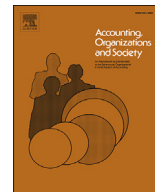




Contents lists available at ScienceDirect

Accounting, Organizations and Society

journal homepage: www.elsevier.com/locate/aos

Acting on distances: A topology of accounting inscriptions

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ARTICLE INFO

Article history:

Received 13 March 2014

Received in revised form

15 January 2016

Accepted 15 February 2016

Available online xxx

Keywords:

Inscription

Topology

Environmental governance

Invoice

Waste

Pay-as-you-throw

ABSTRACT

Following on the reiterated claim that accounting inscriptions make action at a distance possible, we draw on post-mathematical topology to explain that this distance work is dependent on inscriptions acting on distances. By adopting a relational understanding of space, we show that accounting inscriptions by themselves create the distances across which they operate. Our case study uses pay-as-you-throw solid waste-collection invoices in a new waste-collection program aimed at increasing the sustainability of waste management. By displaying weight and cost side by side, these invoices conduct topological operations that dissolve, create, and redefine the distance between people and their waste, between the economy and the environment, and between the city and its residents. The ability of these operations to mobilize a sense of environmental responsibility, enroll residents in the city's plans for sustainability, and translate political ambitions into individual behavior demonstrates that the performativity of accounting inscriptions resides in the efficacy of their distance work.

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1. Introduction: distances are not given

Since the early 1990s, accounting scholars have devoted sustained attention to inscriptions—or the “durable institution of a sign” as Derrida (1967, p.65) puts it. Inscriptions are any material expression of meaning that presents facts in the form of a sign (Latour, 1987): traces, spots, point histograms, recorded numbers, or peaks, for example (Latour & Woolgar, 1986).

In particular, accounting scholars have attended to the ability of inscriptions to permit actions at a distance, in the sense of “enabling people far away from the scene of activity to ostensibly have a window on those activities and intervene in the name of better management” (Chua, 1995, p.116). The rationale is that accounting inscriptions act at a distance by creating translations that enable passage from one context to another (Dambrin & Robson, 2011; Edwards, Ezzamel, & Robson, 1999; Mouritsen, Hansen, & Hansen, 2009; Robson, 1992). Inscriptions have been found to act at distances that are geographical (Preston, 2006), functional (Dambrin & Robson, 2011; Jørgensen & Messner, 2010; Lowe, 1997), hierarchical (Ahrens & Chapman, 2007; Edwards et al., 1999;

Ezzamel, Lilley, & Willmott, 2004; Ezzamel & Willmott, 1998), and interorganizational (Caglio & Dittillo, 2012; Mouritsen, Hansen, & Hansen, 2001), and distances that operate between a dominating center and its periphery (Bloomfield, 1991; Bloomfield & Vurdubakis, 1997; Dambrin & Robson, 2011; Lowe, 2001; Lowe & Koh, 2007; Skærbæk & Tryggestad, 2010). Accounting inscriptions have also been found to act at distances that are temporal (Qu & Cooper, 2011; Quattrone & Hopper, 2005); spiritual, in the sense of what separates the mundane from the heavenly (Ezzamel, 2009); and emotional, when “at a distance” is used in contradistinction to corporeal closeness (Ezzamel & Willmott, 1998; Lowe & Koh, 2007).

Yet, accounting inscription studies have devoted greater interest to the conditions for *acting* (e.g., Dambrin & Robson, 2011; Jørgensen & Messner, 2010; Qu & Cooper, 2011; Skærbæk & Tryggestad, 2010) than they have to a reflection on *distance*. With few exceptions (e.g., Quattrone & Hopper, 2005; Sundström, 2011), accounting inscription studies have approached distance as a given. But distances are not givens. As Latour (1987, p.228) explains, distances are “produced inside the networks built to mobilise, cumulate, and recombine the world”, and there is a corresponding need for accounting studies on inscriptions to account for the terms of this production.

To address this need, we have adopted a topological stance to show that inscriptions have the ability to define the distances they cover. The growing field of post-mathematical topology (Martin &

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Secor, 2014) demonstrates that space is a contested matter and distance is not a univocal category. Post-mathematical topologists offer a series of spatial concepts and figures: fold (Deleuze & Strauss, 1991); stretch and reach (Allen, 2011); wells, bridges, prison, hotel, and labyrinth (Serres, 1982); region, network, fluids, and fire (Law & Mol, 2001). These concepts and figures underpin a topological imagining of social spatialization (Shields, 2013) and build an understanding of space as produced *a posteriori* through relationships (Massey, 2005), rather than existing *a priori*. They view space as ontogenetic (Doel, 1999), in the sense that it is performed through practices and is thus in a state of becoming (Massey, 2005). Topological thinkers consider space to be a verb rather than a noun: They offer a variety of analytical pathways to the development of post-Euclidean spatial theory (Martin & Secor, 2014).

The purpose of this paper is to draw on post-mathematical topology to explain what inscriptions do to distance. Accounting inscriptions have a performative ability (Callon, 2010; Lyotard, 1979; MacKenzie, Muniesa, & Siu, 2007; Muniesa, 2014) to create, dissolve, and redefine different types of distances—civic, material, ethical, cognitive, or administrative, for example. Not only can inscriptions travel among contextually distant others; they can also bring remote matters to a meaningful closeness. Inscriptions can act at a distance because they build relationships among elements that are otherwise considered detached. Post-mathematical topology (Allen, 2011; Ek, 2012; Shields, 2013) focuses on the way inscriptions literally construct and bring into being the distances between *what they deal with* and with *what or whom they connect*. Every type of relationship that one can imagine between any two points will define a specific type of distance, whether symbolic, politic, or cultural. This additional understanding of what is meant by distance serves to expand our knowledge of the way accounting inscriptions act on distances and contribute to control and policies.

