Evaluative infrastructures

Evaluative Infrastructures:
Accounting for Platform Organisation

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Forthcoming in *Accounting, Organizations and Society*

Abstract

Platform organizations such as Uber, eBay and Airbnb represent a growing disruptive phenomenon in contemporary capitalism, transforming economic organization, the nature of work, and the distribution of wealth. This paper investigates the accounting practices that underpin this new form of organizing, and in doing so confronts a significant challenge within the accounting literature: the need to escape what Hopwood (1996) describes as its "hierarchical consciousness". In order to do so, this paper develops the concept of evaluative infrastructure which describes accounting practices that enable platform based organization. They are evaluative because they deploy a plethora of interacting devices, including rankings, ratings, reviews, and audits to establish orders of worth. They are infrastructures because they provide the invisible yet essential mechanisms for the flow of economic activity and exchange on platforms. Illustrating the concept of evaluative infrastructure with the example of eBay, the paper's contribution is to (1) provide an analytical vocabulary to capture the accounting practices underpinning platforms as new organizational forms, and in so doing (2) extend accounting scholars' analytical focus from hierarchical settings towards heterarchies. Conceptually, this shift from management accounting to evaluative infrastructures entails a focus on relationality (evaluative infrastructures do not represent or reference but relate things, people and ideas with each other); generativity (evaluative infrastructures do not territorialize objects but disclose new worlds); and new forms of control (evaluative infrastructures are not centres of calculation; rather, control is radically distributed, whilst power remains centralized).

Keywords: accounting, hierarchical consciousness, evaluation, infrastructure, platform organization

"I look at the scaffold for the king from the carpenter's perspective:
The structure of the scaffold is of more interest than the actual execution."
Jean Cocteau

Introduction

This paper is motivated by a growing and disruptive economic phenomenon: the rise of platforms as new organizational form. Platform organizations include accommodation providers such as Airbnb, ride-sharing companies such as Uber, service and product marketplaces such as Taskrabbit or eBay, and even relationship services such as eHarmony; indeed, *There's an Uber for Everything Now* as the Wall Street Journal commented in 2015.[1] Traveling under many names including platform capitalism (Srnicek, 2016), sharing economy (Sundararajan, 2016), collaborative consumption (Botsman and Rogers, 2010), gig economy (Mulcahy, 2016), mesh (Gansky, 2010), multi-sided markets (Evans and Schmalensee, 2016) or commons-based peer production (Benkler, 2011), the phenomenon of platforms can be defined by distributed and often switch-role producers (sellers) and consumers (buyers) interacting with each other, digitally mediated by a third party, the platform owner. Platforms organize distributed production (Benkler, 2002) and collaborative consumption (Botsman & Roger, 2010) without direct control over the value creation process. Rather, platform organizations' value-add is to provide an interface for interaction and controlling mechanism for transactions between tens of thousands, sometimes even millions of buyers and sellers who might never meet in person. Platform owners' business models rest on their ability to ensure trust between these buyers and sellers. Through reputation systems that account for people's actions and behaviours, platforms turn what could easily become "markets for lemons" (Akerlof, 1970) into thriving exchanges. What allows them to do so is a specific accounting regime – a regime that this paper sets out to describe as evaluative infrastructure.

Taken the economic significance of platform organizations, this seems a timely task. Digital technology and the move towards access rather than ownership (Rifkin, 2001), among other factors, are fuelling the rapid growth of platforms. PricewaterhouseCoopers (2014; 2016) estimates the transaction value facilitated by collaborative economy platforms in Europe to be €28 billion, tripling since 2013, and the global revenue to be $335 billion by 2025.

[1] http://www.wsj.com/articles/theres-an-uber-for-everything-now-1430845789

Platform organizations have an extraordinary scale: as of 2014 eBay had 165 million active users,[2] Uber was hosting over 1 million rides per day,[3] and Airbnb was facilitating 155 million guest stays annually, surpassing the Hilton Worldwide by 22 percent (PricewaterhouseCoopers, 2014: 14). The valuations of these relatively young organizations (many of them "unicorns") further indicate the economic significance of the phenomenon. Eight years after its founding and with less than 8,000 employees the ride-sharing platform Uber is valued at close to $70 billion — more than General Motors, which employs over 200,000 people and manufactures annually close to 10 million cars.[4] Eight years after its founding and with only 1,600 employees, Airbnb similarly is valued at $30 billion —more than Hilton Worldwide.[5] These optimistic valuations are met with critical scrutiny of various researchers, who argue that the "Uberification" of the economy is resulting in a deterioration of labour standards amounting to the marketization and financialization of everyday life (Davis, 2016; Scholz, 2016). The contested political economy of platform capitalism (Martin, 2016) highlights the importance of better understanding its inner workings, which are enabled in large measure by its novel accounting regime. Toward this end we ask: What is the role of accounting practices in platform organization and through which mechanisms do they work? In other words, what is at stake is whether and how accounting scholarship can contribute critically to better our understanding of platforms as a disruptive organizational form.

Turning from business to the bookshelf, two bodies of literature in accounting prove helpful in articulating our research question. On the one hand, the growing strand of literature attending to supply chains and supply networks highlights the changing and contested role of accounting concepts and practices in the formation and control of alliances, joint ventures, strategic partnerships, outsourcing, and cooperative between independent units (Håkansson & Lind, 2004; Mouritsen & Thrane, 2006; Caglio & Dittilo, 2008). On the other hand, studies of accounting as a power/knowledge apparatus (see Miller & Power, 2013 for an overview), and more recently explorations of non-traditional forms of accounting such as rankings, ratings and other classification regimes (Kornberger and Carter, 2010; Jeacle &

[2] https://www.statista.com/topics/2181/ebay/
[3] http://www.forbes.com/sites/ellenhuet/2014/12/17/uber-says-its-doing-1-million-rides-per-day-140-million-in-last-year/#19515df97a68
[4] http://www.reuters.com/article/us-uber-valuation-breakingviews-idUSKBN14B23A
[5] http://qz.com/719157/airbnb-is-raising-money-at-a-30-billion-valuation/

Carter, 2011; Pollock & D'Adderio, 2012; Fourcade & Healy, 2013; Power, 2015) explore processes of accounting which extend beyond organizational boundaries.

These strands of literature offer a foundation for an investigation of platform organization. However, as we elaborate below, much of this literature remains beholden to what Hopwood (1996: 589) criticised as the persistence of "accounting's hierarchical consciousness". Extending their unit of analysis from firms to supply chains and networks, the first body of literature investigates how firms, like "islands of conscious power in this ocean of unconscious co-operation like lumps of butter coagulating in a pail of buttermilk" (to paraphrase the economist Dennis Holme Robertson, quoted in Coase, 1937: 386), coordinate action; but in so doing this literature remains wedded to notions of hierarchy and the visible hand searching for efficiencies in closed supply chains. Whilst thinking accounting as an apparatus of governmentality, the second, more critical, strand of literature remains tied to a centralist notion of power – the buttermilk is studied to understand the formation of lumps of butter, to stretch the metaphor. Both literatures represent points of departure for our own contribution.

The contribution of this paper is to propose and specify evaluative infrastructure as an analytical concept with which to attend to the accounting practices that help to structure platform organization and in doing so extend accounting beyond its hierarchical consciousness. The concept of evaluative infrastructure includes a focus on relationality, generativity and on an evolving apparatus of control that we describe as protocol. With the concept of relationality we propose that evaluate infrastructures do not represent or reference pre-existing objects, but relate and recombine people, ideas, and things so as to construct new economic subjects and objects. With the concept of generativity, we propose that evaluative infrastructures do not territorialize from a center, but instead disclose new worlds. And with the concept of protocol we propose that control in evaluative infrastructures is radically distributed whilst power remains centralized alluding to the interplay between hierarchical and heterachical power relations.

These three concepts provide part and parcel of a vocabulary with which to describe production in, and control of, platform organization. Put metaphorically: if we look at Manhattan today we marvel at the skyscrapers from the early 20th century; yet in order to understand their designs we have to study the race between several intertwined

infrastructures, most notably plumbing, lift technology and finance (Koolhaas, 1978). This paper makes a homologous argument: in order to understand platform organization (and by extension other, non-hierarchical, forms of economic activity) we need to look at the invisible infrastructures that coordinate and control platform activities. It is this paper's contention that the focus on these evaluative infrastructures helps to equip accounting scholars with critical instruments to study a set of emerging phenomena that are related to platforms as new organizational form, including distributed innovation, crowd sourcing, big data and other burgeoning phenomena.

This paper is structured as follows: in the next section we review the literature that marks the point of departure for our argument. We then develop the concept of evaluative infrastructures. This conceptual work implies mobilizing a variety of different literatures that have discussed infrastructures in depth. In order to illustrate the mechanisms and effects of evaluative infrastructures we provide the extended example of eBay as prototypical platform organization that is based, at least in large part, on such a novel accounting regime. This calls for a caveat: eBay and related examples are not intended to provide closure but, to paraphrase Thomas Schelling (1978), to spark curiosity for further investigation. The paper concludes with a discussion of implications for research and reflections for practice.

Accounting beyond its hierarchical consciousness?

Empirical context: the disruptive phenomenon of platform organization

Our paper uses the phenomenon of platform organization as a "tool for thinking" (Douglas & Isherwood, 1979): attending to platforms that organize economic activity of third parties without directly controlling them will facilitate the development of the concept of evaluative infrastructure. While management accounting systems typically control production inside hierarchies, platforms require evaluative infrastructures as accounting systems to organize the economic activity they host. How can we describe this new organizational phenomenon, and how does it differ from networks, markets and hierarchies? The following observation might be a good place to start looking for an answer:

> The world's largest taxi firm, Uber, owns no cars. The world's most popular media company, Facebook, creates no content. The world's most valuable retailer, Alibaba,

> carries no stock. And the world's largest accommodation provider, Airbnb, owns no property. Something interesting is happening.[6]

That "something" refers to a disruptive organizational phenomenon – platform organization.[7] Mediated by digital interfaces, platform organizations are defined as "matchmakers" between producers who offer excess capacity and other assets for consumers to use, buy or simply enjoy (Evans & Schmalensee, 2016). Platform organizations are a "new type of firm", which provide "the [digital] infrastructure to intermediate between different groups" (Srnicek, 2016: 12). Their strategic position between different user groups makes them the "ground upon which their [users'] activities occur, thereby giving it privileged access to record them" (Srnicek, 2016: 12). There are at least two main reasons for the rise of this new organizational phenomenon. These include, first, the emergence of knowledge, creativity, and human ingenuity as the key resource in economic production over the past decades (Benkler 2002). Know-how as resource is distributed across many actors, sticky and tacit (von Hippel, 1978). Hence, echoing Hayek (1945), models of distributed innovation such as open source have become increasingly popular as they harness "the wisdom of the crowd" (Surowiecki, 2005). A second reason is technology: the Internet reduces search and other transaction costs facilitating the effective coordination of distributed economic activity (D'Adderio & Pollock, 2014). Platforms are the organizational form that incorporate these two fundamental changes into their structures and channel their powers through their specific designs (Kornberger, 2016).

