure time" situations, in which I could talk to them about different issues than "at work". On the other hand these close personal ties also lead to "schizophrenic friendships" (Bachmann, 2009, p. 255), in which I found it hard to differentiate between conversations amongst friends and conversation for the sake of data collection. However, as I came aware of this, I coped with this confusion by directly addressing this issue in private conversations with some of the members. Sharing this inner conflict with them and retrieving understanding helped me a lot. I left all of the organizations at a point where I felt that I reached "theoretical saturation", the point when I would not discover any new relevant practices, spoke to all members about issues that I was interested in and gathered all documents that I considered necessary (Kleemann, Krähnke, & Matuschek, 2013, p. 25). The clearest indicator for this "informational sufficiency" (Snow, 1980, p. 101) was my field diary. At the beginning of each of the ethnographies I wrote several hundred words every day. When these words became less I tried to think of different angles in which I had not looked at my environment before. Information sufficiency set in when I could not find any new angle and all of my notes just showed repetitions of things I had already seen. Table 4 provides an overview of the three organizational ethnographies, which I conducted between July 2013 and October 2015.

Table 4: Case study database: Organizational ethnography

	BetaNYC (NYC)	**Open Data Institute (London)**	**Open Knowledge Foundation (Berlin)**
Time span	August 19th – October 18th 2015	July 1st – August 2nd 2013; April 6th – April 22nd 2015	July 3rd – September 30th 2014
∑ Full days	54	49	45
Role description	I participated in the role of a *volunteer*.	In the first episode I participated as a *research intern*. In the second episode I was a *guest*.	I participated in the role of an *intern*.
Location	The organization has no office. Some members work from co-working spaces, where they also host weekly hacknights.	The office is located in one of London's startup districts. The office follows an open plan design and all employees sit in groups of four to six.	When I joined the organization they had just moved from a small provisional office into a large open plan office, which they shared with a web design agency.
Field notes	I took notes when I shadowed some members when they worked on their own and at the weekly hacknights.	I took daily notes on the things I observed and conversations I had overheard in the office.	I took daily notes on the things I observed and conversations I overheard in the office.
Digital communication	Much of the organizational life happened in web forums or instant messaging channels, which I got access to.	I had access to web tools for task delegation and access to some of the chat channels used for team communication.	I quickly got access to a wide array of instant messaging channels and was included to mailing lists.
Internal documents	I had access to a large number of internal documents, including financial planning, funding agreements, hackday schedules and statistics.	I had limited access to internal documents. On request I gained access to some internal strategy documents as well as extensive press clipping.	I had access to the entire archive of internal documents dating back to the founding of the organization.
Audiovisual material & artifacts	I retrieved several videos of previous hacknights from Youtube. I took photos at all of the hacknights that I participated in.	I took photos of the office during both visits. Also I retrieved video material from different public events on which members of the organization spoke.	I retrieved some television features on the organization from Youtube. I took photos from the office and at the hackathons that I participated in.
Other sites	Most meetings took place at a co-working space in Manhattan. However we also organized hacknights in Brooklyn and a community day at a corporate office.	Only one field site.	I participated at several hackathons, organized by OKFde, at different places in Berlin.

5.3 Data analysis

To avoid "death by data asphyxiation" (Pettigrew, 1990, p. 281) qualitative researchers need to organize their data. In order to develop useful theory, they need to build complexity (rules and templates for interpretation) in order to reduce complexity (all possible interpretations of their data), or as Haridimos Tsoukas puts it, "theoretical complexity is needed to account for organizational complexity." (2016, p. 1) In order to make my data analysis inter-subjectively comprehensible, I developed a systematic "sequential model" (Mayring, 2003, p. 53) of my analytical steps that can be found in Figure 5[37].

My comparative case study design allows me to answer the research question on two levels of generalization: (1) On the level of the single cases I am able to create a causal reconstruction of the respective institutionalization process in each city. Hereby I account for the distributedness of institutional work by retracing the process along multiple "narrative clusters". In each of these clusters, the process is told as a distinctive chain of events that has the institutionalization as its outcome. Subsequently I triangulated these narratives in order to carve out a more objective causal reconstruction. (2) Across cases I am able to derive more generalized theory on the distributed nature of institutionalization processes on the field-level. In this phase I ventured back and forth between the causal reconstructions of the single cases looking for commonalities. In the literature on comparative process studies this procedure has been described as "cross-case pattern search" (Eisenhardt, 1989; Gilbert, 2005). First I looked for relatively distinct phases during which incumbents perceived openness as an institution. Deeply immersed in all three cases at that time, I was able to identify three distinct institutional phases across cities and the modes of institutional work that led to their transition. In the following each of these phases of the data analysis will be presented in more detail.

Before venturing into the data analysis I prepared and assembled the data from my three sources. For the 54 hours of interview material I created verbatim transcripts (Edwards & Lampert, 1993). I migrated all interview transcripts, documents, as well as material gathered during my organizational ethnographies, to MAXQDA, a software tool for qualitative data analysis. My case database eventually contained 542 entities. At the end of the analysis as described below, I had assigned 2793 data passages to 254 different codes across the three cases.

To learn about distributed agency in accounts of institutional creation, the concept already has to inform the process of data analysis. To date there is little methodological advice on how to capture the complexity, ambiguity, and simultaneity of distributed institutional work with the limited expressive capacity of written words. To account for distributedness I sought to avoid heroic (only one narrator), as well as chaotic (all possible narrators) accounts of institutionalization. I therefore developed the instrument of *narrative clusters*. Reconstructive qualitative process studies are grounded in the lived experience of actors. As a researcher we can learn about these experiences through interviews, documents and – in a limited way – through observation. When studying processes of institutionalization, I found that different

[37] This is a pragmatic idea of objectivity. A more nuanced and worthwhile discussion on the inter-subjective construction of objectivity can be found in the sociological literature, e.g., on reviews and reviewing (Blank, 2006; Chong, 2013; Pinch, 2011), or taste and tasting (Liberman, 2012).

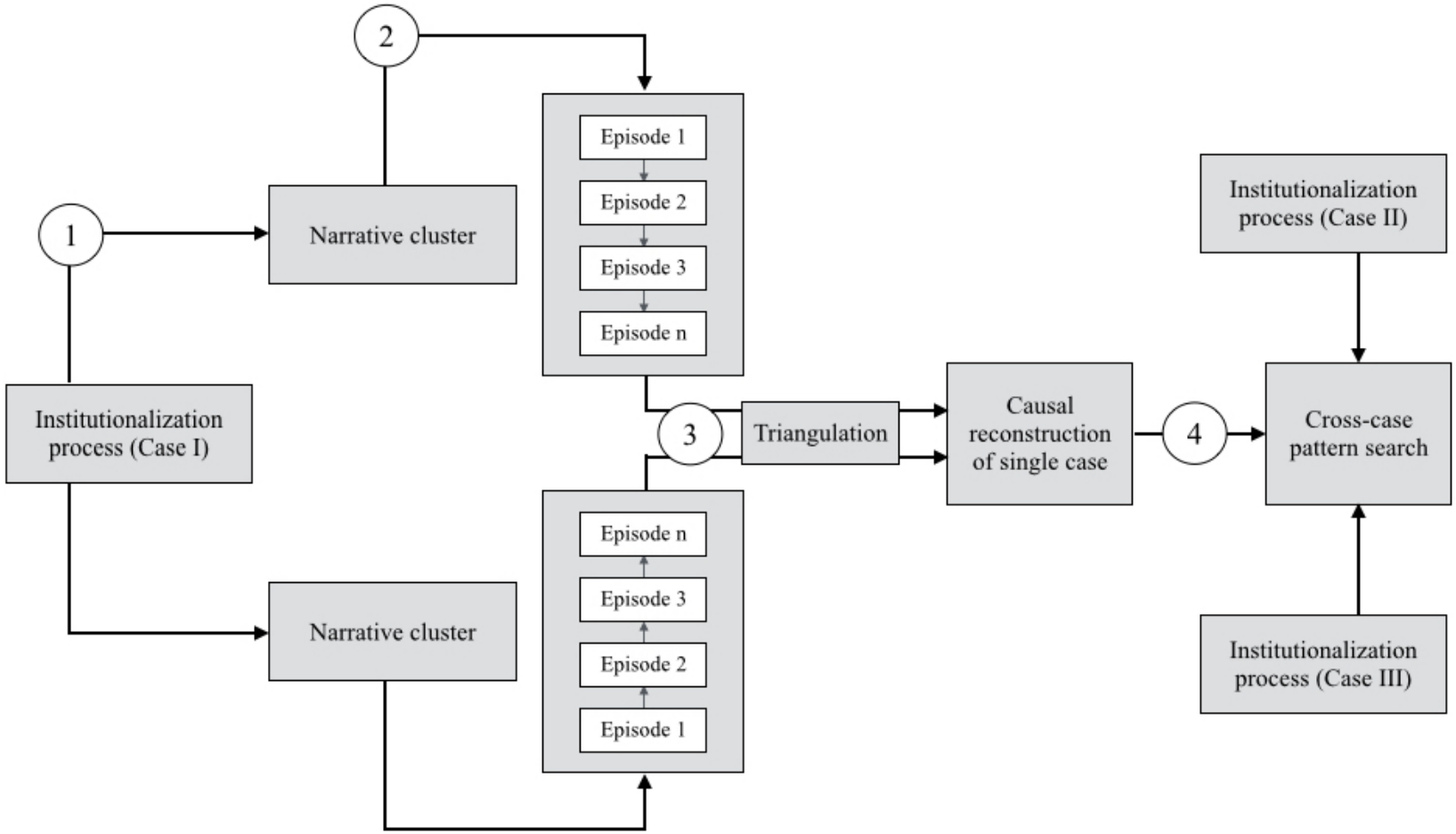
actors in the same field attribute different causalities to different events. Theoretically these narrative chains are contingent, which means – paraphrasing Luhmann (1995, p. 152) – processes can be possible as a certain chain of events, yet could possibly also be a different chain. Empirically I found that these narratives are produced in clusters (by groups of actors). Within these groups, people tell rather similar stories about a process. Between groups, however the stories vary. Analyzing the distributed nature of a process along these narrative clusters hence allows me to move from simplistic (only one heroic narrator) to more complex theorizing, but without by presenting *all possible* narrations. As the economist Joan Robinson famously put it: "A model which took account of all the variegation of reality would be of no more use than a map at the scale of one to one." (1962, p. 33) In the first step of my analysis I identified two types of narrative clusters across my cases (Figure 5). I labeled them as type "A" and "B". In the A-clusters the institutionalization of open data was mainly attributed to the institutional work of politicians together with small groups of open data "evangelists" within the otherwise inert city administration. Due to the centralistic administrative structure in the UK, I had to split the A-cluster in the London case into one narrative around the central government's, and another around the local government's impact on the city administration. In the B-clusters the institutionalization was accredited to institutional work performed by constellations of information activists, technology hobbyists and entrepreneurs.

According to Pettigrew (1997) the chronology of events should be at the heart of any process analysis. In the second step of my analysis I therefore identified relevant episodes within each of the narrative clusters and arranged their codes in my code database in their chronological order (Figure 5). When there was conflicting data on their ordering, I gave priority to information derived from official documents rather than interview data. Based on these codes I assembled tables with titles and short descriptions of all key episodes within a narrative cluster. Based on these tables I was able to check for causal gaps within the narrations. To close the gaps that I found, I ventured back into my data and in some cases had to collect some additional evidence, mainly from publicly available documents (e.g., newspaper reports). Having the coded data and the tables in place, I developed "thick descriptions" (Geertz, 1973) of the institutionalization process as presented to me within each narrative cluster. Following Geertz, I understand thick in contrast to thin descriptions, as they not only consider the external behavioral aspects of action, but also include the inner, meaningful aspects, which are focal in reconstructive studies of organizations and institutions (Alvesson & Skoldberg, 2000, p. 130). Following what Langley (1999) describes as a "narrative strategy" to making sense from process data, I deliberately abstained from a greater reduction of my data in order to present a "vicarious experience" of a real-life setting (Lincoln & Guba, 1985, p. 359). Through the thick descriptions I am able to show two things: First, I can show the piecemeal work that goes into institutionalization processes in fields as large and as strongly structured as the ones I looked at. Institutionalization is seldom a heroic act and problematic to conceptualize as completely emergent. Through the means of thick descriptions I tried to present the process on the middle-ground of distributedness. Second, and interrelated to the first point, the thick descriptions show that the same process can be interpreted quite differently depending on the relative position of actors in the field. Based on my epistemological axioms laid out in chapter 4.2, I grant room for these different interpretations, however regard it as the role of the researcher to carve out a causal "truth" that lies within them (cf. Mayntz, 2002).

In the third step I therefore set out to partly "recapture" the distributedness that I granted my theorizing in the previous step and to distill a single causal reconstruction of the institutionalization process (Figure 5). For each case I therefore compared the chain of episodes (A and B) to carve out their similarities in terms of critical episodes and their causal connections. During this stage I consulted existing stage-models of institutionalization (Barley & Tolbert, 1997; Greenwood et al., 2002; Mena & Suddaby, 2016; Zietsma & Lawrence, 2010), yet rather to check whether my categories contradict previous work in fundamental points and not as a template for my own model. The archetypical model of institutionalization that many of these studies draw upon is that developed by Tolbert and Zucker (1996). The authors define three stages, which they model closely after the three stages of social constructivism developed by Berger and Luckmann (1966). In the first stage, the "habitualization", actors develop patterned reactions to new problems. Over time these patterns become attached with shared meanings and understandings. In the second stage, the "objectification", the meanings and understandings become generalized beyond the specific context in which they initially developed. In the third stage, the "sedimentation", the patterned behaviors and meanings spread even wider and existing structures are solidified. As Djelic and Quack point out "it is during this last stage that institutions can potentially acquire the 'quality of exteriority', that is, become taken for granted and develop a reality of their own." (2003, p. 64)

For each of my cases I identified three episodes that were crucial in the gradual development of openness as an institution, from an information regime where citizens had little to no access to public information, to one in which city agencies proactively make their data sets accessible. In the fourth and final stage of my analysis I drew on all of my three case studies in order to find patterns on institutionalization processes on a more general level (Figure 5). First, I looked for relatively distinct phases during which incumbents perceived openness as an institution. Deeply immersed in all three cases at that time, I was able to identify three distinct phases across cities: In a first stage organizational openness is predominantly defined by formal regulation. In the second stage normative expectations clearly exceed the degree of openness inscribed in these regulations. In the third stage new formal regulation crystalizes these normative expectations. Second, I carved out matching patterns in the modes of institutional work that led to the progression along the three stages. I found that through different practices of theorizing actors developed the institution from the first stage to the second. Through practices of advocacy they developed the institution from the second to the third stage. Third, I collapsed all these theoretical building blocks to a model that captures the recursive relationships between structure and agency, institution and institutional work, over time.

Figure 5: Sequential model of data analysis



5.4 Ensuring quality in qualitative research

Credibility is the ultimate quality criterion for any kind of academic research. In quantitative research credibility is achieved by testing the validity and reliability of instruments (e.g., questionnaires, calculations) through standardized and generally accepted measures. In many of these studies researchers draw on the well-developed concepts of (1) construct validity, (2) internal validity, (3) external validity, and (4) reliability to signal trustworthiness of their results. In qualitative studies however, "the researcher is the instrument" (Patton, 2001, p. 14) and the way to determine his or her credibility less standardized. Lincoln and Guba have famously argued that the criteria for trustworthiness developed for positivist studies may not be appropriate for judging actions taken from a post-positivist perspective, just as "it is not appropriate to judge Catholic dogma from the perspective of say, Lutheran presuppositions." (1985, p. 293) Instead of the four criteria mentioned above they propose to evaluate qualitative inquiries along their *credibility*, *transferability*, *dependability* and *confirmability*. For each of these criteria they provide a list of techniques to enable standardization of their assessment (Lincoln & Guba, 1985, p. 328). Although I agree with Lincoln and Guba about the need to use quality management techniques appropriate to qualitative methodology, I find their proposition to change the terminology of criteria problematic. In my opinion, changing the terminology of the criteria rather broadens the gap between positivist and post-positivist researchers, by reducing their ability to communicate in a meaningful way, than closes it through the creation of trust in qualitative inquiry. In the remainder of this chapter I therefore demonstrate the trustworthiness of my own study along the well-established labels that emerged from positivist research, yet apply techniques adept to qualitative methodology.

(1) Construct validity refers to the question whether the study investigates the concepts it claims to investigate (Denzin & Lincoln, 1994). To assure construct validity the qualitative researcher needs to interlock the theoretical framework with the design of the data collection and analysis. Theoretical concepts that are of interest need to be translated into observable aspects of social life. Data collection methods need to be able to capture these aspects of social life. In my study I wanted to explore how organizational practices influence shared understandings on what is rational behavior on the field level. I therefore designed a data collection that was able to capture the concepts of field level change (documents, interviews) as well as organizational practices (interviews, organizational ethnography). In addition I constantly consulted other studies that looked at similar constructs and checked for their methodology. Finally, I presented my methodology and the operationalization of my constructs at several conferences and incorporated the feedback that I received there.

(2) Internal validity in qualitative research is achieved when the causal relationships between the occurrence of certain conditions and the occurrence of other outcomes is sufficiently credible (Yin, 2013, p. 40). According to Mayntz (2005, p. 237) these "social mechanisms" are the main research interest of qualitative scholars who "oppose the dominant tradition of correlational (or multivariate) analysis in quantitative research." In my study I carve out whether these practices have influenced the adoption of open data by public organizations. I secured this internal validity through pattern matching and theory triangulation. In pattern matching,

researchers compare the causal patterns they have found with patterns found within the same theoretical framework yet in other studies and other contexts (Denzin & Lincoln, 1994; Eisenhardt, 1989). Complementary to this measure I triangulated other theoretical explanations and checked for similarities or contradictions (Pentland, 1999).

(3) External validity asks whether findings can be generalized to other domains. There is a hierarchical relationship of validity types, in which a clear theoretical and causal logic (internal validity), as well as a careful link between the theoretical conjecture and the empirical observations (construct validity) are acting as necessary conditions for external validity (Gibbert, Ruigrok, & Wicki, 2008, p. 1468). Creating generalizability of process research is a complicated endeavor and in some regards antithetic to the idea of rich and detailed case study reports. Many organizational scholars agree that case studies allow not for statistical, but for analytical generalization. Analytical generalization is the generalization from empirical observations to theoretical propositions (Flyvbjerg, 2006), rather than a population (Gibbert et al., 2008). Eisenhardt (1989) argues that an important factor to external validity of case study research is the cross-case analysis, as well as a sound rationale for the case selection. In my research design I deliberately picked three cases that are similar in internal properties (city size, homogeneity of actors), but different in external properties (country). Through this literal replication I tried to maximize the robustness, as well as generalizability of my results.

(4) A study shows high reliability if its results are consistent in cases of repetition. There are mixed opinions about the criterion of reliability in qualitative inquiry. Some scholars call for reliability checks as a crucial part of any solid research (e.g., Patton, 2001). Others argue that reliability is simply not applicable and misleading when used in relation to qualitative work: “If a qualitative study is discussed with reliability as a criterion, the consequence is rather that the study is no good.” (Stenbacka, 2001, p. 552) As Eisner puts it, qualitative studies simply do not aim to be designed in a way that allow for repetition and comparative measurement of outcomes, moreover they want to help the reader “understand a situation that would otherwise be enigmatic or confusing.” (1991, p. 58) I very much agree with the latter group of scholars and think that process studies, like the ones I present in the following chapter, should only be repeated in the case of fundamental doubt.

6. Open(ing up) data

In each of my case studies I came across interview partners who described themselves as veterans in the field of public information. All of them – independent from each other – strongly recommended me to understand open data not as a completely new phenomenon, but just as the most recent facet of a trajectory that has spanned several decades beginning with the struggles for a Freedom of Information law. I followed their advice and indeed ended up with an understanding of open data that is more comprehensive than accounts that focus just on a brief period of time.

6.1 Prelude: Technological change and trajectories of imagination

Looking at the technological and historical antecedents of open data does not only help to understand the individual change processes, but also clarifies why open data processes in different cities and across countries have started almost simultaneously, including similar forms of actors, practices and reasoning. The onset of institutional change in a given field has been accredited to "external shocks", spillover effects of technological, economic and political changes in adjacent fields (Fligstein, 1991). Against the backdrop of globalization research, Djelic and Quack (2003) elaborate on the issue of adjacency and describe the onset of institutional change as triggered by "trickle-down trajectories" from transnational into national fields. In the following sections I therefore first describe the technological developments around computerization, datafication and connectivity that have transformed the very nature of public information over the last decades. Subsequently, I outline how these technological developments have been driven and shaped by the hopes, desires and expectations of governments (incumbents) on the one side, and citizens (challengers) on the other side. In the three case studies that follow I can show how these "imagined futures" (Beckert, 2016) have guided the behavior of actors.

6.1.1 Computerization, datafication, interconnection

In his opus magnum *Die Gesellschaft der Gesellschaft* sociologist Niklas Luhmann (1997) positions the proliferation of computer communication in a historical trajectory of societally disruptive technologies like the art of writing or the printing press. Dirk Baecker, one of Luhmann's students, even announced the societal transformation towards a "computer society" (2007), which is characterized by an excess of control and controllability. Until they reached their verdicts, these social theorists had been able to follow the development of computer technology for quite some time. In the 1950s, computers were pioneered by scientific institutes and used for calculations and routine administrative tasks. The 1960s saw the development of mainframe computers consisting of a large centralized computer systems, with the main processor held at regional computing centers and a number of terminals without own processing power. In the 1970 the number of applications for these mainframe systems increased and terminals spread across all kinds of organizations including government departments and city agencies. During the 1980s, plummeting prices for personal computers with own processing power and storage capabilities led to the replacement of terminals. At the same time, the development of various data base technologies enabled the structured storage of data and fostered integration of information technologies. In the 1990 the capacity and storage abilities increased further and networks to link the computers together became available to most organizations (Margetts, 2012).

In the 1980, when the market for desktop computer technology was still in its infancy, scholars started to study the use of office automation in various office environments (Olson & Lucas, 1982, p. 838) and described its deterministic effects, its potential for employees to create leeway (Sydow, 1985), or ways in which access to new communication channels has been turned into a source of micro-political power (Ortmann, Windeler, Becker, & Schulz, 1990). Many of these authors have found that the introduction of computer systems did not increase the overall productivity, but was spurred by the somewhat diffuse promise of greater control over the entire office operation (Hirschheim, 1985). When asked for the motivation for their decision, managers oftentimes argued that office automation was their one and only alternative to cope with the rapidly increasing complexity of their organizations' environment (Olson & Lucas, 1982). In his historical study on the adoption of desktop computers in several city administrations, Dobusch (2008) found that personal computers were in the first place purchased as a replacement for the outdated electronic typewriters, and that their potential to exert new forms of control was discovered and explored after the fact. The imagination of control has to be understood as being intertwined with routines of renewal.

Researchers of information systems have described this macro-social development, the diffusion of computer technology into almost every office environment, as the "computerization" of organizational life (Iacono & Kling, 1996; Kling & Iacono, 1995). Although there is no doubt on the multi-causality and emergent properties of computerization, it is worth trying to sketch in broad strokes how it has continued until the present day in the form of datafication and interconnection. The rise of personal computers enabled organizations to connect the individual units to an intra-organizational network of computers. The primary network effects resulting from these connections in turn accelerated the general diffusion of computers. The positive effects for each individual user increase with every new user of the system. While five computerized workplaces enable ten network connections, ten computerized workplaces already enable 45 network connections and 15 computerized workplaces bring the number to 105 possible network connections (Shirky, 2008). These network effects set clear incentives for managers: To realize the promise of a more controllable organization, as many workplaces as possible have to be computerized. In this line of reasoning, more and more network connections seem to be the first step towards more information and eventually better control mechanisms. At the point when the majority of workplaces was equipped with a computer, the process of computerization morphed into a process of datafication. In the time when office automation was fragmentary and computers rather an exception than a rule, administrative processes were still mostly paper-based. Some tasks could be automated, but the majority of information was stored and passed around in analogue form. However, once every employee of an organization had access to a computer and was connected to the local area network (LAN), entire processes could be digitalized without analogue disruption. The process, in which more and more analogue forms of information become digitized, easily multiplied, and distributed to various computers across the entire organization, has been described as the "datafication" of organizational life (Lycett, 2013; Mayer-Schönberger & Cukier, 2013). Datafication hereby is not limited to the mere digitization of existing analogue information, but describes the rapid increase in volume and complexity of data within organizations. In a way the growing environmental complexity that managers in the 1980 wanted to

tackle through office automation has been re-entered into the organizations themselves: In the early years of office automation, the potential for increased control and controllability seemed to be exhausted once computerization and datafication reached saturation within the boundaries of a local area network. This impression changed rapidly with the rise of the Internet in the 1990s. Through the Internet network effects previously limited to local area networks, could theoretically be expanded to the entire planet (Castells, 1996). Through the Internet organizational information networks could be expanded outside the boundaries of physical buildings including offices in different parts of a city, in a different country, or on another continent. If network connections held the promise for more control, the Internet must have appeared as Willy Wonka's golden ticket to the ultimate control room.

6.1.2 Trajectory A: Governments and public data sets

The idea of cybernetics, developed in the 1950 by MIT-based mathematician Norbert Wiener, has fundamentally influenced our modern day understanding of information and control (Halpern, 2015). In the aftermath of Second World War Wiener and his colleagues worked on the improvement of anti-aircraft systems. Influenced by advances in information theory they set out to design a system, which understands the relation between gun and aircraft as one of informational flows and negative feedback. If a missile is fired but misses the target, this information is fed back to the anti-aircraft system. This feedback is then used to readjust the system according to the predefined goal of hitting the target. This process will be repeated as long as the negative feedback has been reduced to null and the target is being hit. Wiener's work suggests that as long as there is a clear definition of a goal, systems can be designed to automatically process negative feedback and adjust their action dynamically to reach this goal. Today, Wiener's ideas of constant feedback and adjustment can be found in mundane technical artifacts like thermostats or more advanced technology like neural nets.

Even before the onset of broad computerization, scholars, managers and politicians have considered the application of Wiener's cybernetic principles of feedback, self-regulation and control to social systems. In 1971 the democratically elected Marxist leader of Chile, Salvador Allende, assumed office. As one of his first acts in office, Allende had nationalized large parts of the Chilean economy and subsequently faced the question how to organize the centralized planning. Inspired by his writings on management cybernetics, members of Allende's inner circle approached the British consultant Stafford Beer, who after first doubts eventually agreed to help the Chilean government design a cybernetic control system for the nationalized economy (Heimstädt, 2015; Medina, 2006, 2011). Over the course of a few months, Beer and his team set up the initiative "Project Cybersyn". Centerpiece of the project was the Operations Room (Figure 6) located in an abandoned building in Santiago de Chile. According to Beer's plan, this room would be connected to all nationalized enterprises in Chile through telex-machines. Several times a day, these factories would then send some key figures of their production process into the Operations Room. Using one of the few mainframe computers available in Chile by that time, these indicators could then be checked against target indicators, representing Allende's desired future state of the economy. Along Wiener's theory of negative feedback, the computer would respond to any small deviations through automated responses (e.g., additional resource allocations to certain enterprises) and only

delegate severe deviations to the human planners, comfortably seated in the Bauhaus-designed fiberglass chairs in the middle of the hexagonal room. Within just a couple of months work, Beer's team managed to connect several factories and to set up a preliminary control room. However, when in 1973 the Allende government was overthrown, the project came to a sudden end.

Even prior to the rise of personal computers, Project Cybersyn explicated the vision that, the easier the government can access the information of its subordinate organizations, the better it might control and steer them in the public interest. Access to public sector information would therefore stabilize the government, but could at the same time be presented as being in the public interest, as the public sector would work more efficiently.

Figure 6: Control room of *Project Cybersyn* in Santiago de Chile[38]

Although Project Cybersyn died soon after its inception, the dream of cybernetic management of the public sector has sustained and developed over time. In 2012 the city government of Rio de Janeiro has inaugurated the modern version of the cybernetic control room: The "Centro de Operaçoes Prefeitura do Rio" bundles live data streams from 30 agencies, including traffic and public transport, municipal and utility services, emergency services, weather feeds, and information sent in by city employees and the public via telephone, Internet and radio. Within the control room, these data feeds are visualized, disassembled and used to inform policy and direct action (Kitchin, Lauriault, & McArdle, 2015). As shown in Figure 7, a lot of the information in the Brazilian control room is presented on an oversize display spanning an entire wall of the room. All the desks are directed towards the display, where each desk is additionally equipped with an individual computer terminal as well. Instead of regular office outfits, the employees in this room wear white one-piece suits with a large blue label on their back. The picture of pilot-like dressed

[38] Source: https://upload.wikimedia.org/wikipedia/en/7/70/Cybersyn_control_room.jpg [Retrieved on April 12th, 2016]

employees sitting inside a NASA-styled operations room inevitably evoke the vision of a cockpit from which the entire city can be steered and held "on course" through the collection and use of digital data. This contemporary example shows that the vision of cybernetic control is not necessarily bound to the socialist practice of centralized economic planning, but equally applies to the provision of public services in market economies.

Figure 7: Control room of the Rio de Janeiro city government[39]

6.1.3 Trajectory B: Citizens and public data sets

One of the fundamental tenets of democratic states is that they are not based on "unquestionable truths" (Popper, 1945), but that citizens are able to publicly criticize the behavior of the government as well as that of public organizations. Information about how the government or the public sector operates can be a strong foundation for such criticism. Computerization, datafication and interconnectedness of public agencies have therefore not only inspired government officials, but also inspired citizens in their pursuit to access more public information.

The rise of personal computers is closely linked to the socio-economic cluster in California known as the "Bay Area". By the mid 1970s some local manufacturers have started to sell their early versions of "homemade" personal computers. To provide mutual support in assembling and maintaining these machines, early customers began to meet in hobbyists groups around the region (Levy, 1984). Many of these technology enthusiasts envisioned computers to be highly emancipatory tools. By facilitating interconnectedness and communication between individuals at geographically distant places, they hoped that computers would help to realize some of the countercultural dreams of the 1960s and 1970s youth movements (Turner, 2006). In a slightly polemic account Barbrook and Cameron describe the culture that developed from this amalgamation of countercultural residuals and entrepreneurial upswing as the "Californian ideology" – a "bizarre mish-mash of hippie anarchism

[39]Source: http://exame.abril.com.br/brasil/noticias/o-que-faz-do-rio-uma-das-cidades-mais-inteligentes-do-mundo [Retrieved on April 12th, 2016].

and economic liberalism beefed up with lots of technological determinism." (1996, p. 6) Alongside famous corporations like Apple or Adobe, a result of this "technolibertarian" (Borsook, 2001) climate was a certain way to understand the government as little more than an administrative instrument that is supposed to work as precisely as possible. According to this Californian ideology public agencies should resemble "trivial machines" (Foerster, 1985), for which a given input necessarily leads to an algorithmically defined output. Following the technolibertarian imagination, this rationalization process can best be achieved through thorough computerization, consequent datafication and the creation of extensive feedback loops between agencies and citizens (O'Reilly, 2010). The way towards ideal service provision is the one that turns government agencies into responsive interfaces. The more and the better communicative channels are established between the organization and its environment, the more responsive it might be to external demands. Whilst in analogue times communication was limited to personal contact, telephone, letters and fax, computerization, datafication and connectivity allow for manifold new communication channels (Noveck, 2009).

At some point, early computer enthusiasts became aware that many organizations would be quite willing to increase their information exchange with citizens, but simply lacked the resources to establish the necessary communication channels. This awareness eventually led to several commercial and non-commercial initiatives that supported non-profit organizations and government agencies in the use of computer technology. McInerney (2007) provides a detailed account of such an initiative, which started in the late 1990s:

> "Calling themselves the 'Circuit Riders', these activists were dedicated to using new information technologies to support the ideals of social justice and environmentalism. Their goal was to deliver the promise of the Internet to grassroots and nonprofit organizations, empowering them to change the world. Leveraging support from foundations, the Circuit Riders traveled to organizations across the United States, installing hardware and software and training staff on how to use their new technologies." (McInerney, 2014, p. 5)

Although the Circuit Riders targeted nonprofit organizations, is has been found that especially local government agencies show a similar need for external support and resources when it comes to the acquisition of new technologies (Corder, 2001), a need that has been addressed across the following cases.

6.2 Case: New York City

Within the United States, NYC was one of the first cities that publicly engaged with the issue of open data. In my analysis I found two interwoven narratives about why and how city agencies in NYC adopted open data. One of these narratives revolves around the managerialism of businessman Michael Bloomberg, who served as the "data-driven Mayor" of NYC from January 2002 until December 2013. The other narrative is rooted in and nurtured by the strong culture of civil rights groups in NYC, which fight for the access to public information since the mid-20th century. Whilst Bloomberg wanted to implement open data as a tool to further rationalize the city administration, the civil rights advocates wanted to implement open data in order to create more functional feedback loops between NYC citizens and the city

administration. Tables with summaries of the episodes in each of the narratives together with their influence on the overall institutionalization process (institutional work) can be found at the end of each chapter.

6.2.1 Narrative A: Open data as a mayor-council co-creation

New York City is the largest city of the United States and home to 8,491,079 citizens in five boroughs[40]**.** Within NYC the strongly centralized executive power lies with the Mayor, legislative functions reside with the New York City Council. The Mayor and the council members are elected to four-year terms. The New York City government employs more than 300,000 people working in roughly 50 different city agencies[41]. The NYC agencies are subject to NY State legislation, yet the City Council has the power to pass additional local laws.

