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Emotion Work and Scale in Sociocultural Bicycle Advocacy and Transportation Literature

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Abstract

Previous reviews of sociocultural bicycle transportation studies have focused on analysis of research results and policy meant to increase bicycle transportation. However, the literature also reveals relevant but implicit patterns regarding emotion and scale embedded in the discourse of the authors, a dimension of the literature that could be explored further. This underlying meaning expressed implicitly by researchers has been much less studied and is the focus of the present research. Affect or emotion related to daily transportation has been shown to influence what mode people use for transit. Sociology of emotion research suggests that emotional factors are part of all that is social, creating an emotional dimension to the allocation of transportation resources, bicycle safety, and policy. In this study, Arlie Hochschild's concept of emotion work is suggested as a mechanism that crosses the divide between individual scales and state-level policy/institutions. Through a systematic qualitative review of sociocultural bicycle literature using discourse analysis, this paper suggests ways individuals are linked to formally rationalized institutions through emotion work focused on identity, here, largely race, class, and gender. In this review, rationalized institutions were seen to reduce the impact of emotional responses to the distribution of transportation resources, while emotion and emotion work were key to both the production and perpetuation of these institutions along existing dimensions of inequality. In the literature, underlying or less-than-conscious emotion work enabled policy decisions to occur at scales removed from the population level while also producing the illusion of meaningful public deliberation. In contrast, emotion work by groups that eschew institutional structure such as Critical Mass was meant to disrupt existing transportation norms and, thus, maintains deliberation about transportation at the population level. These results suggest links between individual emotional experience and formally rationalized institutions.

1. Introduction

The human experience of transportation is inherently connected to emotion. As
with all human activity, transport creates feelings in people. These feelings are
centered on at least three areas: 1) the things people use in transport such as
roads or bike paths, types of vehicles, and surrounding urban form; 2) what
happens along the way including human and material interactions; 3) and the
emotions people always carry with them about who they are, i.e., identity. Affect
and mood related to available transportation influence what mode people use for
daily transit (Mann & Abraham, 2006; Kaplan et al., 2019; Morris & Guerra,
2015; Redman et al., 2013). Moreover, the sociology of emotion suggests that
emotional factors are part of all that is social and, in this way, also create an
emotional dimension in allocating transportation resources, bicycle safety, and
policy (Bericat, 2016; Passafaro et al., 2014; Zeile et al., 2016). Transportation li-
terature emphasizes that, in the car-dominant US, increased bicycle mode share
would provide both health and environmental benefits (Brugge et al., 2015; Ca-
vill et al., 2008; Feyerherm et al., 2014; Keall et al., 2015; Rabl & de Nazelle,
2012). This article is part of a larger qualitative review of sociocultural bicycle
transportation and public engagement literature that produced two policy white
papers published by USC's University Transportation Center and UC Davis's
Institute for Transportation Studies through the Feminist Research Institute.
These papers aimed to synthesize academic research for policy makers interested
in equity and bicycle mode share, the first emphasizing sociocultural bicycle li-
terature and the second public engagement. However, the review revealed pat-
terns in the research that were outside the scope of a synthesis of explicit find-
ings. While publications from the initial review present explicit findings relevant
to transportation policy, the literature also speaks implicitly to social mechan-
isms underpinning persistent transportation outcomes in the US such as very
low bicycle mode share (Pucher et al., 2011) and much lower mode share for
women (Emond, Tang, and Handy, 2009). To address this gap, the aim of the
present study is to examine pervasive examples of emotion work in the literature
in relation to the success of bicycle advocacy and public engagement efforts
which, among bicycle transportation researchers, is often equated with the scale
of the outcome. Emotion work is defined as human effort meant to manage
emotions that might otherwise produce social conflict (Wharton, 2009; Hoch-
schild, 1983) and is accomplished through humor, attentiveness, and facial ex-
pressions in new, stressful, or uncertain situations (Hochschild, 1983; Cahill and
Eggleston, 1994; Wharton, 2009). In the sociocultural bicycle literature, poli-

cy-related institutions employ emotion work meant to gain approval for large-scale projects through public engagement among minority populations with lower socioeconomic status (Creger et al., 2018); in other words, emotion work is used in public engagement efforts among populations who share lower status identity characteristics, e.g., race, class, gender. This study is the first analysis of emotion work in relation to formally rationalized institutions and scale.

Results reported in the literature indicate patterns of identity associated with bicycle mode choice, adding strength to calls for increased sociocultural and historical research to uncover mechanisms underlying the lack of equity in these outcomes (Clifton and Handy, 2003; Epperson, 1995; Oosterhuis, 2014, 2016). Gender is the most studied identity-related factor (Emond, Tang, and Handy, 2009; Garrard, Handy, and Dill, 2012; Hanson, 2010; Steinbach et al., 2011) with some research finding that gender affects regular cyclists experience of heightened positive emotions during rides (Félonneau et al., 2013; Peterson et al., 1997) and, in terms of advocacy, also during participation in bicycle advocacy organizations (BAC) (Nixon and DeLuca, 2012). Race has been much less studied with significant recent exceptions (Brown and Sinclair, 2017; Day, 2006; Golub et al., 2016; Lubitow and Miller, 2013; Stehlin, 2015). Handy et al. (2014) finds gender, age (especially children and youth), and income are strongly connected to cycling and Nehme et al. (2016) analyze several identity variables based on U.S. National Household Travel Survey (NHTS) data finding bicycle trips are more likely for those who are young, white, male, residents of higher density (urban/suburban) areas. However, these differences along identity lines, especially gender, appear to occur much less for other active travel modes such as, for example, walking among school children (McDonald, 2012), and for rural compared to urban areas in the U.S. (McAndrews, Okuyama, and Litt, 2017).

