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The role of social identity in institutional work for sociotechnical transitions: The case of transport infrastructure in Berlin



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ABSTRACT

Generally, sociotechnical change requires that agency is exercised across multiple, connected levels or contexts. Yet there is very little work in the sociotechnical sustainability transitions literature that theorises these connections in ways that acknowledge the individual-level processes involved. Here we show how identity theory can connect macro- and micro-levels of analysis, with identity construction being a social psychological process that is also involved in institutional work. For empirical illustration we use the case of emerging mobility transitions in Berlin, Germany, in particular aspects of institutional work for infrastructural change in favor of cycling. The study shows how the construction of a common identity among varied actor groups has been key to a citizen campaign for safe cycling infrastructure. The construction of a socially inclusive identity relating to cycling has been made possible by prioritizing the development of a campaign network comprised of weak ties among stakeholders, rather than a closer-knit network based on a more exclusive group of sporty cyclists. The findings are discussed in the light of both social psychological models and sociotechnical transitions theory. The implications for scaling niche practices for sustainability are considered.

1. Introduction

While agency inevitably plays a crucial role in transitions processes (Geels, 2011) and models such as the Multi-Level Perspective (MLP) have been described as "shot through with agency" (Geels, 2012, p. 474), longstanding critiques of the under-theorization of this agency (Smith et al., 2005) continue to justify further study (Köhler et al., 2019). Such study may examine collective agency exerted through institutions or organisations, i.e. actors as collective groups (e.g. Kivimaa, 2014). Such collectives may represent large groups indeed, such as cities (see e.g. Geels, 2012). Alternatively, the focus may be on processes that connect to the level of individual actors, although such work is much less common (Upham et al., 2019).

Svensson and Nikoleris (2018, p. 470) also highlight the need to study the motivational aspects of transitions processes. The authors call for accounts of change that go beyond such change arising through the actions of "knowledgeable human agents who reproduce and creatively reinterpret rules", i.e. structuration-based accounts that neglect questions of *why* actors act as they do, in response to internal and contextual factors. The wider innovation studies literature holds a special place for the for-profit entrepreneur (Schumpeter, 1950) and does address issues of entrepreneurial motivation. There is a developing literature on the role of user-led innovation (Hyysalo et al., 2013). In the sociotechnical transitions literature, however, agency is analysed predominantly as social, collective and external to the individual, neglecting individual-level characteristics and processes. Rarely are the internal states of the individuals given focused attention and rarely are those internal states theoretically connected to the collective, networked and institutional work that is required for system change (Bögel and Upham, 2018).

Here we address the latter deficit via a case study of the early-stage institutional work being undertaken as part of the mobility transition ("Verkehrswende") in Berlin, Germany. A social movement called the Cycling Referendum ("*Volksentscheid Fahrrad*") has initiated a public referendum for better cycling infrastructure policies in the city of Berlin. The "Volksentscheid" is a participatory legal instrument by which citizens may bring new law proposals into parliament and has been successfully used in relation to other topics in Berlin. Through the Cycling Referendum (CR), citizens have been trying to oblige the state government to provide better infrastructure, in this case for cycling.

We view Berlin's *Verkehrswende* project as an on-going attempt at sociotechnical change: an attempt to scale-up the still relatively niche practice of cycling in the city (modal splits are below). In this respect

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the process is one of a dominant motorized transport regime being pressured to accommodate a niche – one that also involves behavioural change (Köhler et al., 2018; Nykvist and Whitmarsh, 2008). Our specific theoretical purpose is to connect the level of the individual actors in the campaign to the level of institutional processes and hence sociotechnical change, in a multi-level account that connects individual and higher (more aggregated) system level processes.

That civil society can be crucial in driving or catalyzing regime change processes is well-known (Hölscher et al., 2019; Smith et al., 2005). Here our purpose is to investigate connections between three aspects of transitions processes in which civil society is involved: the social psychological experience of participants and prospective participants; the recruitment and strengthening of the campaign for sociotechnical regime change; and the beginnings of institutional change in favor of mobility transitions, here by supporting cycling. The terms in which we view these connections are those of meaning and identity, which we show to be increasingly shared among the actors in the campaign. Analyzing connections in terms of the construction, promotion and subscription to a shared, identity-related meaning allows us to investigate inter-related research questions concerning: the (i) role of identity-related meaning in the coalition for the CR; (ii) how the construction of this meaning was pursued; and (iii) how we might thereby theorize the connections between the experiences of individual actors, the social movement to which they subscribe and the institutionalization that they seek.

In terms of the structure of the paper, we first summarize the approach of Fuenfschilling and Truffer (2016), based on Lawrence and Suddaby (2006), on institutional work; in particular we rehearse the role of advocacy, the fostering of shared identity and shared meaning in the institutional work required for sociotechnical regime change. We then connect this to social identity and in-group theory, to elaborate on specific social psychological issues of relevance to transitions processes, which we subsequently investigate and illustrate using the CR case. Finally we reflect on the value of the model and its implications for public participation in transitions management and transitions processes more general, plus the role of social movements (Törnberg, 2018).

2. Sociotechnical niches, institutional work and the role of identity

2.1. Cycling as niche practice

As a share of transport modes, cycling practice varies substantially across and within German cities, including Berlin. As of 2017, the average modal split for Berlin as a whole, measured by stated use as a main mode, was 27% walking, 15% cycling, 25% public transport and 33% private vehicle (Infas, 2018, p. 13). The modal split of cycling in Berlin has nonetheless seen a growth of 36% compared to the year 2010 (Infas and DLR, 2010, p. 52). At the same time, the city did not improve bicycle infrastructure and was not able to reduce cyclist fatalities (about 10 each year with 17 killed cyclists in the year 2016).

In terms of the perceptions of those with an interest in cycling, cycling in Berlin is under-served by the city in terms of enabling infrastructure; objectively, as described above, cycling is a niche activity to the extent that it represents numerically the smallest percentage of transport modes used. For users, cycling as a sociotechnical niche operates in an insufficiently protected space. Empowerment of cycling as a practice requires adequate road infrastructure (Santos et al., 2013). Such infrastructure cannot be improved through individual behavior change but through political action and institutionalization of a wide variety of supportive practices.

2.2. Institutional work

The establishment of institutions requires purposive effort (Lawrence and Suddaby, 2006). Using elements of the 'institutional work' framework of Lawrence & Suddaby (ibid), we analyze strategic institutionalization efforts in a sociotechnical case relating to mobility. The institutional work approach is rooted in the sociology of practices (Lawrence and Suddaby, 2006), but develops this by taking a more agentic perspective on the processes involved. The need to take account of individual, actor level processes has long been identified as an underdeveloped aspect of sociotechnical transitions theory (Genus and Coles, 2008) and is an area that transitions theorists have been developing in recent years (Bögel et al., 2020; Upham et al., 2019). This dual perspective makes it both complementary to transitions studies and to the social psychological approaches applied here. A sociological perspective aligns well with the theoretical underpinnings of several key transition frameworks (see e.g. Geels, 2002 on the sociology of technology as a key cornerstone of the Multi-Level perspective). While the institutional work approach used here has been previously applied in transition studies (Fuenfschilling and Truffer, 2016), here we extend this through connection with a socio-psychological approach, in order to address actor-level processes. The framework of (Lawrence and Suddaby, 2006) lends itself well to such integration, as it already relates to central concepts of psychology, notably norms and identity (Bögel and Upham, 2018). Overall it is well suited for an integrative account at the intersection of psychology and sociology, which itself has been previously identified as a key site for more in-depth study of individual-level processes in transition studies (Bögel et al., 2020; Bögel and Upham, 2018).