The City Charter overhaul

In 1989 NYC citizens voted in favour of fundamental alterations to the City Charter, which led to the greatest administrative changes since the Greater City of New York was created in 1898. This overhaul of the City Charter was the outcome of a three-year long public deliberation covering a very broad range of contested issues[42]. One of the issues that made it through this convoluted discussion was greater transparency of the city government, heavily campaigned for by multiple civil rights organizations. As a response to these campaigns the reworked City Charter contained the role of a Public Advocate who is elected by the citizens and is supposed to chair the likewise newly established Commission on Public Information and Communication (COPIC)[43]. The mission of COPIC is to:

- "educate the public about the availability and potential usefulness of city produced or maintained information",
- "assist the public in obtaining access to such information",
- "review [...] all city information policies, including but not limited to, policies regarding public access to city produced or maintained information, particularly, computerized information",
- "assist city agencies in facilitating public access to their meetings, transcripts, records, and other information", and
- "monitor agency compliance with the provisions of the charter, and other laws which require such public access."

(NYC Charter, § 1061 d.)

At first glance, this process that happened in the late 1980s and early 1990s appears to be a genuinely great example for successful institutional work. A group of professional advocacy organizations sees an opportunity structure (the City Charter overhaul), engages in traditional advocacy work and is able to steer their issue

[40] Estimate for the year 2014 based on the 2010 city census. Source: http://factfinder.census.gov/faces /tableservices/jsf/pages/productview.xhtml?src=bkmk [Retrieved on March 6th 2016]
[41] The exact number varies. The Mayor's Management Report from 2012 lists 42 Mayoral and three non-Mayoral agencies. Another list on a NYC official website lists more than 80 entities, whereby some of them are departments of larger agencies.
[42] NYC_891108_Media
[43] NYC_130913_Media

through the opaque deliberation and into the new Charter, resulting in the formalized positions of the Public Advocate and the COPIC, ready to substantially change the information regime. However, things did not turn out this way. Although COPIC had the formalized mission to dramatically increase public access to city information, it was never allocated any funds from the city budget to actually perform this task. Without any resources COPIC quickly turned into not just a toothless, yet an invisible tiger. The incumbent city government was able to retain their legitimacy (they reacted to the civic advocates demands for this committee), but at the same time preserved the status quo of rather closed than open city information.

Despite its marginalization, COPIC in 1993 presented NYC's first "Public Data Directory", with details of around 300 databases maintained by city agencies, the contents, format and methods of accessing the information, as well as the contact information for officials who can be addressed for information inquiries[44]. Although COPIC was formally required to update the directory every year, it only managed to publish an updated version in 2001[45]. This update shows that by 2001 all NYC agencies maintained some kind of computerized data sets, yet the report did not explicate whether and how the public could get access to them[46]. How can we interpret the influence of COPIC in relation to the macro-trend of datafication?

A search in the Internet Archive reveals that the municipal government URL "www.nyc.gov" was used for the first time in December 1998[47]. One of the earliest operational city websites that I was able to locate is the website of the NYC Department of Sanitation in a version from October 1999[48]. Aside a variety of colorful fonts, the website in fact already provided the visitor with a wide array of information, e.g., the department's organizational chart, its annual reports, or a waste management plan. When browsing through other city websites from these early days, I learned that the Department of Sanitation was rather a positive exception as others made little more then their contact details available.

So, did COPIC play a meaningful role in the institutionalization of openness? By the year 2001 COPIC was not able to directly alter the practices of information sharing in NYC agencies. Some organizations like the Department of Sanitation decided to share some documents and data sets on their website, others however refrained from doing so. With their data directories COPIC, however, moved the issue of access to public information from an organizational to a field-level. Through the directory, COPIC created comparability between city agencies, which were now able to reflect on their own information sharing practices and situate them against the other agencies. In a way, COPIC created the issue field of public information in NYC.

[44] NYC_090828_Media; NYC city agencies have begun to digitize their data sets in the early 1970s. In 1974 NYC Mayor Abraham Beame established the Office of Electronic Data Processing, which had the "statutory responsibility to operate one or more data processing service centers providing data processing equipment, programming and computer systems analysis for City agencies [...]." (Executive Order No. 18, July 25, 1974)
[45] NYC_110512_Report
[46] NYC_090902_Media
[47] The Internet Archive is a US-based non-profit organization that provides access to collections of digitized materials. Since its foundation in 1996 it captures snapshots of openly accessible websites and thereby allows exploring their development over time (Kozinets, 2009).
[48] NYC_991002_Web

Michael Bloomberg: Symbolizing accountability

The terrorist attacks on the World Trade Center in September 2001 pushed the COPIC reports and their power of comparability into the back, but had a highly unintended effect on the access to city information in the long run. On the one hand, the reconstruction of lower Manhattan and the emotional processing of the events moved the interest in municipal transparency into the background for several years. Transparency, as was the unspoken consensus, was rather an issue to debate about in times of stability and peace than in times of crisis and threat. On the other hand the attacks led to the landslide election of businessman Michael Bloomberg, who framed his Mayoral campaign around his rationality and ability to steer NYC through the aftermath of the attacks. As the 108th Mayor of New York City, Bloomberg served until the end of 2013. During his second election period, the openness of NYC agencies increased drastically and in many of my interviews, as well as in numerous media reports, these changes were associated with Bloomberg's character and managerial philosophy. A close examination of his action is necessary to determine whether these accounts are just well crafted personal branding, or if Bloomberg has in fact been the powerful institutional entrepreneur, which I assumed to be an explanatory oversimplification.

After leaving the Wall Street investment bank Salomon Brothers, Bloomberg founded and chaired his own company, Bloomberg L.P. The company became famous for the Bloomberg Terminal, a dashboard-like computer system for financial professionals that consolidates and visualizes various streams of financial information. The hardware of the Bloomberg Terminal usually consisted of six screens and a color-coded keyboard, a setup that was supposed to turn complex data into decision within seconds.

As Mayor of NYC, Bloomberg cultivated the persona of a "results-based"[49] businessman, who applies a "corporate executive's by-the-numbers approach"[50] to implement his "data-driven" policies[51]. Through his personal Twitter account Bloomberg underscored this image through iconic statements like: "In god we trust. Everyone else bring data"[52]. Shortly after Bloomberg entered his second period as Mayor, the New York Times reinforced this image and found that "data analysis is religion for Mr. Bloomberg, and numbers are the lifeblood of his administration."[53] A popular theme in interviews and media portrait about Mayor Bloomberg was the physical and socio-physical design of his office, oftentimes dubbed the "bullpen"[54] (Figure 8). Bloomberg created an open plan workspace modeled after a Wall Street trading room. The roughly 50 employees sat side by side in cubicles, with Bloomberg sitting at a similar desk right in the middle of the room[55]. Bloomberg explained that he had chosen this design to make the higher-ranking executives more approachable and to render the office processes "fluid, interactive, decentralized and cooperative"[56].

[49] NYC_051018_Media
[50] NYC_051018_Media
[51] NYC_150806_Int
[52] NYC_110915_Other
[53] NYC_051018_Media
[54] NYC_131030_Media
[55] NYC_051018_Media; NYC_100926_Media
[56] NYC_131030_Media; Beunza and Stark (2004) provide an ethnographic study of a Wall Street trading room. According to their description it is set up in a very similar fashion to Bloomberg's

Bloomberg created the bullpen to symbolize a government approach, in which "accountability was no mere concept but an inescapable, moment-by-moment reality."[57] Zooming out on the field-level, I find that despite the alluring analogy, turning around the Mayoral office turned out to be easier than turning around the entire city administration.

Figure 8: Bloomberg's *bullpen* office

Creating an informal expectation: Big Apps and Data Mine

In 2009, almost eight years after he assumed office, Bloomberg discovered the emerging issue of open data and found it not just compatible with, but emblematic for his approach to leadership. The Mayor of NYC is not in the position to introduce new bills that might turn into local laws, but able to issue Executive Orders that are valid until he/she or another Mayor revokes them. Nevertheless, Bloomberg decided on a different, "softer" approach to institutionalize open data. At the heart of this approach were the "NYC Big Apps" software developer competition and the NYC public data portal "Data Mine". Their interplay over time, orchestrated by Bloomberg, has been a strong mechanism in the institutionalization of open data in NYC and is worth exploring in some detail.

In June 2009 Bloomberg was invited to give the keynote speech at the Personal Democracy Forum, an annual NYC-based conference that deals with the convergence of the Internet, government, and politics. Bloomberg used his speech to announce the developer competition Big Apps. Through Big Apps, software developers were encouraged to develop applications based on city data. Bloomberg framed the

"bullpen" with the open plan cubicle system and the highest ranking employees sitting in the middle of the plan with their lower ranking colleagues in circles around them. Beunza and Stark describe how this setup is deliberately chosen to foster the "art of association" needed for successful arbitrage trading in a team.

[57] NYC_130322_Media

competition as an effort to "improve government transparency and accountability and stimulate development of the digital media industry."[58] On the ground Big Apps was organized by the Economic Development Corporation, a non-profit organization closely affiliated with the city government. The competition launched with a first stage during which citizens were able to submit requests for government datasets. Within the community this was received as a "momentous days for civic-minded software developers."[59] After the suggestion phase the NYC government made more than 170 data sets from over 30 city agencies available through a new website called Data Mine. The data included traffic updates, schedules of citywide events, property sales, restaurant inspections, or data around school and voting districts[60]. In the main phase of the competition developers had three months to create and submit applications based on these data sets to a jury of investors and entrepreneurs[61]. Prices included direct financial support, networking with potential investors and a private dinner with Mayor Bloomberg. Big Apps was modeled after a Washington D.C. initiative called "Apps for Democracy" that took place for the first time in fall 2008[62]. Already in 2006 the District of Columbia had started to release state and city data on a dedicated website and under licenses that allowed every citizen to download and use them for any purpose[63]. This effort was recognized by the Bloomberg administration, which several months prior to the announcement of Big Apps started to develop NYC's own city data portal Data Mine.

Bloomberg assigned the development of Data Mine to the Department of Information Technology and Telecommunications (DoITT), which eventually became a focal actor in the city's open data process. To catch up with Washington D.C. and to gather data for his developer competition, Bloomberg needed to convince some of the 50 city agencies to voluntarily open up a number of data sets. Despite his role as chief executive of the city administration, he had no formal mechanism at hand to coerce the agencies to hand over their data sets. The following months were characterized by backdoor negotiations, side deals, and various creative ways to "pull together" enough data sets to make Big Apps "credible" and attractive for developers and journalists[64].

To collect some initial data sets, DoITT decide to use the annual edition of the Mayor's management report as an inroad. The management report is a document, which the administration is legally required to publish every year in order to provide an analysis of the city agencies' performance[65]. To assemble the report, every year the Mayors Office would contact the different agencies and ask them for some key performance indicators. In 2009, the Mayor's Office together with DoITT used this established routine as an inroad to retrieve more data than legally obligatory for the report: "We started to evolve it to more than that and said: 'Ok, you were giving us these five sets of data but you could also give us this additional data'."[66] After this startup phase, the Mayors Office handed over the entire responsibility to fill up Data Mine to DoITT, which continued a rather undirected search for more data sets:

[58] NYC_090629_Media
[59] NYC_090831_Media
[60] NYC_091006_Media
[61] NYC_091006_Media
[62] NYC_090831_Media
[63] NYC_060628_Media
[64] NYC_150824_Int
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> "[An employee of DoITT] ran around each agency and said: What have you got? What does your data system look like? But slowly and painstakingly and with a lot of doors slammed in his face, he pulled together all this data sources that could be made public."[67]

Several of my interviewees described this early development and stocking of Data Mine as a process which "brought out the data sets of a few willing agencies."[68] As with the Department of Sanitation back in 1999, some agencies already hosted data sets on their websites anyways, and oftentimes DoITT would just help them convert the data in a format that could be used by developers. In other cases DoITT would simply download the data and convert them their selves[69]. The rationale, which DoITT used to approach many of these agencies, was that as it was on their websites anyways, the agencies had "already made this data available" so "there was nothing new here [but] the format."[70] Although quite subtle, DoITT thereby likened the new practice (providing data sets in developer-friendly formats to a broad audience) to what these agencies were already doing (uploading unstructured data on their website to a small audience). Cognitive distance was thus reduced as the practice change got dressed as just a slight modulation of an already existing practice.

Simultaneously with the main phase of Big Apps, the Bloomberg administration launched the first version of Data Mine, including 170 data sets from over 30 city agencies[71]. In the eyes of the administration, the developers, and the general public, Big Apps was considered a success and repeated annually until the end of my data collection. Particularly interesting for this study on the institutionalization of open data is the reciprocal relationship that developed between the competition and the data portal over the years. A former employee of DoITT described to me how the annual competition, "a companion that came along at the same time [as Data Mine]"[72], made it easier for them to retrieve new data sets that could be uploaded to Data Mine:

> "When City Hall said right before a Big Apps launch 'We need to get more data on to the portal', we could use that as leverage to go to agencies and tell 'Yeah, you have to go with something more. This is coming from City Hall, we've got to do it'."[73]

Although the provision of data sets remained voluntary the popularity of the Big Apps competition together with Bloomberg's endorsement of the competition created a strong normative pressure on city agencies to upload new, sought after, data sets to Data Mine. The more and the more interesting data sets could be found on Data Mine, the more popular Big Apps would be, raising expectations for the following year even higher.

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[68] NYC_120321_Media
[69] NYC_150922_Int
[70] NYC_150824_Int
[71] NYC_091006_Media
[72] NYC_150824_Int
[73] NYC_151008_Int

Make-believing rule-following: Bootstrapping open data

Despite the normative pressure created by the annual competition and Bloomberg's endorsement of open data, some city agencies remained passive and signaled that they were not interested in sharing any data sets[74]. DoITT on the other side was under great pressure from the Mayoral office to fill up Data Mine:

> "It was very much a numbers game [...], it went 'Okay, we started off with a hundred, so I now have to make sure we have 200. Next year we we're up to 400.' It was crazy. No thought about the value of things. No thought about which data would be useful and which wouldn't be."[75]

During these first years of open data, DoITT developed several methods to cope with this pressure and to increase the one single metric that their performance was measured against: the number of data sets on Data Mine. One of the ways to increase this number was to browse websites of city agencies looking for data sets that were already published there and could easily be modified in order to meet the requirements of Data Mine. Sometimes this process occurred without requesting permission to do so or even notifying the respective agency[76]. DoITT considered this a legitimate or at least pragmatically necessary practice, as "none of it was particularly critical, or probably even useful data. It was to support the numbers game."[77] However, collecting and transforming data that was already published did not seem sufficient to make the cut. Sometimes DoITT employees also decided to use particularly large data sets in order to "fake the numbers"[78]:

> "We would take a data set that covers five years worth of stuff-- so one of our tricks was to cut that up into five different data sets; one for each year. [Then we could say], hey look we have five more data sets."[79]

> "The other thing that we would do is we would take data and split it up by county or by borough. Let's say you have data sets city wide for five years, you can split this up into 25 data sets because it's one per year per borough over five years." [80]

When telling me the stories about tinkering with the data, the interviewee emphasized several times that this practice is a "terrible technique", that he tells his employees not to do this anymore and that this stands in stark contrast to the employee's professional identity.[81] In October 2011 DoITT retired the "clunky at best"[82] Data Mine and migrated all the data sets to the newly established web repository "NYC Open Data". The launch was accompanied with the announcement of a third round of the Big Apps competition as well as 230 new data sets.

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[82] NYC_111012_Media

DoITT tried to turn the open data portal into a Potemkin village, which made the city agencies look very transparent and willing to share information when in fact they are not. Although this illusion of openness was born out of necessity, it played an important role in the institutionalization of open data. The existence of the open data portal provided city agencies with a new practice template how to retain their legitimacy. Faced with any criticism of opaqueness, they could now simply contribute to the portal in order to move out of the spotlight. To solve the "first mover problem" and to make this new practice legitimate, DoITT created an illusion of openness by make-believing that more and more agencies were obeying to the new norm and contributing to the portal.

Reinforcing an informal rule: The Mayor's Office for Data Analytics

Bloomberg was convinced that the normative power of Big Apps and the open data portal would not be enough to "sell" open data to the city agencies. Shortly after the launch of Big Apps and Data Mine, he therefore initiated an internal project that was supposed to provide convincing case studies on the value of openness, not only as a marketing tool for the city but in the day-to-day operations of city agencies. By solving "real" problems through data, Bloomberg hoped to substantially change the city agencies' attitude towards data transparency.

In 2009 Bloomberg hired lawyer, war veteran, and former city employee Mike Flowers to apply his philosophy of data-pragmatism to some pressing urban problems. Funded by a small stimulus grant, Flowers hired a young economist "straight from Craigslist"[83] to tackle a well-known problem with mortgage fraud. Using freely available data sources from the city, Flowers and his employee eventually "came up with a pattern" that the two of them turned into "an information product [...] that would automatically trigger when a certain property [...] is more likely to be fraudulent."[84] Flowers handed over this algorithm to the District Attorney's office and attracted some first media attention on the project. A year after Flowers was hired Bloomberg asked him to expand the scope of his operations as NYC's first "Director of Analytics" and a budget to grow his team[85]. Over the following years this team attracted international attention. The New York Times described them as the "geek squad of civic-minded number-crunchers."[86] To secure further funding for his prestigious invention, Bloomberg issued an executive order and formally turned Flower's team into the Mayor's Office of Data Analytics (MODA)[87]. In NYC Mayoral offices are temporary organizations, installed by the Mayor to pursue "initiatives that sometimes don't fit well in a particular city agency."[88] As a Mayoral office, Flower's team – on average a half-dozen employees – had the "ability to escalate things"[89] to the Mayor directly without going through the hierarchy of a regular city agency. Between 2009 and 2013 Flowers and his team created problem-solving algorithms for issues, such as the identification of high-risk illegal housing conversions, or patterns of prescription drug abuse. With every new project, Flowers' team gained growing visibility and acceptance across city agencies:

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[84] NYC_150922_Int
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[86] NYC_130323_Media
[87] NYC_130417_Report
[88] NYC_150824_Int
[89] NYC_150826_Int

> "The agencies just started coming to us. It used to be that, I had to knock on their door [...], then all of a sudden I was flooded with requests from the agencies. [...] I hired five more people to service these clients."[90]

With MODA, Flowers had achieved what Big Apps and the open data portal already attempted to do: He convinced city agencies that the sharing of agency data helps solving agency-related problems.

Once Flowers had unlocked the agencies' willingness to share their data, he was looking for a solution to routinize the practice of information sharing across city agencies and to decouple it from MODA and its limited resources. City agencies should "do it themselves"[91] so it would become their "regular business practice"[92]. In late 2013 his project was realized under the title "Data Bridge", a platform, which merged data sets from over 50 information systems within 20 different agencies."[93] Data Bridge allowed city agencies to match their datasets with "foundational"[94] data sets like building, property or zoning data. Furthermore, the system allowed agencies to set controls for who can access their data sets within their own and across other organizations[95].

Shortly after Data Bridge was put in place, Mike Flowers left MODA with the end of Bloomberg's last election period in 2013. In 2014 the new Mayor Bill de Blasio appointed a new Director of Data Analytics who announced to continue the work towards cross-agency data analytics.

Within NYC's open data process, the primary role of MODA was not the fight against illegal housing conversions or prescription drug abuse, but their orchestrated and highly visible demonstration that data sharing leads to public legitimacy for the city individuals that do so. To ease agencies into sharing their data, MODA created Data Bridge not as an entirely open, but as an inter-agency realm of "enclosed openness". Once an agency had prepared its data sets to be used by Data Bridge, the hurdle to upload it to NYC Open Data was easier to take.

Open data becomes a law (1)

At this point the narrative of how open data was institutionalized in NYC moves from the executive power of the Mayoral Office to the legislative power of the City Council. In 1974 the State of New York passed the Freedom of Information Law (FOIL), which allowed citizens to request government information from all state and local government agencies. With exemptions concerning privacy and public safety related issues, the agencies were supposed to make the information available at minimal cost, regardless of who asked for it, and what the intend for the request was.

[90] NYC_150922_Int
[91] NYC_150922_Int
[92] NYC_150922_Int
[93] NYC_150201_Slides; Flower's idea of a permanent system for data exchange was inspired by a system ("Data Share") already in place since 2005 in order to facilitate data sharing between criminal justice agencies in NYC and NY State.
[94] NYC_150201_Slides
[95] NYC_150201_Slides

On legal grounds, FOIL changed the relationship between citizens and city information in NYC fundamentally. On practical grounds, however, its "reactive approach"[96] put this shift into perspective. As one of my interviewees with several decades of experience in submitting FOIL requests explained: "Sometimes you get your request denied and then you have to go through a legal process to appeal it and potentially go to court to require the agencies to comply."[97] During the first years after its passage in 1974, many FOIL requests were first denied and eventually fought over in court. Over a time span of several decades FOIL gained acceptance with city employees and controversial requests have been widely interpreted by the courts[98].

Venturing back to the beginning of this narrative, it now becomes clear how the history of FOIL led to the creation of COPIC and the role of Public Advocate. Since 2001 however, COPIC has been de facto defunct. Almost ten years later, it was remembered and its mission revived within the open data process: When the Public Advocate's office established COPIC in the early 1990, one of its employees was NYC-born Gale Brewer. In 2002, Brewer was elected into City Council and immediately served as founding chair of the council's Technology Committee. In 2009, Brewer met with the software developer and open government campaigner Phil Ashlock and shortly after presented "Introduction 991-2009" to the City Council[99]. The bill, mainly penned by Ashlock, reads:

> "This bill, [...] is an effort to increase government transparency and access to public data. [...] The bill will require the City to create a centralized online repository of all publicly available information that is either produced or retained by the City. Furthermore, data published under this legislation will be readable by any computer device, whether that is a laptop or a phone."[100]

This bill, which asks for a city data repository is presented at the very same time that Mayor Bloomberg decided to create Data Mine, however, as my interviews suggest, was developed without coordination, but inspired by Obama's efforts to create a federal data portal. With the current election period ending only a few months later, the bill faded out in late 2009, but got re-introduced by Brewer in February 2010 as "Introduction 29-2010". After some initial hearings the bill slowly gained traction within the legislative system of NYC. As one of Brewer's employees explained, their strategy to progress the bill was to align it with the interest of the Speaker who is the elected head of the City Council:

> "The main actor [in City Council] we needed support from was the Speaker. [...] If the Speaker said 'This bill is going to happen' then it would happen. [...] A lot of the conversations that I was having was with the Speakers' legislative divisions making sure they felt comfortable with the bill, that it was workable."[101]

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[97] NYC_150828_Int
[98] NYC_150806_Int
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[100] NYC_090625_Report
[101] NYC_150814_Int

Eventually not only the Speaker but also Bloomberg signaled that he was in favour of the general idea of the bill, as it aligned in wide parts with his ongoing initiative to make city data available for the NYC Open Data portal as well as Data Bridge[102]. As one of Bloomberg's former employees explained to me: "We got to a point where we had accomplished as much as we could organically and there was a growing desire to have a mandate and have more structure [to open up city data]."[103] Affirmative signals from these two sides triggered a yearlong consultation process in which the initial bill was aligned with various city interests. The most involved parties were the offices of Council Member Brewer, Council Speaker Quinn, DoITT, the Mayoral Office, council lawyer Jeff Baker as well as the New York City Transparency Working Group, a coalition of civil society groups including the initial author of the bill, Phil Ashlock.

Open data becomes a law (2)

The crafting of the open data law occurred against the backdrop of Bloomberg's ongoing open data efforts (Big Apps, Data Mine, MODA, Data Bridge). In my research, I tried to disentangle the genesis of the legislation as best as possible to find out how these ongoing efforts as well as the vested interests of the involved parties shaped the regulative pillar of openness in NYC. In my interviews with many of the involved parties, the process of crafting the open data law was described from different perspectives, sometimes in conflicting versions, but always as extremely distributed and "messy". Most generally, the negotiation process was split between "open-door" negotiations in the form of public hearings, as well as "closed-door" negotiations through quick and widely undocumented exchange of drafts between the involved organizations[104]. Brewer's office was steering the overall process and met with members of DoITT and the Mayoral lawyers at least every other month to report on the process and receive subtle feedback whether the bill is going into a favorable direction or not[105]. A high-ranking member of DoITT described the process as "the normal tug and pull of legislating", in which an "ideal open data law" was balanced against what seemed to be "adoptable"[106]. In her understanding, adoptability was related not necessarily to the willingness of city agency employees, but rather describing the legal boundaries of privacy as well as the resources available to build open data processes within agencies. However, as FOIL had been part of NYC's administrative reality for several decades, one of our interviewees remembered: "the hard questions about privacy, security and all that stuff were already answered by FOIL" and that the negotiators did not have to "create an entirely new regime" around city information[107]. One of the greatest bones of contention however laid in the bill's initial demand that not just future or present digital data should be published, but that all paper-based data from the agencies' archives had to be digitized and prepared for publication. As a former member of DoITT remembered:

> "City agencies, even an agency which was open minded to the notion, would say 'That's fine, I totally support it, but all of my data is trapped in paper

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[104] NYC_151008_Int; NYC_150814_Int; NYC_150824_Int
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[107] NYC_150806_Int

> documents and excel spreadsheets and it will take me years to unlock it without having a funded resource, talent or tools to be able to do that'. And so the trade-off was to go to every agency and say 'Well tell me what is part of your inventory, what's the data that is easily unlockable, what's the data that's not so easily unlockable and what's the data that you wouldn't unlock even if you could'."[108]

As a response to these complaints the bill was rephrased, and from then on only incorporated data that had already been digitized or future data. As the bill did not include an allocation of additional financial resources for the departments, DoITT and MODA were made responsible to provide support in terms of technical infrastructure (DoITT), and training for city employees (MODA). At the end of the negotiation process the outcome was evaluated quite differently. While activists saw the initial bill "significantly weakened"[109], DoITT agreed on it being "reasonably different from the original version" but still "a good compromise."[110] In February 2012 Gail Brewer eventually introduced the reworked "Introduction 29-A", which got passed immediately and signed into effect by Mayor Bloomberg in March 2012 as Local "open data" Law 11.

The crafting of the open data law is a great illustration of the distributedness of institutional work. The initial version, but more so the re-introduction of the bill was influenced – enabled and at the same time constrained in its shape – by the open data efforts that were already happening in NYC. Through Big Apps, Data Mine, and MODA, Michael Bloomberg unintentionally, but significantly, influenced the onset of this law making process. During the immediate negotiations, the large number of heterogeneous actors led to a rather unstructured process. Due to a constant exchange of new drafts and back-door negotiations between individual actors, none of the involved parties had complete information which changes represent whose interests.

How to enforce a law without formal sanctions

The parties involved in the process of crafting the open data law agreed on a phased model of implementation ending in 2018. Within the first year DoITT published a "Technical Standards Manual", including detailed instructions for city agencies how to publish their data sets in the future. One year after the law was passed, city agencies had to name an open data spokesperson and move data sets that were already published on their website to the open data portal under the formats specified in the manual. In fall 2013, 18 months after the law was signed, DoITT published a compliance plan, detailing all relevant data sets held by NYC's agencies and the schedule in which the agencies intend to make them accessible as open data. The progress has to be documented in annual updates presented by DoITT and MODA. According to the open data law DoITT is responsible for the technical support of agencies in complying with their publication requirements. MODA, on the other hand, was charged to ensure the publication of controversial or previously commercialized data sets. As one interviewee put it, MODA came in when a dataset was "due" but "just didn't materialize"[111]. In one of these cases DoITT informed

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MODA that many citizens had requested access to a certain geospatial data set ("PLUTO"), which was maintained by the Department of City Planning. For many years, the Department charged parties who wanted to use this data sets several hundred Dollars per license. In order to make the data set accessible as open data, MODA arranged that the Department of City Planning received budget compensation in return for making the data sets available as open data[112].

In January 2014, Bill de Blasio succeeded Michael Bloomberg as Mayor of NYC. Previously de Blasio served as the city's Public Advocate, the position initially created as an ombudsman for citizens and head of COPIC. As Mayor of NYC de Blasio did not alter but continued the ongoing open data process. In October 2014 he appointed a new head of MODA and thereby decided to keep this temporary Mayoral Office operational. In July 2015, de Blasio used the mandatory update of the open data compliance plan to announce the "Open Data for all" initiative, in which he reassured his commitment for open data and included the promise for a citizen outreach tour to each of the five boroughs[113].

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[113] NYC_150715_Report

Table 5: NYC – Narrative A: Open data as a mayor-council co-creation

Episode	Contribution to institutionalization / Forms of institutional work
The City Charter overhaul	After a long process of political deliberation, the citizens of NYC vote in favour of a new City Charter. The new Charter includes the necessity to set up a **Commission on Public Information and Communication (COPIC)**. Making public information more accessible is the inscribed purpose of COPIC and thereby moved from an ephemeral issue to a more stable one. COPIC publishes a directory with all public data sets existing in NYC and their availability across city agencies. For the first time there is comparability between the agencies, they are able to reflect on their own information sharing practices, and situate them against the other agencies.
Michael Bloomberg: Symbolizing accountability	Businessman Michael Bloomberg becomes **Mayor of NYC**. After maneuvering through the aftermath of 9/11, Bloomberg begins to transfer practices of managerialism from private businesses to the city administration of NYC. He legitimizes these transfers with his prior success as a businessman and makes wide use of symbols like his trading-room-like mayoral office. He introduces the cognitive template that for most efficient governance, there needs to be solid data available.
Creating an informal expectation: Big Apps and Data Mine	**Mayor Bloomberg** co-develops two interlocking instruments that set the institutionalization of open data in motion: Together with the **Department of Information Technology and Telecommunications (DoITT)** he creates the data portal "Data Mine" on which agencies can upload their data sets. Together with the **Economic Development Corporation (EDC)** he launches the software developer competition "Big Apps". Citizens are invited to use open data in order to build tools that contribute to the greater good. Through Bloomberg's public endorsement of the competition city agencies feel increasingly pressured to upload data sets.
Make-believing rule-following: Bootstrapping open data	Less agencies than expected voluntarily upload their data sets to the data portal. **DoITT**, made responsible by Bloomberg for overseeing the development of the portal, fears missing the performance indicators set by Bloomberg (e.g., number of data sets on the portal). Eventually the agency bootstraps the data portal and finds ways to increase the number of data sets without having more agencies to contribute. On institutional grounds they make-believe the city agencies that "the other" agencies are contributing and thereby evoke a feeling of lacking behind.
Reinforcing an informal rule: The Mayor's Office for Data Analytics	City agencies resist external pressures to open up their data sets more strongly when they attribute great economic value to their closedness. Oftentimes, however, these data sets are at the same time the ones strongly demanded by potential users. To strengthen his own position by opening up these data sets, Bloomberg creates the **Mayor's Office for Data Analytics (MODA)**. On the operational level the office finds individual arrangements with agencies (involving financial compensations) to open up certain data sets. On the institutional level MODA develops and

	publicizes case studies that create causal relationships between opening up data sets and improvements in livelihood of the city and the perceived quality of public service provision (e.g., less bike accidents).
Open data becomes a law (1)	The awareness of open data has increased to a point that it seems legitimate for some **Council Members** to support it as a political issue. Building on Bloomberg's existing programs as a template, one Council Member introduces a bill for a law that would make the release of open data mandatory for city agencies.
Open data becomes a law (2)	The bill passes the first hurdles in the **City Council**. In a process spanning several months **Council Members, city agencies,** and a **coalition of civil society groups** rework the bill several times. All involved parties try to inscribe their interests into the bill. When the bill is sent to a vote it has already reached an informal consensus and is passed without problems. How this formal pillar of the institution open data was shaped, depended greatly on who had access to the negotiation process at all. Private businesses were excluded from the process, yet advocacy organizations (some funded by private businesses) were granted access.
How to enforce a law without formal sanctions	The proposal for a formal sanctioning mechanism for agencies that fall short in uploading their data sets had to be excluded from the bill in order to make it pass-able in the City Council. As a compromise the law requires **DoITT** to collect promises from city agencies on how many data sets they intend to publish and check for these promises in annual reports. Through these reports city agencies are moved in a position where they can be compared against other city agencies and compare themselves as well. This leads to effects of reactivity and eventually to a greater adoption of open data practices.