To address possible social and emotional mechanisms underlying these results, following Donna Haraway and Bruno Latour academic discourse from the literature itself is used as qualitative data and reviewed systematically, including both researchers' explicit findings as well as the context described in their academic discourse. The study views bicycle transportation scholars who are frequently cyclists themselves as research subjects. Importantly, the literature includes a unique dimension of contrast in that emotion work is described in relation to both complex multi-level institutions and also advocacy groups like Critical Mass (CM) that avoid institutional structure. More precisely, this contrast provides insight into the differences between emotion work directly connected to the formally rationalizing and state-dominated policy process and emotion work in settings without direct effort from the rationalizing engine of the state. In the literature, formally rationalizing institutions consist of universalized policies, agreements, and organizations meant to free transportation resource delivery from negative emotional responses or conflict. Formal rationalization moves deliberation about transportation resources and policy out of the purview of population-level emotional exchange into "higher" scale institutions. The

concepts of scale and formally rationalized institutions are used in relation to emotion work to explore resulting patterns as population-level transportation norms, bicycle policy, or infrastructure become normalized either through the policy process or without it.

The study uses Linda McDowell's (1983, 2001) definition of scale defined as patterns of social relations that reduce conflict over resources through spatialized structures of identity dominance. McDowell's definition is innovative in that it socializes Weber's (2002, 2013) notion of formally rationalized institutions of universal or scaled-up rules and regulations (Calhoun, 2012) by adding facets of individual and domestic process in which identity dominance links private or local social relations to large scale public institutions. McDowell adds a critical social component to Weber's formal rationalization and related literature on organizational economics by suggesting that underlying social and emotional mechanisms are not separate from "higher" scale social structure (Granovetter, 1985) but, instead, play a part in the fluid and networked process of producing and then perpetuating institutional scale. McDowell's definition of scale addresses two common uses of the term scale in the bicycle transportation literature: a set of hierarchical social institutions upon which change is dependent ("scale") and the process of achieving wide-spread change through policy or behavior ("scaling-up"). McDowell uses the term identity in a different sense than that used in the term identity politics defined as efforts to organize interest groups among underserved populations with common, often lower status, characteristics. Instead, the term identity is used by McDowell to indicate the sense of self all people feel in relation to variables like race, class, and gender.

The bicycle transportation literature reviewed here speaks to the configurations of objects and processes over which populations can and cannot deliberate through emotional exchange and emotion work, that is, the types of deliberation over resources already at "scale", the ways facets of population-level deliberation is "scaled-up" into institutions, and the kinds of deliberation currently left to populations. For Weber and the ideas of institution-based conflict reduction based on his work (Coase, 1937; Hall and Taylor, 1996; Immergut, 1998; Williamson, 2000), scaled up contracts, rules, and regulations are the rational basis of large modern institutions key to transportation policy and infrastructure. In the present study, state-level transportation initiatives and policy are seen to also include conflict reduction regarding nonviolent emotion work over resources (Weber, 2013) such as bicycle infrastructure. In highly rationalized settings like the US, organizations apart from the state similarly reduce conflict and emotional exchange through binding agreements and hierarchies protected by the state (Coase, 1937; Williamson, 1981, 1999). Formally rationalized institutions reduce conflict over resources in line with status expectations from the broader society, e.g., a new freeway may cut a poor area in half for the convenience of higher status populations. In the literature, while rationalized institutions reduce the impact of emotional responses to the distribution of transportation resources, emotion and emotion work are also key to both the production and

perpetuation of these institutions.

2. Theoretical and Conceptual Framework

Using a post-structuralist approach to academic discourse, a systematic qualitative review of the literature suggests implicit emotion work as a link between scales. Through this process, bicycle transportation outcomes align with prevalent identity norms. The study combines geographical literature on scale, emotion work, and institutions to examine the ways emotions connect people to social structures such as transportation norms, and to formally rationalized institutions including organizations, agreements, and rules (Emirbayer and Desmond, 2015; Stets and Turner, 2008). Emotions also play a part in conflict reduction central to formally rationalized institutions. To accomplish this, Hochschild (1983) and McDowell (2001) help explain scale-creating processes linking private local interactions with state-level institutions responsible for infrastructure and other transportation services.

The next sections start by framing the concept of scale and formally rationalized institutions using the post-structuralist approach common to new materialist literature (Braun, 2014; Law, 2008). In sum, scale is seen here as part of human perception not as an absolute in nature, suggesting that more research attention is needed on the linking social tissue created by emotional processes. In section 2.2, McDowell's (2001) definition of scale is used to examine structuring linkages based on identity dominance. In complex societies with large-scale state interventions exercised through policy, dominance as the basis of scale in social relations, according to McDowell, links populations across space. In section 2.3, Hochschild's (1983) concept of emotion work is explored as such a link between scales, something suggested but not clarified by McDowell. Section 2.4, connects theories of scale and identity dominance to the literature addressing formally rationalized institutions as defined initially by Max Weber.

2.1. The Scale Debate in Geography

In human geography, there have been at least two approaches to scale in arguably one of the most heated debates in the discipline: structuralist/post-structuralist notions of scale on one hand and materialist concepts of scale on the other. This article attempts to bridge the two by taking a materialist approach with post-structuralist leanings (Braun, 2014; Law, 2008). That is, the present study does not assume scale as inherent to nature but, instead, sees it as part of human perception; at the same time, the reality of groupings of material relations that create persistent, observable patterns perceived as scale by humanity is assumed (Levin, 1992).

As with other social disciplines, structuralist concepts of scale in human geography were the status quo until structuralist theories evolved through the work of, for example, Michel Foucault and Giles Deleuze. The "post-structuralist"

evolution then took root in geography in the 1990s through the work of Donna Haraway (1991) and Eric Swyngedouw (1996). Structuralist ideas of scale use the social construction of language to uncover patterns of relations represented in shared meanings and common language usage. Under structuralism, the identity of an object—the scale at which it is differentiated from other objects—can be boiled down to a definition of difference (Woodward, Dixon, and Jones, 2009). Most human geography through the 1980s assumed an objective reality about social objects. To overcome this, Haraway developed the concept of the cyborg, a rejection of rigid boundaries between humans and animals (e.g., as revealed in evolutionary theory) or machines (e.g., as revealed in the impact and extent of 20th century technology). Swyngedouw (1996) and Swyngedouw and Heynen (2003) later applied these ideas to the city using the concept of scale by suggesting that rigid boundaries related to urbanization did not adequately reflect the lack of scale in nature. Here, Swyngedouw and Heynen fall implicitly in line with Marston (2000) and, to a large degree, Marston, Jones, and Woodward (2005), in which scale is rejected completely.