For the present case study of how Berlin's transport transition is being institutionalized through the new Mobility Act, we focus on the *creating institutions* aspect of institutional work. We consider the Mobility Act to be a new "institution" because there had been no prior transport legislation in Berlin with equal scope and depth of intervention in the recent past. As Lawrence and Suddaby (2006) outline, „creating institutions" often goes along with "disrupting institutions". However, the focus of the Cycling Referendum (CR) movement was on creating the Mobility Act as a new institution, not on disrupting institutions, in that it has never been a formal goal of the movement to disrupt incumbent cycling NGOs. Fuenfschilling and Truffer (2016), drawing on Lawrence and Suddaby (2006, p. 300), describe nine forms of such 'institutional work' to create institutions:

(i) Advocacy (mobilization of political and regulatory support through persuasion, e.g. lobbying)
(ii) Defining (the construction of rule systems that confer status or identity)
(iii) Vesting (creating rule structures that confer property right)
(iv) Constructing identities (defining (new) relationships between actors and their environment)
(v) Changing normative associations (re-define social practices and their moral and cultural foundations, e.g. driving an SUV)
(vi) Constructing normative networks (to sanction practices)
(vii) (vii) Mimicry (ease adaptation by building associations to existing e.g. techniques and practices)
(viii) Theorizing (creating new cognitive maps, e.g. on cause and effect)
(ix) Educating (educating of actors regarding skills and knowledge needed for new institutions).

The forms of agency, directed at creating institutions, may be exerted by actors such as those with official state power, capable of mobilizing state resources, or they may be applied through more normative forms of power, such as by NGOs (Fuenfschilling and Truffer, 2016). This is not to exclude the possibility of powerful individual actors, but in general institutional agency is most often associated with collective forms of agency. Yet, while the above definition of agency improves our understanding of *how* agency is exerted in transitions processes, largely by collective actors, it neglects the

questions of w*hy* actors use particular strategies (i.e. the question of motivation - see e.g. Svensson and Nikoleris, 2018). It also neglects the matter of *how* these strategies can be implemented.

Clearly there are a large range of case-specific possibilities in response to these questions. Here, we focus on a combination of social psychological accounts relating to processes of communication and persuasion (for a more general discussion on this issue see Bögel and Upham, 2018; Upham et al., 2015 Upham et al., 2019). In the present context of civil society we see the role of social identity and identity construction as a key mechanism and keep this as a focal point of the study. Identity has also been previously identified as a key barrier to mobility transitions (Geels, 2012), as well as a key mechanism for sustainability transitions in general (e.g. in the Triple Embeddedness Framework (TEF), see Geels, 2014). *Constructing identities* is accordingly also a mechanism of institutional work for creating institutions (Fuenfschilling and Truffer, 2016).

Previous studies have highlighted the potential of psychological accounts for theorizing aspects of these processes (Mäkivierikko et al., 2019; Upham et al., 2019). We continue this line of research, working on the research gaps in micro-macro connections in the transitions literature (Köhler et al., 2019), to connect social psychological mechanisms that span individuals and their social groups with the processes of institutionalization that they facilitate. In the next section we provide an overview of the social psychology of creating and maintaining groups.

2.3. Identity in sustainability studies and in social psychology

The identity of an actor encompasses a diverse set of both social and non-social identities (Clayton and Opotow, 2003), e.g. a professional identity, an identity as a fan of a football club, an identity as a member of an environmental NGO such as Greenpeace, an identity as a citizen of a country and an environmental identity. Given this broad spectrum, there are also close interrelations of the concept of social identity with other concepts of identity in sustainability studies. Sustainability research give particular attention to the concept of environmental identity. Environmental identity is defined as "a sense of connection to some part of the nonhuman natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we perceive and act toward the world; a belief that the environment is important to us and an important part of who we are." (Clayton and Opotow, 2003, 45f).

While environmental identity has shown promising value with regard to fostering pro-environmental behavior (Meis-Harris and Kashima, 2020), the concept has to date not integrated the further interests and identities of actors, which may also support pro-environmental behavior. The key question for behavior change is which identities are salient for a certain pro-environmental behavior, which in our study is the provision of support for the Cycling Referendum, the social movement campaigning for mobility system change. We choose to focus here on the concept of social identity, as preliminary analyses of our case study identified the creation of an inclusive, pro-cycling social identity as a key mechanism of institutional work. This is not to neglect the importance of a narrower environmental identity for sustainability transitions, but rather to broaden the focus and connect this to further concepts of identity to identify which are most suitable for building a shared identity, depending on the case of application.

Social identity theory holds that people typically classify themselves as members of particular social categories and non-members of others. As people derive their self-esteem in part from the standing of the groups to which they belong, they are motivated to regard the group to which they belong (their ingroup) and its accomplishments in a positive light compared to those of other groups (outgroups) (Tajfel and Turner, 1979). People also show more positive beliefs, feelings, and behaviors for ingroup than for outgroup members, providing the situational context emphasizes the meaningfulness of the categorical distinction between the groups (Gaertner and Dovidio, 2011). Contexts thus have implications for social identity: the latter is a concept that spans social and individual experience and as such lends itself to connecting 'levels' of transitions processes (Upham et al., 2019).

Social identity is also associated with the development and prescription of shared norms (Hogg and Reid, 2006). Hogg and Reid (2006) define group norms as shared 'regularities in attitudes and behavior that characterize a social group and differentiate it from other social groups' (Hogg and Reid, 2006, p. 7). They can also be thought of as shared cognitive representations that characterize ingroup and outgroup behavior (Hogg and Reid, 2006). Individuals who are more supportive of group norms tend to have stronger intention to act in a way that is consistent with those norms, especially for high group identifiers (Fielding et al., 2008).

Hogg and Reid (2006) emphasize that communicative processes are important in conveying, diffusing and influencing such norms within and among groups. Of course communication per se need not be normatively influential: to be influential, the social category or group involved must be psychologically salient and meaningful (Hogg and Reid, 2006) (Turner et al., 1987). The social identity theory of influence in groups is referred to as referent informational influence theory, which asserts that such influence involves cognitive change (internalization), not simply compliance (ibid). This influence not only requires relevant communication, but also leads to norm-relevant communication (ibid).

Another aspect of norm-related group identity of relevance here is prototypicality. Hogg and Reid (2006) argue that group norms are cognitively represented as context-dependent prototypes that capture the distinctive properties of groups. By this they mean fuzzy sets of attributes such as behaviours and attitudes that capture similarities among people within the same group and differences between groups. In our case here, the obvious example is 'the cyclist', though the prototype may also be a particular type of cyclist. Going beyond Hogg and Reid (2006), one might find, for example, a rather fuzzy cyclist prototype consisting of several more specific sub-prototypes (family group cyclists, commuting cyclists, child cyclists, sport cyclists etc.). Prototypes maximize the ratio of intergroup differences to intragroup differences: they help the group to appear distinct and to share a common fate (Campbell, 1958; Hogg and Reid, 2006).