6.2.2 Narrative B: Open data between lobby and hobby

The early days of data activism: creating the issue

Transparency and accountability of the city administration have been longstanding concern of citizen activists in New York City[114]. One of the oldest organizations, Citizen Union, was established back in 1908 as a "force for good government [and] to avoid the problem of party patronage."[115] A wave of civil rights groups in NYC was founded in the 1970s, coinciding with the passing of NY State's Freedom of Information Law (FOIL) in 1974. Many of these groups integrated this new law into their campaigning repertoire and began to "specialize in data requests."[116] One of these organizations was the New York Public Interest Research Group (NYPIRG). The student-led political organization was founded in 1973 and primarily worked on consumer, environmental, and government accountability issues[117]. Their interest in government accountability is best understood as a reaction to the Watergate scandal of the early 1970s[118]. Since its founding, NYPIRG had made extensive use of FOI requests for campaigning purposes. In the 1990s the group began to leverage this campaigning instrument through the emerging opportunities of mapping software. In 1997, NYPIRG launched the Community Mapping Assistance Project (CMAP) to provide computer-mapping services to nonprofit groups using Geographic Information Systems (GIS) software. When submitting their FOI requests, the activists added the note that they would like to receive the data not in paper form but on a floppy disk, a demand that was usually granted and allowed them to integrate the data to digital maps[119]. The ongoing computerization of city data as well as the rapid development of GIS software further facilitated their advocacy work. A former CMAP employee remembered how this computerization not only changed the advocates' work, but processes within the city administration as well:

> "As information began to get computerized, digitized... made electronic, it was easier and easier to provide access to information. And some agencies really embraced that and used the web or used email initially to distribute information, realizing that there was almost no cost of reproduction in that sense. They would just attach a file and email it back to the person who sent in a request by email."[120]

In one of their most notable campaigns, NYPIRG and CMAP used data about lead poisoning with children to influence legislation on the use of lead paint on houses:

> "NYPIRG had hoped to use maps to help legislators understand the impact of the issue. [...] NYPIRG earlier had sued the city to obtain computerized data of the geographic distribution of lead poisoning cases, but refusals by city officials prevented any meaningful maps from being used during the debate

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[120] NYC_150828_Int

> over the 1999 law. Finally, in 2002, a judge ruled on NYPIRG's behalf, providing data that identified the number of new children poisoned annually from 1995 to 2000, aggregated by ZIP Code. Working with the Community Mapping Assistance Project (CMAP), the NYPIRG used this data to prepare a report calling on the City Council to renew its attention on lead poisoning."[121]

In its early days, CMAP would print these reports and deliver them to their audience. When the Internet gained more influence in the late 1990s, they also made their maps available online. Although the FOI law was in place, its enforcement was highly dependent on the nature of the specific data, the city employee's attitude towards the law and the context of the request. A former campaigner remembers his research for a report on waste disposal sites:

> "One time, I had submitted a FOI request for information about garbage disposal practices, a local official on Long Island said: 'Look, I know I have to give you this information. I don't want to, but I will give you the bullets with which you will shoot me'. He knew he had to do it, and he knew I was going to use it to criticize him and his practices, so sometimes people begrudgingly go along with it and sometimes they would fight it."[122]

The more I explored the struggle for information access before the onset of open data, the more examples I found in the nexus of civic advocacy work, the use of maps, and the retrieval of geospatial information. The non-profit organization Transportation Alternatives (TA) was founded in the same year as NYPRIG. In response to the growing environmental consciousness of that time, the organization's goal was to increase the safety of pedestrians and cyclists on NYC's streets. With the rise of mapping technology in the 1980s and 90s, TA became increasingly interested in data from the police and transportation departments of NYC in order to map car crashes with pedestrians and cyclists[123]. As one of my interviewees remembered:

> "It has taken forever for it to happen, but in fact, we got all of that data through Freedom of Information requests and then we cleaned the data and then we mapped it ourselves and we put up one of the first crash maps in the United States all ourselves, because government would not do that. Now that's common and people all over the place do it, but at the time nobody did it. It was a big deal."[124]

The stories from NYPIRG, CMAP and TA show that the access to city information was negotiated between citizens and city agencies in NYC "way before anybody coined the term open data."[125] Analogue to the story of COPIC, they show how events dating back several decades still play their role in an institutionalization process that became explicit in the more recent past. NYPIRG, CMAP and TA did not try to alter the "rules of the game" on the field-level by introducing any transparency legislation. However they took the existing framework of FOIL and reinterpreted it for their purposes by requesting digital instead of analogue data, which they could redistribute

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and use for campaigning more easily. In terms of information access, their effect was twofold. On the one hand, they fought many local battles against individual city agencies, facing them with the fact that – in front of the FOI law – they were required to hand over their data. On the other hand, and at least equally important for the story of open data, they very explicitly showed the connection between digital city data, successful activism and the ability to influence entire legislative projects. By creating these cognitive templates, by showing this realm for action, they created the role of an urban data activist, which would later on be picked up by a new generation of civic advocates.

The lobbyists: pushing for an open data law

The traditional civic advocacy organizations used the existing information regime (FOIL) as a means to specific ends, e.g., lead legislation or safer streets. In 2010, two professional civil rights campaigners and a philanthropically inclined hedge fund manager founded Reinvent Albany, a non-governmental organization with the mission to increase government transparency in New York State and City. Soon after their official launch, the small group started to engage in the swelling discussion around an open data law for NYC, initiated by City Council member Gale Brewer. Behind the scenes, this effort was facilitated by the personal connection between Reinvent Albany and Phil Ashlock, who drafted the first version of Brewer's open data bill:

> "Phil Ashlock was working for Open Plans, a civic technology NGO, and we [Reinvent Albany] shared office space with them. They used to be here, right here. I knew Phil and I had heard about open data [...]. One of our key areas of advocacy is transparency and public-facing technology. Putting stuff online. And so open data was a very natural fit."[126]

After it faded out in the previous election period, Councilwoman Brewer re-introduced her open data bill in early 2010. After the bill received first positive signals from the Mayor and Council Speaker, Reinvent Albany decided to use its resources to support the bill. Together with NYPIRG, Reinvent Albany founded the "New York City Transparency Working Group" (NYCTWG) as a "methodical tool" to pass legislation[127].

Over most of its existence, the NYCTWG consisted of ten organizations, ranging from the more than 100 years old Citizen Union to recently founded Reinvent Albany. Between January 2011 and its last documented gathering in September 2013 the NYCTWG met 17 times in different locations across NYC. After its last meeting, the group continued to issue press releases and open letters on an irregular basis. At the end of data collection in fall 2015 their last statement calling on Mayor Bill de Blasio to allocate funding for COPIC, dated back to June 2015. Representing not one, but ten civil rights organizations, allowed the spokespersons of the NYCTWG to join the legal discussion and to be considered a legitimate contributor. In this regard, the decision to form such a coalition can be interpreted as a form of institutional work in itself, creating the necessary foundation for other topical forms of institutional work. During the crafting process of the open data law between late 2010 and early 2012,

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[127] NYC_150806_Int

NYCTWG balanced their contributions between idealistic demands for radical openness and contribution that signaled their technical expertise in the domain of public sector data. The main actors who crafted the law were the NYCTWG, Gale Brewer's team, DoITT and the Mayoral law department who over the course of almost two years debated, assessed and fought about what was desirable, legally possible and technically feasible[128]. Whilst DoITT served as a rather neutral mediator between the discussants and the city agencies, the Law Department took a generally hostile position towards a drastic increase of informational openness. A NYCTWG member described the NYC Law Department as "protecting city agencies' prerogatives" and demanding to take out several passages of the law causing several "total rewrites" of the bill[129].

In between these rounds of negotiation, NYCTWG regularly met with representatives from city agencies, which either held particularly interesting data sets (e.g., Department of Planning) or which were particularly concerned about the release of data (e.g., NYPD). To ease these city representatives into speaking frankly about their expectations and concerns regarding the bill, NYCTWG decided to enforce a "closed door" policy to their meetings and only to publish the agendas, but no notes or videos of their meetings. As I learned, this policy was debated controversially and seen as a general trade off. To achieve greater transparency of the government in the long term, one decided that it is acceptable to create these temporary rooms of closedness and privacy in the short term:

> "If we want to talk to [city employees] and we say, 'we're going to live stream this to the Internet' – what are they going to say? They're just going to read from press releases. 'We are committed to improving the state of open government in New York City'. That's what they're going to say. But if there are no cameras and there is no transcript, they'll say: 'Look, we're running into some trouble. The data is a lot messier than we thought it was so we're cleaning it up [...] but right now it's embarrassing if we publish.' [...] This is a thing that happens with [some city employees] we talked to."[130]

Around two years after it was re-introduced, the crafting of Brewer's open data bill was complete and Introduction 29-A was sent to a vote in City Council. In February 2012 the City Council unanimously passed the bill. It became Local Law 11 and was turned into effect by Mayor Bloomberg the following month. After the law was passed, the frequency, attendance, and number of issues on the agenda of their meetings decreased. After DoITT published the first mandatory open data compliance plan in September 2013, the meetings of NYCTWG finally faded out and its members turned towards other issues.

The role of the professional lobbyist of the NYCTWG in the institutionalization of open data is a fascinating one. Most significantly, they presented a strong symbolic and argumentative counterweight to the Law Department as an incumbent, and it appears as that without their presence, the open data law would have turned out significantly less liberal. Zooming in we find that the NYCTWG coordinated their institutional work between a front and a backstage. On the front stage, they negotiated

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[129] NYC_150806_Int
[130] NYC_150909_Int

with the Law Department, started off with idealistic demands (all city information has to be digitized) and eventually played a loose-to-win strategy (only new city information needs to be digitized) in order to achieve effective change. On the backstage, NYCTWG created spaces of informality to eradicate concerns by city agencies. Once they knew about these concerns, they could readjust their negotiation strategy on the front stage.

The hobbyists: adding an informal sanctioning mechanism to the open data law

NYCTWG involved many established and professionalized civic advocacy organizations, which understood the improvement of city services and general livability as a confrontational process of law enforcement and extensive "watchdog" campaigning. However, the broad coalition that worked towards an open data law also included representatives from organizations who believed that improved services can emerge from a more cooperative process, during which they contributed their skills and resources in order to facilitate the agencies' change processes.

In NYC, people comparable to the Circuit Riders (Chapter 6.1.3) began to gather in different hobbyist groups describing themselves as "civic hackers". The most influential group regarding the institutionalization of open data in NYC, was "BetaNYC". The genesis of BetaNYC started in 2008, when a NYC-based PhD student started a hobbyist project that would quickly develop into the web application "TwitterVoteReport", a monitoring tool for the upcoming presidential election. The web application was created by a number of people who read about the project idea in web forums on government and technology-related issues. Over the course of several weeks these people would meet regularly at a co-working space in Brooklyn and together experimented how to use the fairly new Twitter technology to monitor the upcoming federal election process. The project collaborators called these gatherings "dev-days"[131], as their main interest was the playful pursuit of software development. Their motivation to join pertained to a mixture of the desire to support the candidacy of progressive candidate Barack Obama, as well as the mere joy of exploring new ways to use social media technology. In these early days the group met in NYC, but had no specific focus on the governmental processes and technologies of the city. After the election was over, a small group of participants continued to meet on a monthly basis and shifted their interest to their immediate environment: NYC. As one of the participants described the atmosphere, these gatherings "were really just opportunities for people to hang out and to shoot the shit, just socialize and talk about some of the problems and some of the ideas"[132] on how to "create a more open, transparent society." Within this process of reformation, the group rebranded themself as open NY Forum[133]. However, despite their initial motivation no new lager projects emerged from these meetings and their frequency decreased ("We met every other month, sometimes once in six months" [134]). By early 2013, the group of politically inclined technology enthusiasts has chilled down to a mailing list with a large number of subscribers, but unfocused discussions. For quite some time, the former event organizers thought about closing down the group once and for all. However, things change drastically when in spring 2013 Noel Hidalgo, one of the organizers and

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participants of the meetings since their beginning, was hired by the non-profit organization "Code for America" (CfA) as their first community organizer in NYC. CfA was founded in 2009 as a non-profit organization that builds government-related open source software products and mobilizes volunteers to convince governments to use this technology. On their website CfA provides a brief explanation of their rationale:

> "Code for America believes that a healthy democracy is one where government and people work together to improve their community. This requires trust between government and residents. That trust is built when interactions between government and residents are transparent, inclusive, and respectful. While trust in government is at an all-time low in the United States, we believe things can be different. And we believe this starts at the local level where government most directly touches our everyday lives."[135]

Since 2011 CfA has expanded its "technolibertarian" endeavors (see 6.1.3) to local governments all across the US and started to nurture groups of volunteer technologists who agree on this theory of change and are motivated to engage with their local government, in order to convince them of new transparency technologies. In NYC, Hidalgo suddenly realized that CfA's interests overlapped with his own and those of many people on the mostly defunct Open NY Forum mailing list. In his new role as a full-time funded community organizer, he therefore decided to use the already existing mailing list and revive the group meetings under a new name: BetaNYC. As part of his job description for CfA, Hidalgo began to organize up to four "hacknights" every month in different locations across NYC. The name and structure of these hacknights was roughly predefined by CfA in a handbook for local organizers, but resembled the earlier "dev-days" of the Open NY Forum. At the beginning of every hacknight, Hidalgo would give an introduction speech explaining the values of BetaNYC/CfA and the procedure of the evening. In the following one to two hours of "open space hack session", people would start by introducing themselves to the group and present any problem or projects they thought of. Oftentimes, and framed by the format, these problems would concern local government and the urban environment. Subsequently, the participants would form groups, work on the proposed projects, just chat with each other, or continue work they had begun previously[136].

Although the rate of participation at BetaNYC hacknights varied over their time of existence, on average they attracted between 15 and 25 people[137]. What surprised me in my observations of several consecutive BetaNYC hacknights in summer 2015, was, that many participants that had previously not heard of open data, but were interested to learn about them, were oftentimes filled in by some of the more regular participants after the introduction round was over. One of the participants reported how warmly she was welcomed to the group and encouraged in her work:

> "I showed up at a BetaNYC meeting and I had this rent stabilization data that I was working with. I told them that I have no technical background, but showed them what I was doing with the data at that point. I presented my project the next week and it was really great and I just met all these people

[135] NYC_151121_Web
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[137] NYC_150902_Int

> who were doing kind of similar stuff. Then I just started going regularly because I started to meet people, and we were doing similar kinds of stuff. I finished my project and then I was like 'What else can I look into'."[138]

Besides rent stabilization, data people at BetaNYC worked with data from various other domains that addressed what they considered as problems, including public transport, homelessness or street safety. As one participant put it, most of these projects included "turning data into something that normal people could understand, [...] poking around at data and making it tell a little story."[139] As more and more of these stories ended up in the local and even national media[140], city employees started to attend the hacknights as well. Sometimes they would attend as regular participants and engage with the others, while at other times they would give a short presentation about data sets that they recently released as open data. In contrast to most of the advocacy organizations within the NYCTWG, BetaNYC "tended not to politicize"[141] and the leadership of Hidalgo was described as purposefully "soft and non-combative" in order to "build a positive working relationship" [142] with the city government. This approach resonated with the general motivation of the participants who described that they did not want to be seen as an "agitators" who were "just complaining", but as part of a group that "works with a city hand in hand." [143] In early 2014, the CfA funding for BetaNYC faded out but until the end of data collection in fall 2015, Hidalgo was able to raise sufficiently additional funding from the city of NYC and corporate sponsors to continue the organization of several monthly hacknights[144].

The role of BetaNYC on the institutionalization of open data is less clear-cut than the one of other information activists, but complementary in various ways. First, BetaNYC picked up the practice template initially developed by the mapping activists of the 1990s and directly linked the access to digital data on NYC to an individual's ability to affect change. During the hacknights, Hidalgo repeatedly described the participants as "change makers", and city data as the instrument that – thanks to the open data law – was right under their noses. By reinforcing this cognitive link again and again, data turned from something abstract and neglected to something desirable and apparently powerful. Based on this link, the hacknights served as an instrument to educate New Yorkers about the existence of the open data law and the open data portal. During the hacknights, Hidalgo and the other volunteer organizers tried to match up individual participants with certain data sets. After just a few weeks, a regular participant would only be addressed as a "transport data expert" and would regularly work with people interested in transport related problems. By creating this stewardship for certain data domains, BetaNYC managed to create a grass roots sanctioning mechanism for agencies' compliance with the open data law. The more individual domain experts feel responsible for certain types of data, the more they would monitor agencies and publicly blame them for malpractice. At many of the

[138] NYC_150912_Int
[139] NYC_150921_Int
[140] Particularly one of the participants published many data stories on the Blog "I Quant NY", many of them, which have been picked up by national media outlets.
[141] NYC_150913_Int
[142] NYC_150913_Int
[143] NYC_150902_Int
[144] NYC_150922_Int

BetaNYC hacknights I met local journalists or bloggers who were interested in stories of city agencies not living up to their transparency promises. Finally, quite similarly to the meetings of NYCTWG, the hacknights created a space of informality for city agency employees, in which they could familiarize themselves with the demands and the language of the open data community. In addition, they had the possibility to receive feedback on data sets that they planned to release and collect stories about potential users of open data, which they could use to build agency-internal legitimacy for any future data releases.

Table 6: NYC – Narrative B: Open data between lobby and hobby

Episode	Contribution to institutionalization / Forms of institutional work
The early days of data activism: creating the issue	The civic advocacy organizations **New York Public Interest Research Group (NYPIRG), Community Mapping Assistance Project (CMAP),** and **Transportation Alternatives (TA)** set the groundwork for the institutionalization of open data. Since the 1970 they fight local battles against individual city agencies, facing them with the fact that – in front of the Freedom of Information law – they are required to hand over their data. Particularly important for the institutionalization of open data, they explicitly show the connection between digital city data, successful activism and the ability to influence entire legislative projects. By creating these cognitive templates, by showing this realm for action, they create the role of an urban information activist, which is later on picked up by a new generation of open data advocates.
The lobbyists: pushing for an open data law	The more Bloomberg promotes his idea of a data driven governance of the city, the more civic advocacy organizations become interested in access to public data sets for their own campaigning. Ten NGOs interested in different data sets form a meta-organization: the **NYC Transparency Working Group**. The group manages to enter the negotiation process of the open data bill initiated in the City Council and successfully insert some of the mutual interests of its members into the final bill.
The hobbyists: adding an informal sanctioning mechanism to the open data law	The open data law is passed without a formal sanctioning mechanism for non-compliance. This void is filled by a group of technology hobbyists. Sponsored by the international open government NGO **Code for America** and shortly after the open data law is passed, **BetaNYC** starts to host weekly "hacknights". During these events, interested citizens (self-described as **"civic hackers"**) meet to talk about data, use data and teach others how to use data. Over time, the civic hackers develop into a community that closely monitors the city agencies' compliance with their publication promises. In cases of deviation, they create ad hoc legitimacy claims (e.g., blog posts) against individual city agencies and push them towards compliance.

6.2.3 From narration to causation

In this dissertation I follow what Mayntz (2009) describes as "epistemological relativism". This perspective on the social, in contrast to classical positivism on the one side and radical constructivism on the other, assumes that there is a real world existing, which is external to the individual observer. Each observer, however, can only perceive sections of this reality, depending on her or his "condition" (Mayntz, 2009, p. 7 ff.). In the two narratives presented above, I showed how the perceived influence of events on the institutionalization of open data differs depending on the relative position of the actor in the field. Slightly simplified, actors tend to overemphasize their own influence, underestimate the influence of others and neglect that there could be influence outside their scope of perception. With narrative clusters as a distributed epistemological approach, I intended to generate knowledge about institutionalization processes that is neither idiosyncratic (including all possible voices), nor based on a too limited section of reality (only based on one voice). In order to move from these distributed narratives to what "really" happened (the promise of epistemological relativism), I triangulated the narratives derived above. Keeping in mind my research question – *How do actors institutionalize organizational openness on the field-level?* – I derived a causal chain of critical episodes that led to the institutionalization of open data.

The *first critical episode* in the institutionalization process of open data in NYC was the crafting and passing of the Freedom of Information Law in the state of New York. In 1975, a formal rule was established allowing citizens for the first time to demand access to city information. After the law was passed, many city agencies attempted to disregard the rule and withhold the requested information. The more of these cases were moved to court, the more city agencies adjusted to the rule. Over time, the idea that the release of public information as a means to support the democratic legitimation of public organizations became taken for granted.

The *second critical episode* is less tangible than the first, but of great importance for the further process. In this episode different challengers created a cognitive link between access to public information as a means to economic benefits as an end. In doing so, they do not replace the means-end link between public information and democratic practice, but added a complementary one. In this way, they significantly broadened the coalition of actors that are willing to support (or at least not oppose) demands for a more progressive law regarding the access to public information. Examples of this creation of a new means-end link are manifold: Through the promotion of the Big Apps competition, Bloomberg and the EDC created a cognitive link between the release of open data and creation of jobs through data-driven startups. Aside of the competition, Bloomberg relentlessly (in press articles and public appearances) emphasized how greatly his management approach – which led him to great economic success – depended on the availability of public information. Finally, also civic advocacy organizations established links between access to public information and ends that ultimately increase the attractiveness of NYC as a place to live and work (e.g., the reduction of cycling accidents through the analysis of crash data).

The *third critical episode* in the NYC process was the crafting and passing of the Open Data Law in 2012. By broadening the range of people that could relate to the issue of open data through the creation of an additional means-end link, challengers managed to steer a bill through the City Council that substantially widens access to public information in contrast to the FOI law. Similar as with the FOI law, some city agencies attempted to circumvent the new Open Data law, yet had been pushed towards compliance through informal grass roots sanctioning mechanisms.

6.3 Case: London

The administrative-legal structure of the UK made it necessary to analyze the open data process in London as being embedded in a national one. I therefore arranged my case study along three narratives. The first and second narratives tell the story of open data from the executive-legislative perspectives of the central and the city government. Open data has been promoted by the UK central government since Labor politician Gordon Brown served as Prime Minister in the late 2000s. Conservative Prime Minister David Cameron, who replaced Brown in 2010 continued and even intensified the governmental open data initiative. In London Mayor Boris Johnson mandated the introduction of open data in order to follow the Conservative Parties nationwide policy. The third narrative tells the story of civic open data advocates, who decided to work hand in hand with the central government, as they expected this strategy to result in a national trickle-down institutionalization of open data. Tables with summaries of the episodes in each of the narratives together with their influence on the overall institutionalization process can be found at the end of each chapter.

6.3.1 Narrative A-1: Open data as a national priority

The United Kingdom is constituted as a unitary state. Over the last decades it has been subject to partial devolution, leading to the allocation of some powers from the Parliament of the United Kingdom to, e.g., the Scottish Parliament/Scottish Government, or to the London Assembly/Greater London Authority. The structure of local and regional authorities in England is complex and convoluted. Crucial for the story of open data is that all legislative power rests with the Parliament and Government of the United Kingdom. Therefore, also all municipalities, including the 32 boroughs of London, are subject to local government legislation passed by the UK Parliament.

Computerization: An issue for central government?

Important and highly contested artifacts in the struggles for UK's information regime are a number of nationwide data sets. The most notable of these data sets are the ones held by several trading funds, the Royal Mail and the National Health Service (NHS). Trading funds are organizations set up by the UK government, which provide commercial services (including data collection and dissemination) to both public and private sector and use their generated income to cover large parts of their operating costs. Trading funds that became entangled in open data discussion are, for example, the Land Registry (land and property ownership data), the Meteorological Office (weather data), the Ordnance Survey (maps), and the Companies House (company register). The Royal Mail has been the UK's publicly owned postal service since the early 16th century. However, following the Postal Service Act of 2011 it has been privatized including the Postcode Address File (PAF), a database containing all

known delivery points and postcodes in the UK. Finally the publicly funded National Health Service (NHS) holds various data sets containing information about the health system in London and the rest of England. It operates autonomously and is overseen by the Department of Health. In an interesting analogy to Salvador Allende's Project Cybersyn (see 6.1.2), the growth of these nationalized services in the UK spurred the government's interest in new forms of data storage and processing early on:

> "With its sprawling civil service, nationalized industries, National Health Service, and dozens of far-reaching social insurance and welfare programs, the British government required ever greater data processing power throughout the twentieth century, both in terms of computing machinery and human labor." (Hicks, 2010, p. 5)

In 1957 the HM Treasury, responsible for financial and economic affairs, set up a team of telecommunication engineers to be able to advise other departments on computer technology. By the 1970s, the initially small unit had grown to the Central Computer and Telecommunications Agency (CCTA) with several hundred employees. In the late 1970 CCTA oversaw around 80 per cent of government computers in the UK and no department or local government (including the London boroughs) could acquire or use computers without their approval. During the 1980s, computer technology began to develop at a pace that exceeded the CCTA's capacity for central planning and it announced that from now on there was no overall strategy for implementing information technology in government and that pace and direction of this implementation is up to the individual agencies. Shortly after, CCTA's budget was cut back several times and its influence decreased. In 1995, Deputy Prime Minister Michael Heseltine created the Central Information Technology Unit (CITU), a small team working within the Cabinet Office not to lose touch with technological development entirely and to make strategic suggestions for a national information technology infrastructure. Up to the present day, most information technology decision-making in the UK remains decentralized, devolved to individual agencies and departments, yet Cabinet Office has oftentimes setup short-lived or more permanent groups to implement specific nationwide IT projects[145].

Freedom of Information legislation and its consequences

Government information systems, whether devolved or centralized, became politicized when actors outside the government demanded access. The interplay of transparency and secrecy of government agencies has been an issue in British politics since the 1960s. In 1968, government advisor Baron Fulton delivered a report to the Labour government on the quality and prospect of the civil service as a British profession. The report was commissioned based on concerns that the highly traditional and elitist model of the pre Second World War era might not be able to adapt to upcoming technical and political changes. One of the recommendations presented by Fulton was to free administrative procedures from "unnecessary secrecy"[146].

[145] This section is informed by the work of Helen Margetts (2012) on the computerization of the UK public sector in the late 20th century.
[146] LDN_160124_Web

The Fulton report was the first to link a liberal government information regime to the idea of modern and globally competitive government agencies. In 1974, Labour reacted to this recommendation and included the commitment to a Freedom of Information Act in its election manifesto. However, after talking to US officials about their experiences with implementing FOI legislation over the previous years (see 6.2.2), the elected Labour government turned away from FOI legislation in 1975. The pledge, however, remained part of the Labour agenda and was featured in every party manifesto including Tony Blair's New Labor manifesto of 1996[147], which directly echoed the Fulton report, stating that "unnecessary secrecy in government leads to arrogance in government and defective policy decisions."[148]

In May 1997, Tony Bair was elected as Prime Minister, following four consecutive election periods under Conservative government. To fulfill the FOI pledge Labour published the progressive white paper "Your Right to Know", but eventually introduced a bill in December 1999, which included more exemptions and reasons to withhold certain types of information than the initial proposal. The bill passed and received royal assent in November 2000. However, due to the coordination with the Scottish FOI act, the law only came into power in January 2005 – around 40 years after Labour first introduced the issue.

In May 2008, four years after the FOI act was passed, a FOI request for Members of Parliaments' (MP) expenses claims, that was previously denied, was eventually allowed by the High Court. The House of Commons authorities announced to release the information by July 2009, but it was previously leaked to The Daily Telegraph, which began to publish stories about the misuse of MP allowances and expenses from May 2009 onwards. When the records were officially published in June 2009, The Guardian uploaded the released information to its website and over the following weeks mobilized more than 20,000 volunteers to search the documents for conspicuous expenses: "If you see a bathplug or whatever you see, you could flag it."[149] Several of my interview partners from outside government described the MP expenses scandal as a call to arms for politicians across all major parties. After the scandal led to numerous resignations, early retirements and even imprisonments, the political parties reinforced their efforts to engage with the new information regime and emerging technologies in order to prevent their legitimacy from getting eroded even further[150].

Sensemaking in times of datafication: The Power of Information Taskforce

More than two years before the MP scandal broke, the changing social, legal and technical environment led the Labour government to commission an internal policy review, which was published as the "Power of Information Review" just days before Labour politician Gordon Brown succeeded Tony Blair as Prime Minister (June 2007). The report was co-authored by Tom Steinberg, who worked for Tony Blair's strategy team in the early 2000s and constantly advised the Labour as well as the Conservative government on technology and data policies from 2007 until 2012. The Power of Information Review contained a set of recommendations for the UK

[147] LDN_160124_Web
[148] LDN_160124_Web
[149] LDN_150424_Int; LDN_090623_Media
[150] LDN_150313_Int; LDN_150323_Int

government to change their technologies, policies and practices around information held by government agencies. Inter alia, the report recommended that government should collect information requests through a web-based channel, significantly lower or eliminate the charges on trading fund data, and revise the current copyright licenses used for government information[151]. In its simultaneously published "Response to The Power of Information Review", the government pledged "reports will be made at six-monthly intervals until the recommendations are fully implemented and an assessment of their effect can be made."[152]

According to information activist and Guardian technology writer Charles Arthur, Gordon Brown – once in office – appointed ministers who were "largely sympathetic" to the outlined changes in information policy and enabled that "things changed dramatically" in contrast to the Blair administration[153]. In his Guardian column, Arthur also provided an anecdote – repeatedly recited by my interviewees – about how the British academic and inventor of the World Wide Web protocol Tim Berners-Lee convinced Gordon Brown of the idea of a new data regime during a dinner party:

> "Brown asked: 'What's the most important technology right now? How should the UK make the best use of the Internet?' To which the invigorated Berners-Lee replied: 'Just put all the government's data on it.' To his surprise, Brown simply said 'OK, let's do it'."[154]

To deliver on the Power of Information Review, the government installed the Power of Information Task Force, a small team affiliated with the Cabinet Office, in March 2008[155]. The location of this working group reminds us of the UK government's problem described above that they were unable to control the national IT development in a top-down fashion, but at least wanted to be able to do some strategic steering when it came to new and fast-moving issues[156]. Over the course of a year, the Task Force evaluated the feasibility of the recommendations, and consulted with various government agencies and external experts to "bring in the best ideas from the outside."[157] During this year, members of the Task Force as well as external experts in government technology and information began to rephrase the debate away from the previously used term Public Sector Information towards what they considered to be a more fashionable terminology. As one of the task force members recalled: "We started talking about open Government Data from early 2009 on. We just rephrased the debate. I think this reframing was quite powerful."[158] After a year of consultations and feasibility checks, the team published the Power of Information Task Force Report in February 2009, including a list of detailed proposals on how to change the way government stores and shares data with the public. Rather rudimentary and diffuse ideas from the Power of Information Review specifying how the information regime would have to change, had now been transformed into a list of specific and feasible projects.

[151] LDN_070601_Report_a
[152] LDN_070601_Report_b
[153] LDN_100401_Media
[154] LDN_100401_Media
[155] LDN_100101_Report
[156] LDN_130718_Int
[157] LDN_130718_Int
[158] LDN_130719_Int

The work that happened in these two years set the stage for the more tangible open data activities to follow. Gradually throughout the early years of the 21 century, the UK government came to the conclusion that changes in the public information regime were needed to remain competitive as a nation among others, as well as to retain their legitimacy domestically. This conclusion was backed by commissioned reports, as well as public information based scandals, like the MP expenses scandal. To determine and legitimize their response, the government included well-known professionals into the consultation process. Once these professionals made their recommendations, the government set up a team of public servants and professionals in order to evaluate the feasibility of individual projects. In terms of institutional work, this group managed to influence the framing of the entire initiative, by directly addressing the media, public and other professionals. To replace a terminology that was associated with the expensive and restrictively licensed data sets held by trading funds (Public Sector Information), the group began to speak about Open Government Data, tapping into the progressive associations linked to Open Source software and the datafication of everyday life[159].

By mid-2009, the Cabinet Office disbanded the task force and set up a project team to implement their recommendations[160]. In June 2009, Gordon Brown appointed Internet icon Tim Berners-Lee and computer scientist Nigel Shadbolt as governmental Information Advisors to support the team and to symbolize the national priority of this issue. In January 2010, the project team launched UK's national open data portal "data.gov.uk", a website on which they collected as many already accessible public data sets as possible and relabeled them using the newly created term *open data*.

The Conservative's national open data initiative

In May 2010, shortly after the UK's open data portal was launched, the Conservative Party won the general election and David Cameron became the new Prime Minister. During his campaign, Cameron commissioned the help of a former member of the Power of Information Task Force (Tom Steinberg) to make his manifesto easily connectible to the open data efforts already initiated by Labour:

> "Drawing inspiration from administrations around the world which have shown that being transparent can transform the effectiveness of government, we will create a powerful new right to government data, enabling the public to request – and receive – government data sets in an open and standardized format."[161]

Cameron and the Conservative Party did not just continue, but also intensified the efforts to institutionalize open data. In addition to transparency and accountability, they gradually widened the open data frame and promised that the instrument would help to make public services more efficient and foremost to stimulate entrepreneurial activity. In the years following his election, Cameron and his team pushed for open data at innumerable fronts, introducing new legislation, open letters, competitions,

[159] At a different place (Heimstädt, Saunderson, & Heath, 2014) I have elaborated more on the genealogical roots of the term "Open Government Data".
[160] LDN_130718_Int
[161] LDN_100401_Media

incentive schemes and various other tools. In the following section, I can therefore only give a very brief overview of the UK's national open data initiative and focus on activities that relate explicitly to the institutionalization process in London.

Right after his election in May 2010, Cameron announced his "week of data transparency" and sent an open letter to several government departments asking them to upload their data sets on central government spending to the UK open data portal[162]. To render this request more sincere, it included specific deadlines as well as the technical demand to publish the data sets not in any arbitrary, but in a machine-readable format[163]. Although this open letter was not formally binding, the administrative culture in the UK made it hard for departments to withhold this demand. In another letter following shortly after, Cameron addressed police authorities (including the London Metropolitan Police) and demanded that crime data has to be published "at a level that allows the public to see what is happening on their streets" from January 2011 onwards[164].

During his open data initiative, Cameron did not just address central government agencies, but local governments including the London boroughs as well. By January 2011, all local councils were supposed to publish information as well as contract documents for all local government-spending items over £500. As one of my interviewees remembers: "This was the first time when there was a real mandate for local government to release information 'open'." [165] In September 2011, the Department for Communities and Local Government published a code of practice with detailed recommendation how to fulfill the demands from central government. A national audit from April 2012 sampled the data release of 202 local councils in the UK and found that 89% of them had published the required data and 91% of them did so using the required machine-readable format[166]. In May 2014, after most of the local governments already complied with the informal demands to release open data, the central government turned the recommended code of practice into a legal requirement by releasing the Local Government Transparency Code.