On the other hand, some geographers with a strong materialist approach preferred to deal with the realities facing vulnerable global populations or capitalist production and the state based on common understandings of social objects (Braun, 2006; Jonas, 2006). Brenner (2001), followed by several others (Jonas, 2006; MacKinnon, 2011; Sayre, 2005), argued for a clear materialist and limited realist concept of scale, acknowledging that scale does not exist in nature. Applying the idea of social construction to scale, it was argued, has muddied the concept's precision in relation to ideas of space, place, and territory. Scale, Brenner (2001) suggests, is useful in human geography for distinguishing among "major dimensions of sociospatial structuration under capitalism" (p. 591). A politics of scale, Brenner (2001) adds, comprising two prevalent uses of the term in geography, similar to the terms "scale" and "scaling-up" found in the present research, has been used by geographers to indicate a "slippage" of concept precision. This "slippage" may represent instead understudied aspects of scale in social settings worthy of research attention.

In contrast, post-structuralist ideas have moved beyond bounded concepts in several ways by using the social construction of meaning to blur the lines between the subject and the object. That is, post-structuralism assumes that there is no absolute observer position even in science. In this way, post-structuralism highlights the importance of "noise" in relation to "signal" and the contingency of human observation (Woodward, Dixon, and Jones, 2009). Any human perception, it is argued, is a simplification of a natural system, human or nonhuman, and the system itself is its only complete representation. As a result, an epistemological focus emphasizing the importance of reflexivity in the production of knowledge emerged, supporting geographers' aim to problematize the "noise" outside of the boundaries of meaning familiar to them related to, for example, dominance, capitalism, and power. The post-structuralist approach to scale used in this study allows both a methodological focus on academic dis-

course in transportation literature as a source of understudied data regarding identity and, following McDowell (2001), a theoretical model allowing for this data to make visible the emotional elements structuring scale through emotion work. In this study, McDowell problematizes socially constructed networks and hierarchies (e.g., "higher" political scales) and Hochschild's emotion work illuminates hidden emotional elements linking these scales.

2.2. A Definition of Scale

In the literature reviewed here, scale production was considered important for the success of an initiative by advocates and community engagement specialists. McDowell's definition of scale suggests a connection between identity dominance, physical space, and social relations that addresses context factors bicycle transportation researchers noticed. Scale for McDowell is "a geographical resolution of social conflict that through its persistence facilitates the social relations of production and reproduction as well as being a reflection of conflicts, power relations, and different interests" (McDowell, 2001: p. 230). When social change occurs, according to McDowell, social configurations are transformed through confrontations or conflict, producing a newly scaled power resolution. In this way, McDowell links larger scale productive facets of capitalist systems to more localized and domestic sectors. McDowell's (1983) definition of scale extends earlier research in which she defines patriarchy as a set of specific temporal and spatial relations that structure urban space and its processes and that extend beyond women to focus instead on complexes of social relations structured by identity dominance. In this earlier work, McDowell suggests that parts of patriarchal domestic labor remain private concerns experienced in the domestic sphere while some parts are socialized (McDowell, 1983: p. 62) to higher scales directly affecting larger institutions.

As private and socialized processes become fixed in practice and rationalized institutions emerge, deliberation over things like infrastructure, public safety, and property rights is removed from the population scale. For example, through the construction and management of roads, water, and electricity—all examples of infrastructure projects that have reached scale—the state resolves conflict over resource distribution through socialized delivery systems. In this way, McDowell's work also falls in line with sociological new institutional theories (Hall and Taylor, 1996; Immergut, 1998) and to some extent transaction cost economics (Coase, 1937; Williamson, 1999). That is, large infrastructure projects and collective redistribution arise through institutions as costs from possible conflict over material outcomes are reduced (Immergut, 1998; Stets and Turner, 2008; Williamson, 1999; Coase, 1937). While these literatures have for the most part avoided a critical stance, McDowell (2001) suggests that labor/work—defined here as both paid and unpaid human activity following Karl Polanyi (1944)—is a basis to explore the sociocultural links between scales, i.e., connections between spheres of production and reproduction. However, she stops short of giving spe-

cific mechanisms that accomplish this work. Hochschild's concept of emotion work fills this gap by addressing the pervasive emotional expectations (Emirbayer and Desmond, 2015) guiding effort that may link scales connected to material distributive outcomes and even transportation mode choice.

2.3. Emotion Work, Feeling Rules, and Emotional Exchange

Emotion is the empathetic basis for all social interaction (Bericat, 2016). However, emotions have been difficult to measure precisely, as they are experienced through complex biophysical processes often measured only at the individual level through facial expressions and language (Cowen and Keltner, 2017). Over the last century, limited emotion research in the social sciences has focused on less-than-conscious action, representation, and decision-making (Jasper, 2006; Sharp, 2009; Stets and Turner, 2008). Recent research on nonconscious and affective aspects of social interaction and social institutions has created a renewed focus on emotion over the last few decades (Jasper, 2006; Stets and Turner, 2008).

Hochschild's (1983) ideas of emotion work, feeling rules, and emotional exchange are concepts underpinning emotional experience and have been expanded to include unpaid labor over recent decades. The term emotion work suggests an interpersonal management activity that, for example, calms anger, creates trust, or provides humor in moments of emotional exchange that have the potential for conflict (Cahill and Eggleston, 1994; Hochschild, 1983; Wharton, 2009). For example, a flight attendant's work of calming an angry customer or maintaining a serene demeanor under stressful conditions creates a positive emotional experience for customers. Both inside and outside the workplace (Wharton, 2009), the goal of emotion work is to help the flow of social interaction through the payment of emotional debts via emotional exchanges (Hochschild, 1979). Emotional debts are largely based on status such that emotion work is normally meant to create a more positive experience for people with higher status or identity dominance, connecting in this way social structure to embodied emotional experience. In moments of emotional exchange, as people interact, feeling rules dictate expectations, including "bows of submission" that they are expected to convey in payment of emotional debt (e.g., flight attendants are expected to perform emotion work toward customers). If feeling rules are not followed, people are left feeling surprised or angry. However, these unfulfilled expectations can also bring feeling rules into a more conscious focus for both researchers and subjects.