The next section presents a topological take on distance. We then describe the empirical basis for our study — a pay-as-you-throw waste-collection program in the City of Göteborg, Sweden, where waste-collection invoices detail the amount of food and unsorted waste that residents discard, and itemize the fee charged for doing so—, and introduce the topological figures that underpin our analysis. This analysis shows that officers and politicians in Göteborg act at a distance from residents, because invoices redesign the distances among waste, residents, the economy, the environment, and the City of Göteborg. Our conclusions illustrate the performative space-constituting practice (Harvey, 1990) of the distance work made by invoices, which is essential to control and governance.

2. Literature: a topological take on distance

Johann Benedict Listing introduced the concept of *Topologie* in 1847 to deal with the relational characteristics of a space (Abrahamsson, 2012; Shields, 2013). Topology can be summarized as “the mathematics of context, connectivity and consistency” (Shields, 2013, p. 104) and differs distinctly from Euclidean geometry (Plotnitsky, 2012). More than a hundred years later, the term was imported into the social sciences and the humanities, sometimes with the word *post* added to signal a use that is not completely faithful to its mathematical roots (Martin & Secor, 2014); or together with *cultural* (Blackwell, 2004), to signal a cultural–analytic approach to space (Lury, 2013; Lury, Parisi, & Terranova, 2012).

Post-mathematical topology and cultural topology offer an understanding of space that borrows from three very different thinkers on space: Henri Lefebvre, Martin Heidegger, and Gilles Deleuze. Lefebvre's *The Production of Space* (1991 [1974]) is

regarded as the founding work in the field (Shields, 1999, 2013), in which he introduces the notion of *spatiologie* in a reaction against understandings and definitions of space that exclude humans and human interactions from the constitution of space. For Lefebvre (1991 [1974]), space is always a process, a societal spatialization that reflects the political, economic, cultural, and social nature of the contemporary (capitalist) society. Furthermore, topology relies on Heidegger's (1962 [1927]) existential philosophy of being (see further Malpas, 2012; Rosen, 2006), relating back to the Greek notion of *topoi* and the conceptualization of the relationship between human and place that has been ruptured because of the development of technology and the rise of instrumental reason (Heidegger, 1977 [1954]), creating a problematization of spatial concepts like territory and spatial scale (e.g., Agamben, 1998).

In addition, the topological take on space in the social sciences and humanities relies on French poststructuralist philosophy—particularly Deleuze (1993 [1988]). Deleuze's interest in topology derives from his interest in the actual (manifested) and the virtual (the possible, the real, but not yet manifested) realms, as one example of making the invisible visible (Martin & Secor, 2014). The notion of fold (Deleuze & Strauss, 1991) is exemplary of his understanding of space. It is “a critique of typical accounts of subjectivity that presume a simple interiority and exteriority (appearance and essence, or surface and depth)” (Parr, 2005, p. 103). The folded object retains its topological characteristics, but the distances between its parts are redefined. Using the example of a folded handkerchief (after Serres and Latour (1995), Allen (2011, p. 285) explains that where the flat, well-ironed surfaces of a handkerchief stand in for fixed distances and well-defined proximities, the fabric, when folded, draws together weaves of cloth previously held apart so that points previously at separate ends of the handkerchief are now in contact. The imaginative power of the fold figure is its ability to clarify that Euclidian distance is not a good indicator of either separation or proximity in a topological world. Rather, distance is a fluid, arbitrary understanding of how points relate to each other, and this understanding does not derive from but is constitutive of space.

Yet others have provided a foundation for the development of a post-mathematical and cultural understanding of space. Michel Serres (2006) insists on bridges, fixed at both their start and end points, serving as direct but nonflexible hyphens between points of a different kind, like the soft and the hard; they connect languages, texts, riverbanks, or people but in ways that can splinter space and populations (Graham & Marvin, 2001). And significant efforts to develop a social-scientific topological approach to distance can be found in actor-network theory (ANT). For decades, such ANT authors as Michel Callon and Bruno Latour (Callon & Latour, 1995; Latour, 1991, 1999) have explored the ways in which artifact-based programs of action make it possible to cover distances and establish “the social” (Latour, 2005). Even if Latour (1987) uses geographical metaphors and a corresponding vocabulary (e.g., the world, navigators, foreigners, home) to describe what he means by actions at a distance, he refers to *any* type of distance between an actor and the actor's object of knowledge—not merely geographical or hierarchical distance. Latour proposes that space and time are generated, always locally, in maps or probes, for example and that action at a distance pertains more to knowledge-generating procedures than it does to spatial coordinates.¹

John Law and Annemarie Mol further expanded this groundbreaking interpretation of the nature of distance and the social, partly as a response to the critique of ANT as a final, all-encompassing vocabulary (Lee & Brown, 1994). To Mol and Law

¹ We are indebted to Reviewer 2 for bringing this point to our attention.

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