Platform organizations are distinct from hierarchies, markets and networks and challenge their status as opposing and exclusive forms of organization (Powell, 1990). Their owners hold limited fixed assets, hire only few employees, and externalize the value creation process; hence platform organizations question not only extant organizational designs but also, quite fundamentally, the idea of the firm (Coase, 1937), assumptions of the resource-based perspective (Penrose, 1959), and our understanding of value creation processes (Porter, 1985). Platform organizations also challenge network designs. According to Powell

[6] Tom Goodwin, senior vice president of strategy and innovation at Havas Media, quoted in Hamish McRae, *The Independent*, Tuesday May 5 2015

[7] A note on terminology: we use to term *platforms* to refer to the digital interfaces that organize *platform production*. We specify the *platform owners* as the firms that legally own the interfaces, and we use to term *platform organizations* to refer to the units or organisational forms within which production occurs, often specified by the name of the platform owners, as well as (in the singular form) the phenomenon and effects of this mode of production.

(1990) networks consist of a finite number of organizations that form an alliance in pursuit of mutually beneficial goals. Examples include learning networks in the bio-tech industry where a network is defined as set of inter-organizational relationships (see Powell et al., 1996) as well as modular production networks arranged around common design rules (Sanchez & Mahoney, 2006; D'Adderio & Pollock, 2014). In contrast with such networks, platform organizations are more market-based as they invite literally millions of hitherto unknown producers and consumers to transact with each other; the difference is quantitative but also qualitative: they do not extend or enlarge a set of relations, but populate a place with the possibilities for relations to form. At the same time, platform organizations also retain hierarchical features as they control the proprietary evaluative infrastructure making the organizational form possible.

Different disciplines have studied platform organizations including product development, technology strategy and industrial economics (Baldwin and Woodard, 2008). Early scholarship focused on the relationship between innovation and platforms (Kim & Kogut, 1996) and especially digital innovation (Yoo et al., 2012). Work on platform leadership (Gawer & Cusumano, 2002) and governance inquired into trade-offs between adoption and appropriability (West, 2003) and between diversity and control (Boudreau, 2012). Platform economics investigated the dynamics of platform evolution, with a focus on network effects and other (positive) externalities (Lerner & Tirole, 2002). From an organizational design perspective, platforms were characterized by a common set of design rules. As Baldwin and Woodard (2008: 3) argue:

> the fundamental architecture behind all platforms is essentially the same: namely, the system is partitioned into a set of "core" components with low variety and a complementary set of "peripheral" components with high variety (Tushman & Murmann, 1998). The low-variety components constitute the platform. They are the long-lived elements of the system and thus implicitly or explicitly establish the system's interfaces, the rules governing interactions among the different parts.

Here the platform represents a stable interface for organizing communication, collaboration and control for distributed production (Kornberger, 2016). Accounting devices constitute the low-variety 'core' components of the platform. Indeed, platform interfaces consist of an ecology of accounting devices in the form of rankings, lists, classifications, stars and other symbols ('likes, 'links', tags, and other traces left through clicks) which relate buyers,

sellers, and objects. These devices provide the "format and furniture" (Pollock & D'Adderio, 2012) for judgment, search and selection to be undertaken, and for matching, interaction, and relations among diverse users to be achieved in distinctive and consequential ways (Fourcade & Healy, 2013). More generally, accounting devices provide much of the "trust infrastructures" (Sundararajan, 2016: 60) necessary to prevent platforms from degenerating into markets for lemons (Akerlof, 1970), in particular when it comes to "high-stakes transactions" (Sundararajan, 2016: 98) such as renting fully furnished private apartments on AirBnB, which may test their limits.

Therein lies the puzzle that sparked our curiosity and motivated us to look into the accounting regime underpinning platforms: since value creation is externalized and occurs on the platform without the platform owner being able to control it hierarchically, we need to think of accounting practices as horizontally distributed as well. It is important to note that this proposition which we will explore in this paper does not suggest heterarchical accounting regimes would replace more traditional hierarchical forms of accounting. Indeed, internally platform organizations may resemble hierarchically organized firms. Airbnb for instance employs around 1,600 staff and uses presumably more or less traditional accounting practices to control and direct their behavior. However, the focus of this paper is on how Airbnb (to stay with the example) organizes value creation – i.e. the 155 million guest stays annually which are provided by users Airbnb has virtually no control over. Because value creation itself is accomplished by hundreds of thousands of people outside hierarchical relationships we need to investigate the specificity of the accounting regime that underpins such decentralized production. As first attempt to solve our puzzle we turned towards the accounting literatures that have challenged, if not overcome, accounting's hierarchal consciousness.

Theoretical context: accounting for platforms

Much of the "hierarchical consciousness" which Hopwood and others lament had and continues to have much to do with the "prevalent patterns of organizational change" (Hopwood, 1996: 589) – namely the development and proliferation of the traditional firm. Management accounting, consequently, has been centrally concerned with coordination and control within, and from the perspective of, the hierarchical firm. As Håkansson and Lind (2004: 52) noted aptly "accounting and the classical market-hierarchy dichotomy are well adjusted to each other".

However, over the past decades two specific strands of accounting literature have challenged this hierarchical orientation and explored accounting in non-hierarchical settings. On the one hand, a number of empirically driven studies have analysed lateral accounting regimes of and in buyer-supplier relations, extended supply chains and network organisations (Håkansson & Lind, 2004; Mouritsen & Thrane, 2006). On the other hand, a variety of critical investigations have been undertaken into accounting as apparatus and regime of governmentality, extending within but also between and beyond the organization as such (Burchell et al, 1985; Miller &Power, 2013). We will now turn to these two literatures as they provide the conceptual points of departure for our investigation.

Point of departure # 1: Accounting in inter-organizational networks

An important strand of accounting literature attending to supply chains and supply networks has highlighted tensions in the relationships between coordination, operation and appropriation in alliances, joint ventures, strategic partnerships, outsourcing, and cooperation between independent units (Caglio & Ditillo, 2008; Dekker, 2004; 2008; Håkansson & Lind, 2006; Lind & Thrane, 2010). As argued by Håkansson and Lind (2004: 52), the challenges which accounting confronts as strong distinctions between hierarchies and markets are complicated by network configurations of various kinds:

> Relationship coordination may cause a problem from an accounting point of view as contemporary accounting depends on defined, limited entities. This new form of coordination blurs the clearly defined boundaries which accounting presupposes and requires.

The effect of the blurring of boundaries resides in the problem that such firms share production function but not objective function since they are autonomous firms that rely in their activities on complements added by others (Mouritsen and Thrane, 2006). Therefore, supply chain and network accounting are lateral in principle, but often, as research shows, in practice such accounting is concerned with the formation of relative hierarchies between a powerful and a less powerful (set of) firms (Frances & Garnsey, 1996; Seal et al., 2004; Kraus & Strömsten, 2016), e.g. through open book accounting (Kajüter & Kulmala, 2005; Agndal & Nilsson, 2010; Windolph & Moeller, 2012; Alenius et al., 2015), or of the dynamic development of relations between the involved parties as they are mediated by

accounting (Mouritsen et al., 2001; Coad & Cullen, 2006; Thrane & Hald, 2006; Chua & Mahama, 2007).

This research raises the issue of whether it is possible to understand a supply chain or a network as a governed entity. Accounting here tends to change random interactions into firm-like relationships in an attempt at coordinating already known and existing firms by accounting mechanisms that extend well beyond the firm (Håkansson & Lind, 2006). The concern is to assign roles and responsibilities that can be contracted or at least mediated by accounting across the supply chain. Therefore, current accounting research focuses on how (or not) accounting helps to create 'meta-organization' resembling a hierarchy de-facto if not de-jure.

In this literature on networks and inter-firm relations, therefore, production is distributed among firms in a perhaps ever-growing supply chain but the focal firm still remains a key conceptual parameter. In supply chains and networks, production is decentralized but still attributable; the boundary of the firm is extended, but only to include a finite number of other firms. Conceptually therefore the firm still seeks, as in the classical hierarchical model, to establish control and coordination among its various units—these units just exist down the supply chain and beyond the legal limits of the organization (Håkansson & Lind, 2004; van der Meer-Kooistra & Scapens, 2008). Hence our first point of departure: to capture radically distributed organizational forms such as eBay, Uber or Airbnb we need to originate our conceptual thinking from somewhere other than a focal firm which distributes and arranges production and relations that were originally performed in-house.

Point of departure # 2: Territorializing from the centre?

The second, perhaps more critical strand of literature investigates accounting in its social and institutional context (Hopwood, 1983). This body of work that has explicitly sought to capture the nature of accounting as an "ensemble" (Miller and Napier, 1993), "constellation" (Burchell et al, 1985), "complex" (Miller & Rose, 1990; Miller & Power, 2013) or "assemblage" (Miller, 1998). Such work, exemplified in Miller and O'Leary's (1994) now classic account of the transformation of American manufacturing, sees accounting as a series of relations, relays, and linkages between heterogeneous elements which unfold in a variety of different locations. Understood in this way, accounting "links up different actors with a

common narrative and may constitute a network of relations *within and beyond the boundaries of the enterprise*" (Miller & Power 2013: 581; emphasis added).

However, much of the vocabulary and theorization about space, representation, and power that this literature employs in order to conceptualize these assemblages, remains wedded to hierarchy. The accounting complex that has been investigated and described is one that is deeply programmatic and attentive to control (e.g. Townley, 1995; Graham, 2010). As such, researchers have been primarily concerned with the localization of power: the creation of "obligatory passage points" or "centres of calculation" (Latour, 1986) that allow for "government at a distance" (Miller & Rose, 1990) and "long distance control" through accounting (Robson, 1992; Jones, 2010). The topography of space upon which accounting has been shown to be assembled is one with a distinctive centre and periphery, exemplified in the notion of territorialization which accounting complexes are often seen to be part and product. As Miller and Power (2013: 579-80) explain: "Territorialization is achieved by linking ideas of the market with instruments of accounting so as to allow households, hospitals, schools, retired persons, or whatever to be constituted as accounting subjects obligated to calculate or be calculated". Territorialization suggests the domination or mastery of one space through the articulation of control, in the face of resistance or anti-programmes, in another (Mennicken & Miller, 2012). As such, accounting is envisioned to have an implied centre from which power is projected and objects are remade (Miller & Rose, 1990). For instance, in Power's analysis of the Impact Case Study as new accountability infrastructure in the UK higher education sector, he argues that "[t]he effect of infrastructure development and centralisation is to create a new normativity or performance capability at the centre of the organization" (Power, 2015: 8). The "nascent apparatus or infrastructure" (ibid) that Power describes is characterized by new roles, functions, processes and structures – all of which are organizational phenomena inscribed in a hierarchical setting (see also Kjellberg & Helgesson, 2006).