2.4. Formally Rationalized Institutions

Formally rationalized institutions codify possibly conflictive social processes related to material outcomes (Clarke, Hoggett, and Thompson, 2006) and are described originally by Weber as rules-based management devoid of passion and emotion (Calhoun, 2012; Weber, 2002, 2013). Rationalization changes the emo-

tional expectations between people by codifying specific types of deliberation into institutions, thus removing it from conflictive social interaction (Immergut, 1998). These deeply held emotional expectations around things like transportation infrastructure might otherwise be the subject of conflict at the population scale. Instead, conflict is transferred from population level emotional exchange into "higher" political scales connected to the state. These scales are thought of as "higher" because of their universal application over populations, e.g. through rule of law or the implementation of policy. In the present paper emotion work is used to examine the links between the "lower" (population) scale and "higher" (policy/institutional) scale, ultimately either perpetuating or expanding existing formally rationalized institutions. Together, McDowell and Hochschild bring out the false dichotomy between emotion and formally rationalized institutions by examining the kind of local emotion-related interaction/work that either perpetuates or transforms formally rationalized institutions, thus linking scales.

3. Materials and Methods

This article employs a Foucauldian discourse analysis methodology (Waitt, 2010), which examines underlying meaning created by producers of knowledge, i.e., language used in practice within an academic field. The method is used in the present study to uncover implicit emotional content used by researchers in sociocultural bicycle and transportation literature with diverse topics. The ways in which emotional exchange may structure scales in this context were analyzed through an inductive process that allowed transportation researchers to be subjects in this study, in this way, using post-structuralist methodology to close the gap between the subject and object in the research process. The resulting analysis focuses on emotional experience and scale using the reviewed literature as a sample of academic discourse. The depth of social context included by researchers in this literature was significantly clearer than in other sources of discourse (e.g., policy documents or media reports). US transportation research describes formally rationalized public and private organizations either strongly rejected or embraced by bicycle advocates in their efforts to increase bicycle transportation or to see policy or infrastructure initiatives succeed (as seen in Blickstein and Hanson, 2001; Lugo, 2013; Savan, Cohlmeyer, and Ledsham, 2017; Smiley, Rushing, and Scott, 2016; Stehlin, 2015; Stehlin and Tarr, 2017). Academic discourse was chosen as data because of clear patterns of emotion work related to scale noted in the initial review. In the literature, emotion work was frequently found in research contexts; however, it was under-emphasized in findings which used more common types of literature review or meta-analysis.

With the goal of synthesizing explicit findings, the initial review of the literature employed two methods based on the qualitative methodology of Okoli and Shabram (2010) and Tracy's (2010) criteria for excellence in qualitative research: 1) inputs regarding pertinent literature from transportation advocates and 2) a

search of peer-reviewed journals addressing nonhistorical US-based transportation studies, public health, and policy. International and historical research was subsequently included if it provided contrast to or informed the current US scenario. Keyword searches included identity variables (i.e., race, class, gender) along with variants of the word bicycling. The initial exploration of the literature resulted in over 300 articles and books. From these, publications were subsequently included in the literature review if they were relevant to the research goals, with 99 in all: 38 qualitative, 45 quantitative, and 16 mixed-method publications (see Table 1 for a list of reviewed academic journals by discipline).

Table 1. Reviewed academic journals by discipline.

Transportation Studies	Transportation
	Transport Policy
	Transport Reviews
	Transportation Research Record
	Case Studies on Transport Policy
	Transportation Research Part A
	Transportation Research Part D
	Transportation Research Part F
	International Journal of Sustainable Transportation
	Transportation Research Record
	Research in Transportation Economics
Health & Medicine	Preventive Medicine
	Accident Analysis and Prevention
	American Journal of Preventative Medicine
	Journal of Physical Activity and Health
	American Journal of Public Health
	Injury Prevention and Control
	Journal of Urban Design
	Transport & Health
	Public Health Practice
	Injury Prevention
Geography	Local Environment
	Urban Geography
	Progress in Human Geography
	Social and Cultural Geography
	Journal of Transport Geography
	Environmental Justice
Urban Studies & Planning	Urban Studies
	Journal of American Planning Association
	Built Environment
Mobilities	Mobilities

The initial literature review produced unexpected findings. In part, this was the result of the project's reflexive approach in that research methods considered the production of knowledge and the researcher's positioning in academia and the larger social context. Authors of reviewed publications were considered part of the research context (Latour, 1993; Law, 2008; Mol, 1999; Stehlin, 2014), providing an insider's insight into norms and institutions. In this way, a second contextual, more implicit level of sociocultural data apart from that of explicit findings emerged across the reviewed literature.

3.1. Discourse Analysis

Discourse analysis was used to uncover normalized emotion work implicit in the literature and sometimes hidden even from researchers themselves (Waitt, 2010). Under this method, discourse is defined using a three-part definition including written texts, statements with a "unified effect," and the rules that underpin the expression of these effects (Waitt, 2010: p. 218). Following Foucault these facets of discourse are part of the socially constructed character of all knowledge production. Although this is not a study of the scientific process per se, here academic knowledge expressed through discourse is used to create a secondary analysis of the social context. Scientific discourse used as data follows Latour (Latour, 1993; Latour and Woolgar, 1979), Haraway (1988, 1991), and others (Bijker, 1995; see Gilbert and Mulkay, 1984 for discourse analysis of variable academic arguments) and is meant to examine underlying trends observed by researchers but recorded in publications simply as social context.