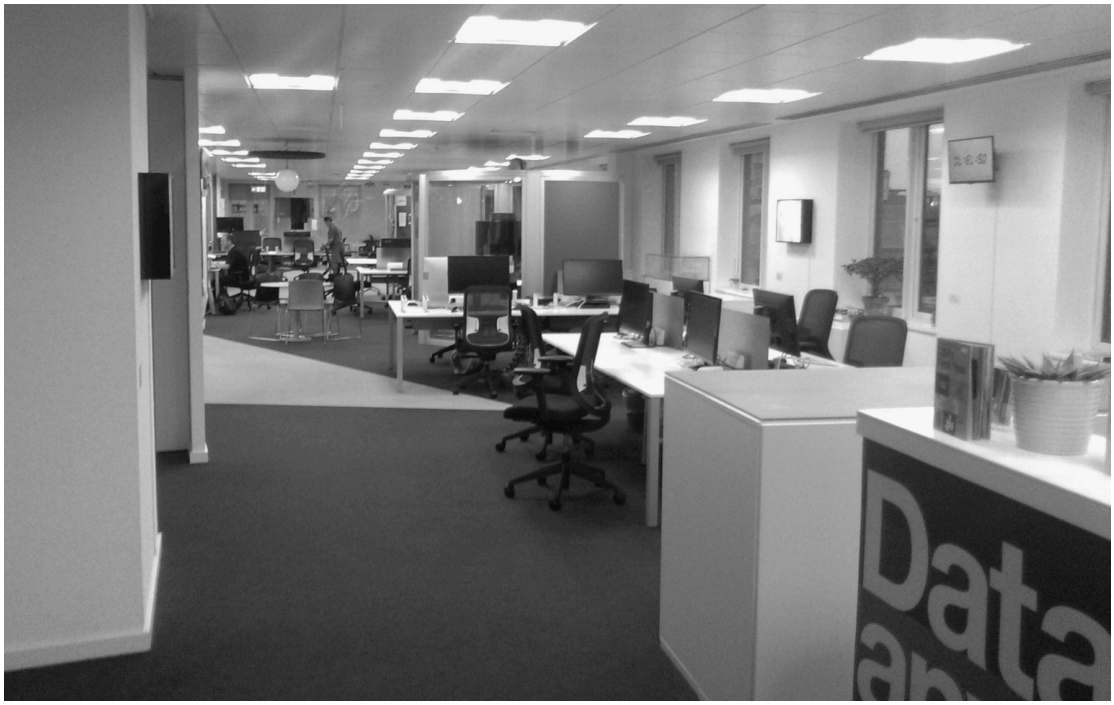
The creation of an institutional entrepreneur: The Open Data Institute

The UK government has used its legislative power and executive authority to make central government agencies and local governments release quite specific data sets as open data. Besides these immediate and "strong" means of institutionalizing public sector practices, the UK government developed a more subtle but highly effective instrument of soft power that is worth exploring in some depth. In March 2010, shortly after the Cabinet Office launched the national open data portal, Gordon Brown announced the establishment of a government-funded "Web Science Institute", headed by information advisors Shadbolt and Berners-Lee. In May 2010, newly elected Prime Minister Cameron suddenly cancelled these plans, just to announce the creation of an "Open Data Institute" (ODI) 18 months later, in November 2011. For many of my interviewees, the realization of this idea was strongly related to "many years of lobbying from Nigel [Shadbolt] and Tim [Berners-Lee] to help government

[162] LDN_100601_Media
[163] LDN_100601_Media
[164] LDN_100601_Media
[165] LDN_150410_Int
[166] LDN_120418_Media

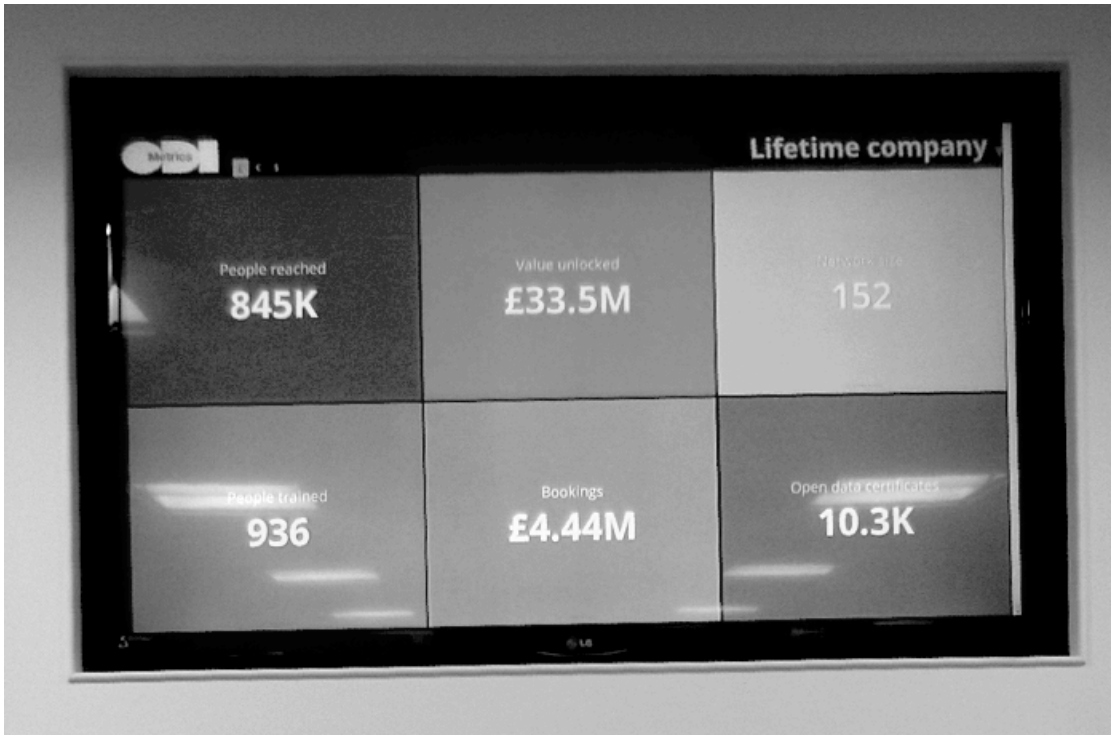
understand the power of open data."[167] In his autumn statement, Chancellor of the Exchequer George Osborne announced that the government would support the ODI with a £10 million grant over five years, bound to the condition for the ODI to raise additional funds matching this amount. As Osborne put it, the government's expectations for the ODI were "to help businesses exploit the opportunities created by the release of public data."[168] In late 2012, the ODI opened office in Shoreditch, one of the entrepreneurial districts of London. Over the following years the ODI became the physical hub and internationally perceived symbol of the UK government's open data efforts.

Figure 9: The Open Data Institute in London



[167] LDN_130709_Int
[168] LDN_111129_Report

Figure 10: Dashboard at the Open Data Institute



In all its facets, the ODI was more of a toolbox than a single instrument to institutionalize open data. As one of its first acts the ODI developed technical standards for open data in the UK. Compliance to these standards was expressed through "Open Data Certificates", a label that data producing organizations used to promote the quality of their data sets. Through these certificates, the ODI on the one hand tries to increase compatibility between data sets and on the other hand invokes a sense of trust around the concept of open data, following the rough societal consensus that certified things can be trusted. Figure 10 shows one of the several dashboards that were handing at different places within the office of the ODI and which constantly monitored the organization's key performance indicators. One of the indicators on this dashboard is the numbers of Open Data Certificates that was been assigned to individual data sets through the ODI's website. Besides these certificates, the ODI offered various training sessions for public servants and private sector employees. In these training sessions, oftentimes subsidized through government schemes, participants met one of the ODI's "open data experts", who introduced them to the history and technical aspects of open data. A large part of these training sessions covered discussions of case studies that were supposed to prove the societal and economic value of open data. On the ODI dashboard in Figure 10, the economic value unlocked through open data was claimed to be £33.5 million (in April 2015). However, the calculation behind this number remained opaque. Many of the case studies that these economic figures were based on, were produced within the ODI itself, by the so-called "evidence team". During my time at the ODI, I oftentimes shared my desk with people from this team and was able to witness first-hand how they skillfully identified cases in which someone used open data to create a tangible information product. They would then come up with a formula to determine the value of this product and eventually maneuvered a story around the product and its value into major media outlets. The ODI regularly hosted "lunchtime lectures" for interested citizens and casual meetings for paying "ODI members" from the private

sector who were interested in networking with other people searching for economic opportunity within this realm. As the ODI dashboard shows, one of their ODI key indicators was the number of people reached by the "story" of open data. For this calculation the ODI used the reach of their success stories in the media, their seminar and networking events, but also the number of people coming in and out of the office in London's startup district Shoreditch.

What became clear to me only after I had already left London for some time, was the institutionalizing effect of this office space in itself. As can be seen in Figure 9, the ODIs office is modeled in a way that resembles the fast paced startups of Shoreditch or likewise the financial trading rooms of the City of London just a few blocks away: cheap but ergonomic furniture, no walls except some capsules, shared desks, the chief executive sitting right in the middle of the room and the kitchen only separated from the main room through a glass wall. In many ways, the ODI resembled Bloomberg's "bullpen" in NYC (see 6.2.1), and its built-in pragmatism and scent of success. In between all these hot desks for the modern "data wrangler", visitors find a broad collection of art pieces, all of them related to the creative use of data. On the ODI payroll and website, one also finds a frequently changing "artist in residence". As posters and wall paintings around the office explain, the art is represents the "open culture" that the organization stands for and would like to spread around the world. Through the ubiquitous dashboards, data-driven governance is not just an abstract concept to preach, but reflexively applied to the preacher himself. The more time I spent at the ODI's office, the more I became convinced that open data is not just right, but even necessary. It took me some time to regain the necessary distance needed for this research project.

Table 7: London – Narrative A-1: Open data as a national priority

Episode	Contribution to institutionalization / Forms of institutional work
Computerization: An issue for central government?	In the centralist state, the UK government has a relatively strong influence on public agencies around the country. In the 1970s the government tries to centralize the entire procurement for computers in the public sector. With the growing complexity of information technology, the process is decentralized in the 1980. In 1995 the UK government creates the Central Information Technology Unit (CITU), a small team working within the **Cabinet Office** not to lose touch with technological development entirely and to make strategic suggestions for a national information technology infrastructure. Through this middle-of-the-road approach Cabinet Office is a relevant actor in the issue field around open data in London.
Freedom of Information legislation and its consequences	Based on the influential Fulton report on the modernization of the civil service in the UK, the **Labour party** includes a pledge for open data to their election manifesto as early as 1974. In 2005, eventually, the Freedom of Information Act comes into power. A few years later large British newspapers expose documents on expenses of **Members of Parliament**. The exposure leads to a number of resignations and even some imprisonments. The scandal has a significant impact on the public sector in general, fostering uncertainty among civil servants. Could, and if yes with what effect, be information related to them be exposed? On the institutional level the scandal moved more proactive and controlled forms of data release into focus.
Sensemaking in times of datafication: The Power of Information Taskforce	The Labour government looks for solutions on how to reorganize public service provision against the backdrop of datafication. After commissioning the Power of Information Review, the **Power of Information Task Force** is set up within **Cabinet Office** in order to explore some of the suggestions made. Most important to the institutionalization process in London, this group shapes the framing of the issue of information access. They address the media, other professionals, replace the rather technical term "re-usable public sector information" with "open data", and tap into the progressive associations linked to Open Source Software.
The Conservative's national open data initiative	In the years following his election, the Conservative government under David Cameron advances the institutionalization of open data on the national as well as local level. In September 2011 the **Department for Communities and Local Government (DCLG)** publishes an open data code of practice for local governments including all London boroughs. Three years later, after most of the local governments already complied with the informal demands to release open data, the central government makes the recommended code of practice legally binding.

The creation of an institutional entrepreneur: The Open Data Institute	Within its open data initiative the **Conservative government** creates a new organization, the **Open Data Institute (ODI)**. The ODI has the organizational goal to institutionalize open data and to create a market around its use outside the public sector. In all its facets, the ODI is more of a toolbox than a single instrument to institutionalize open data in the UK: It certifies data sets to increase compatibility between them and to invoke a sense of trust around the concept of open data. It offers training sessions for public servants and private sector employees, oftentimes subsidized through government schemes. It publishes open data case studies that are supposed to prove the societal and economic value of open data. Located in the heart of London, the ODI certifies data sets from local city agencies, trains local staff and creates case studies including causal chains between the release of local data sets and positive effects for the citizens of London.

6.3.2 Narrative A-2: Open data as mayoral bricolage

London is the capital of the United Kingdom and home to 8,538,689 citizens in 32 boroughs[169]. Over the course of the last decades, the administrative structure of London has undergone several fundamental changes. These changes, together with a hard to pierce layer of traditional rules and exemptions, make it difficult to draw a clear-cut picture of the regimes that govern the production and flow of city data[170]. In 1986, the Conservative government under Margaret Thatcher abolished the citywide Greater London Council and devolved its powers and responsibilities to the 32 London boroughs. However, after a successful referendum held in 1999, Tony Blair's Labour government brought back the London-wide government in 2000. The newly formed Greater London Authority consists of an elected Mayor of London and the 25-member London Assembly, which exists to scrutinize the Mayor's actions but has no legislative authority. Mayor and Assembly are elected for four years. The coordinative responsibilities of city development and strategic planning are performed by the GLA itself. The responsibilities to provide London-wide transport, police, and fire services are delegated to so-called functional bodied of the GLA. The three most important functional bodies are Transport for London (TfL), Mayor's Office for Policing and Crime (MOPAC) and London Fire and Emergency Planning Authority (LFEPA). The functional bodies act autonomous in their day-to-day work, but fall under the wider policy direction of the Mayor and the London Assembly. However, interpretations of the extent of this policy direction vary. Many other services that Londoner's use on a day-to-day basis, are provided by the 32 independent London borough councils. These services include council housing, schools, social services, rubbish collection, or street cleaning.

Mayor Johnson's open data pledge: introduction of the issue

When the GLA was established in 2000, independent candidate Ken Livingstone, who already headed the Greater London Council prior to its abolition, was elected as first Mayor of London. He was re-elected in 2004 running as a Labour candidate. In May 2008, the Conservative party candidate Boris Johnson was elected as second Mayor of London. By that time, the Conservative party was in opposition in the UK central government. During his campaign in early 2008, Johnson published an election manifesto, in which he made several commitments related to government transparency. Amongst other things, he pledged to publish detailed crime data and corresponding crime maps[171]. When Johnson assumed office in May 2008, he immediately began to work on his promise to open up crime data, yet the project did not turn out to be the quick win he had expected. Johnson's idea of crime mapping was inspired by the CompStat system that was developed in NYC in 1995[172]. In the early 2000s, some elements of this policing system had already been transferred to

[169] More precisely London consists of 32 boroughs and the "City of London", the historical center of London, which holds on to some traditional administrative particularities.
[170] LDN_150323_Int
[171] LDN_139999_Report
[172] In the early 1990 a New York City police officer began to manually map solved and unsolved crimes in the city. By 1995 this technique was transferred to computerized maps under the name CompStat. A main feature of this system was that individual precinct commanders could be held more accountable for crimes in their area than before (LDN_990331_Media).

London. One of my interviewees remembers how these changes affected the way the London police collected and stored data:

> "They brought my unit into existence in 2004 when the London police decided to change the policing style and [to monitor] very, very small geographic areas. But their IT systems didn't collect any data at that level. So in order to be able to determine whether the new policing style was a success, my initial brief was to build a system that would allow the data to be stored and analyzed at any level."[173]

Against the backdrop of this technological infrastructure that was already in place, Johnson approached the London police with his demand to publish the underlying data of their crime maps. Only loosely constrained by Johnson's executive power, the London police discussed this demand with their associated information commissioner, and came to the conclusion that due to legal privacy constraints "it was actually prohibited what the Mayor wanted."[174] According to a former member of this project, Johnson was particularly keen on presenting results within just twelve weeks after his election to demonstrate his ability to deliver on his promises[175]. As the police simply did not comply to his idea of openness, he had to agree to a scenario in which crime data would be made available not as download, but as a website containing different maps, Also, the maps could only be searched according to preselected parameters and not on a granular, but on a level of aggregated crimes. This website was launched in September 2008[176].

What happened between Johnson and the London police in 2008 is particularly interesting in contrast to Bloomberg's strategy to change the information regime in NYC. Where Bloomberg avoided the authoritative route and tried to achieve openness through means of soft power, Johnson tried to press for his ideal of openness through formal means, but eventually failed due to his limited executive powers. More generalized, Johnson overestimated his Mayoral authority and underestimated the inertia and professional identity of the London police. After his pledge on crime data turned out to be a mediocre success, Johnson tried to achieve administrative transparency in other ways.

The London Datastore as a signal for openness

Johnson's board of advisors, closely tied to the Conservative Party as well as various technology corporations, closely monitored the development of the UK's national open data portal and convinced the Mayor to mirror the project in London[177]. In March 2009, just one month after the Cabinet Office's Power of Information Task Force had delivered its report on how to change the public information regime, the GLA started an internal scoping project located within its Intelligence Unit[178]. The Intelligence Unit encompassed around 40 employees, who provided analysis and strategic support to the Mayor and the Assembly on areas such as health, education,

[173] LDN_150324_Int
[174] LDN_150324_Int
[175] LDN_150324_Int
[176] LDN_080903_Media
[177] LDN_139999_Report
[178] LDN_151101_Report

crime, economics, and opinion research[179]. To lead this project, the GLA hired Emer Coleman, who had previously worked for London's Borough of Barnett as a project manager. After familiarizing himself with the information structure of the GLA and the boroughs, Coleman established a working group within the Intelligence Unit and began to outline a city data portal[180]. To the public, this project was communicated as an effort to "tease out collaboration across London's boroughs, and respond both to internal pressures to save money and stimulate economic growth in the city."[181] The team quickly agreed on the project title "London Datastore" (LDS). In October 2009 Coleman used the project's Twitter account to reach out to "technologists and those active in the open data movement" and invited them to City Hall to discuss technical specifications, including data formats, software choices and usability issues. As Coleman remembers: "This invitation drew over 60 developers to our open workshop [...] in City Hall. We got some clear messages from the technology community that helped us manage expectations in the months to follow."[182] In January 2010, the GLA launched the London Datastore more or less simultaneously to the launch of the UK's national open data portal. Just as the Cameron administration did with the national portal, the LDS was not primarily announced as an instrument to foster transparency, but highlighted the ability of shared data to cut cost, increase controllability of the city and foster economic development[183]. The GLA managed to launch the LDS fairly quickly, yet it soon became clear to the project team that many of London's administrative organizations had little interest in contributing their data sets. The Mayoral authority, together with some encouraging word of the project team, simply did not challenge the organizations' legitimacy to a degree that would make them reevaluate and potentially revise their information practices.

Insufficient institutionalization: Problems with opening up transport data

To comply with the Conservative party's general endorsement of open data, Johnson was keen on having an open data portal in London as well. However, the relative limited formal authority of the Mayor of London as well as the small number of data sets maintained by the GLA itself made it difficult to present the Datastore as a success story. After the launch of the LDS, Coleman's project team therefore began to develop – more emergent than deliberate – a "third way" of open data that should mediate between a closed information regime and the idealistic idea of radical openness.

In any way possible, the team needed to make data sets from the 32 London boroughs and the functional bodies more accessible. After getting the LDS infrastructure up and running, Coleman redirected her project towards Transport for London (TfL), as many members of the open data community had shown interested in the commercial exploitation of their data sets. TfL was the local government body responsible for various types of transportation across the city, including subways, buses, cycle hire and the regulation of London's taxis. In a 2015 study, a TfL official explained that since 2007 the organization was "feeling its way a bit" in terms of an organizational transparency agenda[184] and had started to provide more information on their website.

[179] LDN_129999_Report
[180] LDN_139999_Report
[181] LDN_151101_Report
[182] LDN_139999_Report
[183] LDN_129999_Report
[184] LDN_151101_Report

In late 2009, TfL launched an area on its website through which developers could tap into some of its data sets. This access however was constrained to personal use and prohibited any use for commercial purposes. Despite this legal constraint, several TfL apps appeared based on these data that clearly breached the given terms and conditions. However, to my knowledge TfL never tried to suppress these apps through any legal means[185].

During its outreach events to the open data developer community in London, Coleman's team became aware that among the participants there was a strong interest in alterations of this "grey" data regime and to allow the commercial use of TfL's transport data. Although being backed with the Mayor's pledge towards transparency, Coleman experienced resistance when first presenting this demand to the TfL: "They didn't want to. [...] There were a number of concerns."[186] One of these concerns was that TfL had to weigh the additional cost of providing the data in clean, usable format against the financial benefit it might yield to them and the city as a whole. In June 2010, TfL removed the restrictions on commercial use of some of its travel information data sets and made them available for download, however not through the LDS but through a section on their own website that still required the registration and login for individual developers[187]. In doing so, TfL gave in to some requests of the GLA, yet on their own and less open terms. When trying to understand the reasons for this strategic shift I found that the emergence of the "grey market" transport applications in 2009, developed by breaching copyright, eventually convinced several TfL executives of the value of an open market for such applications.

In an article reflecting on her time at GLA, Coleman explained how she strategically used her contacts to the open data community to apply pressure on public agencies in a way that was not possible to her as an official representative of the GLA:

> "When I, as a public official, was unable to state publicly the resistance to data release on the official level, I could brief the digital disrupters in the Datastore network. They could raise issues on their blogs and ask questions publicly through their networks (social and otherwise) that brought external pressure to bear on their local and central government contacts."[188]

After this first step in her desired direction, Coleman and some of the open data community developers extended their demands towards the release of real-time bus data. Due to positive feedback on their prior data release, TfL was generally accord with this idea, but intended not to rush but to wait several months before doing so. At one point TfL met with Coleman's team and some developers and presented their plan to embed the visualized real-time data on their website and to release an API for developers in about six months. After this discussion, Coleman's team was able to bring the delay down to three months, just to find out that "within hours of that conversation ending" the data had already been leaked[189]. As one of my interviewees described to me:

[185] LDN_100615_Media
[186] LDN_151101_Report
[187] LDN_100615_Media
[188] LDN_139999_Report
[189] LDN_139999_Report

> "At some point a friend of mine discovered that they have a JSON [note: a data format] endpoint, so you can actually download the data, and announced it. I twittered about it and my Tweet became the object of controversy between [Emer Coleman] and TfL. After that they started to work more on the open data."[190]

During a "rather surreal conversation" with the TfL, Coleman subsequently found out that "the link to the data was available internally on the TfL intranet all along, and someone had simply emailed the link externally, whereupon the developers descended and immediately started building their apps."[191] Two days later developers had already uploaded two bus apps to the App Store[192]. In June 2012, after Coleman's contract at GLA had already ended, TfL eventually released their official bus data API.

This episode of the narrative vividly shows how the practice of doing open data is negotiated between different actors and how the final result is affected by events external to this negotiation process. On the front stage, Coleman's team negotiated with the powerful and fairly independent TfL about the conditions of their data release. TfL in fact felt the pressure of a general normative shift towards more transparency, but circumvented formal openness by granting the "grey" use of their transport data. The final decision to change the information regime of some of their data from grey to white did not happen due to the pressure applied by the GLA, but rather coincided with their demands. The institutional work that led the TfL to adapt their behavior is therefore not to be found with GLA, but with the software developers who created the prototypes that TfL in turn interpreted as signals or symbol of a broad commercial interest in their data.

Central government rushes in: Top-down interventions

After the UK government initiated the release of open data by national departments and trading funds, its attention moved to the information held by local governments. Between 2011 and 2015 they used a combination of normative pressure and formal regulation that affected the institutionalization of open data in London and thereby supported the efforts of Johnson and the GLA.

In September 2011, the national Department for Communities and Local Government issued the "Code of Recommended Practice for Local Authorities on Data Transparency". Through the code, the Cameron administration explicitly demanded the publication of some specific information as open data, but added its expectations that communities and local governments should "go further in publishing the data they hold than the minimum standards" set out in the document[193]. My interviews revealed that this code, although framed as non-mandatory, had a strong normative effect on local governments and exerted "quite a lot of pressure [...] to publish this data."[194] When speaking to employees of a London borough, I learned that that the "recommendations" were perceived as a de facto obligation and that many of the

[190] LDN_150317_Int
[191] LDN_139999_Report
[192] LDN_150313_Int
[193] LDN_131201_Report
[194] LDN_150323_Int

councils complied with "everything that was on there."[195] In November 2014 the recommended practice became mandatory practice when the UK government passed the "Local Government Transparency Code", which asked for the publication of procurement information including lists on expenditures exceeding £500. Overall, the requirements of the local law from 2014 closely resembled the practice recommended and widely adopted since 2011.

In 2014, around the same time the local law came into power, the UK government initiated multiple schemes to nudge central and local agencies towards open data. In their totality, these schemes may best be understood as instruments of governmentality in the Foucauldian sense. By creating "soft" market-inspired mechanisms, the government tried to institutionalize a behavior that would be more resource intensive to achieve through means of "hard" monitoring and sanctioning.

During the "Local Government Open Data Incentive Scheme" between June 2014 and March 2015, the national government offered local councils £2,000 to publish open data on one out of three themes (planning applications, premises licenses, public toilets). A further £1,000 would be paid if the council published data for all three themes. By attaching a monetary sum to open data, the national government created an opportunity cost for closedness and secrecy. As such, the more a public organization's internal decisions were led by economic ends, the harder it became to defend the position of withholding data sets.

During the "Open Data Breakthrough Fund" scheme, local governments were asked to submit proposals for projects related to the release or innovative use of open data. In late 2014, 36 local governments across the UK were accepted to this scheme, including several London boroughs. One of them was the London borough of Barnet, which received a £43,800 grant to develop their own open data portal[196]. In their evaluation report, published shortly after the launch of the open data portal in August 2014, the borough stated that they have thus far published "45 individual and grouped data sets, with more being checked and uploaded every week."[197] These data sets included not just the legally mandated lists of expenditure items, but data on population projections, the location of CCTV cameras, or figures on corporate fraud. Through this kind of competition, the government not only attached an opportunity cost to the withholding of information, but also framed open data as something desirable on a societal level. Even for local councils that were not selected into the round of grantees (and thereby had no de facto opportunity cost), the experience of having competed for the best way to open up information shaped their general attitude towards the practice. In a similar vein, the local councils who had not even participated in the competition had to face questions why they refrained from doing so, thereby experiencing soft forms of stigmatization.

Administrative control without a hierarchy: The Borough Data Partnership

After having struggled with their previous attempts to "demand" open data, GLA reoriented its strategy and mimicked the national government's attempts to use more subtle means of institutional work. In an interview, the GLA's Assistant Director of

[195] LDN_150331_Int
[196] LDN_150331_Int
[197] LDN_140822_Report

Intelligence claimed that city data not being shared in a "harmonized, interoperable and meaningful way" was supposedly his "biggest frustration". Yet, through coordination and cooperation between GLA and the boroughs these actors were able to overcome the "artificial administrative boundaries, which cross the city."[198] As an instrument to foster this coordination and cooperation, the GLA launched the "Borough Data Partnership" initiative in July 2014. With this initiative, the GLA intended to integrate the different London boroughs' diverse databases and data platforms with the London Datastore. In July 2014, the GLA organized the first Borough Data Partnership meeting. Targeting employees and elected members of borough councils, GLA brought together speakers from central government, the ODI, and startups that make use of open data to convince the boroughs of the benefits of open data[199]. Unlike the meetings GLA held with the developer community, the stories told on stage did not revolve around technical details of data provision, but geared around economic success stories that sprung from more liberal and interconnected information regimes. As one of my interview partners convincingly pitched it: "If you want to build an app, it doesn't really make sense to build a different one for every borough. You want to have one large and connected data set."[200] At the first event in July 2014, members of 15 out of the 32 boroughs showed up. The second one in December 2014 attracted 23 out of 33 boroughs[201]. The GLA continued these events over the course of 2015 and in early 2016 published their "City Data Strategy" as a "plan, which will actively integrate and mobilize all the 'working parts' of the city data economy."[202]

In these two interconnected narratives, I have shown how open data in London emerged in a process of institutional bricolage between the Mayor of London and the national government. The issue of open data entered the London administration when Boris Johnson became Mayor. Johnson, who had a keen eye on the agenda of the Conservatives' action on the national level, decided to replicate their open data efforts on the city level. However, due to the historically fragmented structure of London's administration and his limited executive powers, his teams were unable to implement their vision of open data. This slightly changed when the national government entered the local institutionalization process through formal rules and regulations as well as resource intensive schemes that incentivized the practice of open data. Eventually, the Johnson administration re-oriented their strategy in 2014 and began to use means of community building and normative re-association to convince the boroughs of the use of open data. Overall, the story of open data in London is strongly intertwined with the national government. In the following complementary narrative, I show that this level-spanning interference is not limited to the administrative-legislative complex but has effected the actions of civil society actors as well.

[198] LDN_150708_Report
[199] LDN_150313_Int
[200] LDN_150323_Int
[201] LDN_141205_Report
[202] LDN_160301_Report

Table 8: London – Narrative A-2: Open data as a mayoral bricolage

Episode	Contribution to institutionalization / Forms of institutional work
Mayor Johnson's open data pledge: introduction of the issue	**Mayoral candidate Boris Johnson** introduces open data to the local political arena. His election campaign is partly framed around issues of safety and transparency. He pledges that in case of his successful election, he will make granular data on crimes and their location available. Once elected, Johnson realizes that his pledge conflicts with the regulatory context, as well as the willingness of the **Metropolitan Police** to open up their data sets. On an institutional level, Johnson introduces the issue of open data, yet the lack of response shows that there is little pressure on organizations to adopt it.
The London Datastore as a signal for openness	**Mayor Johnson** advises a small team within the **Greater London Authority (GLA)** to create a data portal that resembles the national portal developed out of Cabinet Office. GLA launches the London Datastore fairly quickly, yet it becomes clear to the project team that many of London's administrative organizations have little interest in contributing their data sets. On institutional grounds, the Datastore serves as a signal for other city agencies that sharing data sets is politically supported. Further is serves as an instrument to create a sense of unity and solidarity amongst the relatively autonomous boroughs, since it is framed not the GLA's, but the *London* Datastore.
Insufficient institutionalization: Problems with opening up transport data	Despite the Mayors pledge and the LDS as a strong signal for its desirability, city agencies are still reluctant to open up their data sets. **Transport for London (TfL)** initially rejects the **GLA team** when they ask them to share their data. TfL eventually opens up their data sets when more and more software developers scraped data from their websites and released unofficial applications on top of it. This episode exemplifies how two streams of institutional work, each insufficient on its own, together become sufficient to make a city agency change its behavior.
Central government rushes in: Top-down interventions	The Conservative's national open data initiative turns towards data held by local governments, including the governments of all London boroughs. The **Department for Communities and Local Government (DCLG)** releases a code of practice including a list with data sets that have to be released. Although formally voluntary, local governments perceive this code as a binding obligation. A few years later, at a point when almost all local governments already comply with the code, it is turned into a formal law. At the same time, DCLG sets up various grant schemes and competitions for local governments in order to make them open up more data than specified in the code. Through these "soft" market-inspired mechanisms, the government tries to institutionalize a behavior that would be more resource intensive to achieve through means of "hard" monitoring and sanctioning.

Administrative control without a hierarchy: The Borough Data Partnership	The **GLA** has little hierarchical control over the relatively autonomous **London boroughs**. Against the backdrop of the formal regulations passed down from central government, it turns to more subtle forms of institutional work. The GLA sets up the Borough Data Partnership and hosts regular events to which it invites representatives of the London boroughs. At these events, speakers from inside and around the ODI present case studies on how data-sharing leads to economic benefits for each borough individually, but that the network effects of mutual sharing might lead to exponential benefits. By using this rhetoric, the GLA moves the decision for open data from a moral one (citizen deserve the information) to an economic one (there are great opportunity costs of closedness).

6.3.3 Narrative B: Open data between coding and consulting

From freedom of information to freedom of data: transformation of an issue

In the UK, the debate about Freedom of Information legislation began in the late 1960s. In 1974, the issue eventually made it into the Labour election manifesto and in 1984 the Liberal politician and citizen campaigner Des Wilson founded the advocacy group "Campaign for Freedom of Information". At a time when the Conservative government of Margaret Thatcher opposed the idea to make government information generally accessible, three opposition leaders including Labour leader Neil Kinnrock, supported the Campaign. When Blair's Labour Party assumed office in 1997, the Campaign's chairman James Cornford served as adviser to the government and helped crafting the white paper "Your Right to Know", which after some changes finally turned into the FOI legislation in 2000. The Campaign was founded at a point when the opposition parties already favored the issue of FOI. Therefore, the role of the advocacy group was not to mobilize citizens in order to convince political parties of the importance of an issue, but to make sure the issue would remain on the agenda long enough. Since the implementation of the FOI law in 2005, the advocacy group continued to campaign against its weakening. In the early 2000s, this first wave of information activists was accompanied by a new generation of "civic hackers", who expressed their vision of a different information regime through traditional advocacy work as well as through "demonstrator projects", websites or software that were supposed to show the government how it could and should handle information[203].

In 1996, a small group of software developers and likeminded people formed "UK Citizens Online Democracy", a group with the aim of exploring how emerging Internet technology could benefit the relationship between citizens and the government. The group faded out in 1999, but was revived four years later. In 2003, Tom Steinberg assembled a group of people, most of them who already worked on individual projects around online democracy, within the new non-profit organization "MySociety". The organization was able to acquire initial grant funding and began to work on several web tools that were supposed to ease communication between citizens and government employees in the UK[204]. One of their first outcomes was the website FaxYourMP, a service that allowed users to write online messages to their elected officials, which would then be send to them as a fax. In 2005, the service was re-branded as WriteToThem and allowed messages to be sent as emails as well. In our interview, Steinberg explained the relation between these services and the 2005 information regime in the UK:

> "We have used a lot of governmental data: boundaries of electoral areas, maps used by Ordnance Survey, postcode databases, and so on and so forth. It used not to be open and we had to 'steal' it. We were trying to indicate that it is absurd, ridiculous that you have to steal something that is created by the government and available at zero marginal cost."[205]

[203] LDN_100101_Report
[204] Since the beginning MySociety is funded by grants, donations and professional services (mainly the implementation of their different software products for local and national government agencies).
[205] LDN_130717_Int

With stealing, Steinberg refers to the use of "scraped" data: To retrieve the data necessary to run their services, him and his colleagues would oftentimes copy data from websites and data bases, which were generally accessible to citizens, but did not explicitly granted download and modification of their content. MySociety used this scraped public sector data in their highly visible demonstrator projects (like WriteToThem). Thereby, they used a similar mechanism of institutional work as the developers who had created the grey market TfL apps. MySociety breached the existing information regime to a degree that they hoped would not be sanctioned. Through this breaching they gathered public support for the alternative information regime they showcased. Once these demonstrator projects gained support, it became increasingly difficult for the government to uphold the traditional information regime.