This theorizing has been developed in the context of hierarchical organization such as the factory or the ward. In this context accounting very well might be a territorialisation device but the centre and periphery of this new form of organization are less clear. Herein lies our second point of departure: under certain conditions, accounting assemblages are no doubt central to processes of territorialization and re-territorialization; but in others, such as those which characterize decentralized production, it may well be that the centre of calculation is

more ambiguous, the programme less defined, and the aspiration to mastery less clear. Hence, in order to theorize accounting beyond its hierarchical consciousness, we need to discard of the notion of centre and periphery which has been embedded in conceptions of territorialization. In platform organization we suggest that the programmatic element of accounting may not be as clear cut or predetermined as extant accounting research assumes.

Point of departure # 3: Making up people and things?

A hierarchical consciousness also seeps into conceptualizations of the relations between the accounting apparatus and the people and things which it seeks to represent. Understood as a means of achieving (however momentarily or imperfectly) a kind of long distance control, accounting is seen to reconstitute its objects through its capacity to "translate" (Robson, 1992), "transpose" (Knorr-Cetina & Grimpe, 2008), "reframe" (Miller & Power, 2013), or "interess" (Chua, 1995). Miller and Power (2013) use Oakes et al.'s (1998) analysis of a museum to show this process in which accounting helps to "reframe" its activities and purpose from a cultural institution into an economic entity "amenable to the narratives of markets and economic rationality" (Miller & Power, 2013: 580).

Accounting, understood this way, is argued to remake its objects through the ability to corner, capture, stabilize, or close: accounting "envelops" its objects (Miller & Power, 2013: 562); it territorializes by fencing in. This conception of accounting suggests a process of invention which leads from an aspiration to a reality, an ideal to a norm, a programme to a technology, although intermediated by a variety of compromises and reconfigurations. For instance, in the already quoted paper on the Impact Case Study regime, Power (2015) argued that new forms of evidence such as testimonies from practitioners became important to demonstrate impact. These testimonies and other forms of evidence were not "out there" waiting to be collected "but would have to be *actively created and solicited*" (Power, 2015: 5; emphasis in original). Here we see a demand for evidence from the central administrators resulting in the construction of evidence from below. Much accounting literature has evolved along this line of argumentation: a powerful and aspiring centre has been shown to remake people and things in its name (see Miller & Power, 2013: 561).

Herein lies our third point of departure: no doubt accounting does capture, reign in, envelop, frame and territorialize; but there is a generative aspect to accounting that does not necessarily follow this line of development. Accounting might be engaged in *disclosing*

objects: akin to early rail infrastructure, accounting as infrastructure may be simultaneously a means of disclosing a new world, of exploring, opening up, generating new opportunities and new subjectivities, such as marking those living on "the wrong side of the tracks". Here we do not have trails, sequences, and accumulations, but disjunctures, surprises, open spaces that emerge endogenously from accounting processes (Revillino & Mouritsen, 2015; Quattrone & Hopper, 2001).

Point of departure # 4: Accounting as mediating device?

A final point of departure for our argument is the literature on accounting as a mediating device (Miller & O'Leary, 2007; Millo & Mackenzie, 2009; Poon, 2009; Pollock & D'Adderio, 2012; Power, 2015). This research has attended to a variety of accounting devices, instruments, and other intermediaries that constitute linkages between ideas and practices, institutions and technologies. Miller and Power (2013: 593) stress the inseparability of devices and the wider accounting complex, arguing for the need to attend to the "ways in which actors, aspirations and arenas can be connected laterally or horizontally through accounting practices". Following this idea, several authors suggested placing organizations and organizational relations in the context of accounting devices, rather than the other way around. Miller and O'Leary (2007) for instance, describe the way that Moore's Law and associated technology roadmaps came to envision relations between and among organizations and between science and the economy in such a way that the proposed future could be depended upon, organizational decisions could be made, and a semiconductor industry could develop in a coordinated way. Similarly, Poon (2009) highlights the way that the secondary market for subprime products in the US was shaped by the development of accounting devices such as the FICO Score which allowed market calculations to be undertaken and, at least for some time, depended upon.

This focus on accounting devices, while providing a strong foundation to theorize heterachical modes of accounting, poses some questions. Much of the literature on devices focuses on single technologies and their effects (e.g. Preda (2006) on the stock market ticker; Espeland and Sauder (2007) on law school rankings; Pollock and D'Adderio (2012) on Gartner's "magic quadrant"; and Power (2015) on the Impact Case Study). These singular devices function like obligatory points of passage; they format and edit the things and people that are brought through them, while they remain static filters. This conceptualization of devices does not consider the possibilities of dynamic, interacting and overlapping

performative struggles between a multiplicity of devices (Kjellberg & Helgesson, 2006). Hence, departing from the focus on singular mediating instruments, we propose thinking of an "ecology of devices" that Star and Ruhleder (1996; Star, 1999; Monteiro et al., 2013) describe as "infrastructure".

Summary and critical appreciation: going beyond accounting's hierarchical consciousness

In spite of the lateral concern in research on accounting in networks and supply chains, this literature emphasizes hierarchical ambitions by a focal firm exercising power over subsidiaries. More critical literature has conceived of accounting as operating from a territorializing centre in ways that, perhaps in style different but not in effect, parallel a focal firm. And even when and where accounting has been investigated as a matter of mediations and translations through devices, it has been seen to lead to stabilization and closure. This tends to reify accounting's hierarchical consciousness: Management accounting remains the "centre of calculation" where control of peripheral activities takes place and from where power is exercised. Imagined as centre, accounting allows "action at distance" (Robson, 1992), projecting its powers to the periphery. Whilst there may be no single actor in the centre, there *is* a centre that controls activities and exercises power. Even if void at its core, the Panopticon remains a centralist control mechanism; it is a gutted Leviathan, still a colossus towering above organizations and society. Our reading of extant research echoes Hopwood's diagnosis that even "the so called new management accountings still tend to maintain this hierarchical orientation" and that "although there is a rhetoric of change and redirection in the name of keeping pace with commercial realities, in practice the implications of that rhetoric or research have been highly constrained" (1996: 589-590). Hence in order to keep pace with "commercial realities" such as eBay, Airbnb and Uber we suggest moving beyond the constrained vocabulary currently at our disposal. The concept of evaluative infrastructure represents such an attempt at conceptual re-tooling with the aim to grapple with the new disruptive phenomenon of platform organization and in so doing think accounting as heterarchical practice.

Conceptually, this implies three in(ter)ventions. First, it means a shift from mediating accounting devices to overlapping and interacting devices forming a dynamic network of control technologies which we describe as infrastructure. We suggest understanding devices in their systematic interplay—as infrastructures that organize economic exchange occurring on platforms more systematically and fundamentally than single devices. This highlights the

relational aspect of infrastructures: infrastructures are not singular mediating devices that strive for referentiatlity between objects and representations; rather, evaluative infrastructures generate relations (not references) between things, people and ideas.

Second, we propose theorizing the relationship between accounting devices and the world differently: rather than speaking of territorializations we highlight the generative element of evaluative infrastructures. We capture this quality through arguing that evaluative infrastructures *disclose* new worlds: they do not simply measure (capture, calculate) what is there, or what a centre imagines there to be, nor do they territorialize (fence in, colonize, envelop) life-worlds. Rather, we are interested in accounting as an infrastructure that discloses objects, akin to physical infrastructures like early US railways that create the very possibility for phenomena such as urbanization to occur. Translated into the context of platform organization: evaluative infrastructures do not calculate what is there but disclose new worlds through creating objects that are not so much the outcomes of programmatic aspirations, but of a surplus of data and traces, which produce new possibilities of discovery and invention.

Third, we depart from the "centre of calculation" view of accounting. We argue that in evaluative infrastructures power is centralized, while control is radically decentralized. We describe this form of power as protocol (Deleuze, 1992; Lessig, 1999; Galloway, 2004). Protocol represents a form of power that configures platform and other distributed organizational settings by establishing the directions of flows and priorities. It is a form of power that, in principle, works by decentralizing control in the sense that platforms enable users (producers and buyers) to audit product quality and define user experience; on eBay, Uber and Airbnb, for instance, users evaluate each transaction and thus control is de-facto outsourced and decentralized. Yet, there is the important caveat that information is centrally collected by the platform owner who is thus in a position to analyse, mine and sell data (Facebook or Google ads); equally, the platform owner is in a position to use the data to drive certain transactions (e.g. Uber surge). Hence, we face intricate power relations in platforms' accounting regime: whilst control of goods and services is radically decentralized, power is concentrated in the hands of the platform owner. We will use the concept of protocol in order to analyse this intricate relationship between control and power.

In the next section we will develop the concept of evaluative infrastructures and provide the extended case study of eBay as illustration of its mechanisms and effects.

Evaluative infrastructures

Infrastructure's modalities and functions

Although the notion of infrastructure has been occasionally evoked in accounting research (see Poon's (2009) notion of infrastructural market device; Miller's (2008; Kurunmäki & Miller, 2013) numerical infrastructures; Miller and Power's (2013) calculative infrastructures; or more recently Power's (2015) description of a transorganizational sociotechnical infrastructure) a systematic exploration of the term infrastructure remains a desideratum, as Power (2015) posited.