2.4. Constructing identities: the common ingroup identity model

The common ingroup identity model (Gaertner and Dovidio, 2011) recognizes that these social categorization processes have some fluidity and that people simultaneously belong to a variety of groups (e.g. families, neighborhoods, cities, regions and nations). These groups are often hierarchically organized in terms of inclusiveness, with some social categories (e.g. nations) inclusive of others (e.g. regions). Different goals, motives, expectations or emphases in the immediate situation can shift the level of category inclusiveness that will be dominant. This flexibility is important because of its implications for altering the way people think about others in terms of their ingroup or outgroup membership and, consequently, how positively they feel about others. Specifically, the common ingroup identity model proposes that inducing people to recategorize ingroup and outgroup members within a common category boundary (a single group representation based, for example, on common school, city, or national identity) redirects those motivational and cognitive processes that produce ingroup-favoring biases to increase positive feelings, beliefs and behaviors toward others who were previously regarded primarily in terms of their outgroup membership (Gaertner and Dovidio, 2011). The development of a common ingroup identity can thus not only increase positive evaluations of others but also increase cross-group friendship development, helpfulness, trust, confidence in suggestions for innovation and indeed forgiveness (Gaertner and Dovidio, 2011).

2.5. The role of identity in social movements

Social identity and identity construction is not treated here as an end in itself, but as important in building the CR campaign for protected cycling infrastructure and support. For this reason, we also need to briefly address the role of social identity in social movements and campaigns. Polletta and Jasper (2001) view social identity as helping to account for the development of social movements where socioeconomic class interests offer limited explanatory value, if at all (e.g. campaigns opposing nuclear power, LGBT rights and so on). Such campaigns are less likely to seek a redistribution of political power and wealth than to seek to change specific, dominant normative and cultural codes (Polletta and Jasper, 2001). Reviewing literature relating to the question of why people join collective efforts, Polletta and Jasper (2001) identify factors including self-interest, altruism, bonds of loyalty and solidarity, pre-existing ties and the opportunity to form new ties. Regardless of the specific form of appeal, activists' efforts to strategically frame identities are also critical in recruiting participants (Polletta and Jasper, 2001): "'Frames' are the interpretive packages that activists develop to mobilize potential adherents and constituents…When successful, frames make a compelling case for the 'injustice' of the condition and the likely effectiveness of collective 'agency' in changing that condition. They also make clear the "identities" of the contenders, distinguishing 'us' from 'them'…" (Polletta and Jasper, 2001, p. 291). Identity is both an outcome of successful strategizing and a resource for it (Polletta and Jasper, 2001).

Drawing together the above, we can propose that strategic communication of norms is likely to help mobilise and reinforce social identity, creating common identities at best and aiding the recruitment and mobilization of people and resources that are a prerequisite for the strengthened institutionalization of activity that operates in a sociotechnical niche, but which has ambitions for a larger role in a corresponding regime. It is this proposition that we explore via the CR case.

3. Methods

Our aim here is to illustrate one underlying psychological mechanism of institutional work, rather than to be exhaustive in terms of the psychological or wider transition processes involved: there is plenty of scope for further work in this regard. Similarly, we support the theorisation with empirics sampled in a way that reflects the relative incidence of themes, rather than in a way that ensures all of their variety is represented. In order to analyze the empirical material in a systematic way, we develop a coding scheme that is grounded in theoretical categories (Mayring, 2000), focusing on the *creating institutions* forms of institutional work (see 2.2. and Table 2). The selection of these categories is equally based on theoretical work, focusing on the *actor-belief-system* strategies of *creating institutions* (see 2.2.).

3.1. Case study selection

The research design is case study based, to explore, characterize and reflect on conditions, drivers and factors that have wider relevance (Yin, 2009). We select the Cycling Referendum (CR) case for analysis, as the early indications were that it would provide an instructive case of identity-building with sociotechnical regime change as an ambition. The CR postulations mean that the current, car-dominated[1] transport regime should be replaced by a new regime that gives equal importance to cars, bicycles and public transit. This requires a redistribution of public space, mainly reducing the space for cars and increasing the space for bicycles. This redistribution process would mean a radical change in street and city design and is a vision with a time horizon of 10 to 20 years. According to Newton (2008), such an "horizon 3″ type of urban transition is a process where major governance and social obstacles need to be surmounted and where full implementation is hard to achieve, even within such a long time span. Preliminary analysis indicated that a window of opportunity for policy change had opened up in Berlin due to a substantial increase in the modal split of cycling, while cycling infrastructure had not improved accordingly, hence providing the type of niche-regime pressure previously identified as potentially involved in regime change (Geels and Schot, 2007).

Against this background, the CR social movement also looked likely to be successful in creating shared meanings and identities among relevant stakeholders and among a large group of Berlin residents. Additionally, similar social movements have been initiated in other German regions since the successful CR campaign in Berlin. Among others, the Federal State of North-Rhine-Westphalia with 18 million inhabitants has seen its own cycling referendum campaign "Aufbruch Fahrrad". The initiators explicitly state they were inspired by the Berlin CR.[2] They started their movement in April 2017 and half a year later, the local ADFC also joined the campaign. Thus, the Berlin CR may well have served as initiator and prototype for a larger civil society movement for cycling (infrastructure), i.e. as a key actor in a wider geographical upscaling of a niche practice that is niche in terms of trip numbers.

3.2. Research design

Case study data collection and analysis is based on the triangulation of methods, including:

(1) Review of news media accounts of the campaign;
(2) Interviews with key stakeholders, defined as actors prominent in the campaign and/or prominent in relevant institutions.

Combining media analysis and interviews provides complementary understandings of the connections between identity and institutionalization processes, the social movement and sociotechnical change. The media analysis aims at analyzing the *events and visible outcomes* resulting from the campaign and here particularly identifying the types of institutional work at play in case of the CR. The interviews are used to analyze in more detail the *underlying psychological mechanisms of institutional work* examined here, which we cannot deduce solely from the media analysis. In this sense, the media analysis focuses on the macro-level of changes in the mobility system in Berlin, while the interviews focus on the micro-level, individual mechanisms that play a role in these collective outcomes. The research design thus, as said, connects micro and macro levels of research in transitions (for more on this issue, see e.g. Bögel and Upham, 2018; Köhler et al., 2019).

Data collection and analysis for both methodological approaches, namely (1) media analysis and (2) interviews, are described in detail in the following sub-sections. For both methods, the research design is retroductive. Retroduction is commonly used in the social sciences and indeed sociotechnical transitions studies (Papachristos and Adamides, 2016), essentially consisting of moving between theory and empirics, generating and refining theory while a convincing account is sought, avoiding the extremes of 'pure' induction or deduction.

3.3. Media analysis

The CR movement presents a full database on press material on the CR on their website and which is used as a primary data source here.

[1] Although the city of Berlin has an excellent public transit network, the road planning generally has been given priority to cars so far. In addition, a substantial part of public transit has its own space underground or on elevated tracks and does not compete so much with space for car traffic on overground roads.

