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Performing the responsive and committed employee through the sociomaterial mangle of connection

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Abstract

In the light of increasingly mobile and flexible work, maintaining connections to work is presented as vital. Various studies have sought to understand how these connections are experienced and managed, particularly through the use of smartphones (e.g. Mazmanian, Orlikowski & Yates, 2013). We take a new perspective on this practice by bringing together the conceptual fields of sociomateriality (Pickering, 1995) and identity work (Svenningsson & Alvesson, 2003). Through the analysis of narratives

produced by smartphone users in an engineering firm we argue that connection can be viewed as a sociomaterial assemblage that performs particular identities: being contactable and responsive; being involved and committed; and being in-demand and authoritative. Through this analysis we both elaborate the concept of connectivity at work and indicate how the material is implicated in identity performances.

Introduction

It is claimed that even with the increasing prevalence of virtual and itinerant work employees can maintain a sense of connection to colleagues and organization through their use of mobile technologies (Elliott & Urry, 2010). Indeed an advertising slogan for the Blackberry™ has been 'Always on, always connected' (Baron, 2008). Unpacking this connected ideal (Turkle, 2008; Agar, 2013) formed the impetus for our research. Where others have expanded our understanding of the extent or patterns of technological connection (e.g. Kolb, Caza & Collins 2012; Mazmanian, 2013), we explore what is achieved through connection in practice. Our case organization was a particularly fruitful context in which to explore this issue. Rail Engineering is a UK firm responsible for the running and maintenance of the rail infrastructure. As such it is largely defined by its ability to enable continuous geographical connectivity and constant human mobility.

Integral to the performance of connection are a variety of mobile technologies. One contemporary example is the smartphone, a mobile handheld device providing multi-functional computing, including a variety of opportunities for connection on the move (e.g. email, phone, instant messaging, texting) (Matusik & Mickel, 2011). Commentators are agreed on the ubiquity of these devices (e.g. Srivastava, 2008), however, it is also recognised that their spread has not had a uniform effect (Agar, 2013). Organizational research has considered the ways in which the smartphone has

been appropriated into working lives (e.g. Mazmanian, 2013), with a particular focus on the implications for work-life balance given the potential for constant connection. Empirical studies have provided evidence for both increased individual flexibility (e.g. Golden & Geisler, 2007) and for increased work extension into leisure and family life (Middleton 2008); and, indeed, both at the same time (Mazmanian, Orlikowksi & Yates, 2013).

Kolb et al (2012) take issue with the idea of constant connectivity, arguing we should carefully consider the extent of connectivity as employees may exert control over this. Some commentators have explained such variance with reference to individual or group reactions and preferences. For example, MacCormick, Dery and Kolb (2012) suggest that the extent to which increased engagement with work offered by smartphones might be taken up is dependent on the centrality of work to the individuals involved, leading them to identify 'dynamic connectors', 'hyper-connectors' and 'hypo-connectors'. Similarly, Matusik and Mikel (2011) conclude that users have different reactions to smartphones – enthusiastic, balanced or making tradeoffs – dependent on the pressures they feel (both intra- and extra-organizational) to be responsive. Recently, Mazmanian (2013) has suggested that such outcomes vary according to occupational grouping; different uses (always on vs. flexibility) being the outcomes of different occupational framings.

However a focus on individual and group differences has the potential to underplay situational influences. Wacjman and Rose (2011) argue that patterns of connection are related to organizational culture and practices. They also note the role of the technology itself, concluding that communication is 'shaped by the interaction between the materiality of communication media and organizational norms, corporate culture, and employees' perceptions of their work roles' (Wacjman & Rose, 2011: 957). Such analysis reveals that connection is simultaneously about electronic signals and social relationships. Accordingly, Wacjman and Rose (2011) interpret employees' patterns of connectivity through a sociomaterial lens: a complex 'entanglement of worker agency with both the materiality of communication media and the social context in which they are used' (p. 956). Orlikowski (2007) recommended the sociomaterial lens to organization studies scholars, urging us to recognise that materiality is constitutive of organizational life. She contends that the smartphone's push-email capability is entangled with individuals' choices to remain continually connected to produce new organizational norms of communication. She concludes that 'focusing on these sociomaterial aspects of everyday practices will open up important avenues for examining and understanding the ongoing production of organizational life' (p.1445). We also adopt a sociomaterial lens to explore individual's narratives of connection. In this case, we draw on Pickering's 'mangle of practice', in part (as more fully explored

below) because the mangle metaphor helpfully represents the complex interweaving of the individual, social, organizational and material necessary for connection.

As noted above, Mazmanian (2013) draws on notions of occupational identity in explaining patterns of connection, while Wacjman and Rose (2011) suggest that 'future research could usefully investigate the extent to which the assessment of work performance relies upon employees' presentations of themselves via communication media' (p.959). Exploring the performance of connection in Rail Engineering highlighted the close intermingling of sociomaterial connection and identity performance as employees endeavoured to present positive identities within an organizational imperative for connection. Consequently, our analysis led us to consider what being connected achieves for employees in terms of identity work.

Below we first give some more detail on the overlapping research domains of sociomateriality and identity work to provide the theoretical background to our study. A description of our case organization provides context for the analysis of narratives of connection that follows. In conclusion we argue that our work contributes to the existing literature both by elaborating the concept of connection from a sociomaterial perspective and illustrating how we might incorporate materiality as part of identity work.

Sociomateriality

The history of organizational and critical studies of technology involves an ongoing struggle to conceptualise relationships between the social and the material: does human action shape the material or the material shape human action? (see Orlikowski & Scott, 2008 who review this debate). A recent conceptualisation asserts that the social and the material should not be viewed as separate entities but rather as sociomaterial assemblages: 'a constitutive entanglement that does not presume independent or even interdependent entities with distinct and inherent characteristics' (Orlikowski & Scott, 2008: 456).

Developing from work in the Social Studies of Technology, theorists (e.g. Barad, 2003; Callon, 1999; Pickering, 1995; Suchman, 2007; Yoo, 2012) have proposed a variety of ways of understanding this 'constitutive entanglement'. A common notion is that we should not locate agency exclusively in either the human (in complete control of technology use) or the material (determining human activity), but rather see a mutual agency emerging from their intra-action (Barad, 2003). In other words, sociomaterial assemblages produce the capacity for action: 'it is through the specific sociomaterial intra-actions of an "apparatus" or sociomaterial practice that an observed phenomenon or "object" is performed' (Doolin & McLeod, 2012: 572). As a consequence, Pickering argues that we should consider the emergence of material agency as entangled with human agency in a 'dance of agency' (p.21). While humans may intend to utilise the material in certain ways, intentions are not always realised as material agency resists

manipulation in unexpected ways. Pickering (1995) contends that humans may then have to accommodate to this resistance by revising their intentions, and/or the material form of the machine, and/or the surrounding social relations. This unpredictable dialectic of resistance and accommodation Pickering terms the 'mangle of practice', through which material and human agency are '…constitutively entwined' and over time 'interactively stabilized' (Pickering, 1995: 17) to produce 'a relatively fixed cultural choreography' of 'the capture of material agency' (p.51) and disciplined human practices. In other words, the process of mutual tuning over time results in (relatively) stable sociomaterial practices.