Infrastructure is a "conceptually unruly" (Larkin, 2013: 329) term which derives its intellectual attraction from a multi-modality which refuses to follow the categorizations of the world in social vs. technical, material vs. symbol and global vs. local. Mostly we think of infrastructures as technical achievements. In reality, they are assemblages of technical artefacts, institutional arrangements, cultural habits and social conventions (Hughes, 1983; Bijker et al., 1987). A simple example illustrates the point: the technical infrastructure of roads requires a shared cultural understanding of how to use them (think of the skills it takes to cross a road in New Delhi as opposed to New York) as well as an organizational and institutional infrastructure (car manufacturers, petrol stations, insurance companies, parliaments making laws, police and law enforcement agencies executing them and so on) to become operational. Hence, in infrastructure, the technical and the social are inextricably intertwined (Larkin, 2013). For instance, Elyachar (2012) shows how micro-finance is built upon the notion of "infrastructure as people" (Simone, 2004): here, the social connections between people provide the infrastructure for financial transactions to occur. Moreover, infrastructures are simultaneously material and symbolic systems: even mundane infrastructure projects are inherently socio-political projections, as Harvey and Knox (2012) have shown in their study on transport infrastructure in Peru. There, roads were not only concrete paths connecting people; but also pathways of the collective imagination towards future political integration, economic growth and social welfare. Hence the building of a highway and other infrastructures is as much a political project as it is an engineering task (see Dalakoglou, 2010; Harvey & Knox, 2012; Schwenkel, 2015). Finally, infrastructures have the ability to span the dichotomy of global and local. As Star and Ruhleder (1996: 114)

argued, an "infrastructure occurs when the tension between local and global is resolved." In other words, infrastructure is a medium that connects the local train station with the global rail network: only *when* this bridging occurs, we can speak of infrastructure (Bowker et al., 2010). This alludes to the temporal dimension of infrastructure: it is a dynamic assemblage that is evolving and changing; infrastructure "is" only if and when heterogeneous sets of elements are put into relation with each other to accomplish possibilities of exchange (Star and Ruhleder, 1996).

In sum, infrastructures can be provisionally defined as "material forms that allow for the possibility of exchange over space" (Larkin, 2013: 327). There are three specific functions that follow from this definition that need unpacking. First, because of this radically relational character infrastructures need to be understood as ecologies (Star & Ruhleder, 1996, referencing Bateson, 1972; Star, 1999; Bowker et al., 2010; Monteiro et al., 2013). Infrastructures emerge by relating heterogeneous elements – people, language, numbers, categories, cultures, practices, artefacts but also pipes and hard-wired circuits. They form networks that bring people and things into proximity to each other. This is obvious when we think of railroad as infrastructure – but also of social infrastructure that in- or excludes people (Simone, 2004). Equally, cognitive infrastructures that group things (organic food, fast food, genetically modified food, etc.) or people (citizen, resident, tourist, asylum seeker, etc.) are relational. Standards (Lampland & Star, 2009), classifications (Bowker & Star, 1999) and categorizations (Schneiberg & Berk, 2010) are further examples of such cognitive infrastructures that produce and order heterogeneous elements into distinct groups. The corollary of this insights is that infrastructures are not obligatory points of passage that format, edit or reference a reality; rather they are relational in that they create the possibility for exchange between elements over space.

Second, infrastructures need to be understood as generative. They do not only connect pre-given elements within a landscape; rather they produce a landscape through disclosing new elements and relations. Spinosa, Flores and Dreyfus (1997: 190) define disclosure as "capacity of coordinated practices to create an openness wherein things and people can show up". To disclose means to open up a space that was hitherto unknown. Take the example of Edwards' (2010) study on knowledge infrastructures that underpin debates on climate change. He argued that we never "experience" global climate because climate is by definition a local affair. So how come we can talk about "global climate change"? How do

we “know” global climate? Edwards shows that it is a global knowledge infrastructure that consists of archives that store historical data on climate; of hundreds of thousands of technological sensors and other data collection points on land, in sea and in the air that measure current conditions; of computers to collect and process data into meaningful information; of models that allow calculation of trends; of paradigms that enable scientists to collaborate, but also disagree productively; and finally of institutions such as the Intergovernmental Panel on Climate Change, an independent organization that reviews research on climate change and issues reports on what is accepted and what contested. “Ultimately”, Edwards (2010: 8 and 19) argues, “this knowledge infrastructure is the reason why we can ‘think globally’ about climatic change. […] Get rid of the infrastructure and you are left with claims you can’t back up, facts you can’t verify, comprehension you can’t share, and data you can’t trust.” Edwards’ study highlights the disclosing function of infrastructures: without the knowledge infrastructure, there would be no “global climate” as object to debate. It is in this sense that infrastructures disclose new objects: they open up the possibility for new objects to emerge, to take on specific shapes and meanings. They are practical “ontological experiments” (Jensen & Morita, 2015). With the characteristic of disclosing we emphasize this generative aspect of infrastructures that has been merely alluded to previously (Lezaun, 2006; Power, 2015).

Third, infrastructures embody distinct political rationalities and engender a specific “apparatus of governmentality” (Foucault, 2010; Larkin, 2013). Every infrastructure is political as the bridge example in Winner’s seminal paper (1980) illustrates. But not only physical infrastructures exercise power; categorical infrastructures (Schneiberg & Berk, 2010) shape perceptions, guide attention and pattern “structures of intentionality” (Goodwin quoted in Bowker & Star, 1999: 287). As such, infrastructures do more than enabling a “centre of calculation” to act at distance (Latour, 1986; Robson, 1992). Rather, infrastructures are a form of control that determines the potentiality of any place within the network, defining what is possible and actual (to paraphrase Hopwood, 1987). Therein lies the specificity of the power of infrastructure (and analytically speaking, its departure from Foucault-inspired governmentality studies). Disciplinary power as defined by Foucault is about enclosure (territorialisation) of things and people, whilst control is about managing flows (Deleuze, 1992). Infrastructure has to be analysed as control *and* disciplinary power. Galloway and Thacker (2004) developed the concept of protocol to analyse this pair as distributed control and centralized power. Protocols are defined as “the conventional rules

and standards that govern relationships within networks" with the aim to "maintaining organization and control in networks" (Galloway & Thacker, 2004: 8 and 9; see also Lessig, 1999). The prototype for this form of control is the Internet: its information infrastructure is governed by protocols that control exchange whilst encouraging communication. Power may be centralized in those places that write and maintain protocol, but control itself is decentralized. This is a critical extension of the governmentality concept that does not differentiate between power and control (Deleuze, 1992). In contradistinction, protocol puts emphasis on the intricate, perhaps even paradoxical, relationship between distributed control and centralized power.

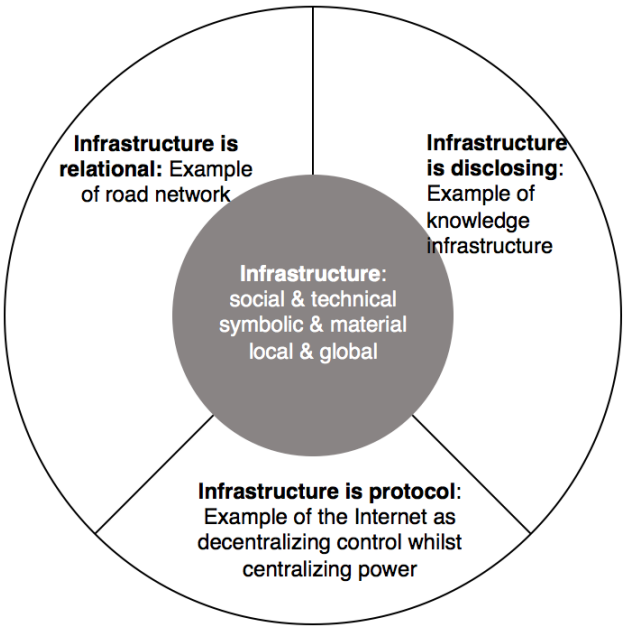


Figure 1: Summary of modalities and functions of infrastructure

The evaluative dimension of infrastructures

What makes infrastructures' evaluative quality? Evaluative infrastructures include rankings, ratings, reviews, tests, audits, assessments and other evaluation mechanisms (Antal et al., 2015; Kornberger et al., 2015). Through their mechanisms and practices, these evaluations constitute as their corollary orders of worth. Put metaphorically, evaluative infrastructures are the invisible pipes and wires that underpin what Power has described as audit society (Power, 1997). This concept of evaluation derives from economic sociology (e.g. Karpik,

2010) and an emerging body of work concerned with valuation (see Vollmer et al, 2009; Beckert & Aspers, 2011; Lamont, 2012; Antal et al., 2015; Kornberger et al., 2015). This scholarship shares the premise that value is not an objective property of a good, nor a subjective preference of a person, but the outcome of practices and processes of valuation. Whilst much extant research has focused on moments of valuation (Antal et al., 2015) or singular valuation devices (Muniesa et al., 2007) the concept of evaluative infrastructures puts emphasis on the distributed, systematic nature of valuation processes that underpin platform organization.

We are now in a position to define evaluative infrastructure: it consists of an ecology of devices that disclose values of actions, events and objects in heterarchically organized systems (such as platforms) through the maintenance of protocol. The following extended example of eBay's evaluative infrastructure illustrates the applicability of the concept for the analysis of accounting practices in platform organization. As stressed at the outset of this paper, the aim of the narrative is not to arrive at intellectual closure but to spark curiosity regarding how an empirical research agenda based on the concept of evaluative infrastructures might unfold.

Evaluative infrastructure at work: illustrations from eBay

eBay (originally AuctionWeb) is an online auction platform that has grown rapidly since its founding in 1996 from a collectables marketplace with a small community of users to a global platform with over 150 million buyers and 700 million items for sale, generating $2.57 billion in annual transaction-related revenues. Central to eBay's story has been its early development of evaluative infrastructures (Baron, 2001), which Stone et al. (2014: 357) describe as "the world's largest and most widely imitated MCS [management control system]". Providing knowledge about people that would otherwise be private such as their reputation, history, and status (Wolf & Mahunna, 2005), and establishing the properties of products as the foundation of enforceable contract (Lewis 2011), the evaluative infrastructure provided anonymous and remote individuals who were unlikely to have repeat interactions and were selling items that cannot be touched, inspected, or verified with the trust to transact (Baron, 2001: 245; Cabral & Hortaçsu, 2004; Resnick & Zeckhauser, 2002; Adams et al., 2006; Lucking-Reiley et al., 2007). It did this, moreover, without the ability to directly control or assure the quality, safety or legality of the products and the people who operate on the site. Like all platform organizations, eBay maintained "no control over the

quality, safety or legality of the items advertised, the truth or accuracy of the listings, [or] the ability of sellers to sell items or the ability of buyers to buy items" (eBay User Agreement, 2008).

eBay provides an advantageous setting to consider platform organization, the development of novel forms of accounting alongside its classical counterparts, and the opportunities and challenges of moving our analytical thinking beyond a hierarchical consciousness. However, like other platform organizations eBay is highly secretive (Stone et al, 2014). Therefore, while well aware of the potential for some bias and also the need for further in-depth studies, we have gathered data for this section from a wide variety of primary and secondary sources such as investigatory journalism and academic research. This section has also been sent to and informally discussed with a member of eBay Labs with the aim to check accuracy and explore its propositions.