Discursive categories used in the literature are considered reflexive of the author's research process (Waitt, 2010). The current paper develops analytical categories not used explicitly in the original research by approaching researchers as both discursive senders as well as receivers within the social context they study. This enables under- or un-explored themes to emerge based on the coding of normalized, though sometimes implicit, categories of meaning. The analysis presented here included several steps: attention to the broader social context, contradictions within social experience and its representation, naturalized power dynamics, missing sources of data, and coding first for organization and then interpretation (Waitt, 2010). The researchers' descriptions of bicycle advocacy and public engagement in the literature reveal patterns of emotion work (Lofland et al., 2006). While these patterns in secondary texts could not produce definitive results, an explanatory framework based on emotional content and scale emerged, which fits this literature.

3.2. Coding

In the first round of coding, references were grouped into nonexclusive topical categories, including safety, policy, health, infrastructure, bicycle mode choice, commute to work, advocacy, planning, and public engagement. Publications were then coded for scale-building and emotion work and grouped by themes

using ethnographic discourse analysis (Spradley, 1980). Following sociological and feminist scholars' work regarding nonconscious emotional structuring and scale (Lofland et al., 2006; McDowell, 1983, 2001), concepts related to emotion work were used to uncover other normalized categories that were less-than-conscious to researchers. Similarly, emotions observed by researchers were not always recognized by research subjects but were coded as such when they reflected categories from emotion research (Cowen and Keltner, 2017; Plutchik, 2002).

Emotion work was coded when the literature described the effort used to smooth the flow of social exchange and minimize conflict. Emotion work was also coded when the purposeful disruption of such flow occurred (Hochschild, 1983; Wharton, 2009). For example, passages were coded in the street advocacy literature when individuals experienced emotional discomfort because of unmet normative expectations (e.g., drivers being forced to surrender street space to cyclists during community bike rides or cyclists demanding equality with cars during these rides). Emotion work that followed normalized feeling rules was coded as part of "bows of submission" (Hochschild, 1983: p. 168). Feeling rules, in accordance with Hochschild, were interpreted when emotion work appeared to flow in ways that felt natural in the context of expected norms. "Bows of submission" included both interactional and material components (e.g., a visit from a high-status professional, provision of scarce resources like infrastructure). Coding highlighted instances in which public engagement specialists or advocates described emotional exchange across scales as part of the approval of a project or when community members expressed the desire for increased trust-building through public engagement. Although these interactions followed feeling rules, they were unique in that public engagement specialists—those doing the emotion work—tend to be of higher status than most residents of lower income and minority populations. In Section 4, citations were not always used for their central arguments or topical content (e.g., bikeshare, bike lane infrastructure, bicycle mode share). Instead, citations are often listed if they give an example, sometimes implicitly, of a given type of emotion work or related concept and set off with the words "as described in" in the citation.

4. Results

In the reviewed literature, emotion affects the distribution of resources such as bicycle infrastructure through advocacy and policy efforts. The intensely rationalized US sociocultural context either perpetuates itself or creates new institutions that take emotion work concerning substantive deliberation or conflict out of the population scale. On the other hand, deliberation is infrequently returned to the population level after it is rationalized, e.g., freeway design is not expected to be conducted by neighborhoods. The literature analyzed here includes two types of emotion work. First, emotion work can create positively experienced emotions, such as trust, belonging, and awe, that perpetuate existing, but not

necessarily positive, social patterns, e.g., racism (as described in Brugge et al., 2015; DeGregory et al., 2016; Hannig, 2015; Hoffmann and Lugo, 2014; Lee, 2014; Smiley, Rushing, and Scott, 2016). In contrast, emotion work can also be accomplished through the disruption of existing norms instead of their perpetuation (as described in Blickstein and Hanson, 2001; Carlsson, 2002; Furness, 2007; Henderson, 2013; Stehlin, 2015). This pattern is exemplified best in the literature addressing Critical Mass (CM), a direct-action cycling event that eschews organizational structure. Through disruptive emotion work, CM produces an uncomfortable emotional state meant to move community participants and observers towards awareness of normalized feeling rules. When social norms learned through years of emotional interaction are broken, negative emotions such as anger signal the disruption. This section examines both types of emotion work including their relation to scale in the literature. Per Hochschild (1983) emotion work is expected by lower status individuals such that positive emotions flow towards people with higher status. However, emotion work in the context of transportation initiatives is also accomplished in the reverse. That is, higher status public engagement specialists make emotional "bows of submission" meant to encourage project approval. While individual emotions are part of emotion work, it is important to note that this concept is distinct and frequently less conscious than the emotions themselves.

4.1. Role of Disruptive Emotion Work in Scale Creation

The primary goal of disruptive emotion work in the bicycle advocacy literature is to change norms regarding street space and bicycle identities. Such emotion work is notable in historical bicycle transportation literature and is echoed in the CM literature.

Intersectional feminist researchers such as Hanson (2010) note the interaction between mobility, gender, and other identity variables. Hanson describes a process of disruptive emotion work meant to change existing travel practices tied to women's social standing and indicates that increased mobility empowered housebound women at the turn of the 20th century by enabling them to travel the streets, i.e., enter the public sphere. Early bicycle advocacy for women with high social standing (Hanson, 2010; Straight, 2016) disrupted existing notions of women's status regarding street space (Mackintosh and Norcliffe, 2016). Women with low status have arguably always been accepted in street space in the role of servants and prostitutes (Mackintosh and Norcliffe, 2016). In a process that was never simple and often unwitting, "well-bred women" disrupted this notion through bicycle transport as direct action (Furness, 2007), which contested the expression of male dominance over women in the street. Women cyclists evoked emotions of anger, surprise, and ridicule as they brought attention to street-based social norms and normalized the presence of women of all statuses on the street. This arguably bourgeois process was emotionally unsettling for turn-of-the-century society and continues to be a topic of debate in the

historical transportation literature (Hanson, 2010; Mackintosh and Norcliffe, 2016; in contrast to Simpson, 2016).