We adopted Pickering's perspective on the sociomaterial to analyse connectivity: examining how human intentions to be connected and the material contours of smartphones may reciprocally perform connection, and how such performances may become both stabilised, yet continue to be open to revision through resistance and accommodation. The concept of the mangle encapsulates the complexity of the sociomaterial practice of connectivity that potentially encompasses a chain of agencies: it is by capturing the material agency of smartphones that humans connect with other humans, within a network of other entangled human and material agencies. Indeed Jones (1998) suggests that we might think of the sociomaterial configuration as a 'double mangle' such that 'human agents seek to channel material agency to shape the actions of other human agents' (p.297). Through our research we argue that this idea of

the double mangle may be usefully developed to incorporate power relations into our consideration of sociomateriality.

From a sociomaterial perspective such as Pickering's we must recognise that the materiality of the smartphone cannot in itself create connection simply by virtue of it encompassing microchips, screens and buttons (Agar, 2013). Such affordances (Gibson, 1979), it is cogently argued by Bloomfield, Latham and Verdubakis (2010), are ambiguous and can only be understood as a situated cultural practice. Thus, while the smartphone may offer a range of connection possibilities, and the opportunity to regulate such connections (Baron, 2008), these are in no sense determining of action. Our interest must be in when and for whom an affordance is seen as such rather than viewing affordances as stable indicators of capacity for action. The capacity for action comes from the enmeshing of material affordances, human understanding, situated practices and cultural discourses as a sociomaterial assemblage.

As outlined above, exploring the sociomateriality of connectivity within Rail Engineering oriented us to a consideration of how the entanglement of social and material may give rise to new forms of identity work. We therefore turn now to a consideration of current theorising on identity work and explore how we can incorporate attention to the material in the production of identity performances through a sociomaterial lens.

Identity work

There is an extensive research literature examining the ways in which employees construct a convincing identity, and how such identities are maintained, challenged and resisted over time and in different contexts (e.g. Svenningsson & Alvesson, 2003; Pratt, Rockmann & Kaufmann 2006; Watson, 2009). It is argued that we need to work at constructing identities favourable to us and avoiding the unfavourable (e.g. Alvesson, Lee Ashcraft & Thomas 2008; Ybema et al, 2009). However, while we may strive to construct positive identities for self, our identities are never entirely under our own control but are 'a socially negotiated temporary outcome of the dynamic interplay between internal strivings and external prescriptions, between self-presentation and labelling by others, between achievement and ascription and between regulation and resistance' (Ybema et al, 2009: 301).

For analytical purposes, McInnes and Corlett (2012) distinguish between two main processes in identity work: *ideational* and *relational* positioning. They summarise the first as 'the way that individuals position themselves relative to, and in turn are positioned by, the ideational notions of who they should be and how they should act that are informed both by societal discourses … and local debates on what one's job entails' (p. 27). Such ideational notions provide resources that justify particular claims to identity for the individual but also fulfil a regulative purpose in constraining the legitimate positions available within a network of power relations (Alvesson &

Willmott, 2002). In the second case, they suggest that we also position ourselves in relation to various Others. Indeed, Ybema et al (2009: 299) suggest that 'it is the varieties of self-other talk that emerge as the critical ingredient in processes of identity formation'. Drawing attention to similarity and/or difference is one way in which we make claims for our own identity: the Other is often a specific contrast (e.g. Fournier, 2001) but may also be an implied contrast (Hall, 1997).

Such a view sees identity as an ongoing process rather than an internalised and stable state. Indeed, identity may be viewed as *performed* (Butler, 1997): constituted in what we do rather than an essentialist attribute. 'One "exists" not only by virtue of being recognized but, in a prior sense, by being recognizable' (Butler, 1997:5) because current identity performances cite previous identity performances, such that particular subject positions become norm. It is within the constraints of these sedimented subject positions, that local and temporal identities are enacted. Re-performances may enact what then appear to be inherent individual characteristics, however, as no performance can completely replicate previous performances, the possibility of making alterations always remains: 'every act of reproduction risks going awry or adrift, or producing effects that are not fully foreseen' (Butler, 2009: iii).

Much identity work is accomplished through talk-in-interaction: we perform our identities as we talk about our experiences and justify our interpretations. Indeed, there is particular interest in the role of narrative in such performances (Watson, 2009). As a

'form of organizing' (Czarniawska, 2011: 342) narratives bring various elements of experience together and provide meaning and structure (Rhodes & Brown, 2006). A 'good' identity story according to Ibarra and Barbulescu (2010) is one that is consistent (e.g. always available when the smartphone rings), and that is regarded as legitimate by organizational audiences (e.g. recognising the need for connection). We might also say that a 'good' story strives towards the achievement of a positive (ideational) identity (Kenny et al, 2011). Of course, as above, we are not altogether in charge of our own stories: competing narratives abound (Boje, 1995) and we are 'constrained in the stories [we] tell about [our]selves, not least by the cultural resources at [our] disposal and the expectations of others' (Rhodes & Brown, 2006: 176).

Material aspects of identity work have been relatively neglected in the identity work literature (Iedema, 2007; however see Pratt & Rafaeli, 1997; Elsbach, 2003). In this paper, we address the issue of how the material may be brought into identity work and how a consideration of identity work may enhance our understanding of sociomaterial connection. From these brief reviews of contemporary theorising in the areas of identity work and sociomateriality, we can see some areas of both similarity and tension in these literatures. Both identity and sociomaterial assemblages are said to be performed, brought into being, their positioning sedimented or routinized through repeated performances, but capable of enacting new subjectivities or agencies. A specific tension, however, is the treatment of agency, particularly intentionality.

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Identity work depicts individuals striving to create particular impressions of self, although emphasising this is not wholly under their control (Ybema et al, 2009). Some theorisations of sociomateriality claim to eschew any idea of intentionality, for example, in wanting to treat machines and humans as symmetrical in their agency (e.g. Callon, 1999). Others may have more sympathy for humans having intentions, even if these might be emergent (Suchman, 2007). As outlined above, Pickering's concept of the mangle of practice is sympathetic to the idea of intention even if such intentions are then transformed in the mangle of encounters with material agency. Thus humans may have the intention of achieving culturally-inspired goals (e.g. ideational identities) but in encounters with the material such intentions may be perverted or revised, forming a new sociomaterial agency. In what follows, we specifically explore how narratives of connection can be said to describe a complex entanglement of the human and the material; a new sociomaterial agency that produces particular identity performances.