Ebay's evaluative infrastructure

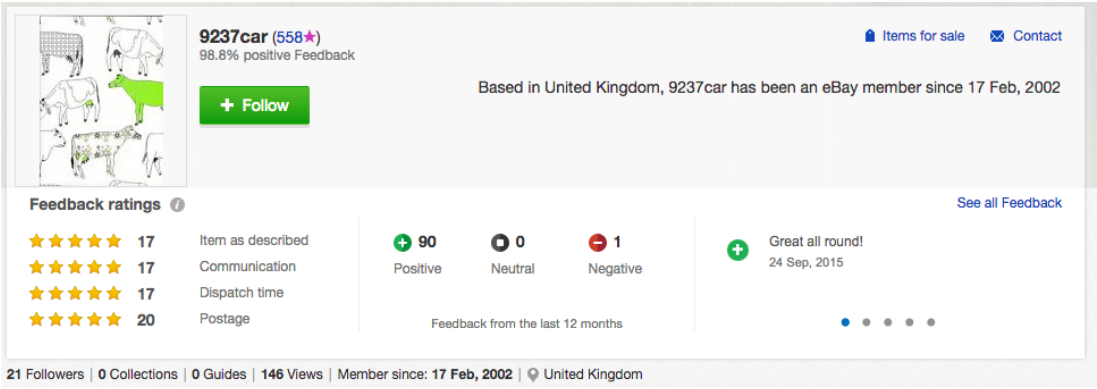
eBay's evaluative infrastructure originally consisted simply of a public discussion board called the "Feedback Forum" and unique user names assigned to each registered email address. These were features created initially as a means of easing the problem of directly intervening in and adjudicating disputes between an ever-growing set of users. As eBay's founder, Pierre Omidyar (2014), recalls,

> "About six months after I created eBay, I started receiving a spate of complaints. Everyone was complaining about each other. I felt very much like I was a parent who had to adjudicate the brothers beating each other up. It was like, "He started it!" "No, he started it." I realized this was going to be a big problem if it kept going this way".

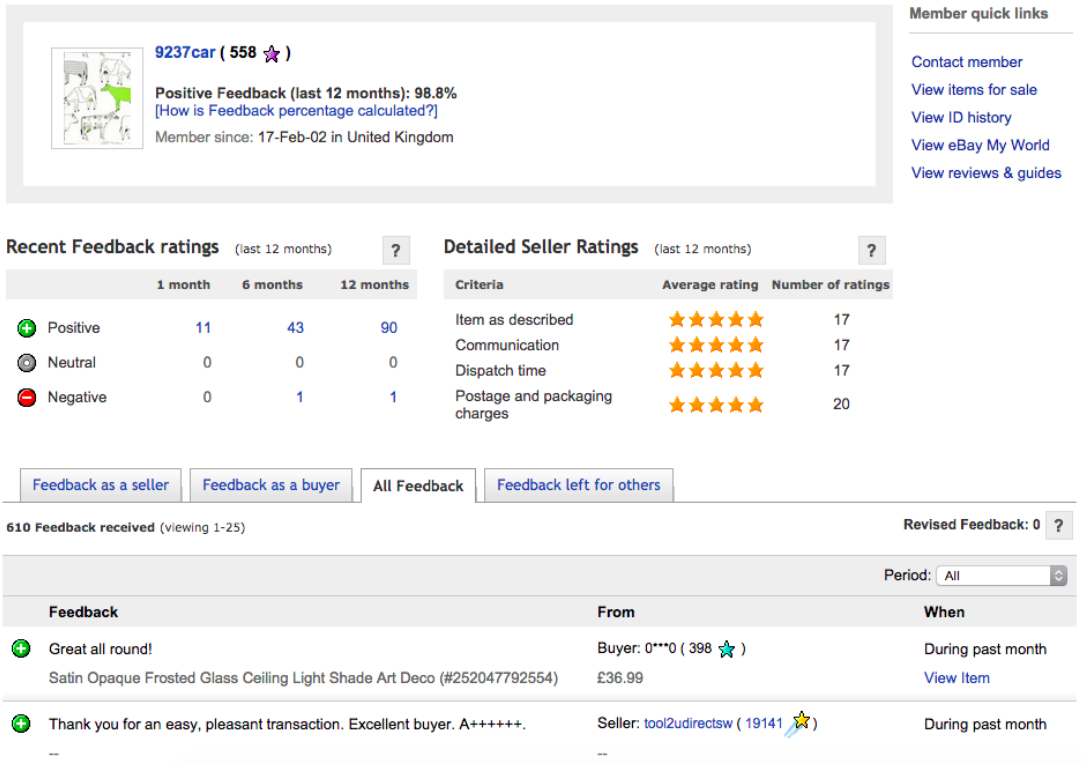
The evaluative infrastructure created to solve this problem provided a means of distributing the task of management that had originally and painstakingly been undertaken in-house. On the Feedback Forum, Baron (2001: 246) notes, "members established informal standards, provided feedback on other members' performance, and policed the site". Rather quickly, an informal neighbourhood watch group, "The Posse", even emerged to collectively determine and enforce against fraud (Hoyt & Baron, 2001). As one member recounts: we would, "ban together and find the bad guys and make their lives miserable […] If we heard of someone

who was defrauding people, we would all email them and tell them if they didn't make it up we would go to the police" (Phillips in Cohen, 2002: 52).

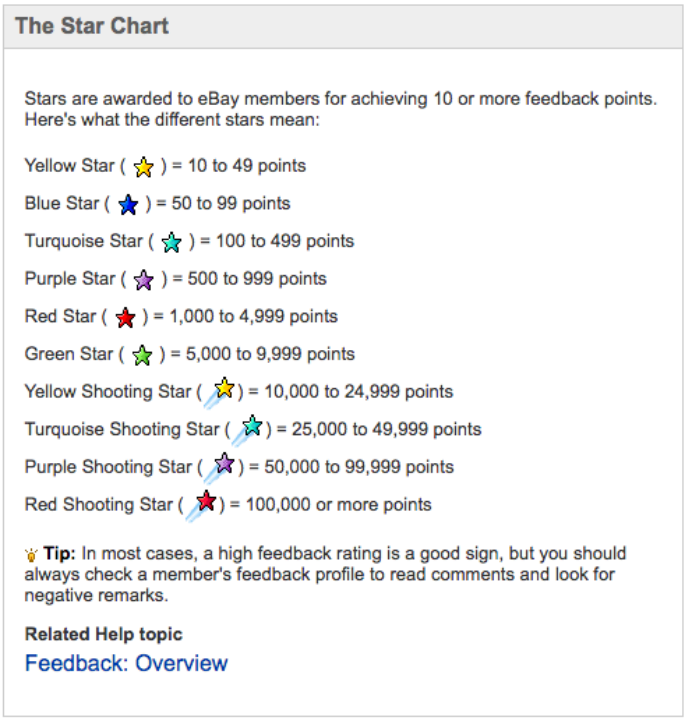
A private ordering emerged; it was said (perhaps overstated) that "trust on the site was so high and the feeling of community so strong that it was common for sellers to ship items even before they had received bidders' payments" (Baron, 2001: 26). On this basis, eBay quickly added additional features. This started with a system allowing users to review each other as "positive", "neutral" or "negative" and to leave a line of feedback or description (such as that at the bottom of Figure 2). Next, these reviews were aggregated into numerical scores for each user (positive reviews added a point, negative reviews subtracted one, and neutral reviews had no effect), and presented in terms of different chronological periods (see Figures 2 and 3). Following quickly thereafter, specific categories (item description, communication, dispatch time, and postage and packaging charges) for reviews were added based on the common topics of user reviews. These features provided the digital traces for making yet more distinctions and qualifications: cumulative scores were associated with the attainment of different coloured stars and shooting stars (see figure 4 below) and new privileges such as "power seller" status as punishments such as being "NARUed" or banned from the site (Klein et al, 2009; Zervas et al, 2015).



[Figure 2: summary profile]



[Figure 3: Feedback profile]



[Figure 4: The star rating system]

Within a matter of a few short years, eBay had populated an uncertain and potentially unknowable market with an ecology of figures, stars, signs, and symbols, as illustrated in Figures 2 and 3 above. What were once anonymous and remote buyers and sellers wary of online commerce, had become multi-dimensional representations (usernames, histories, feedback ratings, points, stars, and other descriptors) transacting at a significant scale, resulting in what we analyse as eBay's evaluative infrastructure. As already alluded to above, it is important to note that eBay can be read as a more or less traditional hierarchal firm with 12,000 employees; yet, what we are interested in is the fact that its value creation occurs on a platform which mobilises hundreds of millions of users and billions of dollars of transactions without eBay being able to control any of these fundamental activities through its traditional accounting regime. Hence in the following sections, we critically discuss key aspects of the development of eBay's evaluative infrastructure in relation to its properties of relationality, disclosure and protocol.

Relationality

The first key feature of the development of eBay's evaluative infrastructure has been to constitute performance, particularly in terms of emerging, distantiated and often quantified notions of quality and trust, as the matter of relations. An inspection of the ecology of devices that make up the feedback forum and user profile (Figures 2 and 3 above) shows that although one can discern an overall score for each user, in the case shown in figure 3 it is 558, linked with a star colour, the profiles do not define what is 'good' or 'bad'. This happens because the overall score measures the volume of positive transactions rather than their consistency (a new user with 10 positive reviews would have the same score as a user with 100 positive reviews and 90 negative ones—hence, notice the "Tip" in Figure 4). This also happens because users have different preferences, for instance, for communication over dispatch time, or for recent transactions rather than historical ones. All of these details can be found but they do not add up in to one stable object as a singular rating or ranking would do. While it may be relatively easy to discern proverbial lemons, there are many ways to order and relate to all of the other profiles that vary on many and overlapping terms such as for example the four dimensions produced in figure 2 which remain un-commensurated. Likewise, the written feedback that has no discernible structure but can be cast around any possible subject of concern. The relational character of feedback makes it potentially surprising and generative of new issues and possibilities.

As a result, the evaluative infrastructures can be seen to evaluate and calculate without a definition of what precisely is 'good' ('standard' or 'normal' in management accounting language; Miller & O'Leary, 1987). Instead, they engage with information asymmetry dynamically, creating rather than settling debates about people, goods, and qualities. Possibly as a feature intended to continue to offer competition and lower the barriers for entry, the picture which the platform seeks to provide is not the clear and parsimonious one of ranking and ratings (Pollock & D'Adderio, 2012: 258), but rather a complex set of possibilities for making connections which may not immediately be clear. Accounting, in other words, operates by creating relations between actions, objects and preferences, so as to engineer possibilities of a match.