As cyclists participate in advocacy, frequently their goal is to reclaim street space for cycling, a process through which patterns of feeling rules come into a clearer focus. This is particularly notable in the CM literature because of the movement's resistance to organizational structure (Furness, 2010; Stehlin, 2015). While CM avoids formal organizational structure and even policy initiatives, the movement scales-up at the population level through face-to-face events that include elements of emotional exchange (as described in Blickstein and Hanson, 2001; Carlsson, 2002). For example, cyclists in San Francisco have displayed aggressiveness (Furness, 2007), which is inherent to the century-old individualistic bicycle culture once termed "scorching" (Mackintosh and Norcliffe, 2016). Expressions of emotional aggression towards drivers and those desiring a more cooperative approach to advocacy are often startling to participants and onlookers—an emotional outcome aligned with CM's goal to reclaim street space by exposing existing car dominant norms.

CM riders express their anger at unaddressed environmental and social ills by disrupting feeling rules connected to transportation and streets (as described in Carlsson, 2002). At the same time, emotion work focused on perpetuating collective norms through the emotions of trust and belonging are also a part of CM events and support the work of disrupting street norms (as described in Blickstein and Hanson, 2001; Carlsson, 2002; Furness, 2007). As an example of the latter, Carlsson (2002) describes flyers given to drivers expressing tongue-in-cheek "sorrow" about the emotional discomfort CM rides cause in drivers, as CM cyclists take over the street. In this way, emotion work in CM is found in complex and contradictory combinations, which is common to the experience of emotion (Plutchik, 2002). While trust and belonging perpetuate emotional expectations, anger and aggression bring existing norms to public attention within "new [population-level] spaces of debate" (Blickstein and Hanson, 2001: p. 348). The CM literature reveals the role of these emotion-laden non-conscious factors that influence emotional exchange which is meant to disrupt existing norms and produce meaningful change. While much of the literature suggests that common institutional structures connected to transportation and advocacy fall outside CM's philosophy, CM's anti-institutional tendencies ensure that emotional deliberation over transportation norms remains accessible to participants at the population-level. CM accomplishes this by avoiding organizational structure and formal rationalization, leaving all aspects of their process open to contestation.

4.2. Identity-Based Emotion Maintenance

Emotion work is also evident in efforts meant to maintain the flow of social interaction, perpetuating long-standing expectations related to identity. Based on survey research, Nixon and DeLuca (2012) report lower confidence among sur-

veyed women participants of bicycle advocacy committees (BAC) and a perceived lack of their own qualifications. At the same time, as a subpopulation, women engage practically in more sustainable travel by making fewer trips, working closer to home, making more linked trips with others including children and the elderly, and creating fewer vehicle miles travelled (see also, Hanson, 2010). While women are more likely to engage in these sustainable travel practices, in their survey responses women connect feelings of inadequacy in committee participation to family and household responsibilities—a relational complex that Nixon and DeLuca term "cross-scale effects." These "cross-scale effects" may allow men to dominate the debate in BAC meetings based on feeling rules dictating that women have less standing in meetings since the domestic sphere is a major focus for women's work. According to survey results, in line with these feeling rules, some women express less positive feelings during meetings, more specifically lack of confidence in their capabilities or education. Feeling rules may be translated from the domestic sphere into feelings of competence for men and lack of confidence for women during meetings. The surveyed women cite implicit "bows of submission" toward male partners and family members at home. Normalized feeling rules appear to require these domestic "bows of submission" from women much more than men, an emotional debt burden that leaves more time, energy, and confidence for male participants on committees. To address this inequity, several surveyed women in the report requested rules limiting dominant participants' discussion time. Although not definitive, these factors suggest cross-scale emotional exchange on BACs, as feeling rules perpetuate the expected domestic role of women across scales while also creating institutional spaces of dominance for men.

Emotion work is a mechanism seen in the present study to cross the divide between individual scales to institutions and policy. In the bicycle transportation literature emotion work by higher status public engagement specialists is often focused on garnering support for policies that rationalize additional transportation decisions out of population-level debate. For example, this occurs among lower status residents through face-to-face listening sessions or other engagement techniques focused on garnering broad-based support. Emotion work also occurs tacitly for areas meant to attract future high-income young urban creatives through "bows of submission" fitted to their well-studied preferences for urban design, leisure, and real estate (as described in Banks, 2009; Florida, 2002, 2007). These apparently divergent trends work together to perpetuate the flow of resources through, for example, gentrification, toward higher-class and racially dominant populations who do not even need to participate to have their needs met.

The literature notes that in response to years of perceived insensitive planning (Hannig, 2015) and gentrification (Hoffmann, 2016), lower-class residents consider that interest in an area by transportation and other planners essentially means the area is being prepared for demographic transition to higher status

residents (Golub et al., 2016; Lubitow and Miller, 2013). Lower-class residents consider transportation projects as either poorly planned because they are out of touch with residents' real needs and desires (Hannig, 2015; Lugo, 2013), or blatantly deceptive appropriative acts meant to lull them into accepting dislocation to make room for higher status groups (Flanagan, Lachapelle, and El-Geneidy, 2016; Hoffmann, 2016; Lubitow and Miller, 2013; see Smith, 2002 for an argument about productive processes obscuring social reproduction as gentrification occurs globe-wide). Planners and advocates often mistake this pattern as a rejection of active travel. However, residents have pointed instead to a long history of discriminatory urban form outcomes (Hannig, 2015).

In the literature, inequitable outcomes appear to have an emotion-related component. Populations with a lower socioeconomic level or a higher number of minorities often understand the true implications of cross-scale "bows of submission" made to them by planners, advocates, and public engagement specialists, including their presence in neighborhood meetings. In these cases, the recognition of an area through a visit—a "bow of submission"—is given in exchange for residents' participation and tacit support of a project. Here, emotion work reduces dissent regarding rationalized project content, as residents feel social pressure to support participating community groups or visiting professionals (as described in Golub et al., 2016; Hannig, 2015). As reported by researchers, in resident interviews and observations of community meetings, lower-class areas provide support for upcoming projects through this emotional exchange in part because "bows of submission" by high-status visitors are unusual and seem to signal that their needs will subsequently be considered (as described in Brugge et al., 2015; DeGregory et al., 2016; Hannig, 2015; Smiley, Rushing, and Scott, 2016). The expanding role of this type of exchange is witnessed in the burgeoning public engagement sector (Lee, 2014).