Case organization and method

Rail Engineering has a large and varied employee base, with City offices and operational staff spread across the country. City offices house corporate managers and technical specialists. Across the country, operational staff and their immediate line managers, organised into regions, are available to respond to any incidents (including equipment failures, accidents, acts of vandalism etc.) and ensure the safe running of the

system as an important priority for the organization. Operational staff have an on-call and shiftwork system to support round-the-clock working.

Our interest in this organization was partly driven by the fact that engineering is an unusual context in which to explore smartphone use, most previous studies being in the financial and services industries (although see Allen & Shoard, 2005 for an exception), and also by the widespread distribution of smartphones, from the CEO to frontline operational staff. However this interest was also piqued by the work itself as an example of connectivity: an institutional narrative of connection is reflected in both non-stop trains (the importance of avoiding incidents that might halt train traffic) and non-stop work (a 24/7 work system).

Given this context of geographical spread and 24/7 operations, it is not perhaps surprising to learn that Rail Engineering was an early adopter of mobile phones, and then, in the mid 2000s, smartphones. Initially, smartphones were purchased for more senior staff, however, over time, they became the mobile communication device of choice. In policy documents smartphone allocation was stated as on the basis of 'a critical business requirement for access to email when away from the office' (Rail Engineering Mobile Telephony Policy, 2009). The justification of smartphone purchase is therefore one of need for connectivity. However, 'critical business requirement' had become increasingly liberally interpreted and seemed relatively easy to legitimate given the emphasis on 24/7 working. Indeed, other uses (informally) emerged as strategically

important, particularly in view of the relationship between Rail Engineering (who manage the tracks) and the organizations who manage the trains. In the event of any delay to operations, one or the other is fined, and so allocating responsibility for the delay is critical. As we shall see below, this sharpens the need for prompt communication, timely resolution of incidents and for sharing digital images. So smartphones contributed to both performance and contractual obligations, although their role in fulfilling these were not formally evaluated. Indeed, our study was the only study made of the organization's use of the smartphones despite the financial outlay and organizational commitment to the devices.

The design of our study evolved in consultation with Rail Engineering representatives, who provided background and detail on the structure of the organization and smartphone users. We wanted to access potential variation in employee experiences so approached groups of employees' at various levels within the organization who made different uses of the technology. We discovered that one group of employees (Mobile Operations Managers, see Table 1) were not routinely given smartphones, except in two particular regional areas. We therefore decided to concentrate our investigation on employees in different occupational roles and organizational grades in these two particular regions. Table 1 provides more detail on those involved in the research.

Table 1: Description of Sample

Anonymised Group Title	Work Roles	Smartphone (SP) Distribution	Sample in this Study
Corporate Managers (CM)	As senior managers, this group either have (1) management responsibilities for particular kinds of work/categories of staff (e.g. Maintenance, HR) or (2) operational (area) responsibilities for particular sections of the network (e.g. SE England). They are involved with strategic planning but operational senior managers also have final responsibility for the smooth running of their area of the network. They all work from HQ offices but these are multiple so they may have several offices.	Corporate Managers were issued with SPs automatically, although they could refuse to have one. This was justified in terms of their need for availability at all times, given their corporate responsibilities, their mobility, and because of the volume of email communication received.	Both types of CMs were interviewed. These included various tiers of operational managers with responsibility for progressively smaller areas of the network. *12 employees* from this group took part in the research.
Local Operations Managers (LOM)	These local line managers have direct operational responsibility for smaller areas of the network. Their role is to ensure the	Local Operations Managers need to make a business case for receiving a SP but this is merely procedural and the SP is	A variety of LOMs took part in this research spread across our two particular regional areas of interest). Some of these

	smooth running of that area including managing local staff, ensuring maintenance, responding to specific incidents. They work from local offices which are usually sited close to the track. LOMs work an on-call system where they are regularly required to be contactable outside normal working hours.	always allocated. The case is made on the basis of need for availability, especially given their staff are geographically distributed, their need to organise management of incidents and their on-call duties.	LOMs reported to CMs who also took part in the study. All the LOMs of the MOMs involved in the study took part. *11 employees* from this group took part in the research.
Mobile Operations Managers (MOM)	Reporting directly to their LOMs, MOMs manage geographical areas and incidents rather than staff. Taking responsibility for the smallest categorised areas, they monitor the area for any problems (e.g. maintenance), liaise with local communities (particularly the police) and respond to incidents as they happen. They are usually first on the scene when things go wrong. They	Most MOMs across the organization do not have SPs (although they all have mobile phones). However, within our two particular regional areas of interest, two groups of MOMs had been supplied with SPs, as specific projects initiated by operational CMs. There were a variety of reasons for this including the need to update managers on progress as MOMs respond to incidents	MOMs were sampled from the two groups who had been issued with SPs, usually on the basis of availability given the shift system. *12 employees* from this group took part in the research.

	operate from local offices but are more often out and about in their vans. MOMs work a three shift system.	when phone lines may be busy. However an important reason was also the camera function of the SP which allows MOMs to record and quickly transmit images (see authors 2013)	
Technical Specialists (TS)	This group of employees work in a support capacity, not concerned with immediate operational issues. For example, they may work in monitoring health and safety or providing training courses. Often they will be working on specific projects (e.g. planning, designing and laying a new line). However some will be called out if a particular incident requires their attention (e.g. engineers may be called out to assess a damaged bridge).	Technical Specialists need to make a business case for provision of a SP and this has to be supported by their line manager. Some staff claimed their line managers persuaded them into getting SPs so their managers could keep in contact with them. The case is usually made on the basis of need for availability and we did not hear of anyone being refused a SP at the time of the study.	A range of technical specialists took part in the research, including those from maintenance, health and safety and training.

11 employees from this group took part in the research. |

The research project was advertised on the company's intranet and volunteers were sought, in addition to targeted approaches and snowball sampling from the interviews themselves. In total, three researchers (including a seconded Rail Engineering researcher) interviewed 46 members of staff across the organization. Participants were assured of anonymity and confidentiality in any resulting reports.

Interviews were broad ranging, covering: how smartphones were obtained in the organization; what features of the smartphones they used; and the impact of smartphone use on their working practices, communications and relationships, in each case encouraging participants to share stories of their own and others' experiences with these devices. All interviews were fully transcribed by a professional transcriber and entered into the NVivo8 qualitative data analysis package for analysis.