[2] https://www.aufbruch-fahrrad.de/#our-partners [accessed 2020/07/21]

Our own search for media articles on the topic as a check for any bias indicates that nearly all press material has been collated there, independent of perspective. Overall, the database included 1060 articles. This covered topic (cycling-)specific media (N = 97) but to a larger degree general newspapers and magazines. Regarding the latter, the news coverage was highest in local media (N = 658 in Berlin-related outlets, mostly in main regional newspapers such as *Tagesspiegel* (N = 169), *Berliner Zeitung* (N = 145) and *Berliner Morgenpost* (N = 120)) and national media (N = 257), with little international coverage (N = 9). On the national level, all main newspapers (e.g. *Die Zeit, Bild, Focus, Süddeutsche, FAZ*) included the subject at some point, with most articles being published in the politically left-oriented newspaper *taz* (*Die Tageszeitung, N* = 77).

We analysed the press material from the start of the CR movement (first media coverage) to its first birthday, which coincides with the draft mobility legislation concept from the new governing parties taking up nearly all demand from the initiative. This spans the time period from August 15th 2015 to November 4th 2016. As said, the study uses an illustrative rather than representative design. Hence, we used systematic rather than stratified sampling, selecting every 5th article. This spanned all days of the week and involved no form of systematic bias of which we are aware. The results were summarized so as to provide an overview of: (i) events and activities; and (ii) types of institutional work; (iii) actors involved. This provided a picture of macro/system-level processes. Relevant processes and strategies, especially regarding identity and the implications of this for network-building were then analysed in more detail via the interviews.

3.4. Interviews

Six interviews were conducted with stakeholders from cycling NGOs and political actors in Berlin between March and December 2018. Interviewee selection covered both the inside perspective from within the CR movement, as well as the outside perspective on the CR movement from politics and administration which was the ultimate target group of CR's strategic activities (see Fig. 1). Furthermore, an interview with the ADFC as the incumbent cycling NGO, provided a comparative perspective on the CR activists' identity construction strategies. Contrasting those identity construction strategies with the previous strategies used by the ADFC helped to better explain why the CR was successful in starting the regime shift and the ADFC as an established cycling NGO was not. The interviews averaged about one hour in length, were recorded and transcribed verbatim and the interviewees anonymized (see Table 1). Interviews were structured as follows: introduction, personal relation to cycling, perceived communication strategies of the CR movement, subjective explanations for the success of the CR campaigns, personal appraisal of the chronology and different phases of the CR campaign as well as of the Mobility Act development process.

3.5. Reflection of interviewee selection

Regarding the selection of interviewees, our choice was limited to 6 interviews with rather neutral or favorable actors concerning the CR. We did not include more opposing actors such as the car lobby and the local chamber of commerce. The main reason for our interviewee selection was our focus on the "creating institutions" strategies rather than on "maintaining institutions". However, a more comprehensive view and analysis would emerge from including the opposing actors and the relation of institutional work strategies in further research on the topic.

3.6. Data analysis

The transcribed interview material was subjected to qualitative content analysis methods with a theory-driven coding scheme (Mayring, 2000). High level codes were based, firstly, on the theoretical categories for institutional work proposed by Fuenfschilling and Truffer (2016); and secondly on the general attributes of common in-group identity. Lower level codes (the subcategories in Table 2) are the corresponding empirical themes in the case. As said, the theory-empirics fit was achieved through retroduction. It should be noted that the codes (categories) are not mutually exclusive: for example, many have normative dimensions, but we judge this to not be their main distinguishing feature (not least, because normativity is common in this context).

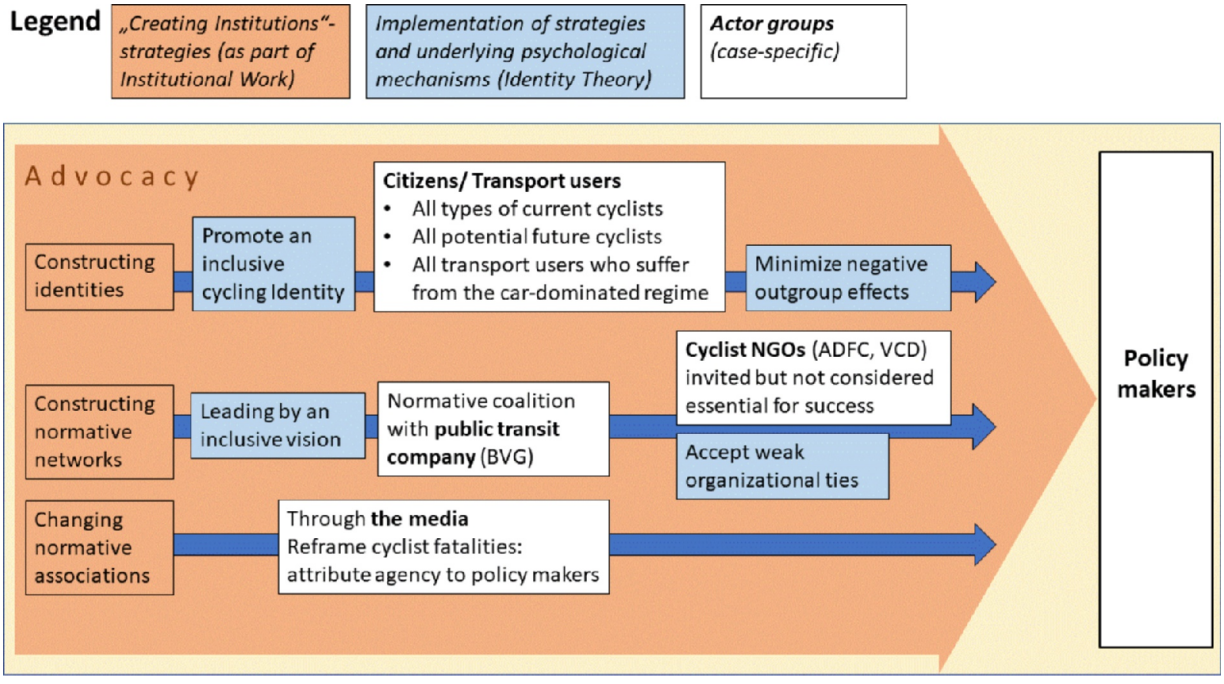


Fig. 1. Theoretical approach and empirical illustration.

Table 1
List of interviewees and their organisations.

Interview Nr.	sStakeholder type	Organization
1 & 5	*NGO*	Cycling Referendum (CR) activists
2	*NGO*	Allgemeiner Deutscher Fahrrad Club (ADFC) (incumbent cycling NGO)
3 & 4	*Politics*	Green Party (part of the government coalition in Berlin since 2017, responsible for the Transportation Senator (Ministry)
6	*Local Administration*	Transport Planner in a district of Berlin

4. Results

4.1. Building a coalition for the Mobility Act through institutional work strategies (media analysis)

The following, extended narrative draws on the media analysis and summarizes the key steps in the development of the Cycling Referendum (CR), which finally resulted in a new mobility law for the city of Berlin. The narrative demonstrates the key mechanisms of institutional work at play, highlighting the role of social identity and identity building, as well as their relationship to the development of a weak-ties network for change.