Between civic hacking and government consulting

The organization MySociety always remained focused on software development and service maintenance. Between 2007 and 2012, its founder Tom Steinberg served as a consultant on digital technology to both Labour and Conservatives. In June 2007, he co-authored the Power of Information Review, commissioned by the Blair government (see 6.3.1). As one of his recommendations, he included that the "government should provide better access to public sector information"[206], an articulation for what he had already demonstrated with MySociety for several years. In March 2008, Steinberg became one of the eight members of the Power of Information Task Force that, over the course of one year, developed detailed recommendations on how to change the central government's approach to information in the time of digital technology. Between October 2009 and March 2010, Steinberg consulted the Conservatives on the technology section of their election manifesto, echoing many of the ideas developed within the Power of Information Task Force. As the Conservatives under Cameron won this election, his ideas directly influenced the following transparency and open data initiative. Finally, in June 2010, Steinberg was appointed as member of the newly established Public Sector Transparency Board, a vehicle to oversee the government's transparency and open data initiative.

This very brief biographical sketch of Steinberg's work is emblematic for what I found to be a characteristic of the UK's broader open data process. On the national as well as on the local level, the delineation between government and civic advocates was blurry. Instead of keeping a distance to each other and negotiating interests in a confrontational mode on the front stage (e.g., the media), challengers and incumbents seemed to mutually agree to work out their differences in a cooperative mode, to publicly demonstrate consent and to work out potential controversies on the back rather than the front stage. With the Power of Information Review and his position within the task force, Steinberg inhabited particularly powerful positions to alter the institutional rules. In terms of institutional work, it is particularly interesting to study how Steinberg gained access to this position. Before working for MySociety, Steinberg already gained some experience as a public sector employee. However, only moving out of the administrative complex allowed him to build up reputation and to craft "credible proof" for his vision of an alternative information regime. This experience then allowed him to re-enter the locus of formal rule setting at a position of power that is much higher than the one he left it at. In 2012, Steinberg resigned from his position on the Public Sector Transparency Board. When Steinberg left the

[206] LDN_070601_Report

group, another longstanding open data activist, civic hacker and consultant took over his position.

Doing things with words: Activists develop the "Open Definition"

In May 2004, Rufus Pollock co-founded the non-profit organization Open Knowledge Foundation (OKF) in Cambridge, UK, with the broad vision to make digital information more accessible to the public[207]. From their early days on, OKF had a very broad conception of information, including everything from "sonnets to statistics, [and] genes to geo data."[208] These examples from their official mission statement reflect the community of early OKF members, highly educated and spread across various academic disciplines. Whether for sonnets, statistics, genes, or geo data, many of them had experienced the negative constraints that the copyright regime posed on the academic profession[209]. At the time he co-founded OKF, Pollock was a PhD student in economics at University of Cambridge where he studied the effects of reduced or repealed monopoly rights, like copyright and patents, on creativity and innovation. His opinion, which he shared with the other co-founders, was that reducing the copyright of a few actors can bring a net gain to society, may it be economically or in more intangible ways of well being. Along this assumption OKF was initially formed as an interest group for people who felt a general discontent with the information regimes that surrounded them and who wanted to find ways to change this status quo and the institutions that reproduce it.

One of OKF's first and historically one of their most significant contributions to the institutionalization of open data was the development of a definition as a shared frame of reference. After a first version was drafted in August 2005, OKF released the Open Knowledge Definition 1.0 in July 2006. The definition described the conditions for openness along eleven criteria, which cover the technical and legal conditions that have to be found with "knowledge" to consider it "open". Within the definition, knowledge included "content such as music, films, books", "data be it scientific, historical, geographic or otherwise", and "government and other administrative information."[210] The definition has been refined over the years, renamed as simply the Open Definition, but never lost its general synopsis: "Knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness."[211] The Open Definition had been strongly inspired by the licenses used within Free and Open Source Software projects: "We wrote the definition and we borrowed everything, really everything from Open Source Software. We were very conscious about that."[212] In the remainder of our interview, Pollock explained how as a young student at Cambridge he came across his first open Source projects, which eventually motivated him to pursue his academic as well as activist work on intellectual property regimes.

[207] In April 2014 Open Knowledge Foundation was rebranded to "Open Knowledge", to clarify that the organization is not a grant giving, but grant receiving body. For the sake of clarity I will use the former name throughout this dissertation.
[208] LDN_160224_Web
[209] Some of the co-founders were already engaged in the Open Access movement that began in the 1990s trying to change the institutions that govern access to academic publications.
[210] LDN_160226_Web; by the time of writing the most recent version, the open Definition 2.1, was published in November 2015.
[211] LDN_160226_Web
[212] LDN_130719_Int

For the development of open data in the UK, the Open Definition played two mayor roles, one internal to the group of challengers and one concerning their relation to incumbents. On the one hand, it served as a common frame of reference for people who were interested in similar issues. As Pollock put it: "There has been open knowledge for a while, but people just haven't been that explicit about it."[213] By explicating the properties of openness, the Open Definition served as an umbrella for people to identify each other, formulate goals and coordinate action. For OKF, the definition furthermore served as an organizational mission that balanced specificity and ambiguity in a way that allowed the organization to persist. The definition was specific in a way as it described a world in which all knowledge is open, however it was diffuse as it lacked specific instructions on how to reach this state. On the other hand, the open Definition served as an immediate instrument for institutional work through its timing and specificity. When it was released in 2005, the Open Definition for the first time put into succinct words what openness could mean for information goods other than software code. By extrapolating the Open Source idea to the entire realm of information goods before anyone else, OKF managed to use what social psychologists have oftentimes described as the temporal bias of norms: In the case of competing normative claims, people tend to find the older one more binding than more recent ones.

Since 2005, the Open Definition spread through policy papers, consultancy memos and the media up to a point at which governments who wanted to pursue openness in any kind saw little alternative as to adopt the Open Definition as a foundation for their policies as well. Since September 2007, the Open Definition is watched over by an advisory council, which crafts updated versions and maintains a list of licenses that are compatible with it. Once the advisory council spotted the use of the Open Definition in any of these documents, they began to check whether the proposed policies, and particularly the proposed intellectual property licenses, were compliant with all the details of the Open Definition. In cases were they found the proposed policy not to live up to their standards, they would publicly accuse the government of "open washing" and oftentimes achieved an iteration on the proposed policy. During my research on open data in the UK, there was no way around the open Definition: In its 2012 open data white paper the Cabinet Office defined the concept through words that were extremely close to the summary version of the above cited synopsis[214]. When in 2013 the ODI developed a certification scheme that allowed government agencies to rank their data sets according to their level of openness (see 6.3.1), they explicitly stated that the scheme is based on the Open Definition[215]. At an internal training session about legal and technical aspects of open data that I took part in at the ODI, the trainer described the open Definition as the "the gold standard" when it comes to open data[216]. When in 2014 the GLA published an "Open Data Charter" to reaffirm their commitment to the issue, they clarify on the first page of the document that "the GLA supports the Open Knowledge Foundation's definition of open data."[217]

[213] LDN_130719_Int
[214] LDN_120601_Report
[215] LDN_130711_Int
[216] LDN_150415_Notes
[217] LDN_141022_Report

Code is law: The rise of CKAN

Similar to MySociety, OKF used demonstrator projects as an instrument to make public organizations adopt open data. When I first met Rufus Pollock in 2013, I asked him how he would describe his organization: "We're not a lobbying organization. [...] I wouldn't even call it policy making. We call it evangelizing, telling and showing how great stuff is."[218] For the members of OKF, telling and showing worked through the medium of software creation. In some of their first projects, OKF experimented with ways to make literature with expired copyright available online, not as PDF but in a machine-readable format that would allow the user to search them by keyword. During these first years of existence, OKF more playfully than strategically explored the different provenances and forms of digital information and the copyright regimes they fell under. Through these explorations, OKF became aware that a lot of open information was already uploaded to the Internet, however that it was difficult for people to find and assemble it from all its different locations. Fuelled by an intrinsic motivation to develop software tools (not unlike the early computer hobbyists from section 6.1.3), some members of OKF started to develop a tool that would allow data providers to easily upload large amounts of structured data to the Internet. They began their work in March 2006, and in July 2007, and were able to release the first version of the Comprehensive Knowledge Archive Network (CKAN).

OKF hoped that through CKAN they would lower the technical hurdle for any kind of organization to change their information regime and to make their data more accessible[219]. Since 2005, OKF hosted regular workshops and small conferences in London and managed to develop personal relations to central government employees in favour of their vision of a more liberal data regime. In early 2009, the Power of Information Taskforce invited OKF to Cabinet Office in order to learn about their software package. In earlier rounds of expert hearings the Task Force familiarized with the use of data platforms in the academic realm and was interested to evaluate whether and how this concept was transferable to the government sector[220]. After members of the CKAN team presented their work, "stuff clearly started to move."[221] In July 2009, one of the task force's secretaries, Richard Stirling, met with Rufus Pollock in order to discuss the practical implementation of CKAN for a national data platform. Pollock remembers how the availability of viable software contributed to Stirling's willingness to develop a data portal as quickly as possible:

> "There was a lot of desire for [a data portal]. I had a coffee with Richard at Cabinet Office, discussing what the site should look like. I drew up a sketch and Richard Stirling said 'Why don't we do that. We don't need a government policy. And then we just launch the site quickly."[222]

[218] LDN_130719_Int
[219] My analysis also revealed that not only the existence of CKAN itself, but also the geographical proximity of its development team (many of them lived in London or the nearby Cambridge) affected the institutionalization of open data in the UK and London, as it allowed more frequent, ad hoc and informal face to face meetings with members of the GLA and Cabinet Office.
[220] LDN_090201_Report
[221] LDN_130719_Int
[222] LDN_130719_Int

Stirling remembers this meeting in a very similar way and even underscored the improvisational and un-bureaucratic fashion in which the idea of an open data portal was turned into practice:

> "Probably Rufus still has the nice little hand drawn sketch of the CKAN integration, which he drew during the conversation we had in the coffee shop around the corner of Cabinet Office[223]. This was the information architecture for data.gov.uk... so we kind of co-designed it."[224]

In September 2009, two months after the coffee shop meeting, the UK's national open data portal launched based on CKAN. By the time of the launch Emer Coleman's team at GLA (see 6.3.2) was right in the middle of their scoping process for the London Datastore. The Cabinet Office's trust in OKF most likely facilitated Coleman's decision on which software to use. As Pollock remembers:

> "I remember we got called into the GLA to make their first open data project. We got called and they said: National government has a portal, we want a portal, too. Build something quickly! I went down there with my developers, and with one of the guys from Cabinet Office as well. [...] They had an aim to launch in January 2010 and we managed to do that."[225]

When in 2014 the London borough of Barnet received government funds to create their own open data portal (see 6.3.2), CKAN had diffused as the de facto standard for European governments of any size. Within OKF, the implementation and maintenance of CKAN instances at public organizations had become their main revenue-generating service. In 2013, there were over 50 documented CKAN data platforms in place around the world. Eight of them functioned as national, 16 as regional open data portals[226].

This section is titled "code is law", a dictum I borrowed from legal scholar Lawrence Lessig (1999), who described the various ways in which the existence and design of software code regulates human conduct in very similar ways legal code does. In this regard, also CKAN had an effect on the institutionalization of open data. Open data is a practice that is performed in interaction between persons and computers. By providing CKAN as a piece of software that can be used in this practice, OKF enables this practice but simultaneously constraints its form. Its enabling capacity became explicit in the case of Cabinet Office and GLA, who once familiarized with the software, did not even bother to go through many formal processes, but rushed towards practice change. The constraints of the software became visible in using it: Practicing open data through CKAN was not necessarily the same as practicing it through software that an organization could create on its own. For example, when uploading a new data set to CKAN, the service per default selected the most open

[223] For a while I thought Stirling used the napkin as a metaphor, alluding to the "business plan on a napkin" story oftentimes used in the field of technology entrepreneurship. Later on I actually found a picture of this napkin, however the resolution was not high enough to include it to this dissertation.
[224] LDN_130718_Int
[225] LDN_150410_Int
[226] LDN_130528_Report

license and users who wanted to use a less open license had to modify this setting deliberately[227].

Journalists as activists: Mixing first and second order observations

Several years prior to the launch of the national and London open data portals, two writers from the technology section of the British daily newspaper The Guardian launched an advocacy campaign to open up public data sets. Under the campaign title "Free Our Data: Make taxpayers' data available to them"[228] Charles Arthur and Michael Cross wrote at least one article dedicated to this issue every week over a period of six years. The influence of weekly articles in one of the most read newspapers of the country is hard to tie to individual events based on my methodological instruments. However, during my data collection many interviewees referred to the campaign, made arguments, and told stories that I found almost equivocally in articles from the campaign. Arthur and Cross identified themselves as members of an open data coalition including groups like MySociety and the OKF: When in 2007 Gordon Brown replaced Tony Blair, they cheered that through changes on the ministerial level "we" finally got an audience sympathetic to the idea of open data[229]. When the Power of Information Task Force released its final report, they described a proposition to simplify public sector copyright rules as "a recommendation that has The Guardian's Free Our Data campaigners standing on their chairs and cheering."[230] When speaking to a member of the Cabinet Office's Power of Information Task Force, I learned that they were well aware of the campaign, recognized Arthur and Cross as a voice that could not be ignored, and that eventually fed into the pressure that made the central government adopt open data:

> "We brought in a lot of people [to the Task Force's meetings]. There was even a 'Free our Data' campaign out of the Guardian. A lot of people at the Guardian wanted the data and they even developed this campaign. [...] This was the first time when the government had responded to this kind of pressure and said 'yes' and has done something about it."[231]

When in 2010 the Conservative party took over the government, they included many of the issues that the Guardian helped to put on the public agenda into their transparency initiative. However, at this point Cross and Arthur decided that although "the Con-Lib coalition has indicated that it has a lot of the right instincts" they needed to continue their campaign: "Once we know which ministers we need to lobby – and once we know what their viewpoints are – we'll be pushing the campaign again. There's still so much data in there which needs to be freed."[232] The campaign however was not only mentioned on the national level, but influenced the local open data process in London as well. In a book chapter on her time at the GLA, Emer Coleman states that Charles Arthur "played an essential part in the establishment of the London Datastore." According to her, he "epitomized the potential of a new relationship between government and media", by not just criticizing the government,

[227] BER_140728a_Int
[228] LDN_160227_Web
[229] LDN_090204_Media
[230] LDN_090204_Media
[231] LDN_130718_Int
[232] LDN_100401_Media

but also giving "praise where it was due."[233] In late 2010, the Conservative government fulfilled one of the campaign's longstanding demands and opened up COINS, a huge database containing around 24 million lines of spending data from various governmental departments[234]. Although Arthur and Cross publicly debated whether this event marks the end of their campaign, they continued to publish articles on the issue of government information until May 2012. In many ways their efficiency and power can be explained by the fact that instead of being in a position where they have to attract the attention of the media to report on their issues, Arthur and Cross *were* the media and over the years had maneuvered themselves in an editorial position that allowed them to get their own political campaign printed.

[233] LDN_139999_Report
[234] LDN_090924_Media

Table 9: London – Narrative B: Open data between coding and consulting

Episode	Contribution to institutionalization / Forms of institutional work
From freedom of information to freedom of data: transformation of an issue	In the 1970s the advocacy group **"Campaign for Freedom of Information"** begins to work closely with the Labor Party in order to keep the issue of administrative transparency on the political agenda. In the mid-2000s new advocacy organizations, among them **MySociety**, tap into the well-established FOI discourse and expand it: As there is plenty of information to be derived from data, freedom of information should also imply freedom to access public sector data. In order to show that the latter freedom is not granted yet, they scrape data, build prototypes of applications on top of it and present them as a peek into what would be possible under an alternative information regime.
Between civic hacking and government consulting	The issue is brought on the agenda and the boundaries between challengers and incumbents become blurred. On the front stage, **advocacy organizations** continue to use tactics of institutional work similar to social movement organizations. On the back stage, **individuals from these organizations** work as consultants for the governments in order to help them find solutions on how to cope with the publicly constructed legitimacy claims.
Doing things with words: Activists develop the "Open Definition"	Around the same time as MySociety, the advocacy organization **Open Knowledge Foundation (OKF)** is established. Over the years it becomes the most influential advocacy organization for open data on a national level as well as on the local level in London. Particularly influential for the institutionalization of open data is their release of the "Open Definition" at a very early stage of the process. By crafting a definition of what makes open data and what does not they not only deliver a description of an organizational practice, but actually defined a normative expectation. They not only say something, but "do something by saying something". OKF uses the Open Definition as a tool for normative sanctioning: Every time an activist finds an instance in which a public servant claims to open up data but does not comply with the Open Definition, this behavior is publicly denounced.
Code is law: The rise of CKAN	**OKF** develops and popularizes software used in the practice of opening up data: CKAN. The code of CKAN is developed under an open license, the software itself is designed in a way that encourages users to select rather open than closed licenses when uploading data sets. Through their intense dialogue with Cabinet Office and the GLA, OKF manages to implement CKAN as the basis for the national data portal and the London Datastore. Many organizational practices are enabled and constrained by software. The way software is designed therefore influences the way in which a practice is performed.

Journalists as activists: Mixing first and second order observations	Within the debate around open data in London and the UK, two authors from **The Guardian** move between participating in and observing the challengers. For years they report on the various efforts by challengers to institutionalize open data and point out the closedness of individual city agencies or ministries. Oftentimes they take a normative position arguing in favor of greater openness. In contrast to cases in which the media is an instrument for challengers to build legitimacy claims, the media in this case becomes an actor of institutionalization itself.

6.3.4 From narration to causation

Similar to in Chapter 6.2.3, I used triangulation of the three narratives from London to identify their overlaps and, unable to reach, at least approach knowledge of what "really" happened in the process. Trying to answer my research question – *How do actors institutionalize organizational openness on the field-level?* – I derived a causal chain of critical episodes that led to the institutionalization of open data in London.

The *first critical episode* was the passage of the Freedom of Information Act in 1999, which came in power in 2005. For the first time citizens had the opportunity to request information from public organizations. Due to the fact that the UK is a unitary state, almost all legislative power lies with the central government. Until the passing of the law 25 years after Labour first included the pledge to their election manifesto, the only way to access public information was through paying licensing costs (e.g., for some geospatial data sets). Public organizations at the beginning tried to withhold information that is requested, but oftentimes – MP expenses scandal being one of the most visible cases – were forced by the courts to eventually release it. Similar to the episode in NYC, the Freedom of Information Act was passed against the backdrop of the cognitive causal link between access to public information and a proliferation of democratic practice.

The *second critical episode* was the reconfiguration of the cognitive causal link between public information as a means to an end. In this stage actors invested their resources and skills in order to create a credible causality between the release of even more public information and diverse economic benefits. Examples for this link between open data as a means for an economic end came from different types of challengers in the field. In his 2010 "Letter to government departments", David Cameron linked open data to democratic principles ("Greater transparency across government is at the heart of our shared commitment to enable the public to hold politicians and public bodies to account"), yet in the same rush promoted open data as an instrument to "reduce the deficit", "deliver better value for money in public spending", and to "realise [sic!] significant economic benefits."[235] From a different position in the field, the founder of Open Knowledge Foundation Rufus Pollock published a study in which he, grounded in economic theory, argued how the widespread implementation of open data leads to positive economic effects[236]. As a final example, the London office of the international consulting firm Deloitte in 2012 published the study "Open Data: Driving Growth, Ingenuity and Innovation" in which they argued that open data is "much more than improving government transparency" and imagined – in broad strokes but neat layout – the various ways in which businesses could use this "resource" to increase their performance[237].

The *third critical episode* in the process of open data institutionalization in London was the release of the Open Data law for local governments by the DCLG in 2014. The event was critical for the institutionalization process as it transformed the ephemeral acts of institutionalization on the national and local into a formal objectified field-level rule that exists independently from the subjects that have been

[235] LDN_100531_Report
[236] LDN_080312_Study
[237] LDN_121001_Study

part of its creation. As a formal rule, the law directly affected the information regime in all 32 London boroughs. Towards the end of my data collection, compliance with the new law was relatively high due to its limited demands regarding which data sets to publish.

6.4 Case: Berlin

At the time of writing, Berlin was not necessarily the German city with the most liberal information regime, yet its open data process had involved a large variety of actors and practices that offered interesting empirical results for fruitful theorizing. My analysis revealed two interwoven narratives: In the first one open data emerged from a routinized relationship between the city administration and an information technology research institute. After these actors decided on the usefulness of open data, they formalized and implement it as "yet another" administrative modernization project. In the second narrative, information activists and civic hackers identified open data as their chance to revive countercultural ideals from the late 1980. They began their campaign for open data using confrontational social movement tactics, but once they placed their issue on the agenda developed cooperative practices to help the city government to diffuse open data across departments. Tables with summaries of the episodes in each of the narratives together with their influence on the overall institutionalization process can be found at the end of each chapter.

6.4.1 Narrative A: Open data as a modernization project

Berlin is the largest city of Germany and home to 3,484,995 citizens[238]. As a city, it is also one of the 16 federal states of Germany. Within its 891.85 km^2 Berlin is therefore home to large parts of the German federal administration, the administration of Berlin as a federal state, as well as the administration of the twelve boroughs of Berlin. Most of the executive power in Berlin lies with the Berlin Senate[239]. The Senate comprises of the Mayor of Berlin and eight senators, each leading one of the eight city ministries[240]. Each city ministry oversees a number of city agencies[241] and city owned organizations[242]. Whilst the Senate forms the upper-tier of administration in Berlin, the twelve borough councils[243] form the lower-tier. Each borough has a directly elected borough parliament[244] and its own borough administration[245]. The borough parliaments as well as the city parliament[246] are elected every five years. The city parliament has legislative power for the city and elects the Mayor of Berlin. The city ministries and borough administrations have partially overlapping responsibilities.

Berlin's modernization agenda: planning for change

A narrative of open data in Berlin has to be told against the backdrop of the administrative history of the city since its reunification in October 1990. During the Cold War, the Federal Republic of Germany (West Germany) and the German

[238] BER_150615_Report
[239] Own translation, from *Senat von Berlin*
[240] Own translation, from *Senatsverwaltung*
[241] Own translation, from *Behörden*
[242] Own translation, from *Anstalt des öffentlichen Rechts*
[243] Own translation, from *Bezirksverwaltung*
[244] Own translation, from *Bezirksverordnetenversammlung*
[245] Own translation, from *Bezirksamt*
[246] Own translation, from *Abgeordnetenhaus*

Democratic Republic (East Germany) turned their respective parts of Berlin into "shop windows of competing systems" (Lemke, 2006). To symbolize strength and viability, both states created more extensive administrative structures than in most of their other cities. By today's measures, the city administration on both sides was heavily inflated. After the reunification the new city government therefore saw the necessity not only to merge these two administrative systems into one, but also to consolidate this one system to a size that would be financially bearable for the widely de-industrialized city. In 1991 the Berlin Senate passed a modernization law[247], due to which the number of employees within the administration has been decreased from 207,000 in 1991 to 108,000 in 2008. At the time of writing the number had further decreased to around 100,000 employees[248]. In terms of the political institutions the number of city council members, as well as the number of senators, was reduced. In 2001 the formerly 23 boroughs were consolidated to twelve boroughs of roughly similar population. During this process a number of responsibilities were devolved from the city administration to the borough administrations. In February 2016, the organigram of the city administration showed the responsibilities of the eight city ministries over 135 subsidiary administrative bodies[249].

"Modernization" however was not limited to the reduction of employees only. Since 1992 administrative bodies were supposed to follow the "New Control Model"[250], a guideline for more standardized internal accounting and controlling procedures. Within the New Control Model, services became "products" and citizen became "customers". In general this reform tried to introduce managerial principles into the public administration, an idea that originated within the "New Public Management" developed in the UK under Margaret Thatcher. The desire to cut the cost of the city administration increased, when in 2001 a large mismanagement scandal involving two city-owned banks became public. As a result, the Christian Democratic Union (CDU) lost its power in the city parliament and the city's budget was severely reduced.

Between 2003 and 2006 the city administration tried to tick of a list with more than 70 modernization projects, most of them aimed at cutting the cost of service provision. In 2007 the Senate published a new list of more than 100 modernization projects under the title "ServiceStadt Berlin" to be completed by 2011. When ServiceStadt Berlin was assembled in 2006 and 2007, open data had not been an explicit issue within the city administration yet. However, the Freedom of Information law that was passed some years earlier had already significantly eroded the regime of closed public information.

Unplanned: Berlin gets a Freedom of Information law

In April 1998 Brandenburg, formerly part of the German Democratic Republic (GDR), became the first of the German federal states to pass a Freedom of Information law. The law was crafted and passed under significant pressure from civil rights groups imprinted by the GDR's culture of governmental secrecy and surveillance. In October 1999 the Berlin Freedom of Information law (FOI)[251] was

[247] Own translation, from *Verwaltungsreform-Grundsätze Gesetz*
[248] BER_151121_Web
[249] BER_150615_Web
[250] Own translation, from *Neues Steuerungsmodell*
[251] Own translation, from *Informationsfreiheitsgesetz (IFG)*

passed and took effect as the second of its kind in Germany[252]. The bill was introduced by the Green Party in 1997 and passed at a time when most members of parliament expected that the upcoming election would result in a coalition between the Green Party and the Social Democratic Party (SPD). The bill was passed against the votes of the CDU. Shortly after, the election surprisingly resulted in a continuation of the SPD/CDU coalition. In this regard it might be fair to interpret the Berlin FOI law as more of a coincidental institutional fragment, yet one that was appropriated, maintained and expanded over the following years[253]. The FOI law granted everyone the right to get access to governmental information from any government agency in Berlin without the need to state a purpose for the request. As a caveat to this freedom, the law allowed agencies to charge fees of up to 500 Euros for comprehensive requests[254]. In 2012 the chief privacy officer of Berlin, Alexander Dix, stated in an interview that even after more than a decade, since the law was passed, there are still many complaints of citizens whose access to information is either denied or hindered through excessive fees[255]. In retrospect it becomes clear that this legislative change in Berlin was a necessary condition for the onset of the open data process. Enforced through actors like the chief privacy officer, the FOI legislation significantly changed the information regime in Berlin from closedness to a state of defensive openness.

Modernization meets information: Creating a city data platform

In 1987 the "Research Center for Open Communication Systems" (FOKUS)[256] was founded in Berlin, with the vision to "support the communication and cooperation of people across time and space in completely novel ways."[257] The institute understood open communication systems as networks in which all connected entities are able to communicate with each other based on standardized interfaces. In 2001 FOKUS became part of the "Fraunhofer Society", a German non-profit group of organizations, which provide scientific research as a service to private and public sector customers[258]. Whether this decision was influenced by the financial situation of Berlin around 2001 remains unclear, however this development had a significant influence on the institutionalization of open data in Berlin some years later. One of the directors of FOKUS explained to me how the institute moved from open communication systems towards an interest in open data along two trajectories:

> "We did networks from the very beginning on, telecommunication, broadband, mobile communication; later on also Internet technologies. We moved upwards in the application layers and about ten years ago started to engage in e-government. We built up the largest e-government center in Germany, with over 70 partners from the industry and many contacts to cities,

[252] BER_110207_Report
[253] In 2010 the FOI was updated to ease access to privatization contracts for previously city-owned service and utility providers. This legal amendment was a response to a large local dispute and a civil ballot about the privatization of the Berlin water provider BWB. The amendment included that public agencies in Berlin have to proactively publish contracts with public service or utility providers.
[254] BER_110207_Report
[255] BER_120220_Media
[256] Own translation, from *Forschungszentrum für Offene Kommunikationssysteme*
[257] BER_160124_Web
[258] BER_160124_Web

> municipalities and ministries. When you do all this, open data develops basically on its own [...]."[259]

> "A parallel trajectory within the institute was 'smart cities'. We as Fraunhofer [FOKUS] were developing an agenda for Berlin 2030. In this project we approached the idea of smart cities and identified urban data platforms as the focal component. So, from this standpoint as well, open data wasn't really far away."[260]

Over the decades of its existence, FOKUS developed relationships with various public organizations in Berlin and routinely approaches them with ideas for public sector innovations. In a way, FOKUS has routinized its institutional work towards new practices for the public sector. As one of my interview partners put it, the FOKUS institute "lives somehow between the worlds" of the public and private sector[261]. On the one hand the institute received a certain amount of funding from the state of Berlin, mostly in form of the facilities they use. On the other hand FOKUS had little to no obligation to report to the state or discuss their plans and overall strategy. Therefore it has regularly happened, that when FOKUS pitches a new product to public agencies in Berlin, the operational work began without the Senate's knowledge.

In summer 2010, FOKUS approached Berlin's city ministry of economic affairs (SenEcon)[262] with their idea for an urban data platform. An employee of SenEcon remembers these first exchanges between him and FOKUS:

> "My main interest [at SenEcon] is research and innovation in the field of information and communication technologies and media. Therefore I have maintained contacts for several decades, also with the Fraunhofer institutes regarding their applied research and innovation projects. Through these contacts we got in touch with [FOKUS]. They approached me and proposed to do something with web technologies, especially with the existing city data in Berlin. This is how it started."[263]

In coordination with SenEcon, FOKUS put together a "pilot study" that explored the existing city data, how it is stored, formatted, licensed, and described through meta data. As an employee of FOKUS explained to me, these self-funded pilot studies are "just one way" to start a project, but something FOKUS uses when it is under the impression that there is substantial political will to fund a further project. In September 2010 FOKUS presented the "Pilot Study for a City Data Cloud Berlin" to the head of SenEcon[264]. At this point, the focus of the project remained on the technicalities of data exchange between different city agencies. The idea of open data, by that time already extensively discussed in NYC and London, did not appear in this pilot study.

[259] BER_140922_Int
[260] BER_140922_Int
[261] BER_140728_Int_b
[262] Own translation, from *Senatsverwaltung für Wirtschaft, Technologie und Forschung*
[263] BER_140723_Int
[264] BER_140806_Int

As expected, the head of SenEcon supported the general impetus of the pilot study and commissioned FOKUS to prepare a more comprehensive report with specific recommendations on how to proceed on the operational level. As first step of this new project SenEcon reached out to potential users of a city data platform. In the form of an online voting SenEcon polled, which data categories would be the most interesting ones to publish[265]. Within two weeks more than 1,500 votes were cast, a number that FOKUS and SenEcon interpreted as sufficient to legitimize the creation of a city data platform[266]. Out of the 20 options that were provided in the voting, the three most sought after were city planning data, general administrative data and environmental data[267]. During this outreach phase, FOKUS and SenEcon spoke to some of the interested citizens in Berlin, came in touch with the concept of open data, and got the impression that a for a city data platform to be legitimate in the future, it had to be aligned with these demands:

> "In the pilot study we did not touch upon open data. In there we just argued that we need an interconnected data infrastructure, which the state can use to provide access to data. This is what we got the contract with the state for. [...] Open data has this normative demand that data has to be provided in a very particular way, all these issues around licenses and copyright. These questions were also something new to us. However we then familiarized with these issues and started implementing it."[268]

At the beginning of this episode I identified a routinized transaction process in which FOKUS tried to sell their services to SenEcon. SenEcon was aware of the fact that the city government usually welcomes the conduct of modernization projects and agreed to the transaction. In the process of writing the project outline, both FOKUS and SenEcon updated their understanding of what makes a legitimate practice of information access. In order to deliver a successful project, they subsequently decided to include the concept of open data, an issue that came out of their feedback loops with other actors in Berlin.

Open data as an intra-administrative change project

In early 2011 FOKUS and SenEcon decided that it would be best for them to secure further funding for their project. Although the election period would end later that year, there were still funds to allocate within the citywide modernization scheme ServiceStadt Berlin. To secure these funds, SenEcon wrote a project proposal and in April 2011 eventually managed to get the proposal passed. The project that started off as an individual transaction between SenEcon and FOKUS turned into a formal modernization project of the city administration, listed and communicated across city departments. On the one hand, this move raised the legitimacy of open data through the Senate's consent. On the other hand it labeled open data as one modernization project among dozens of others. As one of my interviewees put it: "From an administrative perspective, open data is a normal modernization project just as so

[265] BER_120101_Report
[266] BER_120901_Report
[267] BER_110118_Report
[268] BER_140806_Int

many others. Just as implementing a digital signature or making appointments online."[269]

Under the project title "From a public administration to an open administration"[270], SenEcon, FOKUS, the city ministry of the interior and the joint statistical agency for Berlin and Brandenburg continued the previous work towards a comprehensive study and implementation plan for open data in Berlin[271]. Some months in this process they extended their plans and began to work on a pilot data platform[272]. As an employee of FOKUS remembers: "When the project was already running, SenEcon said 'Damn, we don't just want a study, let's already develop the prototype of a data portal'. And then they changed our contract and we started working on it."[273] In September 2011 the first version of Berlin's open data portal launched with an initial number of 18 data sets, mainly from the included project partners. As several of my interviewees have confirmed, one of the reasons they managed to launch the open data portal even before the upcoming elections was the availability of CKAN as a technical platform (see 6.3.3)[274].

The Pirate Party brings open data on the political agenda

In November 2011, the number of data sets on the city open data portal increased from 18 to 56. Among the new arrivals were also the recent election results for the Berlin Senate[275]. Even more important for the open data process than the actual results of the election however were the campaigns that led up to it. Many of my interview partners have linked the course that open data took to the growing popularity of the Pirate Party. Founded just a few years earlier, Berlin's regional association of the Pirate Party was estimated to receive more than ten percent of all votes during the political campaigning in summer 2011. In my interview a former politician of the Greens remembered that the Pirate Party

> "definitely applied quite some pressure on the other parties, pressure that they had to engage with the issue [of transparency]. Politicians recognized that people think transparency is important and would actually vote for it. That's when things in the Senate began to move."[276]

Another interviewee also remembers his impression that "the Pirates came along and shouted 'transparency, transparency, transparency' all day long and with this very singular message were able to mix up politics quite a bit."[277] The Pirate Party ended up in opposition, yet the newly elected coalition of SPD and CDU reacted to the demands for transparency and in their coalition agreement declared to continue and expand the state's open data initiative[278]. Within SenEcon this pledge was warmly welcomed, although they emphasized to me that this political process was

[269] BER_140806_Int
[270] Own translation, from *Von der öffentlichen zur offenen Verwaltung*
[271] BER_120101_Report
[272] BER_140922_Int
[273] BER_140806_Int
[274] BER_140723_Int
[275] BER_120901_Report
[276] BER_140930_Int
[277] BER_141106_Int
[278] BER_140728_Report

"completely unrelated to [the] efforts on the operational level" and shall rather be interpreted as a fortunate coincidence than strategic action between the two levels[279].