There have been recent debates with respect to the value of interview data when examining identity work (e.g. McInnes & Corlett, 2012) and (sociomaterial) practices (e.g. Feldman & Orlikowski, 2012). Concerns are expressed over the situated context of the interview, while observation may be privileged as uncontaminated. Here we interviewed most participants at their place of work, which encompassed a multitude of different offices, huts and signal boxes. For health and safety reasons, we were not allowed to accompany them onto railway tracks, but our experience of their places of practice was otherwise extensive. We encouraged interviewees to bring their smartphones to the interview and these were often referred to during our discussions, as

well as occasionally disrupting them. As such, the sociomaterial performance of connection was sometimes played out in the interview itself. Therefore while we do not argue that we were entirely observing real-time practices of connection, we feel we do have a good insight into reported practices, including through their re-enactment by the interviewees in situ.

More broadly, we argue smartphones raise specific methodological challenges. The sociomateriality of connection as identity performance is not easily observable given wireless technologies, ubiquity of smartphone use, mobility issues and size of the devices (see Orlikowski & Scott, 2008, for further discussion of the 'invisibility' of contemporary technologies). More specifically, the temporal emergence of such agency is difficult for the researcher to apprehend. It is perhaps significant that much previous research on smartphone use has been either survey- or interview-based.

In this case, narrative analysis seemed appropriate to our inquiry, and has been recommended by Orlikowski & Scott (2008) as one potentially fruitful line of enquiry in their calls for future studies of sociomateriality. In addition, as above, narrative is also increasingly viewed as helpful to understanding identity work as 'when we tell a narrative about our personal experiences, we also weave, mould and fashion our sense of self in the process' (Kenny, Whittle & Willmott, 2011: 27). There are many different forms of narrative analysis which may follow individuals' experiences (sometimes over a lifetime) or adopt a specific focus on events (Andrews, Squire & Tamboukou, 2008).

This latter approach fitted this investigation. In talking about their smartphone use, participants made sense of their experiences by 'arrang[ing] events and characters in a meaningful way' (Kenny et al, 2011: 26). Through this narration, materialities such as place and technology are brought together with other agencies (self, other employees, organization) in an holistic re-performance of the event.

Analysis strategy

The researchers individually read and re-read the transcripts to produce draft thematic categories and, subsequently, revised these categories during team meetings to develop a final 20-item 'subject coding' (Richards, 2009). The extracts analysed here come from further interrogation of the overall subject category 'accessibility'. Analysis of these extracts then proceeded in two main stages. In the first exploratory stage, we read across the extracts looking for patterns of similarities and differences in the stories participants told of their experiences of the accessibility provided by smartphone use. It was in this process that we became aware of the way *being connected* seemed to have consequences for employee identity: individuals discussed being connected in terms of what image this projected to others and how they managed self-presentation. Our first data cut therefore concentrated on distinguishing the identity performances related to *being connected*, specifically what performing connected through smartphones achieved for these employees in terms of identity work. Further analysis identified three main

narratives of connection as identity performance across the extracts: connection as being *contactable and responsive*; connection as being *involved and committed*; and connection as being *in-demand and authoritative*. Significantly, extracts categorised in each narrative were not necessarily supportive of each identity but were sometimes negative examples, criticisms or re-interpretations of the identity performance.

Having identified these overarching identity narratives, we were then interested in exploring the relationship between the material artefact of the smartphone and these identity performances in more detail. In other words our research question moved from a more general interest in the purposes of connection through smartphones for employees to the more focused: how are connected identities performed through the sociomaterial mangle of smartphone use? Thus we then moved onto the second theoretical stage of analysis, scrutinising the extracts ('narrative fragments' Kenny et al, 2011) systematically in terms of concepts from the sociomateriality and identity work literatures. Each narrative fragment was analysed individually to identify and explain:

- Human agency in the intention to achieve (contextually-relevant) ideational identities and position self in relation to Others (McInnes & Corlett, 2012);
- The intermeshing of this with the material agency of the smartphone, including the cultural interpretation of affordances (Pickering, 1995; Bloomfield et al, 2010)

- The recursive 'tuning' processes of resistance and accommodation as human and material agency meet within the mangle of practice (Pickering, 1995)

- The situated identity performances of connection constituted by this entanglement of agencies

- Processes by which sociomaterial identity performances appear disciplined and sedimented (Pickering, 1995; Butler, 1997)

Examples from this analysis are presented below. While our analysis was shaped by the concerns outlined above, these should be viewed as sensitising theoretical concepts drawn from relevant literatures rather than mechanistically applied categories. The *connected identity* performances are not, of course, entirely distinct categories and the extracts given below are categorised according to the emphasis placed within each. Each extract provides a fragment which when pieced together describes the overarching, complex narrative of connection, including converse, failed and disputed performances (e.g. failing to respond or being too responsive).

Analysis

In this section, we present the deconstructed fragments in terms of the narratives of connection identified above, addressing directly our emergent focused question of how connected identities are performed through the sociomaterial mangle of smartphone use.

Being Contactable and Responsive

This first narrative concerns the identity performance of being in (regular) contact with others in the organization, being known to be contactable and being reliably responsive. In Rail Engineering, always being in contact and responding quickly to requests reflects an organizational narrative of keeping the railway running.

This narrative is constituted by various fragments illustrating *call and response* smartphone use and, in the telling of these stories, fits with Kolb et al's (2012) argument that 'effective and efficient performance requires that individuals, teams and organizations achieve and maintain a state of requisite connectivity' (p.269). In this sense, simply making the connection is sometimes produced as *good work*. However, there are also tales of failed connections and connecting as *poor work* that may even be dangerous.

In this first fragment, the connection is relatively unproblematic: an enmeshing of social and material agencies that performs positive identities:

Do you think that using the [smartphone] has changed your relationship with others in [the organization]?

I think it definitely helps relationships because you can more readily respond … I had an e-mail on Friday about 4.30… normally if it was on the desktop at 4.30 on a Friday there'd be the tendency to walk out of the office and leave it. But because I was on the [smartphone] and I was down the pub, I was able just to e-mail the

guy and say "look I'll deal with it on Monday, I'll send you the information you

need on Monday" so I think it keeps you more engaged with people so they don't

think you're ignoring them   (LOM10)

From this recalling of a recent event, the sender and the receiver of the email have

'captured material agency in an intended form' (Pickering, 1995: 52) and achieved

connection, producing a new kind of sociomaterial intra-action (Barad, 2003) which

transcends some cultural norms of workspace and time. Whereas an email arriving at

4.30 in the office might be ignored, one received at 4.30 'down the pub' is answered, as

normal work conventions accommodate to this new sociomaterial agency of mobility.