4.1.1. Beginning and first (negative) reactions of different actor groups (11 – 12/2015)

Preceding the start of the CR movement was an ongoing debate in Germany's capital Berlin (as well as in other cities) on the need to create new cycling infrastructure to accommodate the growing number of cyclists and make cycling safer. While the goal was generally appreciated by different political parties, the implementation had made little progress over the last years. Seeking to change this, the CR activists started their work. The goal was then to force the implementation of new cycling infrastructure via a citizen referendum.

In December 2015, the CR movement went into public. Here, 10 goals were formulated for a new cycling infrastructure in Berlin. The goals were taken up in media reports, mainly regional ones (e.g. *Tagesspiegel*).[3] First reactions to the new movements were, at this point, rather negative; established cycling organizations in particular, here the ADFC, did not support the CR as would have been expected, but critiqued the radical requests. The same was true for political parties; here the main critique, picked up by several newspapers, was the neglect of other transport modes, e.g. public transport. The chances of the referendum being successful were considered rather low. The Senator for City Development and Environment, Andreas Geisel, assumed this in December 2015 in a media interview[4].

4.1.2. CR movement develops own "Cycling Act" and a more inclusive approach (01/2016 – 02/2016)

Through a "Law-Hackathon", the CR activists develop their "Berlin Cycling Act" (Berliner Radverkehrsgesetz) and present it to the public (02/2016). Around the same time, the activists started to raise awareness for their cause through PR activities. A key event in this regard was connected to an illegal car race in which a non-involved car driver died in Berlin. The topic raised high media awareness because the drivers of the illegal car race were, for the first time in Germany, accused (and later convicted) for murder instead of involuntary manslaughter. The CR activists organized several accompanying actions, e.g. sit-ins and a 'ride of silence'. As a result, the initiative was covered in media articles on the trial.

This more inclusive approach – here, in particular, protest for the safety of pedestrians rather than a limited focus in cyclists - is mirrored also in the new law draft. A key difference between the new legal draft and the original 10 goals was the inclusion of not only development for cycling infrastructure but also policy supportive of pedestrians, public transport, other aspects of city logistics and smart city developments.

Meanwhile, the senate and the car lobby still critiqued the attempts of the initiative as "too radical".[5] Nonetheless the "natural allies" finally changed their mind: a member of the board of the ADFC (incumbent cycling NGO) resigned his position because the majority of the boards now tended to support the CR.[6]

Table 2
Main categories of the coding scheme.

Categories	Subcategories
Strategies to create institutions (i.e. the Mobility Act)	
Construction of normative networks	Leave the approach of incumbent cycling NGOs behind (they publicly opposed the Cycling Referendum in its starting phase); instead, focus on shared norms and an attractive vision of the future.
	Connect to the emotional state (being angry and annoyed of the bad infrastructure) of the cyclists as potential supporters of the campaign.
Changing normative associations	Establish cycling as a practice of transportation that is as equally important as car driving.
	Attribute agency to political decision makers and to political institutions through reframing: cyclist fatalities are not tragic accidents, but can and should be prevented through political action (that implements adequate and safe infrastructure); use powerful pictures to communicate this message.
	Establish cycling as a normal, daily practice without claiming moral superiority in terms of climate protection.
Advocacy	Choose political decision makers as the ultimate target of the campaign; the Cycling Referendum campaign both supports and critically watches them.
	Focus the campaign on symbols that have a clear political message: providing 100,000 signatures within 3 weeks (although only 20,000 would have been necessary for a referendum).
	Carefully timing the campaign to the political agenda (e.g. national elections).
	Use current "news hooks", e.g. the court decision about an illegal car race, to effectively communicate one's own message to the media: the importance of better cycling infrastructure and transportation policy to improve traffic safety.
	Name the conflict arena (space distribution) and highlight the political nature of the conflict: traffic accidents involving cyclists as a result of poor infrastructure are not the fault of individual action but are a consequence of political choices (including the choice not to act).
Strategies to build a common identity	Addressing higher values such as safety, justice and quality of life.
	Integrating instead of polarizing between cyclists and car drivers.
	Drawing a positive vision.
	organizing public pickets for killed cyclists, for killed pedestrians and for an uninvolved car driver killed in illegal car race.

4.1.3. The CR movement gets broader support from different actors but experiences opposition from the government (03/2016 – 05/2016)

Overall, public opinion started to change and the support for the CR grew. It is important to note here that the CR activists managed to get support not only from organizations that are closely aligned to related goals, e.g. sustainability-focused organizations such as Greenpeace, but also from other, often competing organizations such as the Berlin public transit provider BVG, in terms of visions for alternative mobility futures.

While the Green Party and the Left Party (*Die Linke*) now also supported the initiative's goals, the ruling parties – the Social Democrats and the Christian Democrats – still declined them.[7] Their assumption at this point in time – and despite the growing support from a large variety of actor groups – was that the initiative would only manage to get support from cyclists rather than from a broad public. The ruling parties even started a PR campaign to advertise their current bike policies (05/2016).[8]

4.1.4. CR hits the mainstream political agenda by collecting 100,000 signatures within 25 days (06/2016)

In June 2016, the CR activists collected more than 100,000 signatures in only three and a half weeks.[9] This was five times more than formally needed (20,000) within six months to start the official referendum procedure. In the meantime - and probably partly resulting from it - political support for the initiative's goals grew. Politicians from the opposite parties, here the green and the left party, integrated most of the initiative's demands into their own mobility agenda.

Nonetheless, the Senator for City Development and Environment, Andreas Geisel, published a document stating how he supported the general idea of developing cyclist infrastructure in Berlin while (still) critiquing that the CR would focus too much on the interests of cyclists.[10] He pleads for the elaboration of a Mobility Act which would integrate demands of all traffic participants. However, among the public, the postulations made by the CR activists are not perceived as exclusive advocacy for cycling but rather as inclusive. A representative survey, commissioned by local media in June 2016, reveals that 62% of Berlin's citizens support the goals of the CR. In more detail, 90% of cyclists, 61% of public transit users and even 50% of car drivers support the CR.[11] At the same time, the variety of actual support bases grew: e.g. in September 2016 the initiative co-organized a demonstration demanding a higher share of public space where children can safely be outside and play.

4.1.5. The state election: green party and left party enter the government (07/2016 – 10/2016)

The state election for the city-state of Berlin took place in autumn 2016 and resulted in changes in the senate, now consisting of a coalition of the Social Democratic party, the Green Party and the Left Party. According to the media coverage, the transport infrastructure and particularly the CR were an important topic in this election.[12] The governing parties, and especially the Green and Left party, officially supported the CR, as bicycle infrastructure now became a major focus for them.[13] Hence the idea of installing East/West and North/South fast bike lanes was launched prominently during the coalition negotiations.