Standardized standardization: The open data working group

Open data had moved from the idea of a single city ministry to an official modernization project of the Berlin Senate, backed by the pledge of the newly elected coalition government. Shortly after this pledge was made, in January 2012, FOKUS and SenEcon summarized the progress of their project in the comprehensive "Berlin Open Data Strategy" report. For a continuation of the open data efforts they study recommended defining clear responsibilities for open data within Berlin, identifying further data sets, and clarifying the licensing and copyright regimes around city data. In July 2012 the senate initiated a cross-agency working group on open data to address its manifesto pledges and respond to the Berlin Open Data Strategy[280].

Spearheaded by SenEcon, the working group met eight times between July 2012 and December 2013. It started with 15 participants from different city agencies and two borough administrations[281]. Over time the group grew to 25 members, however not all of them were present at every meeting. In the working group, SenEcon brought together agencies that already had some experience with the storage and sharing of data sets and were therefore more interested to learn about the open data portal. As an employee of SenEcon remembered:

> "Our goal was to reach a mutual understanding of the subject matter across agencies. [...] What is open data? How do open data processes look like? We spoke to our colleagues who already have experience with publishing environmental data. We asked how our colleagues, who work with geo data, make it available online. [...] We also asked what experiences did the statistical agency make so far."[282]

To develop this mutual understanding, the members of the working group formed sub-groups that met additionally and presented their progress at the larger meetings. One of the sub-groups developed a list of terms and their definitions to facilitate communication between the different city agencies (e.g., "raw data", "machine-readable", or "data set"). As the first of its kind in the German-speaking world, the working group also forwarded this list to public officials in the German national government, and the city government of Vienna, hoping to harmonize the use of language. Another sub-group reviewed the different licensing schemes that were in use or could potentially be used for city data in Berlin. They compared these licenses against the Open Definition (see section 6.3.3) and eventually recommended three licenses that they considered compliant. A third sub-group worked on the question how the awareness about and the skills necessary to practice open data could be diffused across the more than hundred city agencies in Berlin. As a result they developed and piloted two educational programs in cooperation with the professional school for employees of the administration in Berlin[283]. On the one hand they

[279] BER_140723_Int
[280] BER_140728_Report
[281] Steglitz-Zehlendorff and Friedrichshain-Kreuzberg
[282] BER_140723_Int
[283] Own translation, from *Verwaltungsakademie Berlin*

developed and conducted a seminar on “Open Government” at a workshop for executive employees of city and borough agencies. On the other hand they helped to include information about the ongoing open data process in Berlin into a seminar on Content Management Systems for administrative clerks. By 2014 the working group was dissolved and the Senate considered open data as a successfully finished modernization project. The responsibility to maintain and grow the open data portal was allocated to one part-time employee at SenEcon.

Table 10: Berlin – Narrative A: Open data as a modernization project

Episode	Contribution to institutionalization / Forms of institutional work
Berlin's modernization agenda: planning for change	After the reunification of Berlin there is political consensus in the **Berlin Senate** that the administration needs "modernization". In the following years the narrative of modernization is used to reduce the number of employees. It is also used as a template to justify more managerial forms of governance and control. Within each election period, the Senate publishes a list of change projects that are supposed to be implemented by the administration in the years to come.
Unplanned: Berlin gets a Freedom of Information law	Rather unexpected by the involved parties, a Freedom of Information law introduced by the **Green Party** is passed in 1999. This legislative change is a necessary condition for the onset of the open data process as the FOI legislation significantly changes the information regime in Berlin from closedness to a state of limited openness. Challengers working towards open data do not have to debate the access to information in general anymore, yet rather the form in which this access is performed.
Modernization meets information: Creating a city data platform	A few years after the FOI law is passed, the **Research Center for Open Communication Systems (FOKUS)** approaches the **city ministry of economic affairs (SenEcon)** with the idea of a city data portal to connect different city ministries. Against the backdrop of Berlin's modernization agenda, the two organizations are able to secure some initial funding from the Senate to develop a prototype. During this process FOKUS and SenEcon are approached by citizens demanding that the data should be provided under licenses that would allow free and unrestricted re-use. FOKUS and SenEcon meet with these external experts several times and include their recommendation to make the data on the portal available to everyone under open licenses.
Open data as an intra-administrative change project	In early 2011 **FOKUS** and **SenEcon** secure further government funding for their open data project. In September 2011 they manage to launch the first version of Berlin's open data portal with an initial number of 18 data sets. All 18 data sets are contributed by the project partners SenEcon, the **city ministry of the interior**, and the **statistical agency** for Berlin and the adjacent state Brandenburg. With the launch of the platform the issue of open data is, for the first time, exposed to the entire field of city agencies in Berlin. At this point, none of the agencies however feels pressured to contribute any of their own data.
The Pirate Party brings open data on the political agenda	An actor that helps to build up this pressure is the **Pirate Party** in Berlin. Founded only a few years prior, the Pirates secure more than ten percent of the votes in the 2011 election in Berlin. Having digital transparency as one of their campaigning issues, the coalition of SPD and CDU decides to include this issue in their coalition agreement and to officially endorse the existing open data project that has sprung from the operational level of the city administration.

	Through this endorsement is becomes harder for city agencies to completely ignore the issue. However, in the absence of formal regulation the increase of data sets on the portal is still rather small.
Standardized standardization: The open data working group	Eventually the Berlin government allocates funds to **SenEcon** and **FOKUS** in order to setup a larger open data working group including different city agencies. Spearheaded by SenEcon, the working group meets eight times between July 2012 and December 2013. It starts with 15 participants from different city agencies and two borough administrations. Over time the group grows to 25 members. Over the course of the working group, the members agree on definitions for technical terms, review different licensing schemes that can be used for city data, and develop and pilot two educational programs. On the institutional level the working group helps to convince most of the participating organizations to open up their data sets. Further it develops instruments that can be used for further institutional work (definitions, educational programs), yet there are insufficient resources to conduct the institutional work itself. The working group disbands and the institutionalization of open data is delegated to one half-time employee within SenEcon.

6.4.2 Narrative B: Open data between revolution and routine

Protect private data, use public data: envisioning the issue

Since the student protests of the 1960s Berlin has been a hotbed for groups questioning the opacity of government institutions and the room it leaves for a misuse of power. Along the trajectory of computerization and datafication, some of these groups became concerned with the role of the government as a collector and administrator of large amounts of data. Decades before the specific issue of open data emerged, these groups started to confront the state with their alternative vision how information should be handled in the time of datafication.

In September 1981 the Chaos Computer Club (CCC) was founded in West Berlin, as a formal organization to provide identity as well as legal support for the emerging hacker community in Germany. In the following years the CCC moved into the public eye when they repeatedly exposed technological loopholes through which they were able to enter the communication systems of large private and public organizations. The CCC phrased its mission as to work towards "transnational freedom of information" and "a new human right to global and unrestricted communication"[284]. During the 1980s the CCC complemented this mission by a list of principles, the so-called "hacker ethics", on how to behave in a digitalized world[285]. One of these principles was the imperative to "protect private data and use public data."[286] Decades later the principle would be picked up and echoed by open data activists to support their cause. By the time it was phrased, it referred to specific political and technological developments of the 1980s.

In 1983 the federal government intended to conduct a national census, a plan that was met with widespread protests across Germany. Later in 1983 the Federal Constitutional Court ruled that the intended census forms are indeed unconstitutional, as they allow the ex-post identification of individuals and thereby breach the right to privacy[287] (hence: "protect private data"). The federal government redesigned the census forms to comply with the constitution and eventually conducted the data collection in 1987. Despite the four-year delay protests were revived. Figure 11 shows a demonstration in Berlin protesting against the census in 1987. The banner in the front says: "Don't count us, but count your days!" The protestors, asking citizens to boycott the census, were driven by the belief that the increasing technological capacities for data processing lead to an increasing exchange of information between government agencies, police and secret service. To counter this tendency towards a technocratic government system, they demanded more citizen participation into democratic processes (hence: "use public data"). One of the protestors' specific demands was the right to a freedom of information[288]. Around one decade later, the

[284] BER_160305_Web_a
[285] In large parts the hacker ethics was adopted from principles that developed among the first computer hackers within the MIT during the 1960s and 70s (Levy, 1984).
[286] BER_160305_Web_b
[287] This decision became known as the *Volkszählungsurteil*. From this ruling resulted the explicit right for every individual in the context of modern data processing to be protected against the unlimited collection, storage, use and disclosure of his or her personal data.
[288] BER_110507_Media

Green Party, which also supported the protests, was able to get the Berlin Freedom of Information law passed as the first one of its kind in Germany.

Figure 11: Protesters against the national census, May 1987 in Berlin[289]

The census protests of the 1980s played an important role in the creation of a FOI law in Berlin. The CCC shared the position of the protestors and translated their ideals into what they would mean in practice: Increased access to public data. It took one decade from protests in the streets to an FOI law in Berlin. Another decade later, a new generation of activists revived the countercultural claims against the backdrop of new technologies for the storage and sharing of public data sets.

First wave challengers: Data reform or data revolution?

In October 2009 a group of people in Berlin, many of them in some sorts affiliated with information projects like Indymedia or Freifunk, came together to start a new organization concerned with digital technology and access to information: Open Data Network. By "reading the US blogs"[290] these people learned about the open data projects, which by that time had already started in the federal as well as some local government across the Atlantic (see 6.2). One of the founders of ODN remembered how news about the US open data activities connected to his memory traces of the countercultural history of Berlin:

> "I came back to Berlin [after living abroad] and then all this Obama open government stuff started. [...] That was a hot topic and it did not exist in Germany by that time. [...] We were fascinated by the idea of transparency and participation 2.0... through the use of technology... to just tackle these issues *again*, this time through the access to data."[291]

[289] BER_110507_Media
[290] BER_140820_Int
[291] BER_140820_Int

As it turned out, my interviewee was not the only one who found open data to be a promising means to a countercultural end. With the inaugural meeting of ODN, its very idea that was "initially developed by a few friends" quickly grew into "a multi-stakeholder thing."[292] At the night of the meeting the initiators were surprised by the interest their announcement has stimulated from different fields and in the end 24 persons signed in as foundational members of ODN. The group included members from all major political parties, an employee of FOKUS (see 6.4.1), six journalists and seven persons that worked as political activists. The 24 members agreed on the organization's mission to "enable and support the free and barrier-less access to data from the political system, the administration, and science for all citizens."[293] The multi-stakeholder design of the organization quickly turned "from a feature into a bug", and only a few months after its start ODN drifted into two fractions. Whilst one of them was rather interested in political discussions about the nature of open data, the other wanted to work more immediately on its implementation. As a member of the latter fraction described: "We were the technology oriented people, developers who really wanted to do build something out of data itself but just could not access it."[294] After some month the participation of the policy fraction declined, and members of the maker fraction had started to work on first demonstrator projects, inspired by organizations like MySociety in the UK (see 6.3.3). "In our first year, we were very much fun driven. There was no agenda, we just developed projects, which we thought the world might need."[295]

During this time members of ODN engaged in projects of a similar pattern. The developers identified data sets that were already available online, reformatted them, and displayed the results online on a map that was easy to understand by a lay audience. Through this practice, sometimes referred to by the developers as "foo on the map"[296], they on the one hand wanted to show the public benefit that they saw vested in these data sets, and on the other hand point at the legal grey area in which they were operating. Very similar to MySociety or the TfL developers, ODN used data that was easy to scrape, but not officially released for third-party re-use and modification. When I spoke to the civic hackers from Berlin, they explained that by that time they were aware of the ambiguous copyright situation under which they were operating, but, because they regarded their action as generally beneficial, assumed that no legal action would be taken against them. Whilst in many cases the data producers did not react or were simply not aware of the data use, a few confrontational instances have shown how the scraping affected the administration's legitimacy: At a community conference in April 2010 a member of ODN scraped geographical data from a public web portal, meshed it with economic data from another source, and visualized the results on a map of Berlin. Shortly after the event and some media reports on this visualization, ODN received a cease-and-desist order from the Berlin Senate, which claimed that ODN had breached copyright on the data.

[292] BER_140820_Int
[293] BER_091022_Media
[294] BER_140806_Int
[295] BER_140820_Int
[296] BER_140708_Notes; The word "foo" is used in computer programming or documentation as a placeholder name for, e.g., variables or functions. In this context it refers to the numerous open data applications, which display a geo-coded variable (e.g., playgrounds) on a map.

They invited ODN for a meeting to discuss what a future licensing agreement could look like, yet ODN declined and moved the map of the web[297].

Just a month before ODN began to meet, another organization with overlapping interest was initiated. In September 2009 the Global Future Camp, a conference that promised to "bring people together, who want to improve the lives of people across the world through the Internet"[298], took place in Berlin. By the end of the conference a group of people from the private and public sector founded the Government 2.0 Network (Gov2.0). Out of the 14 founding members, eight worked as consultants, three in public sector organizations and one at FOKUS. None of the founding members was associated with the Berlin city administration or local political system. Gov2.0 defined its mission broadly as to achieve that "the potential of the Web 2.0 will be realized in the public sector", and referred to technologies such as social networks, blogs, wikis and – among these others – open data. When talking to some members, they described Gov2.0 to me as a hybrid between a professional association and a social movement organization, amalgamating advocacy work and market making and led by people who were "less technical", but "already had some experience in working with the public administration."[299] In their private roles its members had progressive ideas on how to remodel government, in their professional roles they had products or services on offer to realize this change. Starting in 2009, the main activities of Gov2.0 revolved around regular blog posts and the organization of small conferences and workshops on government and web technology.

Second wave challenger: Revised and reorganized

The inclusiveness and unexpected popularity of ODN led to its fairly quick downfall. On a web technology conference in Leipzig in May 2010, some of the technology-oriented members of ODN got to know the founders of UK-based Open Knowledge Foundation (see 6.3.3). Disappointed by the ongoing fragmentation of ODN and amazed by the software-focused approach of OKF they informally agreed to form their first international chapter Open Knowledge Foundation Germany (OKFde):

> "ODN more and more developed into a direction that we did not like. A lot of people wanted to have a say [...] but no one actually wanted to *do* something instead of just talking. [...] There was no consistent mission, we were just bunch of individuals with vested interests and everyone used this platform to position oneself."[300]

In February 2011 OKFde was formally established in Berlin. Three out of the ten founders were the most involved members of ODN. After a short period of "schizophrenia" they left ODN, which shortly after became defunct[301]. One of its founding members described how the new organization was deliberately designed much more exclusive than ODN in order to push for institutional change more effectively:

[297] BER_100926_Media
[298] BER_090918_Web
[299] BER_140806_Int
[300] BER_140820_Int
[301] BER_140820_Int

> "From the beginning on we wanted to be less like a charitable organization but more along the lines of social entrepreneurship. We wanted to be efficient and professional. We did not want to become a group of babblers [...] we just wanted a lean structure that allows us to do things. We even have this paragraph in our founding certificate that we do not actively recruit new members and that you need at least three people on the board who pledge for you, if you want to become a member."[302]

Over the following years OKFde developed into the most active and influential civil society organization within the city's open data process.

Debating legitimacy: The informal open data regulars' table

When FOKUS approached SenEcon with their idea of a city data platform, they were not aware of the activists that already began to organize around this the issue of open data. The civil society groups on the other side had little idea about which incumbent best to confront with their demands. At this point, they were unaware that with the pilot study, SenEcon had already begun to engage in their interest matter. This part of the narrative describes how these two groups came together and eventually took up negotiations on how to change the rules governing city data.

In September 2009 SenEcon announced Apps4Berlin, a competition that invited software developers to think about web apps that would make for a more livable city. A few weeks later some of the 72 submitted prototypes and ideas were awarded with small grants to development them into marketable products. In its announcement, SenEcon stated that the goal of the competition is to help entrepreneurs develop new markets and to reach new customer groups[303]. Shortly after the competition was announced, ODN published a number of blog posts in which it criticized SenEcon for not releasing any data sets along side the competition, as it happened before with a similar competition in Washington D.C. (see Chapter 6.2.1):

> "The competition is [...] a great idea in terms of economic stimulation – however in its current form it has nothing to do with open data [...] and is ultimately harmful for the cause itself. [...] Berlin is still far away from a serious apps competition. An apps competition without data sets is like a soccer match without the turf: it has no basis. [...] When there is no open data inside, it should not say so on the label."[304]

By drawing a categorical boundary around these two events, ODN managed to create a comparative momentum between the two and to expose the Berlin competition as unsatisfactory against the criterion of openness. SenEcon interpreted this communication as an attack on their legitimacy, as they would either have to distance themselves from the famous US competition, admit their shortcomings, or argue against the value of openness.

Parallel to the apps competition, SenEcon and FOKUS put together a list of data sets available within the Berlin city administration. As a response to previous criticism

[302] BER_140820_Int
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[304] BER_100916_Media

and to increase their input legitimacy, SenEcon forwarded this list to some members of ODN for feedback. Without asking for further permission ODN published the list on their blog alongside a call for action to search for additional data sets, as they assumed the list to be "highly incomplete"[305]. Shortly after the list was published, a member of ODN received a call from FOKUS "with the threat to take this [misconduct] to court as the disclosure of trade secrets."[306] According to a member of ODN the relationship to SenEcon and FOKUS "cooled down quite a bit" after these episodes[307]. However, a member of SenEcon described how these boundary breaches eventually paved the way from confrontation to dialogue:

> "They did not try to imagine themselves in the position of the administration, they did not try to understand our boundary conditions. They did not try to engage with us to find some middle ground or a compromise. [...] One could have proposed to start small, maybe with modified licenses that do not cause us that much trouble. [...] Back then I realized that they had some problems understanding our concerns in terms of what happens to the data and what is it with our legal liabilities."[308]

Two month after these episodes, it came to another incident, which eventually triggered the creation of a platform for dialogue. In November 2010, Gov2.0 organized a small conference including a workshop on open data[309]. At the conference members of SenEcon and other city ministries were "literally confronted" by the criticism that was brought forward by the open data activists in the room[310]:

> "These people [the activists] had no idea about the pace at which these administrative processes progress. They did not understand that this was an entirely new topic for the city administration and that there are no structures in place at all. [...] We already started with this pilot study, and the online voting and the app competition. But apparently that was way too little and too slow and we should just hand over all the data sets. At that point I just had to say 'Sorry but there is no legislative foundation for that'."[311]

During the informal closing of the conference in a nearby bar, the quarreling parties had smoothed the ruffled feathers and spontaneously decided to setup regular meetings in order to better understand the position and demands of the other side. Over the following months roughly a dozen of participants came together once every four weeks "on a voluntary basis"[312], "without etiquette"[313] and "as private persons"[314] to discuss open data. These participants included members from SenEcon,

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[306] BER_140820_Int
[307] BER_140820_Int
[308] BER_141106_Int
[309] My interview partner from SenEcon notes that through this focal event, he also met "a number of colleagues, who also engaged in open data by that time" and that "beforehand, there was no contact between [SenEcon] and these other city agencies."[309] This helps to explain how SenEcon was able to select the participants of the cross-agency open data working group (see 6.4.1).
[310] BER_140723_Int
[311] BER_140723_Int
[312] BER_140806_Int
[313] BER_140820_Int
[314] BER_141106_Int

Gov2.0, ODN and OKFde. Oftentimes the meetings included "small homework assignments", members had to report on some event they participated, or research they conducted[315]. Updates and results of these "open data regulars' tables" were published on a website maintained by SenEcon. During these monthly meetings, SenEcon and FOKUS secured the funding to begin the work on an open data portal and during the development process oftentimes presented their progress and open questions to the regulars. One of the FOKUS employees, who worked on the prototype, remembers:

> "The regulars' table gave important input when designing the data portal. [...] Two weeks before the launch of the portal, we for example sat together with the members and rewrote and refined the legal description about what users are allowed to do with the data."[316]

Within the institutional struggle for openness, the regulars' table fulfilled two main functions. On the one hand it served as a translational device between challengers and incumbents. Literally sitting at the same table helped the challengers and incumbents to gain clarity on the legitimacy claims and to avoid misinterpretations. At the same time the social setting served as a stage for negotiating the claim itself. On the one hand the SenEcon gave in on the demand that there have to be changes in the way public information can be accessed. On the other hand they could present and rationalize arguments why certain changes are possible and others are not.

Presenting transparency: The Berlin Open Data Day

Whilst the open data portal prototype was being finalized, the regular's table made its most tangible contribution to the institutionalization of open data in Berlin: The annual Berlin Open Data Day (BODDy). After meeting for almost a year, the group decided to organize a joint conference to present their consensual understanding of open data to the wider public. The previously informal group gave itself the name Open Data Action Alliance[317] and started to assemble projects and speakers that could demonstrate the usefulness and potential of open data. In my interview, a member of Gov2.0 described vividly the process by which the organized informality of the regulars' table allowed the members to organize the conference in a more spontaneous way than would have been possible through more formal means of organizing:

> "We had this meeting with twelve to 15 people from all kinds of organizations. And then [a group member] said that she could not leave home because she couldn't find a babysitter. And then we said 'Then we just come over'. We simply moved the meeting from a bar into her living room and turned it into a bottle party. Everyone brought something along... and then we sat... that was just crazy. There you had the city ministry of the interior, the SenEcon, representatives of the federal ministry of the interior, the industry and civil society [...] sitting in [the group member's] living room and planning the Open Data Day. That was a lot of fun, far away from all formal

[315] BER_140806_Int
[316] BER_140806_Int
[317] Own translation, from *Aktionsbündnis Open Data*

> shibboleths. We did not participate in our professional roles, but as evangelists of the open government idea."[318]

Shortly before the conference, the group co-authored the Berlin Open Data Agenda, a one-pager in which the members outlined their shared vision of how open data should be implemented in Berlin over the following years. At the conference all members of the alliance signed the document and participants were invited to pledge themselves to the principles as well. In total more than 100 guests visited the event, which was opened with a keynote by Berlin's deputy mayor and head of SenEcon. The BODDy was repeated over the next three years. In 2012 it was again organized by the Open Data Action Alliance. In 2013 and 2014 the organization was passed on to a professional event agency. Since 2013 attendance, public interest and prestige of speakers declined. In 2015 the alliance announced that due to other obligations they would not organize a BODDy that year. For the institutionalization of open data the annual conferences had at least two main purposes. On the one side it signaled that the practice was legitimated by the political government of Berlin. This became particularly important, as from the second BODDy onwards the government of Berlin was a different coalition than the one that initiated the open data portal. On the other side the various presentations on open data projects helped the city employees in the audience to justify the practice within their respective agency. Through stories in which the use of open data served the public interest, the open data action alliance linked the release of data to the general mission of city ministries and agencies, to serve the public.

In September 2011, shortly after the first BODDy, SenEcon and FOKUS launched the Berlin open data portal with the unfettered approval of Gov2.0, OKFde and the other actors, who have been involved in the regulars' table and the Action Alliance. At this point the actors agreed that their informal meetings are not necessary anymore as they reached their goal of a mutual understanding about the open data implementation. In the following years many of the group members redirected their interest to more recent issues, and from the field of challengers only OKFde kept a strong focus on open data in Berlin. However, as the open data portal was in place and the issue placed on the political agenda, the organization had to redefine its role in the field in order to stay operational. In the following and final section I show how OKFde moved from an activist role to one of a service provider, helping SenEcon to institutionalize open data through the routinized organization of hackathons.

Organizing hackathons: Linking open data with public service provision

OKFde was founded with a preference for "making" over "talking". Over the years it followed this premise and developed a number of demonstrator projects, for example "Frag den Staat", a platform to help citizens send FOI requests[319]. Besides developing and maintaining their own open data projects, OKFde in 2012 started to organize open data hackathons. Technology scholar Lilly Irani provides a description of hackathons, which fits many of the events organized by OKFde:

[318] BER_141106_Int
[319] *Frag den Staat* is a localization of the UK's *What Do They Know*, developed by MySociety (see 6.3.3)

> "In its most basic form, a hackathon is an intense, multiday event devoted to rapid software production. Hackathon organizers invite programmers, designers, and others with relevant skills to spend one to three days addressing an issue by programming and creating prototypes. Organizers offer a space, power, wireless Internet, and often food. Participants bring their computers, their production skills, and their undivided attention. Hackathons usually happen at night, on weekends, or during conferences—times away from routine obligations to family, managers, or long-term plans. Participants form work groups, explore ways to address the focal theme, and push toward a 'demo' – a piece of software that supports storytelling around future technologies and use [...]. At the end of a hackathon, those who managed to build demos might show them off, speculate about their futures, promise to continue the work, or just shake hands and say good-bye." (2015, p. 803)

Starting in 2012 OKFde and SenEcon developed a routine in organizing open data hackathons around certain data categories of for a certain target group. The cooperation agreements differed, but in most cases SenEcon would provide parts of the financial resources and make contact to city agencies that hold interesting data sets. OKFde would reach out to the community for participants, conduct the event itself and raise additional funds. In most cases the events were called "hackathon" or "hackday". Hacking hereby refers to the playful exploration of data sets. However, by request of SenEcon some events were framed as "developer day" (*Entwicklertag*) in order not to "steamroll" any city employee with the imagination of someone intruding their software[320] (as it was oftentimes associated with the CCC). Table 11 shows the ten largest hackathons organized by OKFde between 2012 and 2015. Eight out of ten events were organized in cooperation with SenEcon. In many cases there was at least one project partner who provided new data sets for the participants to work on. Zooming into some of these hackathons shows their functioning as an instrument of institutional work.

Table 11: Hackathons organized by OKFde in Berlin

Date	**Hackathon**	**OKFde's project partners (selected)**
2012/11	Apps & the City	SenEcon, VBB (transport association)
2013/06	Energy Hack	SenEcon, Stromnetz Berlin (energy company)
2013/09	Jugend hackt	SenEcon
2014/02	Open Data Day	SenEcon, City ministry for health and social affairs
2014/03	Coding DaVinci	SenEcon, 16 cultural institutions
2014/09	Jugend hackt	SenEcon, BSR (public waste company)
2015/04	Coding DaVinci	SenEcon, 33 cultural institutions
2015/05	Hack your City	Federal ministry of education and research
2015/10	Jugend hackt	Regulatory body for media industry in Berlin
2015/11	Energy Hack	SenEcon, Stromnetz Berlin

In November 2012 OKFde organized a hackday in cooperation with the Berlin public transports association VBB. Over the previous months VBB was confronted with demands from various actors to make their public transport schedules available as open data. In one particular case, a student simply copied the schedule data from the

[320] BER_140723_Int

VBB's website, reformatted it and released it as an unauthorized smartphone app (very similar to the TfL developers in London, see 6.3.2). At some point in 2012 VBB decided to "escape ahead and seek a dialogue" with those people who wish to access their data sets[321]. Aware of OKFde and their work, VBB contacted the organization and proposed to organize a joint one-day hackathon: "We wanted a forum to release our data and we knew that OKF already had a lot of experiences with this." [322] After a few days, all 150 tickets of the event were sold.

"Apps & the City" took place at a co-working space in Berlin. The rent for that evening was covered by VBB, SenEcon sponsored food and drinks. Several members of OKFde voluntarily facilitated the event, which to the delight of SenEcon and VBB was covered by several newspapers and television teams[323]. "Afterwards the entire country and all the other public transport associations read about us and that we did such a hackday. All eyes were on Berlin!"[324] After VBB presented its data set and gave background on its origin, some of the participants went on stage and one after the other pitched their project idea. Subsequently the participants rearranged the tables into islands, each labeled with a number, and sat down with the project they wished to contribute to. A member of VBB remembers how he experienced the event:

> "For us, the entire process appeared like a complete chaos. When we develop software in-house, we have an idea, and a project descript, a tender, an award and a specification sheet. But at the hackathon, people just sat down and said 'Let's go'. Two worlds collided on that evening... but we approached each other over the course of that night. It was an interesting evening, and it definitely built some bridges."[325]

At that night, the employees of VBB left the co-working space around 3am and could not tell me how long the remaining participants continued to work on their projects. A few weeks later the hackers presented their final results and VBB announced that it would not just make all their transport schedule data available as open data, but also create the position of an open data commissioner[326].

In June 2013, shortly after the successful transport hackday, SenEcon and Stromnetz Berlin, a private energy company supplying Berlin, approached OKFde with plans for another hackathon. By that time OKFde had just started to discuss internally whether to turn their accumulated knowledge and network into a "commercial hackday-as-a-service model"[327]. Due to legal regulations, Stromnetz Berlin had to publish a number of key data sets. When they contacted OKFde they were already working together with FOKUS to develop their company-run data portal. Through a hackday they hoped to attract developers to their company and to reposition themself in the public eye as a more transparent organization[328]. Same as the transport hackathon, the "Energy Hack" attracted around 150 participants (Figure 12).

[321] BER_140912_Int
[322] BER_140912_Int
[323] BER_140728_Int_a
[324] BER_140912_Int
[325] BER_140912_Int
[326] BER_140711_Int
[327] BER_140728_Int_a
[328] BER_140728_Int_a

Figure 12: Participants at *Energy Hack* hackathon, June 2013 in Berlin

Satisfied by the successful hackathons on transport and energy data, OKFde wanted to expand their service to data from cultural institutions. Together with the German chapter of Wikimedia (the non-profit organization behind Wikipedia) and Berlin's office for the digitization of administrative documents[329] they conceptualized "Coding Da Vinci" in early 2014. OKFde took over the project management and within three months was able to raise enough funds and to convince 16 cultural institutions from Berlin and beyond to participate[330].

> "The office for the digitization of administrative documents in Berlin helped us to get in touch with a lot of cultural institutions, and we got in touch with the community. The idea was that all project partners contribute with their network to make the project flourish. [...] We contacted the cultural institutions—some of them were like 'Oh my god' but basically they were very interested in all these issues around open licenses. [...] It took them some time to fight this through internally, but after we applied some pressure, pointed to our deadlines, and just asked them again and again they all agreed to participate."[331]

To make participants enjoy a hackathon, OKFde had learned, there had to be some curating of the data first. Curating hereby involves checking that the data sets are not too fragmented, that the data is provided in formats that are known to most software developers and that the content and labels of the data set are understandable without explicit domain knowledge. In the case of Coding Da Vinci the curating process was more complex as this time there was not one but 16 institutions with varying technical knowledge:

[329] Own translation, from *Servicestelle Digitalisierung*
[330] BER_140709_Int
[331] BER_140709_Int

> "We wanted to look into the institutions' data sets before the event. We asked them so send us an excerpt, even if its only one row out of an Excel sheet [...]. All institutions did that and that's when we started seeing the first problems. The columns were irregular or some data was missing. [...] Then we did several feedback loops, depending on the institution. We had quite cute misunderstandings. Once I asked them to upload pictures to their servers and include the link in an Excel sheet. But what they did is copying the pictures in the Excel sheet. Someone else asked me whether, after opening up their data for the hackathon, they would get it back. That sounds funny at first but you just have to pick the institutions up where they are [...]. We really learned that these are two different worlds and we have to find a middle ground to communicate. I am sure they thought as well that we have no clue about the cultural sector at all."[332]

Coding Da Vinci took place over a weekend in March 2014 at the office of Wikimedia in Berlin and attracted more than 150 participants over the two days[333]. The procedure was fairly similar to the previous hackathons. After all cultural institutions presented themselves and their data to the participants, there were several sessions in which the institutions explained their data sets in more depth and participants could develop initial project ideas. Having learnt about several data sets, participants met again to present their project ideas, to form teams and to start working. In contrast to earlier hackathons, this one not only attracted software developers, but at least the same amount of people interested in design issues or the cultural sector[334]. Ten weeks after this kickoff, the teams, which continued to work on their applications or websites, were invited to present their results to all the cultural institutions at an event in Berlin. At least half of the teams did. In the following year Coding Da Vinci was repeated with 33 cultural institutions opening up parts of their data.

For OKFde, the organization of hackathons had developed into a revenue stream that allowed them to fund several full time employees. Within the open data process in Berlin, hackathons filled the void of government-led schemes to diffuse the practice of open data through all city departments. Through hackathons, OKFde and SenEcon slowly but steadily moved from one city agency to the next and individually convinced them to adopt open data. Through the instrument of a hackathon they made the demand for open data tangible for these organizations. By seeing and talking to the actual people who would like to work with open data, the legitimacy claim moved from something abstract to something immediately perceivable.

[332] BER_140709_Int
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[334] BER_140426_Notes

Table 12: Berlin – Narrative B: Open data between revolution and routine

Episode	Contribution to institutionalization / Forms of institutional work
Protect private data, use public data: envisioning the issue	The issue of open data in Berlin it rooted in several decades of information activism. In the 1980s a national census brings **thousands of protestors** to the streets, fuelled by the imagination of a state that uses its computer systems to share and misuse personal data. Around the same time the **Chaos Computer Club (CCC)** is founded in Berlin, which states as one of its basis principles to "protect private data", but to "use public data".
First wave challengers: Data reform or data revolution?	Drawing on the cultural legacy of early information activism, two actors import the issue of open data to Berlin. They, however, develop different strategic approaches: **Open Data Network (ODN)** follows a rather revolutionary approach. They scrape (copy) data from city websites to show that they can get access to it even if it is not officially published and confront employees of the city administration with their demands for open data at public events. **Government 2.0 Network** operates in a more reformist way. They identify as consultants rather than activists and push for slow convergence and incremental change. On the institutional level the organizations move open data from a technical topic that is debated within the hierarchy of the city administration to the public sphere, where it is debated on blogs and in the press and can be perceived by actors outside the immediate conversation context.
Second wave challenger: Revised and reorganized	After an initial period of great activity both organizations develop into loose discussion groups rather than functional social movement organizations. Frustrated but willing to continue to work on the issue of open data, a group of individuals founds the **Open Knowledge Foundation Germany** as a more exclusive organizations working on clearly delineated projects that are supposed to bring forward the institutionalization of open data.
Debating legitimacy: The informal open data regulars' table	Through their more or less coordinated campaigning, the open data challengers manage to irritate **SenEcon** and **FOKUS** (at that time working together on a data platform) to engage in an informal discussion format in order to figure out whether interests can be aligned. Over several months roughly a dozen of participants come together once every four weeks "as private persons" to discuss open data. Within the institutional struggle for openness, these meetings fulfill two main functions. On the one hand they serve as a translational device between challengers and incumbents. Literally sitting at the same table helps the challengers and incumbents to gain clarity on the legitimacy claims and to avoid misinterpretations. At the same time the social setting serves as a stage for negotiating the claim itself.
Presenting transparency: The Berlin Open Data Day	Once **SenEcon** and **the activists** are able to align their interests, they move from the back to the front stage. For several years in a row they organize an annual open data conference and invite employees of the Berlin city administration. For the institutionalization of open data the annual conferences have at least two main effects. On the

	one side it signals city agencies that Berlin government supports open data. On the other side the various presentations on open data projects help the large number of city employees in the audience to justify the rationality of this practice. Through stories in which the use of open data serves the public interest, the release of data is cognitively linked to the general mission of city ministries and agencies: to serve the public.
Organizing hackathons: Linking open data with public service provision	Once SenEcon has launched the Berlin open data portal and the city government has endorsed the practice, the challengers face the options either to move on and to campaign for another issue or to modify their role in the open data process. Whilst Gov2.0 moves on, **OKF Germany** develops into a service provider for "hackathons". Through these events in which they bring together city employees, city data, and app developers eager to work with the data, they managed to slowly convince one city agency after the other to adopt open data by educating them and by attaching meaning to the abstract practice.