The mangle of practice reported here is a complex interweaving of people, place, time

and relationships which in its performance, produces the LOM as a reliable, contactable

and responsive colleague. Maintaining good relationships is an ideational identity

performance: the connection itself is presented as good work, distinct from content or

outcomes (here, merely a holding message). The Other of identity work is the

uncontactable, unreliable worker. To continue to distance themselves from this alter-

identity, the employee has to work at maintaining the performance by continuing to

respond.

In contrast is this narrative of unsuccessful connection:

Do you think because you've got the [Smartphone] you're more likely to deal with those [communications] out of standard office hours than you would do on the laptop?

Yeah possibly. The only thing that prevents you a lot of the time is your inbox gets so full that you can't send even, because you're at your maximum limit. So no matter what you do with the [smartphone], you try and send an e-mail and it won't go, which is rather frustrating to be perfectly honest because I think that's a little bit self-defeating in that respect. (LOM11)

Here, the employee-smartphone configuration has failed to produce the capability to make and maintain connections, and the LOM's intention is subverted in the mangle of practice. In Pickering's terms, material agency has not been captured and the LOM cannot accommodate to this resistance ('no matter what you do with the smartphone'). Consequently, the LOM is performed as the undesired Other: the uncontactable, unreliable worker. Performances and re-performances of sociomaterial connection have been so routinized that such failure to connect is experienced as 'self-defeating': without the performance the sociomaterial assemblage makes no sense. However by narrating a distinction between human and material agency in the interview, this employee continues to assert the connected worker identity, claiming a distinction between their intention and the resistance of material agency.

Adding further complexity is the sub-narrative of delaying connection (cf Wacjman & Rose's (2011) 'managed' connection). Here the narrator challenges the institutional script of person-to-person direct contact as necessarily performing connection:

> ... the need as well for people to answer and say "oh I'm with someone, can I call you back". I'm not entirely sure what that's all about … there seems to be, again, an unspoken rule that we have to be there 24/7, so therefore even if it's a quick "I'm here, I can't speak to you, I'll call you back". And this is why I say people don't use the medium correctly. So you call someone, they're not available, you can either leave a message, or send them a quick e-mail to say "tried calling you".
>
> (TS4)

This TS narrates a different kind of sociomaterial configuration: material agency is captured in the utilisation of voicemail or email which perform the goal of connection and maintain the identity of contactable employee. However, voicemail subverts the intention of the caller who fails to make the immediate personal contact they were seeking. Here, a particular sociomaterial configuration of immediate person-to-person connection is privileged in accordance with ideational identity performances ('an unspoken rule that we have to be there 24/7'). In Butler's (1997) terms, there are fewer performances citing these previous performances and, as a consequence, it has not become sedimented. This narrative demonstrates the ambiguity of material 'affordances' (Bloomfield et al, 2010). Voicemail presents itself as an 'action

possibility' ('you can either leave a message') but is said to be one rarely configured into a sociomaterial performance. Voicemail is an accommodation, in Pickering's terms, but not one that produces the desired sociomaterial identity. The Other of this particular narrative fragment is the worker who has not adopted the affordance, who is technologically inept ('people don't use the medium correctly'). However, the routinisation and sedimentation of practice here means that this Othering is unconvincing. As before, the Other to be avoided is the one who is not 'there 24/7'.

In contrast, the smartphone provides a new sociomaterial agency, beyond that of the earlier mobile phones, by virtue of the taking up of affordances:

I think now we've all got Smartphones … people, especially like my manager and his manager, are less patient, if it's an urgent response there's very few managers higher up that will accept the fact that you're in a meeting for you not responding, because you've got e-mails. If they send you a request urgently you can sit and do it silently in the meeting. So I think there's less tolerance for timescales….

OK, so [your Operations Manager] expects you to respond to [Smartphone] messages…?

Yeah, he's never said, he's never even mentioned it but I think he expects anybody that works for him to be similar to him, have similar priorities and that sort of stuff. But to be honest I think we do anyway. (LOM2)

Smartphones here are an accommodation to the material agency of ringing phones, performing the responsive, contactable and yet not rude or disruptive employee because 'you can sit and do [email] silently in the meeting'. In the 'double mangle' (Jones, 1998) of sociomaterial interconnections, the senior manager channels the agency of the smartphone to form a new kind of sociomaterial agency: management at a distance. This affordance is given meaning by the power relations between LOMs and their line managers. This sociomaterial enactment of the contactable and responsive employee is so routinely performed that it is 'never even mentioned'. The Other to be avoided would be those who are not 'similar', not constituted as responsive by the enmeshing of their 'priorities' with silent emailing. Indeed, the LOM here denies even the existence of such an Other in 'I think we do anyway'. This constitutes a sociomaterial configuration of responsiveness that performs not just an individual but a group identity; a cohesion held together by channelled agency and routinized performances.

Continuing to perform the responsive employee is thus positioned as an imperative in the cultural discourse of this organization; a routinized performance that encourages re-performances. However, doubts are raised as to the acceptability of the constant connection performance, particularly for employees working in potentially dangerous situations on the track:

Because they've got [the smartphone], [a message has] come in and you're possibly not in the best situation … but feel an obligation because you've read it that you ought to respond. [….] And I mean you do see it with the guys .. they're not looking at....you know, "am I in a place of safety and am I continuing to be in a place of safety, has the situation around me changed?" because they're so intent on either answering the phone call or dealing with an electronic message. (CM1)

This is an accommodation requiring some revision of goals and intentions and potentially the social relations that give those intentions meaning. The ideational identity of the reliable and responsive employee ('feeling an obligation') is re-presented here as the distracted and vulnerable employee ('they're not looking'). In the mangle of practice, the enmeshing of place-time-person-activity has configured the assemblage as unsafe. This distracted, dangerous employee is the Other of this fragment. In contrast, the performance advocated is the responsible and disciplined employee who puts safety first, also an ideational identity in this organization. Thus we note how identities may be contested in the organization.

Being Involved and Committed

In this second narrative, connection is performed as being engaged with the work of the organization, committed to the railway and as providing identity validation for the self as part of the group. In Rail Engineering, commitment to the railway was a pervasive

organizational narrative, producing identification - a connection - less with the organization, but with the materiality of the railway (track, signals, points) and of solving engineering problems.

This narrative is constituted by various fragments that illustrate an informational aspect of smartphone use and, in the telling of these stories, echoes Schlosser's (2002) description of the smartphone as a relational tool and MacCormick et al's (2013) concept of smartphones as providing engagement with the organization. However, we also see such involvement as strategic and political; a sociomaterial configuration that may produce performances of *being involved* which are not indicative of (some ideational notion of) *good work*.