Yet, and despite such growing political support, the CR activists increased the pressure further. The initiative now demanded the adoption of the new law in March 2017, or threatened that intense pressure will be applied with regard to the upcoming national elections (to be held in autumn 2017). The CR activists keep up or even increase the number of their activities and the tone becomes harsher: after another fatal bike accident involving a truck, the head of the CR movement even declared the Senate in persona of Christian Gaebler (State Secretary for Transport) to be personally responsible for what happened. For this he was criticized and apologized.[14] Another example of the ongoing protests is members of the initiative jumping into the river in front of the Bundestag (national parliament) in rather cold October to criticize the then still ongoing (and, as they claim, purposefully delayed) verification process.[15]

4.1.6. Participative writing of the Mobility Act (11/2016 – 07/2017)

In November 2016, the new senate integrated most of their demands in their draft mobility legislation concept[16]; these demands – in contrast to the ten goals for a cycling law announced a year ago by the CR activists – included pedestrians and public transport as well. The whole development process of the new Mobility Law was carried out in an unusually participatory manner. From February 2017 on, joint negotiations between the senate and representatives of the CR movement, the ADFC and the BUND Berlin (Bund für Umwelt und Naturschutz Deutschland, an environmental-focused NGO) took place on the Cycling/ Mobility Law, a joint effort to build an inclusive law.[17] The official referendum was paused during this time but the CR activists continued their PR activities (e.g. vigils and rallies). The length and number of these meetings brought the voluntary activists of the CR to their personal limits but was in the end successful.

4.1.7. Mobility Act passed senate (08/2017 – 06/2018)

After the usual procedure passing the different political institutions, the Mobility Act finally passed the senate in June 2018. The new “Berlin Mobility Act” takes up most of the proposals made by the CR activists, most prominently the construction of wide and safe cycling paths along all major roads of the city, amounting to 100 kms of cycle highways and urgent safety measures at cycling accident black spots. Meanwhile, the activists have adopted a new name for their association, now called “Changing Cities” and gave workshops for activists in other cities to

[3] https://www.tagesspiegel.de/berlin/onlineplattform-startet-am-freitag-volksbegehren-radfahren-heute-gehts-los/12707696.html?pageNumber=0#commentInput

[4] https://www.berliner-zeitung.de/berlin/radschnellwege–stellplaetze–gruene-welle–senator-fuer-stadtentwicklung-kritisiert-volksbegehren-zum-fahrradfahren-23352842 [accessed 2019/10/21]

[5] https://www.focus.de/regional/berlin/150-millionen-euro-fuer-neue-radwege-radler-zoff-in-berlin-auto-lobby-und-senat-schiessen-gegen-volksentscheid-fahrrad_id_5311472.html [accessed 2019/10/21]

[6] https://www.tagesspiegel.de/berlin/streit-um-fahrrad-volksentscheid-in-berlin-adfc-vorstandsmitglied-tritt-zurueck/12959506.html [accessed 2019/10/21]

[7] https://www.morgenpost.de/berlin/article207411139/Initiative-will-Dienstfahrrad-fuer-Michael-Mueller-per-Gesetz.html [accessed 2019/10/21]

[8] https://www.tagesspiegel.de/berlin/berliner-volksentscheid-aktivisten-schlagen-alarm-senat-verteidigt-pr-kampagne-zum-radverkehr/13568572.html [accessed 2019/10/21]

[9] https://www.zeit.de/mobilitaet/2016-06/berlin-fahrrad-volksentscheid [accessed 2019/10/21]

[10] https://www.morgenpost.de/berlin/article207752599/Radwege-in-Berlin-Verkehrssenator-gibt-Fehler-zu.html [accessed 2019/10/21]

[11] https://nationaler-radverkehrsplan.de/de/node/19095 [accessed 2020/07/21]

[12] https://www.tagesspiegel.de/berlin/verkehrspolitik-der-zukunft-berlin-muss-endlich-mehr-fuer-radfahrer-tun/13986096.html?r=7771532 [accessed 2019/10/21]

[13] https://www.bz-berlin.de/berlin/heute-wird-das-rote-rathaus-schon-mal-rot-rot-gruen [accessed 2019/10/21]

[14] https://www.tagesspiegel.de/berlin/streit-um-politik-toetet-radfahrerin-stroessenreuther-entschuldigt-sich-bei-gaebler/14743244.html?utm_referrer=https://www.google.de/ [accessed 2019/10/21]

[15] https://www.berliner-zeitung.de/berlin/regierungsviertel-volksentscheid-fahrrad-badet-aus-protest-in-der-spree-24903160 [accessed 2019/10/21]

[16] https://www.morgenpost.de/berlin/article208655469/Rot-Rot-Gruen-uebernimmt-Forderungen-des-Radentscheids.html [accessed 2019/10/21]

[17] https://www.zeit.de/mobilitaet/2017-04/volksentscheid-fahrrad-radgesetz-berlin-senat [accessed 2019/10/21]

initiate similar cycling referenda in various German cities (e.g. Munich, Stuttgart, Bamberg, Darmstadt).[18]

4.2. Underlying socio-psychological mechanisms (interview analysis)

The interview analysis reveals the socio-psychological mechanisms at play in CR's institutional work. As illustrated in Fig. 1, broad *advocacy* (for better cycling infrastructure) builds the background for three specific strategies to create institutions as part of institutional work: Constructing identities, construction of normative networks, and changing normative associations. The ultimate target audience of all activities were local policy makers. In the following, we analyze in detail *how* the institutional work was performed, paying special attention to the role of identity-related psychological processes involved.

4.2.1. Constructing common identities

The CR activists chose an inclusive approach in constructing identities. Three strategies were pre-identified in the media analysis, where they became visible through specific activities and events (e.g. vigils for all kind of victims of traffic risks (see Section 4.1.2)). In the following three sub-sections, we examine these strategies in more detail: First, the CR movement did not narrow down the group to sportive cyclists (as the ADFC had done for a long time). Second, the CR movement did not fall into the trap of polarizing cyclists and car drivers. Third, the CR also advocated for pedestrians and for victims of car races and other car-related traffic risks. Below we examine each of these in turn.

4.2.1.1. Promotion of an inclusive cycling identity. The CR activists avoided a common mistake of other cycling lobby groups, i.e. to *only* advocate for their membership and to implicitly assume that "cyclists" are sportive cyclists who know their routes well, who don't transport children by bike and who include the (arguably unfairly lampooned) "middle-aged men in Lycra" (Interview 1, CR, 22). Sportive cyclists are apt to ride at a rather high speed and claim the right to use the main road instead of dedicated cycling lanes.

> "If you look at the last decades, it's this kind of people who have campaigned for this goal [to have the right to cycle on the car lane]." [Interview 2, ADFC, 42].

The ADFC had spent decades of political work to argue that dedicated cycling lanes are only for optional but not mandatory use. Arguably, this led to a perception of the organization as having a narrow focus that prioritized one type of cyclist and that had become lost in technocratic debates and numerous law suits against the legal obligation for cyclists to keep to the cycling lane whenever there is such a lane on the street ("Radwegbenutzungspflicht"). After the success of the CR activists with their very different strategy, a self-critical reflection took place:

> "The conclusion that we've come to by now is that the argumentation 'driving on the main road is safe' actually inhibits the construction and maintenance of cycling lanes (…) because the communal administration then says 'Ok, we'll block the cycling lanes, since you cyclists prefer to drive on the main roads'. But, with this approach, one excludes a lot of people from cycling: all those who do *not* drive on the main road, who are *not* the hard-boiled ones. And all those people then simply leave their bike at home and don't cycle." [Interview 2, ADFC, 44]

In contrast, the CR activists were aware from the beginning on that they wanted to represent the large diversity of cyclists and also had in mind future, potential cyclists who are currently not cycling because of traffic safety concerns.