6.4.3 From narration to causation

Like with my other cases, I also triangulated the two narratives from Berlin to identify their overlaps. Equipped with my research question – *How do actors institutionalize organizational openness on the field-level?* – I derived a causal chain of critical episodes that led to the institutionalization of open data.

The *first critical episode* in the institutionalization of open data in Berlin was the passage of the Freedom of Information Law in 1999, which came into power in the same year. After its adjacent state Brandenburg, Berlin became the second German state to grant its citizens the right to access public information. Similar to NYC and London, many city agencies at first tried to circumvent this new formal rule, but oftentimes caved in when the issue is taken to court. In Berlin the Freedom of Information Law prescribed the appointment of an information commissioner who served as an ombudsman for citizens. In addition to the courts as formal sanctioning mechanism for non-compliance, the information commissioner regularly issued public statements on informational malpractice by city agencies.

The *second critical episode* in Berlin included various efforts to create a cognitive causal link between accessible public information as a means to economic benefits as an end. This means-end connection did not replace, but complement the conncection between accessible public information and democratic practice that had been established back in the days of FOI advocacy work. Examples for this link between open data as a means for an economic end are manifold: In order to secure funds for the pilot of the open data portal, SenEcon and FOKUS registered their open data initiative as a "modernization project" within the larger modernization agenda of Berlin. Framed as such it became "yet another" instrument to elevate the productivity of the overloaded Berlin administration to an economicaly viable level. Another example comes from the city-owned think tank Technology Foundation Berlin: In 2013 they published a study on open data as the "digital gold". They used the same formula Rufus Pollock in the UK developed to prove the economic benefit of open data (see Chapter 6.3.4). They adapted this formula to the Berlin context and came up with an "economic potential between 20 and 50 million Euro over the course of the next three to five years." Finally, also the open data NGOs in Berlin contributed to the establishment of this new cognitive link. At public events or in the press, they usually introduced their demands by pointing out the benefits of open data for democratic practice, yet seldomly missed the oportunity to also mention the economic potential of open data and its ability to create new or increase the value of existing commercial services.

The *third critical episode* in the institutionalization of open data in Berlin was the passage of the E-Government Law in June 2016[335]. The law was passed after the end of the data collection phase of this dissertation, however I learned about the institutional work that led to the fact that the provision of open data is explicitly articulated in § 13 and hence be made a formal rule for city agencies in Berlin. Work on the relatively comprehensive E-Government Law was already underway when the issue of open data gained traction in 2009. The paragraph that ended up in the final

[335] This episode is less substantiated by my data than the other episodes in this or the other cases. However, its plausibility will become clearer in the following case comparison.

version was originally crafted by the intra-administrative open data working group. It remains unclear at this point in how far the political deliberation process altered the originally devised version, yet it seems evident that the broad coalition that was able to align behind the economic imaginary of open data greatly influenced that the demand made it into the new law at all.

6.5 Interferences between horizontally adjacent fields

Organizational fields are interpretative devices to reduce the complexity of social life. One way of reduction is their boundary. Organizational fields are understood as meso-level social orders, and therefore attribute a lower explanatory power to "macro-social processes that contain some underlying structural logic operating independently of actors (e.g., social class)" (Kluttz & Fligstein, 2016, p. 186). Also they attribute less explanatory power to the relations to other meso-level social orders. However, I believe that good theory on field-level change should not end at the field's boundary but shed some light on the embeddedness of fields in other social orders as well. In chapter 6.1 I described how techno-social developments on the societal level have rippled down and triggered the institutionalization of open data in cities (as meso-level fields). In this chapter I discuss the interferences that temporarily overlapping change processes in horizontally adjacent fields have on each other. In my analysis I identified two types in which the institutionalization of openness in different fields interfere with each other: through practice brokerage and through the creation of comparability.

Practice brokerage

Since Burt's (2004) study on the networks of managers in a large American electronics company, we know that brokerage between groups can be a source for social capital. Actors that are connected between different groups (each with a relatively high internal homogeneity in terms of opinions and behavior) can use this position in order to broker social goods (e.g., information, practices) from one group to the other. Within the respective groups these actors are perceived as coming up with "good ideas" more frequently than other members. In each of my cases I found that some of the actors deliberately tried to import practices from other fields, hoping to foster the institutionalization of open data in their own field. Across my cases these attempts range from highly reflexive, formalized and even routinized efforts to more serendipitous accounts.

In all three cities open data advocates within the city administration have tried to establish inter-city working groups. Some of these efforts have been successful others failed. The former CIO of New York City reported how she was part of an informal group consisting of her and her counterparts in four other US cities. The members of the group had "regular conversations about innovative things" which they planned or which were already implemented in their city[336]. As she reports the idea of an open data portal was not genuinely developed, but strongly encouraged and refined through these field-spanning conversations. Another episode between London and New York City sheds more light on the practice of brokerage itself. When speaking to a member of the Cabinet Office, he reported about his suspicion that *his* idea of a national open data portal was "picked up" by the White House during one of their informal phone

[336] NYC_150824_Int

calls, and implemented quicker than the team in the UK was able to[337]. When speaking about the same episode with a former member of the White House's Open Government team, he reported in length about all the legal groundwork he and his colleagues had to do in order to launch the portal[338]. This triangulation shows that practice brokerage between fields might not be clear cut –practice creation vs. practice sourcing – but can take mezzanine forms in which existing practices are refined by ideas from adjacent fields.

The CIO of NYC used informal exchanges with colleagues from other US cities, yet not with English-speaking cities elsewhere. Similar patterns of institutional proximity (Knoben & Oerlemans, 2006) emerged in the other two cases as well. When Berlin launched its open data portal, members of the city agency responsible for the project got in contact with colleagues from Vienna in order to get insights on their experiences. As Berlin and Vienna are twin cities, the city employees from Berlin were able to tap into "various existing networks."[339] Shortly after the first exchanges, actors from Berlin and Vienna decided to routinize these meetings and established a formal working group for city employees from Germany, Austria, Switzerland and Liechtenstein that would meet at least annually to exchange experiences and skills. In a similar vein, an employee of London's GLA reported that the Cabinet Office set up a group of exemplar cities including – inter alia – London, Manchester, Bristol, Leeds and Glasgow. The cities were supposed to craft case studies on public sector innovations in order to foster diffusion to less innovative municipalities within the UK[340].

Finally there are episodes in which actors tried to create formal structures to broker practices, but failed to build sufficiently strong connections into other cities. In NYC a mid-level city agency employee working on the open data portal reported about his efforts to set up a national discussion group for open data project managers. Despite his intention, he was never able to mobilize the resources and the network necessary to establish the group:

> "In the open data movement and actually in technology movements as a whole there's a lot of leapfrogging so you push forward and do something very amazing. And then everybody looks at that, takes that in, fits it in. Then somebody else, six months later, jumps over you and does something even better. [...] Part of the whole idea of that working group was to kind of recognize when that would happen and help those ideas kind of spread very quickly."[341]

Across cases I also found less structured ways in which practices move from one field to a horizontally adjacent one. Instead of formality, these accounts are characterized by serendipity, the happy blend of wisdom and luck by which something is discovered *not quite* by accident (Merton & Barber, 2004). In these accounts, actors that were able to span "structural holes" (Burt, 2004) ventured into adjacent fields

[337] LDN_130718_Int
[338] NYC_150909_Int
[339] BER_140723_Int
[340] LDN_150313_Int
[341] NYC_151008_Int

looking for useful practices in an unstructured way and eventually brokered something that they did not explicitly searched for.

After the transparency activists in Berlin had successfully campaigned for the creation of an open data portal, they were in need for new practices that would allow them to keep their organization alive without changing their identity too drastically. One of these activists explained to me how, in order to search for new ideas, he mixes structured with more undirected forms of search:

> "In a few days I will leave for my study tour. My first stop is the Code for America Summit in California. Afterwards I travel to Mexico City, Boston, Philadelphia and New York. I want to put together a project proposal, which I can then send out so some German mayors to get their feedback."[342]

In this case, the conference in California was an annual meeting for open data activists from around the world and thereby a structured form to learn about new practices from other cities. The subsequent city hopping was much more undirected and might have resulted in the discovery of practices that were not discussed on the conference. Another example of serendipitous practice brokerage is that of an entrepreneur and open data enthusiast from NYC. Somewhat bored by his day-job he began to use and explore the first version of the NYC open data portal. Intrigued by the potential use of the data sets, he shortly after participated in the first local apps developer competition. Whilst working on his contribution to the competition he was looking for the best way to store and manage data sets and found out about the CKAN project, developed by Open Knowledge Foundation in the UK. Through this contact, yet rather by chance than planned, he imported the influential open data software CKAN to the US context:

> "I reached to Open Knowledge Foundation and at the time they started a professional partnership program. I decided that I wanted to become the first professional service partner here in the US, I got that accreditation and helped some smaller organizations to a CKAN portal."[343]

Creation of comparability

Horizontally adjacent fields cannot only serve as a source of practices; they can also interfere with each other as points of comparison. With their study on media rankings of US law schools, Espeland and Sauder (2007) have drawn attention to the methodological concept of reactivity — the idea that people change their behavior in reaction to being evaluated, observed, or measured — as a useful lens to study recent phenomena around transparency, accountability and comparability. In my analysis I discovered how actors in one field tried to create comparability with the institutionalization of open data in other fields. When comparability was achieved and a comparison was made, challengers could use negative deviation of the own field to trigger mechanisms of reactivity with the incumbents. Successfully triggered, incumbents increase their efforts to adopt open data in order to "catch up" with the other fields. Mechanisms of reactivity can also be used by incumbents in order to safeguard the status quo. Incumbents can create comparability to other fields in order

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to justify their inert behavior with the inert behavior of "similar" incumbents in other fields.

One of the best examples for the creation of comparability in order to institutionalize open data that I found stems from the Power of Information Taskforce Report assembled by the Cabinet Office at the beginning of the UK's open data initiative. In a section on practical recommendations for the government, the authors draw on an example from Washington D.C.:

> "The District of Columbia in the USA provides a vivid example of aggregating data for reuse in its data catalogue. […] Using modern techniques and storage it is relatively easy and inexpensive for government to aggregate performance and other data as it is produced."[344]

In the first part of this comparison the example is laid out in a few sentences (mostly spared out in the excerpt above). Subsequently the example is generalized from one specific city administration to "government" in general. Finally, a comparative momentum is created by describing the practice in D.C. as "easy and inexpensive" guiding the reader to the conclusion that under these circumstances, it would be grossly negligent for the UK not to adopt it.

Characteristic for comparisons as an instrument of institutional work is a high degree of selectivity within what conversation analyst Harvey Sacks (1988) calls "measurement systems". For a comparison to serve the purpose as a legitimacy claim, it needs to be limited to a metric that many people associate with the institutional goal. Measured by this metric, there needs to be an undeniable deviation between the own field and the field that serves as point of comparison. Finally the comparison needs to exclude other metrics that might be used to relativize and delude the primary deviation. In one of my interviews with a city employee in Berlin, I witnessed a prime case of such a comparison: "If you look towards Vienna, they already have 150 apps listed on their website. We only have about 20. We really have to boast up our game to get there. But that's where we want to go."[345] In this example, the number of open data apps is singled out as a metric to measure the success of an open data initiative, the comparison with Vienna opens up a gaping deviation that spares out any other potential explanation for it. I found similar accounts in NYC as well: An employee of the city administration in NYC described to me his reaction when in 2008 Washington D.C. launched its app competition: "If we want to keep New York ahead of the curve, we should think about an app challenge too."[346] By using this idiomatic expression, "the curve", the interviewee discursively creates a ranking among several cities, in which he sees a need for NYC to perform above average. The metric against which this ranking is established however remains unspecified and thereby unquestionable. In a similar vein another interviewee from NYC stated that in her understanding "London is like a leader of open data initiatives in Europe."[347] Again, the interviewee is using the rhetoric of rankings and competition without a specification about the rules of this game.

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6.6 Comparing the cases: Towards generalization

In the following I present the results of my "cross-case pattern search" (Eisenhardt, 1989; Gilbert, 2005) that allows me to make more generalized statements about institutionalization in general and the institutionalization of openness in specific. As in my single-case analyses, this generalization provides a further piece to my research puzzle: *How do actors institutionalize organizational openness on the field-level?* In the following I present my results in three consecutive parts. First, I present three stages of openness as an institution. Second, I present two distinct modes of institutional work. In the third part I integrate the institutional phases and the modes of institutional work to a structurationist-inspired model of institutional change.

Stages of openness as an institution

In my stage model I build upon Scott's (1995) pillars of institutions introduced in Chapter 3.2, whereby I focus on the interplay between the regulative and the normative pillar. The reason that I exclude the cultural-cognitive pillar is that, in a "strong" reading of Scott, it is somewhat contradictory to the other two and therefore of little help in answering my research question. In my reading of Scott, if an institution contains a fully developed cultural-cognitive pillar, actors in a given field are basically unable to imagine a different way of doing things. In the case of organizational openness this would mean that employees of city agencies are unable to imagine that data could *not* be shared with their environment. If, hypothetically, this would be the case, there would be no need for norms or formal regulation. Even more, the mere existence of formal regulation would imply that things could be done differently (otherwise no regulation would be necessary). By excluding the cultural-cognitive pillar from my analysis, I do not neglect its existence in partially developed forms, but simply focus on the other two pillars as they interact more fatefully with each other in my analysis than with the cultural-cognitive pillar.

(1) Openness by regulation. In the first stage of my model, organizational openness is predominantly defined by the regulatory pillar of the institution. Across my cases Freedom of Information legislation sets very specific rules what kind of and under which conditions public information has to be made available. The laws grant citizens the right to make requests for almost all sorts of information. Within a certain timeframe, the city agency has to make this information available to the individual person or organization. If city agencies refuse to make the requested information available, there is a formal sanctioning mechanism in place (requesters can file a suit based on the respective law). That I have labeled this stage "openness by regulation" does not imply that the normative pillar is not developed at all in this stage. Even if cases in which they withhold information are not brought to court, they may stir negative reactions from the media, individual citizens or other organizations that have requested the information. Therefore, the desire to comply with the wider expectation to release requested information eventually leads to the decision to release it. I labeled this stage "openness by regulation" because the Freedom of Information laws effectively defines the upper limit of organizational openness. Even if the public opinion would expect less openness than inscribed in the formal regulation (normative pillar), the organization would eventually need to release exactly the amount of information inscribed in the law.

(2) Openness by norm. The second stage of my model, "openness by norm" is distinctly different from the first one as the upper limit of organizational openness is set by normative expectations that exceed the amount of openness inscribed in the formal regulation. When comparing the regulative and normative pillar in this stage, it would be incorrect to argue that every city agency perceives a normative pressure to legitimize greater than the one exerted by the formal law. Some city agencies might still perceive less normative than regulative pressure. However what is the characteristic of this stage compared to the last is that there are a significant number of organizations that comply to a normative pressure that clearly exceeds the regulative one. Across my cases there are numerous city agencies that proactively make large amounts of their information available. Some of this information is provided under what is generally understood as open data, other is provided in less accessible forms. Any proactive provision however leads to greater organizational openness as the purely request-based system from the first stage. I generalize on the genesis of this norm in the following section on modes of institutional work. What can be added to this stage is my finding that across cases, city agencies that had less intense and controversial relationships with external actors (e.g., statistical agencies) complied earlier and more adequate to the emerged norm than city agencies that are in frequent and rather controversial contact with non-administrative actors (e.g., police departments).

(3) Openness by regulation'. The third and last stage of my model is called "openness by regulation'". Like in the first stage, the upper limit of organizational openness in this stage is defined by formal regulation. This regulation, however, is not the same as in the first stage, but a complementary one that was crafted "on top" of the already existing one (hence the suffix – ' –). Across my cases open data legislation has been passed. Although the regulations differed in their specificity, their implementation scope and their inscribed sanctioning mechanisms, they all define that all city agencies have to make almost all of their data sets available to the public. In cases in which agencies have not yet done so, citizens have the right to request the publication of the data in public hearings or even in court. Different to the Freedom of Information legislation, this and any other public information is not made available to only the actor that requests it, but to the general public (through the open data portals). When the open data laws were passed, basically nothing changed for the city agencies, which already complied with the norm during the previous stage. The field-level institutionalization of openness however increased, as the city agencies, which were previously reluctant to comply with the norm now have to comply with the law.

Modes of institutional work

In Chapters 6.2, 6.3 and 6.4 I have shown that institutionalization of openness is highly distributed between different actors and across different forms of institutional work. Two modes of institutional work however have shown to be the most important ones along the three stages described above. Through different practices of theorizing actors were able to develop the institution from the first (regulation) to the second (norm) stage. Through different practices of advocacy actors developed the institution from the second to the third (regulation') stage.

In studies of institutional work *theorizing* is understood as a set of practices through which other organizational practices are abstracted into compelling theoretical models including chains of cause and effect (Mena & Suddaby, 2016). Through abstraction

these chains of cause and effect are detached from individual situations as well as individual subjects, but are perceived as verified knowledge. Once objectified actors can use these theoretical models in order to exert normative pressure. How has organizational openness be theorized? Theorization of open data revolved around the chain of cause and effect that I described already in all three of the causal reconstructions of my cases: The more public information is available, the greater positive economic effects for the city and its citizens will show. A particularly striking example of this theorization is the study "Models of Public Sector Information Provision via Trading Funds" published by David Newbery, Lionel Bently and Rufus Pollock (all University of Cambridge). In their 154-page study, commissioned by the UK government, the authors drew on economic theory to evaluate different models for the provision of public sector information by trading funds (e.g., the Ordnance Survey). The authors come to the conclusion that "[…] in most cases, a marginal cost regime would be welfare improving – that is, the benefits to society of moving to a marginal cost regime outweighed the costs."[348] The benefit of open data is argued for not on a moral level (improving some sort of democratic principle, e.g., the open society), but through welfare as an economic indicator for societal benefits. In other words the study creates the causal link between the release of public information and an improved ratio of public spending to economically quantified welfare. The nature of theorizing becomes even more visible in an example from Berlin. During my time as an organizational ethnographer, I participated in a press conference at which the city-owned think tank Technologiestiftung Berlin published their study "Digital gold – Use cases and value creation through open data in Berlin"[349]. In this study, the author, a trained economist, picks up the formula for the welfare analysis of open data initially developed by Rufus Pollock in the UK, adapts it to the Berlin context and presents different scenarios that place the economic benefits of open data for Berlin between 20 and 50 million Euro within three to five years. During the press conference, one of the present journalists asked a question related to the formula. Instead of redirecting the question to the author, the chairman of TSB, proposed to move these "technical" questions to the informal part of the event. Through this rhetorical move, the chairman was able to focus the press coverage on the message that the economic projection has theorized (according to literally unquestionable scientifically principles) and avoided public scrutiny of the process of theorization itself. Once the scientifically backed causal relation has been published without arousing immediate controversies about its accuracy, it is referenced in further statements, studies and strategy papers. The more actors draw upon the relation, the more it becomes taken-for-granted[350].

Advocacy as a mode of institutional work is generally understood as the mobilization of political and regulatory support through direct and deliberate techniques of social suasion (Lawrence & Suddaby, 2006). In my model I understand advocacy a bit more specific as either directly addressing the legislator with the aim to initiate a new, or to influence an ongoing regulative process. Further, what unites all forms of political and regulative advocacy is the notion of not speaking for oneself only, but acting as a proxy for a larger group of actors. By following this narrow understanding of advocacy I am able to delineate the efforts that immediately influence the open data

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[350] At this point the reader might want to venture back to Berger and Luckmann's (1966) social construction of reality as described in Chapter 3.2

laws from the efforts that feed more broadly into the norm of open data on the field-level. How do actors organize and which practices of social suasion do they use to achieve the formal regulation of their interests? Across my cases I found two generalizable forms of advocacy work. The first form is the initiation of new legislative projects. These initiations have to be formally performed by members of the parliament. However in some cases the members are approached by or reach out to domain experts. In the case of Berlin the Pirate Party (in opposition) pushed the government to include the formal regulation of open data to its coalition manifesto. In NYC, an individual Council member, in close exchange with information activists, introduced the bill that eventually became the open data law. The second form is the influence of an ongoing legislative project. In Berlin the government considered to include open data in a broader E-Government law that was already under negotiation. The intra-administrative open data working group – led by the progressive SenEcon (in terms of their attitude towards openness) – managed to contribute the paragraph on open data that eventually made it into the final E-Government law. In Berlin the working group was able to influence the law making process, as they were considered non-partisan and well versed in technical-legal questions (e.g., licensing schemes). In New York City, civil society groups were able to enter the negotiation process of the open data law directly. The organizational form in which they achieved this can be described as a "discourse coalition" (Hajer, 1993). For a certain time and concerning a certain issue, diverse actors align their storylines in order to have an influence in a group instead of having no influence on a given process at all as individual agents. By forming a discourse coalition (the Transparency Working Group in NYC, or the Open Data Action Alliance in Berlin) actors managed to enter the law making process as they appealed to its input legitimacy on the one hand (civil society needs to be represented in some sorts), but at the other hand secured the output legitimacy of the process (if there are too many dispersed voices in the process it might fail or slow down dramatically).

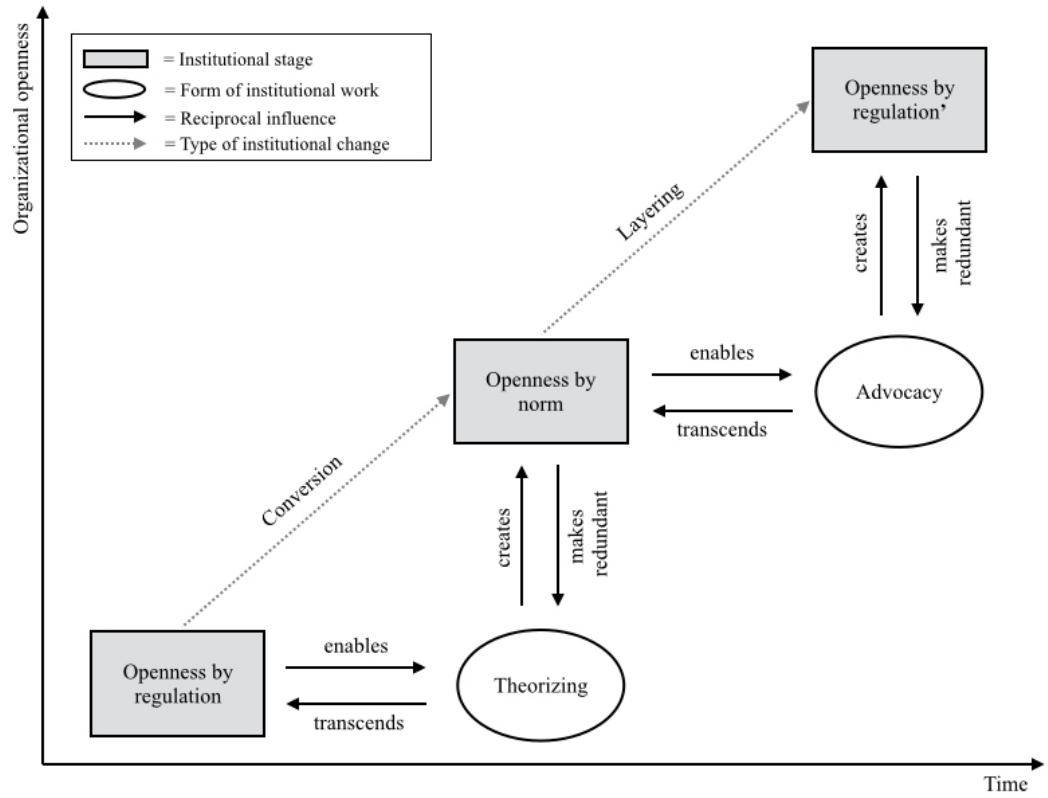
Recursive process model

I can now develop a process model of the recursive relationship between structure and agency, institution and institutional work over time. My model is inspired by the work of Barley and Tolbert (1997), who for the first time – at least to my knowledge – proposed to enrich studies of institutionalization with the recursive approach to the structure-agency relationship as developed by Anthony Giddens (1984). The recursive approach to institutionalization has quickly been picked up by institutional scholars (Lawrence, 1999) and more recently been transposed to practice-based strategy research (Jarzabkowski, 2004, 2008). Figure 13 depicts my stage-model of the institutionalization of organizational openness, which combines the elements described above. The horizontal axis displays the temporal direction of the institutionalization process, the vertical axis the degree to which organizational openness is institutionalized on the field-level. With my model I am able to explain the institutional change towards greater openness in the interplay of institutional context and institutional work and to show how they enable and constrain each other.

The Freedom of Information laws represent a context in which organizations practice openness mainly due to formal regulation. These existing rules of openness enable the challengers to theorize about what would be possible with even more information available. As we can see in the example of the scientific study on information regimes from the UK, only the fact that the information they studied was already available in

some form (companies were able to license it) it was possible to speculate of alterations of this regime (e.g., provision at marginal cost). With a completely closed information regime, it would have been much harder and much less legitimate to theorize about the economics of data provision. At the same time at which this institutional context enables theorizing, theorizing transcends it and spurs imaginations of a different institutional arrangement. By transcending the regime of openness by regulation (stage one), actors who link the provision of open data to the image of city agencies that are more economically efficient and that at the same time function as a "breeding ground" for new startups, create a new institutional context: that of openness by norm (stage two). In this dyadic relationship between structure and agency, the more developed the openness-norm becomes through theorizing of its economic fertility, the more this norm makes the practices of theorizing – the creation of this norm – redundant. The institutional change from the first of the second stage occurs in a way that Mahoney and Thelen describe as institutional "conversion", which "normally occurs when rules are ambiguous enough to permit different (often starkly contrasting) interpretations." (2010, p. 21) Characteristic for institutional conversion is not only the high level of discretion of the changed practice (how exactly is open data practiced?) but also the weak veto possibilities of the incumbents (how to veto an informal norm?).

Figure 13: Stage-model of the institutionalization of organizational openness



In the transition from the second to the third stage of institutionalization, the critical mode of institutional work is a different, yet the forms in which structure and agency are recursively intertwined remain the same. The growing norm of openness in the field enables challengers to engage in advocacy work and to push for a legislative anchoring of a practice that is not only theoretically linked to mutually agreed-upon

goals of all actors, but also already exemplified by a significant number of field participants. At the same time at which the norm enables advocacy efforts, these efforts transcend the norm and work towards its formal entrenchment. The institutional work of advocacy in all of my cases has led to the creation of a third institutional stage in which openness was predominantly brought about and stabilized through formal regulation. Once in place (and even gradual during the process of its passage) the regulation makes the advocacy work that led to its installment redundant. Institutional change from the second to the third stage of the model occurs in a different fashion than the previous one. At this point of the process the existing institutional regime is layered by a new one. With "layering", Mahoney and Thelen argue, "institutional change grows out of the attachment of new institutions or rules onto or alongside existing ones." (2010, p. 20) Whether the new open data laws are installed onto or alongside the Freedom of Information legislation seems debatable. However, very much in contrast to the previous stage, incumbents have a relatively strong veto option (the administration can kill a bill by declaring it impossible to implement) and a low discretion in the implementation of the new rule (the law is the law).

7. Discussion

Institutionalization studies are a well-established format to make sense of field-level change. In this discussion I therefore move into the background the grand dynamics of change, in order to provide room for three undertheorized issues: The distributedness and transorganizationality of institutionalization in general, and the paradoxical aspects of openness as an institution(al project) in particular.

7.1 Institutionalization as a distributed process

The institutionalization of open data was not centrally planned and orchestrated, but resulted from the simultaneous and partly intertwined actions of different actors. Recent literature on institutional change calls for further studies that focus on agency as a distributed phenomenon. So far, this perspective is oftentimes implicit, yet rarely made explicit in studies on institutional change (for exceptions see Delacour & Leca, forthcoming; Delbridge & Edwards, 2008; Garud & Karnøe, 2003; Quack, 2007). Partly this lack of explicitness might be due to the fact that agency, and in particular its distributed form, is a theoretical concept of such high abstraction that it is strikingly plausible, but at the same time surprisingly hard to pin down. An attempt:

> "Agency from an institutional work perspective is something often accomplished through the coordinated and uncoordinated efforts of a potentially large number of actors. Distributed agency invites researchers to explore how individual actors contribute to institutional change, how those contributions combine, how actors respond to one another's efforts, and how the accumulation of those contributions leads to a path of institutional change or stability." (Lawrence et al., 2011, p. 55)

Against the backdrop of my epistemic interest in "organization as organizing" (Weick, 1969), it seems sensible to focus on the *coordinated* (rather than uncoordinated) efforts within processes of institutionalization. Actors need to coordinate their action, as situations in which there is only a single challenger or multiple challengers with exactly identical goals, seem rather the exception than the norm. When coordinating, actors intend to solve the problem how to achieve institutional change in the first place, and how to shape this change as closely to their own goals as possible. When I compare my findings with literature on agency, two dimensions to understand its distributedness emerge: Coordination with the present and coordination with past and future.

Coordination with the present

When studying the process of institutional change it seems sensible to explore how actors coordinate with other actors that work alongside them, ergo in the *present*. In this dimension different actors try to alter the same institutional context, but with diverging imaginations of how these alterations should be shaped. Perkmann and Spicer (2008) have found that within processes of distributed institutionalization, different actors are equipped with different social skills and hence engage in different forms of work: Through political work, actors create alignment between different actors; through technical work, they build new and technically elaborate organizational practices; and through cultural work they frame a management fashion in terms of broader values. The more of these forms are combined, Perkmann and

Spicer (2008) find, the stronger the fashion becomes institutionalized. This adds to an understanding *why* contemporary actors coordinate, yet still leaves open the question *how* they achieve this coordination. In the history of agency-centered institutionalism answers to this question have accumulated. I therefore focus on field configuring events as one – among many – instrument to capture how actors coordinate their institutional work in the present.

The concept of field-configuring events (FCE) has been found the be a useful lens to study institutional work in practice (Hardy & Maguire, 2010). In their conceptual article Lampel and Meyer (2008, p. 1026) describe field-configuring events as „temporary social organizations such as tradeshows, professional gatherings, technology contests, and business ceremonies that encapsulate and shape the development of professions, technologies, markets, and industries". FCEs present a social microcosm through which one can study the development of an entire organizational field. When used as a lens to study the performance and coordination of institutional work, field-configuring events serve as an explanation on two levels. On the one hand these events are episodes of co-presence during which various forms of institutional work take place. On the other hand the mere organization of these events can be studied as a form of institutional work, as "organizers often design FCEs with an eye toward influencing field evolution." (Lampel & Meyer, 2008, p. 1026)

Across my cases I found episodes that classify as field-configuring events: In Berlin data activists and the city government organized the annual Berlin Open Data Day. In NYC the media entrepreneurs Andrew Rasiej and Micah Sifry have been organizing the Personal Democracy Forum since 2004. In 2005 Open Knowledge Foundation organized their first OK Conference in London. Among the guests where not just activists, but academics, journalists, and employees from Cabinet Office as well as other London-based public organizations. The conference was repeated on an annual basis and moved through different European cities. When I visited an OK Conference in Geneva (in 2013) I was one of almost 1,000 participants, the program included dozens of talks and presentations and a there even was a dedicated area for open data startups to present their products and services to the community. Among the participants I met activists from around the world, government officials as well as representatives from transnational organizations like the United Nations or World Bank. On these events various actors interested in institutional change meet, compare their goals and practices to the goals and practices of others, and eventually reconfigure their strategies afterwards.

Möllering (2011) has raised concerns about the tautological shortcomings of the FCE concept, as it only allows classifying events as field configuring ex post, judged against the actual impact they had on the field. More accurately, he argues, the concept seems to be useful to identify *potentially* field-configuring events: "Why some events have a greater impact than others remains unclear, especially ex ante. Which event should organizations participate in because they are likely to have an important impact on the field and which they can stay away from?" (Möllering, 2011, p. 477) Although Lampel (2011, p. 342) has described FCEs as spaces to allow for „predictable unpredictability", it seems as the unpredictability might be predictable through factors that lie beyond the individual event, but in the phase of their preparation or their temporal connection as "serial singularities" (Dobusch & Müller-

Seitz, 2012). This leads us to the second and less explored dimension in which I recommend to unpack the distributedness of institutional work: The longue durée of *past* and *future*.