In this fragment, the sociomaterial assemblage forms a connection that performs work identification:

I like working for the railway. If I had no interest in the railway I probably wouldn't really care about my [smartphone]. So I think rather than, it's not my [smartphone] or I like going on my [smartphone], it's actually I like being connected to the railway.

OK, so you're just interested to know what's going on?

Yeah I mean I take quite a lot of interest in what goes on in my area, whether I'm at work or not […] And unfortunately the [smartphone] is the only way that if I'm away from work that I'll have some contact with, some connection with work […]

so because of that it probably becomes a higher priority for me than it should do […] It's actually made it easier to see stuff that happens on the railway. Because obviously I'm always looking at my [smartphone] so you are seeing stuff happen real time and how it's dealt with and these sorts of things. (LOM2)

Here the intra-action of employee and smartphone performs a new capability of constant observer of the railway ('seeing stuff happen real time'). This observer is in an enhanced position to learn about and understand the railway ('it's made it easier'). The connection narrated here is not centred on communication, rather it is a form of work engagement. The connective material agency of the smartphone is denied ('it's not my smartphone') and yet is integral to the performance of connected ('the only way'). The Other of this fragment would be the employee who simply 'likes going on their smartphone', who is not capturing material agency to perform the committed railway worker, interested in the railway itself rather than job performance. This LOM is keen to distance themselves from this imputation but in the mangle of practice, his intentions may be subverted and other identity performances are possible - being visible on the network of connections out-of-hours might give the impression of addiction ('having a higher priority for me than it should do'); the LOM has no control over the interpretation of this identity performance by others.

In a similar fashion, this employee discusses the 'passion' of working for the railway, however here the identity performance is intentionally public:

.....the railway's a funny industry … it becomes an obsession sometimes. …And I think that it's lucky for that, that it gets passionate managers that do tend to take work home. […] And I think these [smartphones] have facilitated that to happen.

They've facilitated the passion in a way?

Facilitated the kind of obsession with working at home out of hours, you know, sort of sending e-mails, and this whole thing of me responding within 5 or 10 minutes on a 10 o'clock of an evening. I couldn't do that if I didn't have the [smartphone]. So I think [my staff] like to see, although they take the mick a bit, I think they like to see that their manager is committed to ensuring things run smoothly, even outside of work. (LOM4)

Conveyed in this fragment is the configuration of passion, time, employee relations and smartphone technology that performs the caring manager, and beyond this, a new identity performance of constant commitment to the railway ('even outside of work'). Here we see the capturing of material agency (mobile email) to exhibit this commitment to staff ('they like to see'). This identity performance is ideational in its fit with cultural discourses of compassionate managerialism and local discourses of distinctiveness and pride in working on the railway. Again, in the mangle of practice, however, this might be performed as some sort of pathological identity (workaholic or addict) over which the manager has no control, such that staff 'take the mick a bit'.

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In the following fragment we see this same exhibition of commitment but a different meaning for this performance emerges from the mangle of practice:

So if the boss puts out an e-mail that says "something has just kicked off - who knows what's happening here" there will almost be like a race to respond, to "reply to all" of course so that everyone can see that that person has responded. So that's a bit of a macho thing as well, it's a bit like kind of thumping your chest type thing, you know.

Interesting.

Yeah. I don't really go for that very much but I can't afford to be left out of that either… there's a pressure on me to live up to that, even though I don't necessarily think it's the best thing to do or the right thing to do, because that's the culture, I have to fit into that. I can't be in a situation amongst my peers where I'm excluded because we all kind of shift and move in the same direction, working at the same speed to achieve the same output, so you can't afford to be too different to that. (TS11)

Responding achieves the local ideational identity of a knowledgeable employee who is constantly engaged with work; always monitoring, ready to react, being seen to have the answer, contributing to organizational goals. The entanglement of managerial authority with general messaging capability in 'the Boss putting out an email' is an assemblage of agency again imperative in its performance, provoking a 'race to respond'. Importantly,

the boss no longer has to contact each recipient but channels the material agency of simultaneous email to produce competitive productivity. In entering this competition, employee identity work is dependent on its acknowledgment by others (Butler, 1997), and the enrolment of the material here performs a new kind of sociomaterial agency of public exhibition ('to reply to all of course'). 'Responding to all' is here equated to 'thumping your chest', both are sociomaterial performances of this 'macho thing', emphasising individual contribution and reflecting the gendered nature of the organization. Not responding would mark the employee out as different because they would not appear to be as informed or committed ('I have to fit into that'). 'We all kind of shift and move ...' suggests a group identity such that the Other is unconnected to the group. Our TS reflexively acknowledges the 'pressure' of this ideational identity produced by the sociomaterial entanglement of the institutionalised script and material agency but positions self as powerless to resist ('I can't be in a situation ..') as he is favourably constructed through this sociomaterial performance. This narrative thus emphasises the regulative aspects to this identity work which could encourage re-performances. The intentions of the employees have been transformed in the mangle to be that of replying quickly rather than 'the best thing to do or the right thing to do'. Indeed, there are two identity performances going on here: one where the TS performs the dedicated employee for Rail Engineering, and one where he performs the anti-macho, more thoughtful employee for the interviewer.

In specific contrast to this need to be 'in the know' at all times is the advocation of disconnection from an employee who had refused a smartphone, and in this way, already performed a certain kind of identity:

Why do you think [Rail Engineering] decided to introduce [smartphones] in the first place?

I can see that for people who are in operational frontline jobs ... that there's a useful thing there about keeping in touch, but I do worry that it tends to undermine people's strategic approach to what they're doing, [they're] just sort of reacting to stuff that's on their [smartphones]........   I do have this worry that it gets people, even in the frontline, gets them focusing the whole time on "what's happening now, what's happening now" and not thinking enough about "what do I need to do tomorrow, next week, next month". (CM8)

This corporate manager's narrative reports the sedimented practice of connection but challenges the ideational nature of the identity produced. Thus the responsive employee produced through the sociomaterial performance of connection is acknowledged ('a useful thing about keeping in touch') but this performance is mainly legitimated by being in operational posts. Indeed, 'even in the frontline' such a sociomaterial performance is challenged through privileging an ideational context of thoughtful, strategic work ('what do I need to do tomorrow, next week, next month').   The intentionality of human action is here positioned as subverted through material agency

('gets them focusing the whole time on what's happening now'). In this process, the sociomaterial entity created is an automaton. This narrative fragment is a further reflexive analysis of the regulative aspects of the sociomaterial performance of connection, rejected in favour of the Other as the reflective worker who takes time to plan and anticipate future needs.