> "Our central claim is that *everybody* shall be able to cycle in a safe and relaxed manner. *Everybody* shall be able to do it (…) And it is not fair that this is currently not possible everywhere." (…) "For me, it is very clear that *justice* is a very central value and goal of the CR." [Interview 1, CR, 30, 42]

> "It's about the value of the city, the right to participate in the city development (…) and to call for a livable city." [Interview 5, CR, 336–343]

Thus, the CR refers to higher values such as safety, justice, participation and quality of urban life – instead of complicated debates about technical details of cycling infrastructure. At the same time, these higher values are not solely used for external communication. Instead, these are the values that the initiators of the CR campaign identify with and from where they derive their personal motivation.

4.2.1.2. Minimizing negative outgroup effects – car drivers. The CR movement did not polarize between cyclists and car drivers. Thus, car drivers were not excluded as a group from those who would benefit from the results of a successful CR.

> "What we have never done, is: We have never worked *against* car drivers. We have always done something *for* cycling. Hence, we have explained all our goals as a *positive* vision. At the same time, we have always tried to make people understand what the barriers against better cycling are: the conflict about space, about public space. This is, so to speak, a political conflict." [Interview 1, CR, 42]

Thus, the kind of conflict that was pushed forward was the conflict with political decision makers. They are the target of the CR activists' institutional work, not car drivers.

4.2.1.3. Minimizing negative outgroup effects – pedestrians. The CR activists extended their pickets beyond occasions of cyclist fatalities to occasions of pedestrian fatalities. As mentioned, they also organized a spontaneous picket for an uninvolved car driver who was killed by an illegal car race in the inner city. They used the media debate to show their solidarity with all kinds of victims of unsafe traffic.

> "We have to participate in this [debate]. We, as a cycling initiative, have to do something for a killed car driver. In the end, it's about the shitty behavior of others." [Interview 5, CR, 274]

Thus, the overarching topic and goal referred to *traffic safety* for all kind of mobility users – instead of simply improving conditions for one group, i.e. cyclists.

4.2.2. Implications of a common identity-approach for the role of networks

Networks are seen as a central part of institutional work and network building a key element of successful transitions (e.g. Rohracher, 2002). A focus on identity adds nuance to this. In the case of the CR strategy, as in any dispersed network, the development of strong ties among all of the participants is not possible. Moreover, the CR activists deliberately opted for a network as inclusive as possible, which was bound to involve weak ties. This provided flexibility and suggests a close relation between the two kinds of institutional work (network building and identity building) from a socio-psychological perspective. The latter perspective emphasizes the need to avoid being exclusive regarding identity, mindset and beliefs if strong (political) coalitions are to be built.

To illustrate this in more depth, in the following two sub-sections we contrast the CR strategies with the strategic positioning of the key cycling groups involved before, as well as other referendum campaigns in Berlin.

4.2.2.1. Accept the disruption of incumbent cycling NGO coalitions and weak organizational ties. Although the CR activists had tried to integrate

[18] https://changing-cities.org/bundesweite-initiativen/ [accessed 2019/10/21]

"natural" allies into the campaign, notably the cycling lobby group ADFC and another association for sustainable transportation, the VCD, these established cycling lobby groups initially opposed the CR, trying to publicly discourage them even before they had started their campaign:

> "So, before we even went into public with our initiative Volksentscheid Fahrrad [the CR movement], the chairwoman of the ADFC's Berlin regional section was interviewed in a radio show on cycling (…) and said: 'In the ADFC, we are *against* this cycling referendum.' The journalist laughed and said there must have been a slip of the tongue just now and asked the chairwoman to repeat this. And so the chairwoman repeated it another three times exactly the same way." [Interview 5, CR, 136]

Although the established cycling lobby groups had sympathized with the overall common goal of improving infrastructure for cyclists, they were very much divided about the *way* it should be done and were strongly against a CR. In their mindset, radical changes were an unrealistic dream and impossible to achieve. They feared that a negative result of the CR would occur and that this would only confirm the argumentation of those who had been arguing against cycling policies – making progress in cycling infrastructure impossible within the coming years. A member of the ADFC illustrates this in his explanation of how the decades of difficult local lobbying work for and by cyclists had exhausted the ADFC members and had changed their mindset:

> "The people engaged at the ADFC (…) are doing this work since decades and realized how laborious it is with politics and that it can take ten years or even more to get any sort of small detail pushed through. And now, there's this Volksentscheid Fahrrad [the CR movement] coming up and says: 'Listen! We simply demand a *tenfold* increase of the public budget for cycling infrastructure (…) and we want so many kilometers of cycling lanes!' – and that sounds like an utopia for the people at ADFC. They cannot imagine that this could be actually possible. Based on their own experiences – I mean, they hold the concerns that politics and administration once had, they have somehow absorbed these concerns and even take all these concerns to the outside world." [Interview 2, ADFC, 32]

Thus, the ADFC members have oriented their work on postulations that are small enough to be politically feasible – not on those postulates that actually bring about tangible change in conditions for cyclists. In that regard, their approach was incompatible with the CR movement's high aspirations.

Shocked by the hostile statements of those groups that the CR activists had expected to be their closest allies, the CR activists did *not* focus on convincing the other cycling lobby groups, nor on aiming for consensus and joining of forces. Instead, they left the other organizations behind because they were perceived as having become too much a part of the old coalition system, while the CR aimed for a paradigm shift in cycling policy. Moreover, in the view of a CR activist, this shift is part of a larger paradigm shift in NGO engagement for nature conservation and beyond that others should learn from:

> "This is an important point for me: we don't only have this problem at the level of those two organizations [ADFC, VCD] but in almost all pro-environmental NGOs that had been born in the 80's. Greenpeace, Friends of the Earth, ADFC, VCD etc. At the time, these were heroic activists, super well organized, with entrepreneurial spirit, leadership personalities. And they've done their job to get a foot on the ground again in that welfare and growth ideology, and to say something against it in the first place. And then, there was the phase where you can only make progress if you deal with the level of individual behavior. That means, not the evil industry or whoever but suddenly – suddenly, the postulate is 'Flying has to get more expensive, heating costs have to increase, car driving has to get more expensive!'. This is where the funny part ends. And that's where we have come to a standstill right now. And that's where they all have come to a standstill because they did not dare anymore to go into the taboo zone that is discussed under the term 'foregoing', from one end of the country to the other." [Interview 5, CR, 244]

Thus, the CR movement takes a critical stand against well-established NGOs and did not expect to have them among its closest allies. In that sense, the CR activists also avoided the "trap" of falling back into a risk-avoidant mindset and frustration, as experienced by the established NGOs.