Indicatively, studies show that, without any clear ranking, buyers "inspect and consider many other *detailed* pieces of information […] such as individual-auction level feedback reviews" (Weinberg & Davis, 2005: 1619). Sellers too engage in a complex set of activities to engineer a match. Consistent with the accounting literature, sellers engage in gaming activities (Argyris, 1990) such as "shrilling" and "feedback bombing", as well as getting caught up in self-fulfilling prophecies, whereby initial negative feedback increases the chances of receiving subsequent negative feedback (Cabral & Hortacsu, 2004: Saeedi et al, 2013). Sellers, however, also engage in strategies of "feedback and reputation management" (eBay, 2015a): a Goffmanian impression management 2.0 in which customers are segmented and a particular kind of a match is sought. Perhaps the starkest examples of such relational work can be seen on dating platforms such as match.com (the name is instructive!): the question to answer from the evaluative infrastructure is not so much 'is s/he a good person?', but 'is s/he the right person for me?'. Platforms accomplish this matching through their evaluative infrastructures which create the possibilities of an exchange that is not governed by a-priori determined categories or rules, but by the endogenously emerging properties which data production and mining allows (Weinberg and Davis, 2005; Roscoe & Chillas, 2014).

This evaluative regime is sometimes argued by platform owners to be less disciplining and more empirically driven than ordinal rankings and lists. But there are reasons to give pause to such optimism. Firstly, as Roscoe and Chillas (2014) show in their analysis of the online dating platform eHarmony, the infrastructure of matching might provide only an illusion of choice. While constituting the searcher as "the one who controls, selects and manipulates

potential matches", at the moment of selection, "it is *impossible* for either the searcher or the searched for to manipulate a choice in a way other than the interface requires" (Roscoe & Chillas, 2014: 819). Secondly, instead of opening up possibilities for knowledge creation, evaluative infrastructure can accentuate discrimination based on pre-existing distinctions (Gillespi, 2010: Edelman & Luca, 2014). Indeed, research shows on a variety of platforms, such as Upwork, Prosper, and Airbnb, those infrastructural design choices which allow for ever more customized matching (the ability of users, for instance to display pictures of themselves, and to display this in their profile) increase the levels of discrimination, for instance based on ethnicity (Luca, 2016). Thirdly, evaluative infrastructures are problematic because they constitute not only economic value but also life chances. In the case of eBay, reputation is not "there" to facilitate exchange; rather, reputation is the result of evaluative infrastructure's disclosing, constituting an asset which Fourcade and Healy (2013; 2016) described as "ubercapital"—the form of capital arising from the "digital record" which evaluative infrastructure unfurls. This is the reason why reputations are bought and sold on eBay and why sellers have sued buyers for leaving negative feedback (Med Express Inc. v Amy Nicholls and eBay Inc.; Baron, 2001). There are even online platforms (such as traity.com) whose sole purpose is to manage users' various forms of "ubercapital" which they acquire on other platforms, in social media, in computer games, and elsewhere. Attention to the elaboration of evaluative infrastructure highlights that problematic way in which organizations constitute, control and commodify capital from digital traces.

Disclosing values

The second key feature of the development of eBay's evaluative infrastructure has been the ongoing elaboration and stabilization all kinds of qualities, such as reputation, trust, service, accuracy, reliability, and even price. This process offers important reflections on the notion of disclosure, and the core tensions upon which it relies.

The concept of disclosing highlights the sense in which evaluative infrastructure constitutes values neither by tracking them to their source—an "infrastructure of referentiality" (Lezaun, 2006)—nor by transposing them upon a pre-established separation of ideal from the centre—as in the case of territorialisation. In developing its infrastructure, eBay did not seek to judge participant's characters or fact check the quality of their offerings. This was precisely the kind of centralized "adjudication" that eBay's founder sought to avoid (Omidyar, 2014). Such adjudication would have limited eBay's ability to scale, because of the resources

required and because doing so would make the company liable for the claims made in its site. Indeed, in a series of copyright-related lawsuits, eBay has relied on the argument that "with respect to the 'star' system and Power Seller' endorsements, […] they were not more than an indication of the amount of positive information provided by third parties, and so eBay was not responsible [for their claims]" (Chandler et al, 2007: 96).

Instead, eBay created and continues to create qualities through a process of disclosure, which is endogenous to the evaluative infrastructure itself. As noted above, the user profiles and reputations first emerged through the "private ordering" (Baron, 2001) that the functionality of the discussion boards and user names provided. As Cohen (2002) notes, in the early days of eBay there were a number of distinctive users that, working with the crowd, debated, established and enforced basic principles of what it meant to be 'good' or 'bad'. The addition of quantitative feedback ratings built upon and provided the conditions to enhance this private ordering. Ratings, which users could initially leave for each other even when they had not engaged in a transaction, largely reflected the ordering of the discussion boards. These digital traces allowed for further disclosure of reputation: the making of distinctions such as 'power sellers' and different coloured and shooting stars, and with eBay's in-house research lab—something most of not all platform organizations maintain—ever more differences and distinctions (Duh et al, 2002; eBay Research, 2015).

As platform owners, eBay did not seek to extend accounting as a means of territorialisation from the centre. Rather, they mobilized accounting throughout constant and continued experimentation (Ungerleider, 2014) and mining of information endogenous to the site. This is highlighted by the puzzlement of economists that find evaluative infrastructures to be capable of sustaining markets despite being plagued by factual inaccuracies, misleading claims, and unrepresentative assessments (Tadelis, 2016; Resnick, et al., 2006). Evaluative infrastructures work because they do something other than verify and validate the world as it is. Rather, they disclose the world that the digital traces and extensive data mining provide: a process of what Amoore and Piotulh (2015) describe as "little analytics" in which correlations and relations are found that have very little meaning a priori. Indicatively accounting was not a matter of imposing a pre-determined definition of "reputation" onto the platform users. In fact, eBay was concerned *not* to figure out for itself what "reputation" was; a thorough investigation of what lurked behind the numbers (the pursuit of referentiality) would have challenged its status, so essential to its business model, as merely

the “modern incarnation of the traditional newspaper classified advertisement and automated and accelerated for the twenty-first century” (*Gentry v eBay* in Cohen, 2002: 309).

However, the development of this evaluative infrastructure reveals that the relational world is not entirely immune to its ‘real world’ correlates. In response to high-profile accounts of fraud, gaming and feedback bombing, eBay was forced to extend its knowledge beyond its referential system through the addition of formal rules, an insurance system, a third-party payment system, verified accounts, and an in-house investigatory unit, Safe Harbor, to prosecute fraud (Gonzàlez, 2003; Stone et al., 2014). eBay, however, has only engaged in such activities reluctantly. As Stone et al. (2014: 368) note: “evidence from knowledgeable users, including statements on the eBay user forums, indicated minimal enforcement of these rules, except for the most egregious violators (Brunker, 2002; Walton, 2006)”.

eBay has also sought to manage the development of its ‘community’ throughout its history. Early eBay members were suspicious that the influential user, “Skippy”, may have been an eBay employee (Cohen, 2002). Similarly, although eBay maintains an extensive consultation process for making changes to the Feedback Forum, users have criticized what they perceive as the willingness of eBay to make changes intended simply to boost its revenue model, for instance in favor of high-volume sellers (Sandoval, 2002). Users explain, for instance:

> “The owners decided that all the users were untrustworthy, out to create scams, cheat each other, but worst of all, cheat eBay out of their rightful fees. They felt they needed to control the users, and began manipulating them” (CM Qxq in AuctionWatch, eBay Outlook, quoted in Boyd, 2002)

And:

> “Kind of makes you wonder about the meaning of eBay community and if it ever really meant anything to the leaders of eBay” (CMOldMan inAuctionWatch, eBay Outlook, quoted in Boyd, 2002).

Such quotes highlight that while infrastructural disclosure may be endogenous, it is also influenced by what might be called the “hidden cursor” of platform organizations: the commercial imperative for platform owners to maximize revenues via traffic to their platform.

The hidden cursor directs attention to the point that platform organizations rely upon two types of accounting. One type of accounting is conventionally hierarchical: as a firm, eBay accounts for its profits, assets and costs and controls hierarchically its in-house employees. Another type is the accounting that makes up the platform's ability to connect and relate millions of suppliers and buyers. As a platform, eBay's accounting mechanisms make it a producer of classifications looking for traces and combinations which can be pulled together to disclose the world in a new way. Unfolding in this way, evaluative infrastructures operate without a stable referent.[8] However, the classifications that matter are driven not only with a view to connectivity between seller and buyer but (also) by a commercial imperative to turn a value into a commodity or a resource for exploitation. This involves assembling relations that blend what is sought and what is known—they unfold distinctions of a community and at the same time they actively cultivate a community of a particular kind. Precisely because the hierarchical features of accounting persist to some degree, evaluative infrastructures create kinds of transparency in which it is difficult to decipher the commercial imperative upon which many design features are based from the collection of correlations, facts and digital features upon which those imperatives depend.[9]

Centralized power, decentralized control

The third feature of the development of the evaluative infrastructure pertains to the form of power which it assembles. The development and maintenance of evaluative infrastructure has established eBay as centre of power. Even though eBay asserts no responsibility for the claims made on its platform, it maintains strict control over the infrastructure and the data which it generates. Indeed, eBay has aggressively protected the data on its site from "crawlers" and auction aggregators (see *eBay v Bidder's Edge*, 2000) and it has engaged in secretive work to maintain and develop gaps in its infrastructure through work, for instance with law enforcement (Boyd, 2002; Duh et al., 2002). This activity affords eBay an extraordinary amount of power. By virtue of its ownership of the platform (as well as the

[8] A fascinating example of relationality is from the UK car insurance firm Admiral, which offered variable car insurance rates based on Facebook posts of its customers: the use of many exclamation marks for instance was read as indicative of assertiveness and hence aggressive driving behaviour. After a public outcry on privacy grounds Admiral had to shelf its idea – for now. See https://www.theguardian.com/technology/2016/nov/02/admiral-to-price-car-insurance-based-on-facebook-posts

[9] This is evidenced by Facebook's huge psychological experiment: as the Guardian reported, "Unbeknown to users Facebook had tampered with the news feeds of nearly 700,000 people, showing them an abnormally low number of either positive or negative posts. The experiment aimed to determine whether the company could alter the emotional state of its users." Even for the benevolent observer it must have become obvious that the difference between purporting and provoking has been conflated in the disclosing powers of platform accounting.

possibilities that the data generates), eBay is able to draw boundaries on what can and cannot be traded, outlawing, for instance, the sale of firearms, drugs, body parts, and alcohol and cigarettes, as well as determining how trade can take place, by, for instance, establishing PayPal as the site's de-facto payment mechanism (Cohen, 2002; Long, 2010). This picture portrays eBay as powerful actor; a spider in the middle of its web.