Being in-demand and authoritative

This final narrative encompasses stories about smartphone use which illustrate connection as being sought after, having relationships with significant others, having status and authority: a sociomaterial assemblage that is 'a badge of our networks, a sign that we have them, that we are wanted by those we know…' (Turkle, 2008: 124). Initially, smartphones were issued in line with seniority in Rail Engineering creating an association with status. However, across these narrative fragments we see a more complex intra-action of power relations and the material, including the conflation of busy-ness and status, and how disconnection may perform the *unwanted* employee.

In particular, seniority is recounted as exceptional and demanding connection:

So generally people wouldn't e-mail during in a meeting?

It depends. The more senior they are the more they tend to. I mean I've been to a couple of what we call roadshows where we've had the sort of top management team and, you know, everybody's sitting there listening to it and you look at the

front row where [top management are] all sat and they're all [mimes typing on a smartphone], not taking any notice at all. Which is fair enough because they've probably got high powered jobs or whatever and lots of responsibility, but it doesn't set a terribly good example. I mean you tend to find in meetings that the more senior the people are, the less attention they're paying. Which is a terrible thing to say and "my name is John Smith" [to the recorder]. (TS9)

From this example, the connectivity of senior managers is so important that normal institutional scripts no longer apply. The image of senior managers typing furiously on smartphones conveys connection as urgency and responsibility. Their worlds are lived more as a configuration of person-smartphone than person-physical surroundings ('not taking any notice at all'). The new capability produced by this assemblage allows them to be in multiple places but, like the MOMs on the track, distracted from the immediate materiality of place (cf absent-presence, Gergen, 2002). The ideational identity of in-demand manager ('high-powered job and lots of responsibility') is however in conflict with the managerial role model who follows the organizational rules ('it doesn't set a terribly good example') and the considerate manager who pays attention to those around them. The smartphone-manager configuration has displaced the physically present-manager configuration, and, here, is the Other to be avoided because they are disconnected from the materiality of place. However, the in-demand manager-

smartphone configuration is so routinized and accepted that to question it is 'a terrible thing to say'.

While smartphone use is now more widespread in society (Agar, 2013), and indeed is widespread in Rail Engineering, only a few groups of MOMs have been issued with them. Such MOM-smartphone assemblage performs a new kind of sociomaterial authority:

.. if you do go out to an incident and you pull a [smartphone] out, they're all like "oh right yeah, must be one of the managers" and it's funny how they suddenly change the way they see you just because of what phone you have.

So they see you as being....?

… "oh yes you're a manager, you're not just another lackey out on the track".....you see a [smartphone] coming out, and so you pick the managers out as they go round.

Is that a good thing or a bad thing, or a bit of both?

It's not a bad thing in a way, because although we're not their managers we do have to oversee a lot of the stuff that they're doing. […] So in a way it kind of helps a little bit…. they're not too sure who you are and all of a sudden … you start pulling your [smartphone] out they're sort of like "oh", just sort of their attitude to you changes and the way they speak to you and stuff like that.

What, they become more polite or something?

Yeah, that or they stop talking to you! (MOM11)

Where the MOM on the track may have been previously identified as a 'lackey', given their general appearance in high visibility jacket etc., the production of the smartphone (not common for MOMs in the organization) , transforms 'lackey' into an authoritative manager with the ability to connect to others and direct action. This sociomaterial assemblage provides certainty in the urgency of incident resolution and produces a new capacity for intervention previously unknown for MOMs. However this comes at some cost. The MOM-smartphone-hierarchy assemblage is individualising, and sets the MOM apart from other operational staff: 'they stop talking to you'. While the MOM may now be enrolled in the distant power relations of hierarchical organization, he is potentially disconnected from the immediate social relations of operational camaraderie. In other words, the MOMs in this situation are caught between two Others: the ineffective incident manager who cannot direct action and the employee who is excluded from the group of 'lackeys out on the track'.

However smartphone possession is not necessarily enough for the performance of authoritative and important employee. In the following extract, the recounting of sociomaterial performances of *unwanted* employees, contrasts sharply with the performance of *in-demand* within the interview:

The inference is, if you've asked for a [smartphone] in the first place then, again

status, "well you must be important, bloody hell you must have a lot of emails so

you're going to need a [smartphone]". And you're going to be out of the office and this sort of thing..... But you do get an interesting one, you put your status symbol on the table [places smartphone on table] the other thing that you will notice is that [pointing to part of the smartphone].....

The flashing light?

If that's not flashing after about 10 minutes you're not very important.

Because nobody's trying to contact you?

Exactly. And it is interesting when you look across, if you have a [smartphone] and it's green and it's [pause - light starts flashing] green

Oh right, it's flashing green.

If you've had one and you're not fitting.... in with the cultural norm i.e. this thing's begging to be looked at, then there's almost a sub-conscious "well why have you got a [smartphone] because you obviously don't need one"? And we've got people that have kind of got them … but they don't really need it for their kind of role, but will play up to the status of it. "Oh yeah you have to give me two or three weeks' notice for a meeting" and you will sit there in the meeting thinking "well [you] can't be that busy because nobody's trying to get hold of you for something". (CM11)

Possessing a smartphone is here embedded in local ideational status connotations of being in-demand. Asking for a smartphone is identity work in proclaiming a

requirement for constant connection. The flashing light is thus here an affordance which has a particular local interpretation, most notably in the group context of the meeting room ('you put your status symbol on the table'). The mangle of practice incorporates the group, flashing light and workload expectations to produce a sociomaterial identity performance of status (NB the status is not inherent in the technology but the outcome of sociomaterial intra-action). When the light is not flashing this is interpreted by others as the employee being 'not important' and not really 'busy'; the Other to be avoided. Material agency has not been captured and so the employees' authority to speak as connected employees is undermined ('[you] can't be that busy because nobody's trying to get hold of you'). We can contrast this with the sociomaterial agency produced in the interview itself. The CM is empowered to speak as material agency is captured in the performance of in-demand ('oh right, it's flashing green') in the interview. As the light flashes, the practice is narrated and the interviewee is himself produced as in-demand. While recounting another's identity performance, the narrator himself is positioned positively.

Discussion and conclusion

In this paper we have taken a sociomaterial perspective on connectivity, analysing this as an intra-action (Barad, 2003) of human and material agencies which performs employee identities. This develops previous work on connectivity by exploring the

overlapping enactment of identities and connectivity and by supplying a detailed analysis of the processes which constitute and emerge from the *mangling* of human and material agencies. We also extend research on identity work in organizations by demonstrating how material agency may be 'captured by' (Pickering, 1995) or resist enrolment into identity work. Additionally we begin to address the issue of power relations within a sociomaterial perspective. These contributions are further explored below.