Coordination with the past and future

In organization studies, work on institutional creation oftentimes focuses on one or a few actors within a relatively short period of time. Only rarely such studies take into account that institutional projects might go beyond the lifetime of individual organizations, or that involved organizations at some point leave the project whilst others enter an ongoing project. My analyses of the institutionalization of administrative transparency span several decades in each of the cases, beginning with efforts to decrease secrecy of governments and administrations in the 1960s and 70s. Throughout the decades different organizations pushed towards a more open information regime. By zooming out, I found that some actors in this process developed a certain awareness that their own action is embedded in a larger process. Instead of being "temporal dopes" (Granqvist & Gustafsson, 2015, p. 37) they utilized past and future for their purpose. Based on this awareness, they tried to coordinate their action, not only with their contemporaries, but also with challengers in the past as well as in the future. What might sound abstract at first is rooted in theoretical considerations about agency and can be illustrated using my case study from NYC.

Emirbayer and Mische (1998) describe agency as a temporally embedded process of social engagement, oriented towards the future, present, and past. Regarding the *past*, the authors speak of the "iterational dimension of agency", and as actors' capacity "to recall, to select, and to appropriately apply the more or less tacit and taken-for-granted schemas of action that they have developed through past interactions." (1998, p. 975) Against the backdrop of my analysis it becomes clear that actors are not only able to recall, select and apply schemas that they developed themselves, but also to discover, endorse and recycle schemas developed by other actors. The process in which an actor actively coordinates, more precisely: aligns, its own behavior with that of an actor from the past became particularly lucid in my data from NYC. After being involved in the open data process for quite some time, the group leader of the civic hacker group BetaNYC came across the story of COPIC (see Chapter 6.2). Up to this point he was not aware that 20 years ago there has already been a governmental board in place that tried to liberalize the information regime in the city. From this time onwards, whenever he gave a public presentation on the work of BetaNYC, he presented their efforts as a continuation of the work that COPIC had done. By linking its own action to argumentative schemas from the past, BetaNYC placed itself in a trajectory of change, making their efforts legitimate towards actors not specifically familiar with the culture and practices of "civic hackers" (Coleman, 2012).

Emirbayer and Mische not only explain agency through relations to the past, but through projective capacity with the *future* as well. As they put it "projectivity encompasses the imaginative generation by actors of possible future trajectories of action, in which received structures of thought and action may be creatively reconfigured in relation to actors' hopes, fears, and desires for the future." (1998, p. 971) When understanding distributed agency as an outcome of successful coordination between actors at different points in time (understood as the historical *longue durée*) we can imagine reflexive efforts to increase the future "connectivity" (*Anschlussfähigkeit*, Luhmann, 1995) of ones own institutional work. An empirical

site to study these forms of projective coordination can be the way in which organizations frame their visions and mission. Thereby I understand their statements not as descriptions of reality, but as a performative speech act aimed at increasing the connectivity of their institutional work (Austin, 1962). When organizations define a mission that is narrow and specific, it becomes more difficult for future actors to find orientation for their action in their past (the present of the organization that frames the mission). If an organization in the present frames its vision and mission in broader terms (yet not so broad that it fails to mobilize resources) it might increase the likelihood that future actors identify as the "next generation" within a larger institutional project. In my data from the UK I found an illustrative example for such future-oriented coordination: At a conference in 2008 Open Knowledge Foundation presented itself as an organization with the "simple aim of promoting (and protecting) open knowledge [...]."[351] In 2016, their website frames the organization's mission as follows: "We want to see enlightened societies around the world, where everyone has *access* to key information and the *ability* to use it to understand and shape their lives [...]."[352] With their updated mission statement, the organization broadens the scope of potential organizations that could succeed them from the ones dedicated to the technology-infused concept of "open knowledge" only, to the large group of organizations that subscribes to the broad principles of enlightenment and the ability to live a self-determined life.

7.2 Institutionalization as a transorganizational process

There is need for a new concept to describe institutionalization processes: that of transorganizationality. As a starting point for my analysis I used the concept of strategic action fields as developed by Fligstein and McAdam (2012; see Chapter 3.2.3). Incumbents are actors interested in the preservation of the status quo in a field. Challengers are interested in a transformation of the status quo. To understand the dynamics of field-level change researchers have (not unsuccessfully) studied the practices through which challengers try to influence the behavior of incumbents and vice versa.

For my case studies these categories were helpful as well. However, I also came across important episodes of strategic action in which the division in these two groups of actors was unable to model adequately what was "going on". I propose to understand these episodes as episodes of transorganizationality. As a working definition we can understand transorganizational processes in relation to interorganizational processes, as transnational processes relate to international ones. Djelic and Quack describe transnational actors as actors "that have [a] transnational – in the sense of not purely national – identity and sense of selves." (2003, p. 68) In a strong – yet not precisely the authors' – understanding, acting in a transnational arena enables these actors to act "essentially free and rational" and to maximize their own interests with little burden being put on them by the space in which their action takes place (Djelic & Quack, 2003, p. 68). I think that these ideas can fruitfully be transposed to strategic action conducted by members of organizations, but outside of organizations:

[351] LDN_080705_Report
[352] LDN_160922_Web (emphasis in original)

In Berlin the Open Data Network (challenger) and the SenEcon (incumbent) lived through a period of public arguments about whether, why, and how the city administration in Berlin should adopt open data (see Chapter 6.4). At one point in this process, members of both organizations decided to move their interaction from the public sphere (e.g., conferences, blogs) to monthly roundtable discussions in order to create mutual understanding and to work out a solution. What I find particularly interesting in this arrangement is that the individuals who set up the meetings decided to participate not in their organizational role (e.g., activists, middle-managers of city agencies), but "as private persons, as men of conviction."[353] Over time more and more individuals from challenging and incumbent organization joined these meetings. Freed from the necessity to comply with the constraints that their organizational roles put on them, the participants developed an understanding for the constraints of the others professional roles. Together they developed a consensus on how the process of institutionalization has to be shaped in the future that would "work out" for them in their organizational role as well. Once this consensus was reached, the participants disbanded the meetings. Back in their professional roles they formed the Open Data Action Alliance, a formal coalition of the organizations, which members participated in the roundtables as private persons. The Open Data Action Alliance published a one-page document in which it describes the consensus on how open data should be implemented in the city administration. Through this document the actors successfully re-entered the consensus that was negotiated in the transorganizational space into their organizations. Without stretching my data too far I can assume that this consensus would not have been reached through the interorganizational struggles that predated the roundtables.

My example raises the question how the concept of transorganizational practices differentiates from adjacent concepts. To sharpen my proposal I briefly compare and contrast it with the concepts of meta-organizations and boundary organizations. Ahrne and Brunsson (2005, 2011) have popularized the concept of "meta-organizations", organizations, which members are not individuals but other organizations. Examples for meta-organizations (that the authors provide) range from well know ones like the United Nations or the FIFA to fairly unknown organizations like the International Egg Commission. Would it be adequate to describe the open data regulars' table in Berlin as a meta-organizational actor in the Berlin open data process? In some regards the idea of a meta-organization overlaps with what I have described, in others it deviates. Characteristic for a meta-organization in contrast to, e.g., business conglomerates is that their members cannot be forced to join, but join on their own terms. At the same time they are free to leave the organization at any time. Linked to these criteria of voluntary membership meta-organizations usually lack formal hierarchy between their members. All these aspects hold true for the open data roundtable as well. Participants joined on their own terms and whilst some showed up at every meeting, others just dropped by once or twice and left the organization thereafter. The crucial deviation between my example and the concept of meta-organizations lies in the members themselves. Ahrne and Brunsson describe as one of the particularities of meta-organizations that "we cannot meet an organization, whereas we can meet human beings." (2005, p. 432) Turned the other way round: Any interaction within a meta-organization is conducted between individuals, who do not act in the capacity of themselves, but only as a simulacrum of the organization it is a member of. Conflicts

[353] BER_141106_Int

in organizations can – inter alia – be resolved through means of persuasion. In meta-organizations this becomes more troublesome as individuals can persuade each other, but it is far more difficult to persuade another organization. In my example the majority of members in the open data roundtable are members of organizations that participate in the open data issue field. Although the composition of members is closely linked to the interaction of their organizations, they participate in the roundtables not in their organizational role, but as private persons. Thereby the roundtables are a form of organization that has individuals as its members, not organizations. During the roundtable meetings individuals engaged in negotiations and persuasions of other individuals and thereby bypassed bureaucratic rules that would have slowed down the negotiation process tremendously.

Another concept that might resonate with my empirical example is that of a boundary organization. O'Mahony and Bechky (2008) have studied the way in which community projects in the open-source movement collaborated with firms defending proprietary approaches to software development. They found that "[t]he boundary organizations created by all four open-source community projects provided an enduring organizational structure that solidified the convergent interests of the two types of parties and attenuated their most critical differences." (2008, p. 431) In contrast to meta-organizations the boundary organizations as described by O'Mahony and Bechky (in their study mainly 501c(3) nonprofit foundations) have not other organizations, but individuals as members. Challengers and incumbent organizations are not member of these new organizations but structurally coupled and to a great degree dependent on each other – a state that Luhmann has described as the "interpenetration" of social systems (1995, p. 286). Have the open data roundtables been boundary organizations, used by activists and city officials to collaborate in the face of contestation? Like with meta-organizations, boundary organizations show some overlap with my data, but deviate in crucial aspects. What differentiates boundary organizations from the transorganizational arenas described in my example is their relative temporal stability. Instead of overcoming conflicts through arguing and deliberating, conflict parties create a new organizational vessel that allows them to reap the fruits of collaboration whilst holding on to their fixed interests and worldviews.

We can now update our understanding of transorganizational processes of institutionalization. I therefore draw on political scientist Thomas Risse, who proposes that there is a widely overlooked mode of social action in transnational negotiations: "arguing and deliberating about the validity claims inherent in any communicative statement about identities, interests, and the state of the world." (2000, p. 1) Risse argues that in order to successfully engage in this mode of truth-seeking and communicative rationality (Habermas, 1981), it is necessary that "actors no longer hold fixed interests during their communicative interaction but are open to persuasion, challenges, and counterchallenges geared toward reaching a reasoned consensus." (Risse, 2000, p. 1) These episodes of communicative action, he concludes, are more likely to occur, the more actors are uncertain about their interests and identities. I therefore argue that in situations in which challengers as well as incumbents are uncertain about their interests and identities in a given institutionalization project, they might have the chance to engage in transorganizational negotiations. In order to achieve distance from the fixed interests and behavior inscribed to their formal role within their organizations, individuals need

to enter the transorganizational arena in a non-partisan role, e.g., that of private citizen.

7.3 Institutionalization of openness as a paradoxical process

Openness is a concept in need of a theory. In Chapter 2 I introduced attempts to understand organizational openness from a systems-based perspective, as cybernetic flows of information that permeate the organizational boundary in both directions. Based on these theoretical priors I studied the institutionalization of openness on the field-level. Looking at openness as a norm-driven rather than rational-strategic behavior inevitably steered me towards the nascent, but growing academic discourse on the paradoxical nature of openness (Dobusch, Dobusch, & Siri, 2016). In this section I first describe the paradox I found within the institutionalization of openness and eventually propose how we can use it to learn about organizational practices and their ideological underpinnings.

Paradox has been a fashionable term in organization studies for at least two decades. Scholars have used the label for phenomena as various as conflicting demands, opposing perspectives, or seemingly illogical findings (Lewis, 2000; Poole & Ven, 1989). In recent years scholars have been particularly interested in paradoxical practices and the practices of dealing with paradoxes (Smets, Jarzabkowski, Burke, & Spee, 2015; Smith, 2014). Despite the valuable insights these studies provide, I find it necessary to approach the paradox of openness from an understanding grounded in formal logics rather than our everyday understanding of the word. On a conceptual level I therefore define paradoxes according to the formal-logical *law of the excluded middle*: Any given contradictory expression either has to be accepted or rejected. There cannot be anything in the middle. Something cannot be and not be at the same time. If we face situations in which something *is* and *is not* at the same time, we might call these paradoxical situations.

The contradictory expression I am interested in is whether an organization is open or closed. Its paradoxical aspects become visible when enriching the information based perspective from Chapter 2 with Popper's (1945) socio-philosophical understanding of openness. In *The open society and its enemies*, Popper describes a closed society as one that is ultimately based on the belief in universal laws upon which history unfolds. According to Popper the only way to prevent society from drifting towards a totalitarian ideology is a liberal-democratic system in which every fundamental assumption on which the society is build can be scrutinized and, in case it proves defective, be replaced. This is what Popper calls the "open society". Armbrüster and Gebert (2002) have adapted Poppers socio-philosophical ideas as a frame of reference for studying management trends. They propose to examine, whether certain management practices follow open or closed patterns of thinking, whereby the latter stands detrimental to a liberal-democratic social order (in the Popperian sense). As example for patterns of closed thinking the authors highlight "collectivism as opposed to individualism, certainty of knowledge as opposed to continuous learning, all-encompassing planning as opposed to stepwise changes/improvements, and substance of content as opposed to procedures for change." (2002, p. 173 ff.) By closely examining supposedly liberationist movements (e.g., liberation from a lack of belonging and emotion at work) they carve out their traits of closed thinking, and thereby their resemblance to the intellectual underpinnings of totalitarianism.

The institutionalization of open data can be understood as the continuation of a liberationist movement as well, described by Turner (2006) as the gradual development "from counterculture to cyberculture". My analysis, however, is less clear-cut than assumed by Armbrüster and Gebert and allows me to construct the paradoxical concurrence of practices of openness and closedness. In analogy to Armbrüster and Gebert (2002) closed practices are those that foster, favour, or perform collectivism, certainty of knowledge, all-encompassing planning, or substance of content. The concept of open data itself follows an open pattern of thinking. Through open data city agencies are supposed to learn continuously through feedback from their environment. Unquestioned expert knowledge inside the organizations is supposed to be challenged by an outside "crowd". Some of the practices used to institutionalize, open data, however follow patterns of closed thinking. In some cases the institutional work of "theorizing" (see Chapter 6.6) leans towards totalitarian principles. I have described theorization as the creation and propagation of causal relationships between openness as a means to entrepreneurial activity and more cost-efficient public services. What is closed about theorizing is that it works best when the theorized relationship is treated as certain knowledge and remains unscrutinized and stable over a relatively long period of time. The more often these causal relationships are revised and modified, the less they become objectified knowledge (in the sense of Berger and Luckmann). Closed patterns of thinking can also be found in the advocacy work of some of the working groups across my cases that were used to decide upon the terms on which open data will become a formal regulation. One example are the meetings between the NYC Transparency Working Group and various city agencies during the crafting of the open data law. During some of their meetings with city employees, the NYCTWG decided neither to allow outsiders to participate, nor to have any part of the meeting on record. I line with Armbrüster and Gebert (2002) we can argue that this form of advocacy work, although it might have led to the desired goal of passing the legislation, has favored the substance of the meetings over the principles along which they are conducted. Breaking these examples down, the institutionalization is paradoxical, as the involved organizations perform closedness in order to achieve openness. Without the closed practices used to create norms and formal regulation, there would be no paradoxical situation. Yet without norms and formal regulation there would also be no openness at all.

Besides a certain intellectual value that lies in the beauty of paradoxes itself, they can be of use to enrich our understanding of organizational processes. Along this line, Günther Ortmann (2015, p. 2) has prompted to transcend an organizational scholarship imprinted by a "thinking in binary codes" and to bring the aforementioned *tertium non datur*, the excluded middle, back in. His prompt might sound illogical at first, but simply follows an alternative, difference-theoretical logic. Focal to this calculus is the concept of the "re-entry", as developed in Spencer-Brown's (1969) mathematical calculus and introduced to the study of social systems by Niklas Luhmann (2006). A "re-entry" is understood as a distinction that is repeated within the same distinction: We can imagine that there is a given space that is divided in two sides. On one side it rains and on the other it does not. In this space I can either stand on the side where it rains or on the other one (distinction: standing in the rain or not). When standing in the rain I can have an umbrella or not. When I have an umbrella and stand on the side where it rains, I can leave it closed and stand in the rain, or open

it and not stand in the rain (re-entry: standing in the rain or not). The umbrella as a form of re-entry allows constructing the paradoxical situation, in which I stand in the rain and not stand in the rain.

What can we learn from looking at the process of institutionalization as a paradoxical one? I suggest that we use it as an attempt to learn about openness by leaving the "[binary] rhetoric of openness behind." (Tkacz, 2012, p. 404) The appropriate device to do so is the "journey" through a tetralemma (Sparrer & Kibed, 2000). Tetralemmata are structures from Indian logics, traditional used to describe the attitudes a judge can have towards two conflicting parties in court.

> "In looking at the classical structure of the tetralemma we find that the judge is not (only) caught in the dilemma of having to [decide] in favor of *either* the one party *or* the other, but also can and must consider the option that *both* or *neither* of the parties make justified claims." (Roth, forthcoming, p. 8)

The tetralemma of open and close (Table 13) clears the view that our descriptions of organizations and their practices is not bound to the opposing options of openness and closedness, but that we also have the option to described them as both open and closed. What seems to be a paradox in binary logics therefore becomes "de-paradoxed" when turned into a tetralemma.

Table 13: The tetralemma of *open* and *closed*

Neither open nor closed	**Either** open	**Or** closed
	Both open and closed	

Eventually the tetralemma points us towards a fourth option on how to describe organizations: Neither open nor closed. As described above, Armbrüster and Gebert (2002) have operationalized the binary code of open/close and derived different patterns of thinking. I will use one of these patterns to show how through this fourth option we enrich our understanding of organizations. Armbrüster and Gebert contrast "certainty of knowledge" as a closed-totalitarian pattern of thinking with "continuous learning" as an open-democratic alternative. In this duality however they not only exclude the third option that organization show patterns of closed as well as open thinking, but also the fourth option that organizations are neither open nor closed in regards to certain patterns of thinking. Are there organizations that distrust the certainty of knowledge, but at the same time lack structures of a "learning organization" (Senge, 1999)? An illustrative example that comes to mind is the hacker collective Anonymous (Coleman, 2015). Dobusch and Schoeneborn (2015) have shown how Anonymous successfully gained organizationality from the state of a fluid social collective. Based on multiple communicative episodes between members of Anonymous on Twitter, the authors show that on the one hand the hacker collective neither follows an uncontested "truth", but on the other hand has no structures to learn based on systematic feedback and organizational memory. If there are organizational forms that transcend the binary logic of closed and open organizational practices, do they serve as an underpinning for a socio-political notion that is neither totalitarian, nor liberal-democratic?

8. Concluding remarks

With these concluding remarks I peek into three interesting sets of questions that lie beyond the boundary of this study. These questions derive from empirical variation, theoretical variation, and practical transposition.

In this dissertation I focused on the institutionalization of open data in large city administrations. *Empirical variation* towards small and medium sized city administrations would not only be interesting in terms of theory testing, but promises new ground for theory development as well. I presented the fascinating case of the Circuit Riders (McInerney, 2014), a group of non-profit technology evangelists that traveled from one small city to the next in order to provide them with technical support (see Chapter 6.1.3). This example leads to the assumption that certain practices of institutionalization might only flourish outside the dense and hectic conditions of urban arenas, in areas less densely populated, with different social structure, norms, and values. Other aspects that make the study of open data in small and medium cities a promising outlook spring directly from my data. In 2014 the Berlin-based social movement organization OKFde managed to establish open data community groups in more than 15 cities across Germany. After stepping down as Mayor of NYC, Michael Bloomberg initiated "What Works Cities", a three-year and 42 million Dollars initiative to encourage data-driven decision-making in governments of small and medium sized cities across the USA. In both cases it would be interesting to study how the national umbrella organization reaches out and connects to pre-existing civic hacking communities in small and medium sized cities, how and to what degree the umbrella organizations transfer practices to these fields, and how they refine their routines through feedback from their subsidiaries. This study also focuses on city administrations in highly industrialized countries of the Global North. At the beginning of my research I intended to include a case study on an open data initiative in Nairobi, Kenya, which was launched in 2011 (Mutuku & Mahihu, 2014). I eventually decided not to include Nairobi or any other case from the Global South in order to increase the comparability of my cases. In Kenya and other countries in Africa, Latin America or developing Asia, open data initiatives have been pushed and partly financed by international organizations with the intention to stabilize governments and to reduce risk for foreign direct investment (Davies & Bawa, 2012). For future studies it would be interesting to study the interaction between these international organizations and local governments in the process of practice change (Djelic & Quack, 2003).

Over the last decades the boundary of organization studies has been widened from primarily intra-organizational approaches towards a more "kaleidoscopic" (Tsoukas & Cummings, 1997, p. 655) view on organizations. Through this widened perspective, organization studies became connectable to disciplines that traditionally engage with macro-social phenomena. In this dissertation I studied the emergence of open data as a new organizational practice. For future studies my findings suggest that a *theoretical variation*, a re-assessment of the same phenomenon through a lens of economic sociology, seems promising. Particularly within the sociology of markets (Beckert, 2009; Fligstein, 2001) three angles seem worth taking:

In recent years scholars have paid increasing attention to the role of social movements in market creation (Rao, 2008), transformation (Rao, Monin, & Durand, 2003) and

categorization (Schiller-Merkens, 2013). Against the backdrop of this literature it seems particularly fruitful to study the emergence of open data as a process of market creation, the market for public information-based services. The market for these services has not developed out of an existing one, but at the boundary to public service provision as a generally non-economic sphere. In Chapter 7.1 I suggested to study the process of institutionalization as a historically distributed process, in which social movement organizations coordinate their action with actors in the past, present and future. Within economic sociology this coordination could be studied through means of frame analysis, to explore which frames were at play (e.g., citizen rights, innovation, or efficiency), and which were used at different points during the process of institutionalization (Benford & Snow, 2000). Further it seems interesting to explore how the use of frames differs depending on their resonance with incumbent organizations (such as consumer watchdog organizations, cf. Rao, 1998; or professional associations, cf. Suddaby & Greenwood, 2005).

In the case of public sector organizations, greater openness can also be interpreted as symptom of a larger trend towards marketization of public services. If public organizations share little of their data with the public, it is relatively difficult to craft a legitimacy claim against their operations. The more information they share with the public, the easier it becomes to compare their operations with operations of other public or private organizations. Through the creation of comparability, public organizations suddenly find themselves in a market-like environment, where they compete with private-sector organizations for the most economic service provision and might eventually get replaced by them. Outside the discourse on New Public Management, this trend towards marketization of public services is discussed within the sociology of rankings and valuations (Espeland & Sauder, 2007). Recently scholars began to study the realm of "impact investing" in which public services are transformed by crafting comparability and commensurability with financial metrics (Golka, 2016). A comparison of openness with other phenomena of marketization would therefore enlarge the ability to generalize on the findings from this study.

Finally, organizational openness can be studied as a disruption of the public sector job market. Whether "civic hackers" (Berlin), "armchair auditors" (London) or "brigade members" (NYC), I showed how volunteers approached city agencies in order to help the government solving certain problems. In some cases the volunteers identified the problems themselves, in others the city agency articulated a task that was subsequently solved by the volunteers. What looks like community engagement from one side, could also be studied as a disruption of the public sector job market. Tasks that were previously performed by salaried employees are now being shifted towards people who perform them on a voluntary basis and oftentimes in addition to their regular job. Within the realm of organization studies similar dynamics have been studied within cases of open source software creation (Hippel & Krogh, 2003), crowdsourcing (Bauer & Gegenhuber, 2015), or citizen science (Gura, 2013).

The third and last question that lies beyond the boundary of this study, but that I want to touch upon is that for its *practical transposition*. What impact can and might my work have on actors outside the academic system? In recent years there has been a fruitful debate about the (un)bridgeability of the gap between academic rigor and practical relevance in management studies (Kieser & Nicolai, 2005; Kieser & Leiner, 2009; Kieser, Nicolai, & Seidl, 2015). Many studies entail remarks on their practical

relevance to actors outside the academic system (Bullinger, Kieser, & Schiller-Merkens, 2015). Nicolai and Seidl have studied over 400 journal articles that included such remarks and came to the conclusion that "management scholars strive too much for immediate, instrumental relevance and tend to overlook the importance of conceptual relevance." (2010, p. 1277) With instrumental relevance, Nicolai and Seidl mean technological recipes, forecasts or algorithmic rules that recommend *decision X* in order to reach *outcome Y*. Conceptual relevance in contrast includes the development of new linguistic concepts, the uncovering of contingencies, or the description of causal relationships[354]. With my study I might be able to contribute to the latter category of relevance, not necessarily by introducing new fundamental concepts, but by presenting the process of institutionalization from a more objective point of view than possible for many of the embedded actors. Finally, by stressing the distributed nature of the process, my study might also serve as an instrument for small and ostensibly irrelevant actors to find meaning in their work, and to continue their piecemeal efforts towards their "imagined future" (Beckert, 2016).

[354] This category of relevance is closely linked to the work of British sociologist Anthony Giddens who has linked social science theories and human behavior through the concept of "double hermeneutics". Giddens argues that "theories and findings of the social sciences cannot be kept wholly separate from the universe of meaning and action which they are about" (1984, p. xxxiii), but circulate between academic and social realm. On empirical grounds, Ferraro, Pfeffer and Sutton have described how people who are exposed to the language around rational economic actors begins to behave like some, showing how economic theories "perpetuate themselves by promulgating language and assumptions that become widely used and accepted." (2005, p. 8)

Appendix A: Abstract / Zusammenfassung

Abstract

In this dissertation I explore the creation of openness as an institution. I therefore bring together a post-heroic perspective on institutional change with the phenomenon-centered literature on organizational openness. The organizational practice, whose institutionalization I study, is commonly referred to as *open data*. I retrace and eventually compare its institutionalization in the fields spanning around the city administration in New York City, London and Berlin. When "opening up" their data, these city agencies make digitized documents, spreadsheets and entire databases available on the Internet, in machine-readable formats, and under licenses that allow anyone to modify, redistribute, and use the data for commercial purposes. I find that in order to capture the distributedness of institutionalization, it is fruitful to allow for multiple process narrations from different perspectives within the field. When triangulating these narrations I find the institutionalization to progress in a dialectical pattern, alternating between phases in which institutionalized openness is dominated by formal regulation and others in which this regulation is transcended by normative pressures. The most important modes of institutional work that I carve out in this process are the *theorization* of causal chains between openness as a mean to various ends, and forms of *advocacy work* in order to objectivize inter-subjective norms. Overlapping institutional theory with openness studies proves mutually beneficial: First I show that practices of openness should not always be understood as strategic action, but can also result from inter-organizational contestation and struggle about norms and regulations. Second I contribute to our understanding of distributed agency within processes of institutionalization, by showing how seemingly heroic acts result from coordination with other actors in the past, present and future. I point to transorganizational aspects that make it difficult to clearly demarcate between challengers and incumbents in processes of change, and eventually discuss some paradoxical aspects of openness.

Zusammenfassung

In dieser Dissertation befasse ich mich explorativ mit der Erschaffung von Offenheit als Institution. Hierfür verbinde ich die neuere post-heroische Perspektive auf institutionellen Wandel mit der noch recht jungen Phänomen-getriebenen Literatur zu organisationaler Offenheit von Organisationen. Die Organisationspraktik, deren Institutionalisierung ich mich annehme, wird allgemeinsprachlich als *Open Data* bezeichnet. Die organisationalen Felder in denen ich die Institutionalisierung von Open Data nahzeichne und anschließend vergleiche sind diejenigen, die sich um die Stadtverwaltungen von New York City, London und Berlin aufspannen. Als „Öffnen" von Daten bezeichne ich dabei, dass verschiedenen Stadtverwaltungen große Mengen an digitalisierten Dokumente, Tabellen und ganze Datenbanken im Internet verfügbar machen. Die Praktik Open Data umfasst, dass diese Daten in maschinenlesbaren Formaten und unter Lizenzen, die jedem Dritten die Veränderung, Weiterverbreitung und die kommerzielle Nutzung der Daten gestatten, veröffentlicht werden. Um die Verteiltheit (*distributedness*) von Institutionalisierungsprozessen abzubilden stelle ich fest, dass es aufschlussreich ist diesen in mehreren Prozessnarrationen aus unterschiedlichen Perspektiven im Feld darzustellen. Durch fallübergreifende Triangulation dieser Narrationen stelle ich anschließend dar, dass sich die Institutionalisierung von Offenheit dialektisch vollzieht. Hierbei wechseln sich

Phasen in denen die Offenheit durch formale Regulierung dominiert wird, mit Phasen in denn eine informale Norm die Maximalausprägung der Offenheit bestimmt ab. Die zentralen Formen der Institutionalisierungsarbeit die von einer Phase zur nächsten führen sind das *Theorizing* von Kausalbeziehungen zwischen Open Data als Mittel zu diversen Zwecken, sowie die *Advocay*-Arbeit durch die intersubjektiv vermittelte Normen objektiviert und in Gesetzte und Vorschriften gegossen werden. Neoinstitutionalistische Organisationstheorie mit Offenheitsstudien zu verschränken stellt sich als durchaus fruchtbar für beide Seiten heraus: Zum einen kann ich erfolgreich meine theoretisch erarbeitete Vorannahme, dass organisationale Offenheit nicht ausschließlich instrumentell-rational, sondern auch als Ergebnis von interorganisationalen Auseinandersetzungen und Deutungskämpfen zu verstehen ist, illustrieren. Zum anderen kann ich am sehr geeigneten Beispiel der Offenheit unser Verständnis der Verteiltheit von Institutionalisierungsprozessen schärfen. In meiner Analyse zeige ich wie scheinbar heroische Akte der institutionellen Veränderung besser als Resultat der Koordination mehrerer Akteure in Vergangenheit, Gegenwart und Zukunft zu verstehen ist. Im Weiteren zeige ich als forscherische Anschlussmöglichkeit auf, dass wir es in Institutionalisierungsprozessen nicht immer nur mit einer klaren Linie zwischen *Challengers* und *Incumbents* zu tun haben, sondern dass diese Grenzen mitunter in transorganisationalen Praktiken aufgehen. Abschließend diskutiere ich einige paradoxe Aspekte organisationaler Offenheit.

Appendix B: Interview process and guideline

I developed two different interview guidelines, one for challengers and one for incumbent organizations, along three steps. In the first step I created a comprehensive list of questions that emerged from my background knowledge and theoretical framing. In the following step I refined this list: I eliminated redundancies, transformed closed into open questions, and exchanged theoretical jargon with everyday language. In the third step I arranged these questions into thematic groups that would allow for a natural flow of conversation. Before every interview I selected the appropriate guideline and enriched it with context sensitive questions for the respective interviewee (e.g., past and present occupation, involvement in specific events). Of course the interviews differed in their structure. In some of them I was able to follow my guideline rather closely, in others the narrative continuity of my interviewee required me to steer the conversation towards my theoretical interests more gently. Below I describe the thematic blocks of questions that were part of my guideline for incumbents:

(A) Introduction and entry question

> In this block I first familiarize the interviewee with my research project: "First of all I want to thank you for your time. I conduct this research to learn about the process in which open data was implemented by the public administration in this city." As interviewees oftentimes ask for the hypotheses of my research I underscore the explorative character of my research in order to avoid social desirability bias: "My research is completely value-neutral, so there are no right or wrong answers." Also, I touch upon technicalities of the interview: "These interviews usually take between 45 and 90 minutes. There will be four to six thematic groups of questions. I will record the interview for transcription purposes. All my data will be anonymized and handled with care." At the end of this block I ask a deliberately broad question to evoke narration: "To begin with I would be interested in how you got in touch with open data at all. Please tell me your story from when it all began until today."

(B) Historical antecedents of open data

> In this block I want to learn about the institutional arrangement before the change towards greater openness took place. These structural conditions help me to understand the following episodes of institutional work: "How did city agencies handle their information one or two decades ago? Do you remember any rules or informal agreements concerning information sharing in these days?" Depending on the age of the interviewee I also asked: "How did you handle information and data, back then when you started working for the city?"

(C) Institutional work towards open data

> In this section I want to learn about the entire process between the first time the interview partner experienced external demands for open data, and the present day. To make strategic action visible I ask for the interplay of

challengers and incumbent: “How did [a challenger] confront you with the open data issue? How did you react? Did you consider different scenarios how to react? Why did you choose this particular one?” I also want to learn about institutional work pursued by incumbents to protect the status quo information regime: “What did you do to avoid sharing data?” Also I check for the deep-seated cultural conviction towards the status quo: “Why did you try to avoid sharing this data?” Alternatively I ask: “Why are you convinced that sharing public information has to have its limits?”

(D) Practices of openness

In this block I explore the way in which incumbents practice openness in their day-to-day work. This block is deliberately placed towards the end of the interview, as the questions would otherwise have interrupted the historical narration. I start with deliberately naive and broad questions like “How do you work with data in here? How do you *do* open data?” Sometimes I added: “Please assume that I do not know anything about the topic. How would you explain what you do to me? Have been other ways, more covert ways, in which data has been shared prior to open data?” Sometimes I also stimulated narration through stories I got from previous interviews: “Another interviewee told me that sometimes data sets are fixed a bit. Have you done something like this in here as well?”

(E) Closing questions and remarks

I closed my interviews by asking for a quick reflection and any additional remarks that did not find space in the previous conversation: “I am done with my questions – do you think I missed any crucial aspect of open data? Do you want to add anything?” Furthermore I also asked for contacts to potential interviewees: “I would like to talk to other employees from the city administration. Can you recommend anyone and provide me with the contact details? You also mentioned [name of potential interview partner] during our interview. It would be great to talk to her, could you introduce me to her?”

Appendix C: Denotation logic

When referring to my empirical data I use the following denotation logic:

Case_YYMMDD_Type

An example from my case database is:

NYC_150824_Int

In case of multiple documents with the exact same case, date and type, I add letters in alphabetical order to the end of the denotation key (e.g., NYC_150824_Int_a, NYC_150824_Int_b).

The abbreviations for my three case studies are:

NYC = New York City
LDN = London
BER = Berlin

I differentiate between the following document types:

Int = Interview
Notes = Fieldnotes
Media = Press and blog articles
Slides = PowerPoint slides
Pic = Photographs
Report = Official document, contract, or study
Other = e.g., Tweets
Web = Website

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