Yet, and somehow paradoxically, the source of this power lies in the distribution of control. Crucially, eBay's proprietary interfaces, from discussion boards to the feedback forum and even its fraud detection system, depend upon its users to work. They require that users evaluate, assess, control, and follow up what their fellow users do, creating much of the information that eBay's evaluative infrastructure collects, analysis and uses to organize its platform. eBay users become the auditors of platform activities, and in-house fraud investigation and protection becomes only a reluctantly-used last resort (Stone, Nikitkov, & Miller, 2014: 368). It is for this reasons that eBay's founder frequently states that "eBay's success as a company depends upon the success of the community" (Omidyar, quoted in O'Connor, 2012): the business model of all platform organizations (few fixed assets and extraordinary scale) depends on the widest possible distribution of control.

This relationship between power and control can be described analytically as protocol (Deleuze, 1992; Lessig, 1999; Galloway, 2004). Protocol can be defined as set of rules that governs exchange over distance. Protocol sets out the possibilities of exchange (say roads you could travel) without determining actual usage (highway or scenic route). In platform organization, protocol describes the widely-adopted standards that regulate the flow of economic exchange. The production of these standards on platforms requires that the centralization of power moves hand in hand with the decentralization of control. It resonates with the finding that eBay's success is the result not of the quality of its reputation accounting system per se – its better-funded rivals such as AuctionUniverse, OnSale, and Yahoo!Auctions had reputation accounting systems that were equally capable – but to the early constitution of that infrastructure *as* protocol (Cohen, 2002: 96).

Illustratively, eBay's power emerged through its ability to enrol its users within its distributed system of control. Well-aware of its reliance on platform users, eBay (like other platform owners) developed and continues to develop its infrastructure toward commercial ends through a series of cautious experiments, beta releases, listening exercises, and pilots

(see e.g. Kramer, Guillory & Hancock, 2014). Rather than constructing a "centre of calculation" (Robson, 1992) eBay established dependencies and obligations in order to attain its power. This mutual dependency was highlighted by a series of insurgencies led by disgruntled users in response to changes to the Feedback Forum throughout its development. In July 2000, for instance, a group of eBay users calling themselves the Discuss New Features or "DNF Posse" mobilized their eBay user names and discussion boards (sometimes extending them onto alternative websites such as the Online Traders Web Alliance and AuctionWatch) to organize a campaign to move one million eBay auctions to competing platforms in protest of its recent changes to site policies—the so-called "Million Auction March" (MAM) (Cohen, 2002).

This form of power, which is dependent on the distribution of control, may sound refreshing but, as Galloway (2004: 13), drawing on Delueze (1990), highlights, "protocol is to control societies as the panopticon is to disciplinary societies". Indeed, it develops and operates through a tension between the distribution of control and the centralization of power. On the one hand, the platform owners gain ever more power to make use of platform data and to design protocol rules. On the other hand, the platform owners gain this power through the distribution of control. Users may gain control but, because the emergence evaluative infrastructure as protocol creates ever bigger network effects (Haucap and Heimeshoff, 2014), users lose power to resist or even exit the platforms as switching costs increase with every new user. What we witness is an endogenous lock-in. This was illuminated starkly by the failure of the MAM to create viable competing protocol owner (Cohen, 2002: 259). It alludes to the tricky political economy of network effects in platform capitalism: as in the market for relationships, "low barriers to entry encourage a steady stream of new innovators and niche operations, typically network effects and economies of scale mean that the market is dominated by a small number of companies" (Roscoe & Chillas, 2014: 805).

In sum, protocol helps us to understand the power / control nexus that characterizes evaluative infrastructures. Firstly, power and control do not flow in only one direction (as in, for instance, the development of rules within an outsourced network) but develop at the same time, and in different directions. Secondly, power in platform organization lies in the number of users and big data, rather than in the ability to discipline and control individuals directly. Once platform owners encounter their users, of course, they face the classical task of extracting and controlling labour. But, they do not necessarily have to be controlled as

individuals; rather, with each new user, eBay recruits an additional auditor (in disguise) of platform activity.

Implications of evaluative infrastructures for accounting research

This concluding section will explicate the analytical vocabulary that allows us to characterize evaluative infrastructures as novel mode of accounting and to go beyond the "hierarchical consciousness of accounting" which Hopwood (1996) called for.

Relationality

The case of eBay highlights the infrastructural character of a heterachical mode of accounting. Evaluative infrastructures are assemblages of heterogeneous elements that create relations between elements across space and time. As such, we showed that they are not singular mediating devices that strive for referentiality between objects and representations. Rather, they are ecologies of interacting devices that generate relations (not references) between people's actions, behaviours, preferences and objects.

The concept of infrastructure highlights this notion of relationality as opposed to referentiality in accounting research. Referentiality is a key notion in accounting, even when it departs from the idea of representational accuracy. As Power highlights, the practice of accounting and auditing typically relies on the assertion that realities "can be verified by the appropriate interpretation and collection of evidence" (Power, 1997: 69)—hence the evidentiary primacy of the notion of an 'audit trail' as a series of traces that can be followed to corroborate accounting's claim. Accounting researchers, along with historians (Porter, 1996; Daston & Galison, 2010) illuminating the social specificity of the nature of knowledge, have long problematized this notion of referentiality (Stamp, 1981; Power, 1997; MacIntosh et al, 2000). Yet, they have far from discarded it altogether. In place of representational accuracy, they advance the notion of "likeness" (Mouritsen, 2011) and the power of accounting to bring one representation of reality, among many possibilities, into existence (Miller & Power, 2013). Here referentiality is not abandoned, but reified with power; it is maintained to exist but only through will. Indeed, much of the accounting literature suggests that accounting is about naming things that are brought to exist and then given a stable form as an unambiguous bureaucratic referent. In this sense accounting "constructs" its objects: the retired person is *constituted* as an economic agent (Graham, 2010), the brand is *reframed* as an asset (Power, 1992b), the office is *transformed* to be

efficient (Jeacle & Parker, 2013) to name but a few examples. In these cases, accounting builds a stable reference through a singular device or evidentiary path, as a matter of developing a clear programmatic agenda.

Evaluative infrastructures differ: they are not referential but relational. They are part and product of an ecology of devices that connect, and through this work of connecting they change the objects they relate to each other. Through connecting events, actions, behaviours, decisions (clicks) and assessments by third parties on eBay, new qualities such as reputation or trust come to the fore. These qualities are not a result of referencing or trailing, but of relations that the infrastructure engenders without altering the connected objects themselves. Take the example of credit scoring technologies of online lenders such as Wonga, a UK based online lender of last resort (Deville, 2013). Within six minutes an application is processed, and if approved within 15 minutes the money will be wired to the customer's bank account. The key challenge is evaluating the customer's creditworthiness. Wonga does not rely on third party scoring technology but has developed its own evaluative infrastructure: It searches through 8,000 different data points to evaluate a potential lender, including: From which browser was the site accessed? With which device was the site accessed – a cutting edge smartphone or an old desktop computer? Was the site accessed directly, via a search engine or an ad? How often was the site visited by the potential lender? And at which time of the day (or night) did the customer inquire for a loan? Even the credit application process feeds into the evaluation: the time a customer takes to fill out the online form is recorded and feeds into the overall credit score (assuming that a creditworthy person types quickly and makes few mistakes). Finally, the algorithm makes the decision about the loan approval; no human is involved in the decision-making process. As this example shows, constructing values (i.e. creditworthiness) is not about tracing, but of constantly re-contextualizing and drawing together a myriad of relations in search of what could matter.

Hence, evaluative infrastructures are contextualizing machines: they constantly link events, actions, behaviours, decisions (clicks), assessments and other traces left unintentionally and unconsciously (such as speed of typing, time of access, or browser used to access site) – all of which are used to build a web of context around objects and subjects. Past buying behaviour leads to personalized recommendations for future purchases: evaluative infrastructure creates *patterns*, relentlessly connecting, comparing, and contextualizing. This leads to an endogenous ordering as infrastructure-immanent activity as opposed to external categorizations.

Disclosing

This leads to the second key insight that follows from our analysis: the generativity of evaluative infrastructures. Operating referentially, accounting is often said to be a matter of territorialisation: of naming things so that they become bureaucratically durable. Power (2015), for instance, quotes Lezaun (2006) who talks about "infrastructures of referentiality" as the "creation of a set of administrative practices and detection instruments" which are capable of defining, cornering, singularizing, counting and controlling its objects that are made durable and controllable through this very practices and instruments (Lezaun, 2006: 501).

Evaluative infrastructures, however, do not territorialize or capture objects through their operations; rather, they disclose new worlds. This notion of disclosing is different to its usual meaning in financial accounting. Disclosure as in *publishing a financial statement* means bringing into the open what is important yet hidden. In our context disclosing means "to create an openness wherein things and people can show up" as Spinosa et al. (1997) argued. Here what is important is not yet known. Instead, it is about creating the condition for the possibility of hitherto unknown things to surface. In this sense, disclosing is about exploration, not exposure.

For instance, "trust" is an object that eBay's infrastructure discloses: for the better part of human history, trust was an interpersonal attribution that required judgement. And judgement required repeated engagement with a person. Trust, as such, was not simply there for eBay to account for. But neither was trust an empty canvas which eBay merely needed to paint. Rather, eBay's evaluative infrastructure disclosed a new form of relationality in which trust between anonymous actors could come into existence: through feedback loops, ratings, comments, and other evaluation mechanisms trust came into existence as a quantification. Hence, it is unsatisfactory to say that evaluative infrastructures "reframe" or "constitute" trust because trust is formed and disclosed via evaluative infrastructures that generate opportunities to connect just like a new highway built into wilderness discloses the opportunity to travel, visit and settle. It is equally unsatisfactory to argue that trust is "socially constructed": at eBay trust is the result not of constructions but of infrastructural disclosure that brings into being a plane of possibilities that did not exist beforehand (Lury & Marres, 2015). This effect requires critical scrutiny as evaluative infrastructures present classification situations (Fourcade & Healy, 2013; 2017) that are different to traditional

class(-ification): here people are sorted out according to what the "infrastructure of scoring" discloses, giving rise to a new "Lumpenscoretariat" (Fourcade & Healy, 2017).