The presence of cross-scale emotional exchange reveals the ways in which identity can conceal meaningful deliberation while simultaneously providing residents with a sense of effective public engagement. Substantive design decisions most often occur at "higher" scales under the purview of staff or other experts; however, as end users, populations provide important project legitimization and can eventually oppose finished projects, an institutional risk. For example, in Brugge et al. (2015), public engagement specialists and other experts in traffic-related air pollutant (TRAP) mitigation used "bows of submission" in design charrettes to appease lower status populations—that is, in terms of racial or class identities. Brugge et al. (2015) describe the emotional content of public engagement efforts meant to move resident's focus away from the inequitable outcomes of past land use decisions that placed housing near freeways in Boston's Chinatown. Simplifying this complex process at bit, in this example the content left to residents for emotional exchange at the population level appears to depend largely on what has been left unrationalized in the past. In the literature, while new initiatives developed by local government or other professionals can

alter existing formally rationalized institutions, content left to residents for emotional exchange does not appear to include substantive deliberation impacting project content. In the example above, residents could choose among after-project mitigations but could not change the substance of their surrounding urban design. DeGregory et al. (2016) describe similar emotion work in the context of cross-scale public agency conveners in Brooklyn's Brownsville area, and Smiley et al. (2016) describe a similar city-wide process in Memphis, Tennessee. These examples highlight the inability of public engagement specialists to use substantive project content provided by residents even when they indicated a heartfelt desire to do so.

At the other end of the urban socioeconomic spectrum, cities have recently initiated urban design programs meant to attract members of the creative class. As described above, these high-status future residents do not need to be present during planning to receive deep "bows of submission" through urban area designs meant to increase economic development by attracting them (as described in Banks, 2009; Florida, 2007; Leslie and Catungal, 2012). Such designs frequently include bicycle amenities (Banks, 2009; Hoffmann and Lugo, 2014; Smiley, Rushing, and Scott, 2016) and often cross geographical divisions that may end up appropriating resources from populations that are present in target areas in favor of higher-class residents that are not. Existing populations may then be erased from the view of the incoming creatives (Lubitow and Miller, 2013).

4.3. Summary of Results

These results suggest several patterns in relation to emotion work in the context of formal rationalizing institutions and policy. Both disruptive and maintaining emotion work reveal emotional dimensions related to scale. First, emotional deliberation is reduced by rationalizing institutions meant to channel conflict. Emotion work in the literature that is meant to disrupt existing norms highlights conflict normally absent from population scale interaction. At the same time, emotion work meant to maintain existing norms reveals a dearth of meaningful deliberation about transportation policy. Both types of emotion work reveal the continuing reality of identity dominance as the substance of deliberation around transportation decisions at the population level.

5. Discussion

Population-level emotional exchange based on status and identity appears to affect persistent low bicycle mode share in the US, in part, by focusing the population's attention away from the substance of transportation initiatives and by reducing population-level deliberation over cycling norms, further separating deliberation over identity from initiative content. The post-structural discourse analysis presented here suggests that emotion work and emotional exchange provide a lens for perceiving inequitable social relations related to these trends.

Simultaneously, these results suggest less-than-conscious institutional factors and inequitable impacts on deliberation over both transportation resources and equity issues around identity.

Results reveal that emotion and related emotion work is central to intensely rationalized processes and not simply a secondary facet of social context. In the reviewed literature, emotion work structures both formal and informal scale from domestic to government spheres and, importantly, is also a signal of change. Creation of scale in this way either moves transportation decisions out of population-level deliberation into institutions or disrupts the norms impacting population-level behavior extending new norms through the population. Further, the impact of emotion work can be seen to structure cross-scale social relations in that opportunities for deliberation are either moved into conflict-reducing codified forms like organizations and agreements or left accessible to populations for deliberation. Broadly, these results can be discussed along two dimensions: the institutional and the experiential.

5.1. Institutional Dimension: Emotion-Laden Rationalizing Processes

In the examined advocacy and bicycle transportation initiatives, emotional exchange regarding identity is often the major focus of deliberation left to populations, that is, outside of formally rationalized agreements. The literature in the present analysis reveals the centrality of identity within *unrationalized* deliberation accessible to populations involved in bicycle initiatives. Moreover, in the US, identity status, along with related feeling rules, may appear so natural that it defies rationalization. To avoid dissent in bicycle initiatives, well-intentioned public engagement specialists and key stakeholders may use very effective participatory techniques that are essentially "bows of submission" to residents. However, these efforts do not often affect substantive initiative content and ultimately matter most as a means of gaining support for an initiative or to diffuse conflict regarding existing policy. In this way, emotional exchange about identity instead of project content is often the real substance of population level deliberation.

While US institutional culture may have historically eschewed emotion in the name of reason, according to the present analysis, emotions are an underlying mechanism without which rationalized institutions (scale) might not be produced or function. Arguably, in this context, emotional exchange regarding identity is used in practice to legitimate inequitable organizations, agreements, and policy (scaling-up), and when this occurs in minority and lower income areas, it weakens trust. In this way, scale-crossing emotional exchange, while an important aspect of social relations in modernized societies, is also a less-than-conscious signal of change as population-level deliberation over norms or resources transitions into rationalized agreements, organizations, or policy (Coase, 1937; Hall and Taylor, 1996; Immergut, 1998; Williamson, 2000). While revealing the centrality of emotional exchange, this pattern also suggests that identity

is often used to manipulate communities through formal rationalization that removes meaningful population-level deliberation about transportation initiatives and, at the same time, identity equity from formal policy.

The CM literature reveals institutional implications for the population level in an unusual way. CM advocacy scales up positive cycling norms across the population, while simultaneously keeping dissent, deliberation, and conflict accessible by avoiding institutional rationalization. That is, the population-level emotional exchange produced by advocacy efforts like CM, with no organizational goals, focuses on deliberative content at the population-scale (e.g., contesting car-dominant street norms). CM has continued to set focused population goals in the car-entrenched US streets and has reached a global scale with monthly rides occurring regularly on four continents (Furness, 2007). Although CM exists within a highly institutionalized broader context (as described in Blickstein and Hanson, 2001; Furness, 2007), to some extent, CM's anger-creating efforts appear to be accomplishing its goal of transforming the street into space for debate over existing pro-car street norms (as described in Blickstein and Hanson, 2001; Henderson, 2013). Through disruptive emotion work, street-level advocacy brings car-bicycle norms and feeling rules into more conscious focus at the population level, something that has been more difficult to address at the institutional level.