4.2.2.2. Leading by an inclusive vision instead of strong organizational ties: building inclusive normative alignments. The CR movement did not focus its efforts on constructing a large, single-norm network with strong organizational ties to support their cause. This stands in contrast to the strategy of previous referendum movements in Berlin, such as the Berliner Energietisch (Energy Referendum), a referendum for the remunicipalisation of the city's electricity provision system. This group had built up a coalition of 50 organizations, mostly from civil society and with strong ties. Yet a strong network is no guarantee of success and in this case the campaign proved difficult to focus:

> "In our Energy Referendum we had found it quite important to build up a very strong alliance. (…) In total, we had 50 supporting organizations and their networks. (…) We've tried to extend the energy topic to a social dimension, a social and democratic dimension. That gives you a lot more points of contact with other [organizations] such as Caritas or other social welfare associations. (…) You might be less focused in your campaign and have to look closer at the messages you sent out – or that you don't send out too many [messages].
>
> [*Interview* 4, P*olitics*, 44–46; 54; 56]

In contrast, the CR activists were able to keep a strong and simple focus on the main goal: to improve traffic safety and cycling infrastructure. The proposition here is that the CR campaign achieved this and attracted supporters through the communication and building of a clear and common vision that was in turn underpinned by the development of a shared identity, instead of relying on organizational ties per se.

5. Discussion

The case study supports an account of nascent sociotechnical regime change that explicitly connects actor psychology to sociotechnical system change, via the processes of institutional work. We focus here on the role of identity and identity construction, given the particular importance afforded to identity in supporting or hindering transitions (Geels, 2012, 2014). In the following, we discuss our findings in light of two key mechanisms of institutional work – identity and network – and their interrelation in more detail and derive implications for scaling sustainability transitions.

5.1. The pros and cons of identity construction

For the social movement examined here, the common ingroup identity model and its key message of the need to create overarching, joint identities if previously diverse groups are involved arguably has strong relevance. It was especially the inclusive approach, among cyclists but also other actor groups in the mobility system (e.g. pedestrians, car drivers), that allowed the recruiting of a large support base. It is notable that the campaign's focus on higher, generally held values (equality, health etc.) and a rather radical change seems to have been more appealing to residents than the previous focus of the cycling lobbyist organization ADFC on minimal infrastructure changes, which had followed the principle of small concessions for cycling being preferable to none. Referring to Newton (2008), this means that an

appealing horizon 3 vision might generally offer more identificatory power than a horizon 1 vision.

Yet, while overall a common identity construction was successfully applied here, the study also shows the limits of building a social identity that covers all relevant actors. The activists of the social movement, often deliberately as it seemed, highlighted and rhetorically mobilized conflict with politicians, creating a "them versus us" narrative reminiscent of populism. Yet, while this deliberate creation of in-group versus out-group behavior can help to strengthen social identity within the group, it also has negative effects on out-group behavior (see e.g. Schmid et al., 2011) and makes joint negotiations between groups difficult. There were specific temporal phases in the Cycling Referendum (CR) movement's progress that particularly reflect this phenomenon, especially between the CR activists and the governing parties.

5.2. Identity building and networks

Networking (Rohracher, 2002) and also advocacy coalitions (Markard et al., 2016) are generally identified as key preconditions for successful transitions processes. Yet the nature of such networks and coalitions need not involve strong relational ties: neither in technology innovation contexts, nor with respect to the social movements that are involved in building pressure for sociotechnical change. As said, the CR activists constructed a movement for infrastructural change based on shared identity construction, not strong relational ties. The loose connections of such identity-work have allowed: (i) more flexibility for building a loose but broad network, notably with those representing other interests, such as public transport companies or car drivers; and (ii) the possibility of building an inclusive and simple message (making cycling easy, fun and safe *for everyone*), rather than an overly complex debate on cycling in particular and mobility transitions in general (which had failed the existing cycling lobbyist group for years).

5.3. Implications for public participation in transitions processes

Calls to involve affected stakeholders in innovation processes, including publics, are not new and have multiple rationales, ranging from the instrumental (to encourage acceptance), to the democratic and explicitly normative (reflecting the principle of a public right to influence technological and infrastructural directions) (Delgado et al., 2011). Yet it is also true that public opinion can both help and hinder transitions processes. On the one hand, it can help foster transition processes by increasing stresses within or on the regime, notably via social movements. On the other hand, it can hinder transition processes by reinforcing the status quo through attachment to a variety of unsustainable norms, particularly those relating to consumption (Upham et al., 2015). In addition, publics may also challenge the legitimacy of new infrastructure and laws (Castro and Batel, 2008).

Despite the challenges of stronger stakeholder participation, there is a growing consensus that system transformations will not be achieved without broad societal consensus. This is particularly important for cases in which behaviors are deeply embedded psychologically as well as socio-technically, making them relatively resistant to change (Baum and Gross, 2017). Particularly in such contexts, there is a need to use analytic perspectives that include salient aspects of the societal context. This is important where normative change is required, as part of building a supportive socio-cultural context. While the MLP (quite reasonably) conceives of values as slow-changing, landscape phenomena (Geels, 2002), it says little about other factors or processes involved in normative and behavioral change. Identity-building is just one such process and – as illustrated here - can be used strategically, to build public support for transition processes. At an analytic level, the present study shows that there is a social psychological basis for understanding identity-building processes: that social psychology can support a fuller understanding of agent-level processes compatible with transitions frameworks. Here, we have drawn on ideas of common-identity (Gaertner and Dovidio, 2011) to build an understanding of the role of arguably an important social psychological condition for a consensual and inclusive transitions process: the perception of a shared identity.

6. Conclusion

We have built upon the previous argument that identity-building is important for the institutionalization of sociotechnical innovations (Fuenfschilling and Truffer, 2016). Here, our contribution comes from social psychology, reflecting an interest in connecting 'levels' or different types of process within a sociotechnical transitions framing, particularly connections between the level of individual actors and larger system change (Upham et al., 2019). Our more specific argument is that transitions processes may well need to minimize the creation of social out-groups to be successful; a case that fits well with the inclusive norms of transition management (Loorbach and Rotmans, 2010). In this regard we also add nuance to the axiom that sociotechnical transitions require network development: not to disagree with the axiom, but to observe that such networks are likely to have varying social qualities. In fact, in some contexts, here e.g. for the Cycling Referendum movement, weak organizational ties and the resulting flexibility for creating an inclusive but still clear vision, has been a key success condition.

In terms of further work, several of the above points merit additional attention per se and in different types of context. Our case study is of a campaign for safe infrastructure in order to move a social practice (cycling) beyond a niche as defined numerically in terms of modal split. Yet the bicycle and cycling are obviously not temporally new. We wonder how the social identity dynamics compare in cases of active social movements that involve greater temporal novelty and where innovation is rapid and on-going – for example, in the case of health treatments where greater social access via public subsidy is sought by campaign groups. It would seem that the same principle of building a broad social identity would still apply – indeed this is in part the basis of social welfare systems more generally: that the beneficiary group may at some point include members of the group paying for the system. Overall, then, attending to issues of social identity is likely to be important for the scalability of sociotechnical innovations, be these more in terms of technology or practice, particularly the minimization of in-group/out-group risks.

Author statement

Sophia Becker: Case study conceptualization; Empirical investigation; Data analysis; Resources; Methodology; Writing - Original Draft; visualization

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