In so doing, evaluative infrastructures disclose values that represent the resource base of economic activity. As shown, eBay's evaluative infrastructure discloses trust as key currency without which it could not operate. Through its evaluative infrastructure, eBay creates the non-economic values it relies on for its economic success. Consequently, eBay's economy is not "embedded" in society; rather, eBay's evaluative infrastructure creates the necessary socio-cultural conditions for its economic activity to flourish. If the (monetary) infrastructure of the traditional economy was controlled by central banks, emerging evaluative infrastructures are the decentralized issuers of new currencies enabling new forms of exchange and accumulation (Beniger, 1989).

Protocol

Evaluative infrastructures produce novel apparatuses of power: they are not centres of calculation that allow action at distance, projecting power to the periphery. Rather, evaluative infrastructures produce a more differentiated regime: in evaluative infrastructures control is radically distributed, whilst power remains centralized. We suggested analysing this relation between power and control as protocol.

Protocol is a concept in contradistinction to disciplinary power (Deleuze, 1992). Disciplinary power reigns through minute control: Foucault's famous analysis of the body of the soldier or the power effects of the Panopitcon are based on a form of power that capillarily seeps into every fold, every crack, and controls subjects from the inside. Of course, analytically Foucauldian power was always in need of an author to provide strategic direction – or at least a souffleur to provide coordinating guidance. This role was mostly more assumed than articulated in the background through big brush schemes such as rationalization or marketization or managerialization.

Evaluative infrastructures invite an alternative understanding of power. They introduce the important difference between power and control. In eBay's evaluative infrastructure control is decentralized, whereas power remains centralized. eBay exercises power through its infrastructural design, maintaining standards, imposing what counts and how to count, excluding users, and introducing rules. Through its infrastructure, eBay "makes up" its users

(Young, 2006). The heart of evaluative infrastructures, where the designers of its elements and operations sit, is shrouded in mystery and secrecy as Canetti (1973: 253) observed so aptly: "Secrecy lies at the heart of power". In fact, eBay, like other platform organizations, is notoriously secretive about its evaluative infrastructure; it is as if the evaluation seemed to be premised on the fact that its production has to remain secret in order to stay truthful. Whilst there can be no doubt of the centralized power of eBay as a firm, control itself is decentralized and distributed alongside the production processes of eBay as a platform organization. As a firm, eBay might reproduce accounting's hierarchical consciousness; however, as a platform, eBay's evaluative infrastructure illustrates a heterarchical mode of accounting. Rather than being a coordination mechanism that provides the locus of "hard-wiring" internal control, evaluative infrastructure enables distributed and outsourced "soft-wired" mechanisms to control and coordinate decentralized value creation processes.

Evaluative infrastructures, as such, are a governing apparatus in which control is exercised as part of production and consumption processes, and conducted by users who take on the task to judge quality. They take part in the construction of different types of subjectivities. these subjectivities differ from those identified by Miller and Rose (1990) who talked of the "calculating self" and of a "new economic citizenship" as modes of subjectivization in which "the economy" (Miller & O'Leary, 1994) is something that subjects encounter, receive, and work within. Here, the subject is the outcome and result of economic power and calculative control. eBay's evaluative infrastructure gives rise to different subjectivities, an "entrepreneurial self": for sure, this self is a calculating one as well, but one that calculates others in an attempt to relate to the world in a multitude of ways, always re-evaluating interpretations, patterns and contexts in which objects and subjects are disclosed.

Conclusion: towards a research agenda of accounting for platform organization

This paper's ambition has been to challenge accounting's hierarchical consciousness through developing the concept of evaluative infrastructure. Evaluative infrastructures are not singular mediating devices but interacting ecologies; they do not capture or reign in but disclose new worlds; and they do not project power from the centre towards the periphery but exercise power through radically decentralizing control. As the illustrative case of eBay highlights, evaluative infrastructures focus attention on the questions of what precisely is new in the new economy of platform organization. The periodization, which this research

has alluded to in its explication of a new organizational form, is a dangerous undertaking. It implies a break which is artificially totalizing and discontinuous. Hierarchies and markets, of course live on, even within platform organizations; managers, not history, confront managerial dilemmas and choose how and on what terms to respond to them. As such, management accounting and its hierarchical consciousness have a significant—and in our rendering a perhaps sometimes deemphasized—place in theorizing the prevalent patterns of organizational change. However, it was Foucault, the inspiration for so much of accounting's current critical theorizing, that insisted and illuminated clearly the analytical benefits of thinking in terms of the assemblages of historically specific movements that constitute social reality. In this spirit, and drawing on Deleuze (1992), who has critically embraced Foucault to outline the emergence of a "control society", we offer this reading of evaluative infrastructure as a possibility for allowing a critical debate of the historical differences that constitute capitalism's evolution, and for further, more immersive, empirical studies that would reveal additional and perhaps more complex dynamics. We hope that evaluative infrastructure's new vocabulary is not seen as what Freud called narcissism of minor differences but as useful analytical tool towards conceptualizing a heterarchical mode of accounting. The stress-test for such an endeavour is: what novel problematizations does the concept of evaluative infrastructure invite?

First, evaluative infrastructures give rise to new questions in regards to the relation of accounting and time. Evaluative infrastructures embody expectations about the future. This can lead to self-fulfilling prophecies and other forms of reversed causality in which expectations of future behaviour shape present behaviour. A second important temporal dynamic are network effects that might turn infrastructures that have grown to critical mass into de-facto standards. A third and closely related temporal dynamic of infrastructures are path dependency effects: because infrastructures require substantive political, cognitive and financial investments to be built and maintained, they are difficult to alter, even if the function they were designed to support has changed. Together these mechanisms engender a dynamic that shapes the evolution of evaluative infrastructures. For instance, path dependencies and network effects may deprive evaluative infrastructures of their disclosing capacity and turn them into administrative machineries (Zittrain, 2006). The playful entrepreneur gives way to the gaming exploiter. Future research may focus on such non-linear temporalities and dynamic aspect that evaluative infrastructures bring about.

Second, evaluative infrastructures call for an extension of the concept of space in accounting studies. Work on double-entry bookkeeping illustrated how a differentiated calculative space unfolded and enveloped economic activity. Studies of mediating devices highlight material, obligatory points of passage that format actions as well as actors. The study of evaluative infrastructures may reveal new socio-economic topographies that are shaped by heterarchical accounting practices. These topographies neither represent calculative spaces (bookkeeping), nor concrete spaces (such as the factory floor) nor abstract spaces (such as the brand); rather, they are emerging spaces of values (trust in eBay; skills in LinkedIn; reputation in Airbnb) that are disclosed through evaluative infrastructures. As over time different infrastructures are layered on top of each other, they will give rise to a layering of spaces which interfere or resonate with each other in multiple ways (Dourish & Bell, 2007). This implies a move away from the idea of mediating devices (which assumes two spatial strata between which to mediate) towards the image of spatial layering of new socio-economic topographies.

Third, the focus on evaluative infrastructures extends the expertise of accounting with potential implications for the profession. Accounting is a way of knowing about the world that supposes a certain type of expert professional, the accountant, as the central figure where receipts meet, sums are added up, and balances are calculated (Power, 1992a). In evaluative infrastructures it is not the professional accountant who does the accounting, but an assemblage of programmers, users (knowingly or not) and algorithms. Hence, evaluative infrastructures may be analysed as forms of distributed accounting akin to distributed cognition (Hutchins, 1995; Giere, 2002). We encounter a "collective epistemic subject" (Knorr-Cetina, 1999) where the expert is not the professional accountant, but the system itself. The professional accountant may even become de-skilled as the system becomes more intelligent (Hutchins, 1995). For accounting studies this calls for a dynamic perspective on the practice of accounting, shedding light not on accounting as knowledge that is possessed and guarded by a group of professionals but on accounting as dynamic process of creating knowledge that draws on and draws in many actors, including machines (Giere, 2002).

Forth, and closely related, evaluative infrastructures invite further reflections on the role of information and communication technology for accounting. Big data for instance is an important precondition to and outcome of the development of evaluative infrastructures. Big data is defined by a deluge of data points, extraordinary computing powers, and constant possibilities for experimentation. Today's platform based firms, such as eBay, Uber and

Airbnb but also its smaller siblings in the emerging fintech industry or blockchain banking are big data firms: their competence is data creation, collection, experimentation, and analysis (McAfee & Brynjolfsson, 2012). Technophile writers announce the "end of theory" (Anderson, 2008) implying essentially that big data will speak of and for itself. The concept of evaluative infrastructures serves as reminder for the relentless background work that has to be accomplished in order to turn 0/1s into voices and values. Exploring evaluative infrastructures offers one possible conceptual trajectory for a further critical engagement of accounting studies with big data and other emerging phenomena (Rogaway, 2015).

Fifth, by focusing on evaluative infrastructure accounting may enter a fruitful dialogue with organization theory and the sociology of organization, both disciplines struggling to understand platforms as alternative mode of organizing economic activity. Scholarship assumes that the characteristics of ties (defined as either strong, weak or missing) explain behaviour and structure of networks (Granovetter, 1973; Burt, 1995); similarly, trust has been analysed as coordination mechanism in clan-like organizational forms (Ouchi, 1980). However, platform organization such as eBay are neither clan-like nor can a theory of linkages explain its organization; recourse to fuzzy notions such as "community" signal scholarly helplessness. Evaluative infrastructure may be a useful concept to further analyse and dissect part of the organisational structure of platforms, taking into account at the same time their material and symbolic, local and global, social and technical dimensions.

Finally, evaluative infrastructures might spark debate about platform organizations' political economy. Platform organizations in general and especially collaborative consumption are heralded as cure against hyper-consumption and cue towards sustainability as people share excess resources with each other (Botsman & Roger, 2010). Others see them as "neoliberalism on steroids" (Morozov, 2013) and argue against platform capitalism and for platform co-operativism (Scholz, 2016). An analysis of evaluative infrastructures approaches the phenomenon not ideologically but, following Foucault, pragmatically: indeed, evaluative infrastructures are at play at Uber just as well as at its cooperative twin, the mobility platform LaZooz. As such evaluative infrastructures span ideological boundaries, suggesting that rhetorical disagreements are in reality based on shared intellectual and material investments. Both Uber and LaZooz give rise to classification regimes that engender social identities, shaping life-chances (Fourcade & Healy, 2013). Living on the wrong side of the tracks determined the lives of many people in the 20th century; in order to understand how

life-chances are shaped in the 21st century, perhaps we should ask what it means to live on the wrong side of the virtual tracks of evaluative infrastructures.

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