5.2. Experiential Dimension: Distribution of Emotional Experience

Rationalizing institutions reciprocally affect the emotional experience of populations in addition to those at the institutional dimension. For the results presented in this paper, this phenomenon is best examined through Hochschild's concept of emotional debt burden in relation to cross-scale effects. Status determines the debt burden between individuals such that individuals with lower status identities experience emotional debt toward those with higher status identities through the expectations dictated by feeling rules. For example, public engagement specialists—individuals to whom positive emotions usually flow—pay emotional debts through their presence when a project needs approval. Here, the scale-crossing presence of an expert pays an emotional debt to community members to legitimize a project.

In another example of heterogeneous emotional experience, Nixon and De-Luca (2012) describe the emotional debts that women are expected to pay in the home; these take time away from their other efforts and create a more burdensome experience for them as they cross scales into organizational settings. Women's desire for formal rules that regulate participation by more dominant members is evidence of their reluctance to take up the emotional debt burden they are expected to pay toward their male counterparts. Here, women may be expressing a desire for a more equitable flow of emotions such as competence, which in the literature examined here flows more strongly toward men. This facilitates men's engagement on BACs while simultaneously discouraging women

who are expected to create positive emotions for them (Stets and Turner, 2008). In this case, emotional exchange based on identity (i.e., flow of positive emotion based on gender) structures feelings of belonging for men in organizational spheres that women often do not experience. As a result, policy appears to be affected through the male domination of debate on BACs based on higher feelings of confidence.

The act of cycling creates an emotional debt burden for any cyclist in a context where car transport is normalized, i.e., where cycling is against the norm. Moreover, large-scale increases in bicycle mode share along with increased use of proposed infrastructure projects may depend on lowering population-scale emotional debt burdens experienced by cyclists. While policy frameworks targeting the physical barriers to cycling have received substantial attention in the literature (Day, 2006; Forsyth and Krizek, 2011, 2010; Litman, 2009; Savan, Cohlmeyer, and Ledsham, 2017), inequitable emotional debt burdens experienced by cyclists could be having a more widespread effect on people's choice to cycle. The CM literature reveals cycling norms in the context of normalized car transport at this level. Young white male urban cyclists—those most likely to cycle in the U.S. (Nehme et al., 2016)—may overcome this undesirable burden through Hochschild's (1983) concept of a status shield, which enables high-status individuals to avoid the full impact of debt-heavy emotional exchange. The act of cycling may include an emotional debt burden (as described in Prati, Marín Puchades, and Pietrantoni, 2017) that increases when an individual has several intersectional, lower-status identity factors. This argument affirms results found in countries having high bicycle mode share, such as the Netherlands and Denmark, where cycling is a normalized form of transportation with less emotional debt burden (as described in Heinen and Handy, 2012; Oosterhuis, 2014, 2016). These countries experience much more equitable rates of cycling mode share in relation to class and gender as pro-cycling norms seem to reduce the baseline emotional debt burden for their populations.

5.3. Conclusion: Change, Equity, and Limitations

Change and stasis meet across scales in bicycle advocacy and public engagement as emotion work affects population processes and institutional forms over time. Here, I argue that emotions, emotion work, and scale are important concepts for analyzing the extensive institutional context in the US, especially the ways meaningful emotional exchange regarding the content of bicycle transportation decisions are codified into "higher" scales. The concepts of emotion work and scale elucidate interactions that "link scales" (McDowell, 2001) through familiar emotional expectations, from domestic identity dominance to bicycle advocacy to successful transportation policy. More alarmingly, most people may be unaware of the centrality of sociocultural context related to emotions in structuring formally rationalized institutions. Existing social research on emotions emphasizes the effects of social structure and culture on emotions and, alternately, the effects

of emotional regulation (work) on individuals, groups, and organizations (Wharton, 2009). Although exploratory, these findings suggest ways population-level emotion work connects people to arguably inequitable social structure in ways that feel natural but are often less-than-conscious.

While small changes are inevitable over time, planned directional change against the emotional motivation examined here is extremely difficult. This research suggests that for public engagement and advocacy, increased attention to emotional responses and cross-scale effect in general may be key to changing material outcomes such as bicycle infrastructure and mode choice. It also suggests that planners and public engagement specialists might use their own emotions reflexively as signals of inequitable social structure instead of indicators of what is natural. These results echo Epperson's (1995) call to caution and attention to equity and inclusion. Under the conditions described above, planning techniques designed to be inclusive such as listening sessions and design charrettes may reach a tipping point among marginalized populations as symbols of injustice. Moreover, if large increases in active travel among minority communities are ignored but economic status among creatives is systematically rewarded, rifts between communities may become much more difficult to overcome. Environmental and human health are at stake in active travel outcomes and the seriousness of actions increasing barriers to cycling, particularly for blatantly appropriative projects, should not be minimized.

In terms of limitations, as this study is inductive research based on academic literature, no claim is made to definitive results. Future exploratory research in international settings may suggest the effects of alternative institutional contexts, especially in cases where organizations and hierarchies are less extensive, and because of this, more deliberation over resources is accessible at population levels. In addition, research might explore emotion work in the context of social media and planning (Criado et al., 2013; Lee & Kwak, 2012; Lourenço, 2015; Majumdar, 2017). There is also a clear need for sociocultural research about deliberative processes at expert and professional scales as well as the effects of cross-scale funding (e.g., federal, state, city; see Handy & McCann, 2010). This follow-up research could examine the kinds of initiative content considered normal for expert deliberation and the types and proportions of infrastructure and design decisions made by experts and professionals outside of public oversight. Finally, future research should focus on the profoundly normalized role of identity and resistance to rationalized protections for under-served populations in very rationalized transportation systems.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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