We develop previous work on connectivity (e.g. Kolb et al, 2012; MacCormick et al, 2012; Wajcman & Rose, 2012) in three main ways. Firstly, we offer an alternative perspective on connectivity than that of identifying individual differences in patterns of use (e.g. MacCormick et al, 2012). Focusing solely on human actions and interpretations downplays the material in the production of connectivity and we redress the balance through seeking to also account for material agency in this process. Viewing identity as performed rather than an individual difference offers a more dynamic view of agency in relation to connectivity, where individuals do not wholly determine their own technology use. For example, rather than individuals psychologically addicted to their smartphones, we suggest a routinised (re-)performance of culturally salient identities within a network of power relations. Indeed, in contrast to Mazmanian's (2013) analysis of occupational groupings differential take up of smartphones, we suggest the employee-smartphone assemblage performs new group

and individual identities; that is identity is emergent from the mangle of practice rather than determining its performance.

Secondly, we suggest a different perspective on connectivity than identifying various 'states' (Kolb, 2008), which conceives connectivity as pre-existing its production. In contrast, we offer a view of connectivity as an entanglement of different agencies that <u>produces</u> connection. Thus connectivity is not a question of '"how much" connectivity exists in a setting' (Kolb et al, 2012: 268) but a demonstration of sociomaterial agency i.e. we argue connectivity cannot exist outside its performance. Through our particular approach, we suggest a view of connectivity that is not just about communication (or even work engagement) but also about being *known* and *knowable* - having presence in the organization's life and, through responding, enacting that presence and one's identity as an employee.

Thirdly, while adopting a similar (sociomaterial) lens to that of Wajcman and Rose (2012) we further develop their work by adopting a specific sociomaterial lens (Pickering's mangle of practice) which allows us to engage with a more detailed deconstruction of the entanglement. In doing so we highlight that not all sociomaterial approaches may be equally relevant to all organizational analyses. Here Pickering's mangle of practice and Jones' double mangle seemed particularly pertinent to an understanding of connectivity'given the layers of interconnection and chain of agencies recognised in mobile work incorporating digital technologies. We also argue that

different sociomaterial lens offer different perspectives on agency in particular. In our case, the focus on identity work implies some accommodation of the intentionality of human agency. From this experience, we would therefore recommend that future researchers seeking to adopt a sociomaterial perspective on organizational practice carefully delineate the conceptual parameters of this.

Conversely, consideration of connection as sociomaterial assemblage potentially produces new challenges for Pickering's (1995) sociomaterial lens, which has largely been applied to more discrete technologies (e.g. Barrett, Oborn, Orlikowski & Yates (2012) pharmacy robot). Here we note the complexity of a network of connections as sociomaterial assemblage, where 'the point of intersection of human and material agency' (Pickering, 1995: 167) may be very unclear. We have found Jones' (1998) idea of the double mangle useful to unpick some of these chains of agencies. What might also be at stake, however, is how or whether we draw analytical boundaries around our sociomaterial assemblage. Future research may want to consider other sociomaterial lenses (such as Barad, 2003; Yoo, 2012), or we may want to develop existing lens (e.g. Actor Network Theory, Callon, 1999) to understand new connective practices, involving, for example, Web 2.0.

Our research has also contributed to developing our understanding of identity work in organizations. Commentators such as Bardon. Clegg and Josserand (2012) have argued that contemporary theorising on identity work has neglected the study of the

material. Our research addresses this gap by demonstrating how the combination of conceptual insights from sociomateriality and identity work provide the analytical tools to directly apprehend how the entanglement of the social and the material perform identity: here, how we are produced by our technologies as *connected selves* while simultaneously producing the technologies as *tools of connection*.

Looking across the different connected identity performances identified here, we see the sociomaterial configuration of employee, smartphone, place, affordances, localised and cultural scripts, electronic and social networks as producing a variety of connected identities. This conceptualisation adds to the theoretical repertoire of identity research by building on the notion of dialogical identity work (Beech, 2008) - through which identity is said to be shaped by utterances of others and contextual discourses - to incorporate the material within this performance. Neither the material nor the employees are wholly in charge of this identity performance but, rather, such configurations have given rise to new kinds of sociomaterial agencies which write new narratives of time and space in relation to identity work practices. In the mangle of practice, identity performances can 'go awry or adrift' (Butler, 1997: iii) when there is a failure to capture the intended material agency or as such performances are re-narrated through some reflexive processes of resistance and accommodation (Pickering, 1995). Accordingly, instead of responsive, employees may be produced as technologically unsophisticated or dangerous; instead of involved, as politicking or automatons; instead

of in-demand, as isolated or inattentive. Thus, we argue that such identities do not reflect invariant categories of employee but are temporal and situated.

While intended identity performances are not an inevitable outcome of the mangle of practice, some performances may be routinely reproduced. Such sedimentation and routinisation of performances can be explained through reference to the importance of localised practice in this process (Suchman, 2007). In particular, in our analysis, valued work takes its meaning from its cultural situation. Thus responsiveness may be valued and consistently re-performed because it is embedded in an overarching institutionalised narrative of the 24/7 railway. Such a narrative has bled into all interactions within the organization, even when removed from operational matters. Indeed, this male-dominated engineering context may have translated responsiveness into a performance of masculinity. Here, *being responsive* is an ideational identity (McInnes & Corlett, 2012) not just a job role, and therefore not confined to particular employees. We do not mean to suggest by this that context is somehow independent of identity performance and exerting some external force on this performance (Alvesson & Karreman, 2011). Rather, it is the situation that makes the performances salient (Suchman, 2007). This engineering firm in the transport sector is perhaps the very epitome of connectivity: an important objective to maintain connections between track and trains, places and people. Hence, the work of the organization itself is a sociomaterial performance of connection - the employee-smartphone performance of

connected reflects the organization-rail infrastructure performance of connected. As a consequence, alternative sociomaterial performances of connected (as, for example, dangerous or overly automated) are not routinely produced. Understanding situated practice (Suchman, 2007) is therefore crucial to interpreting ideational identities and sedimented sociomaterial practices.

While not routinely reproduced, alternatives are, however, possible, and also get their sense from both local and more general cultural scripts. A particular theoretical contribution of the research presented here is the identification of the mechanism by which alternative sociomaterial performances are achieved - questioning and undermining ideational identities and highlighting various Others gives alternative meanings to situated performances. For example, in the case of using smartphones while fixing railway tracks, the ideational identities of *safety-conscious* or *connected* may be in conflict and whichever emerges from the mangle will be a product of the complex intermingling of situated sociomaterial practices at the time.

An emergent aspect of our analysis is how power relations are also part of the sociomaterial configuration, and this begins to suggest ways in which we could bring considerations of power and sociomaterial relations together. Leonardi and Barley (2010) argue that 'the enactment perspective's unrelenting focus on action in the here and now of practice' (p.24) has made it difficult for such research to address how 'preexisting social structures' (p.24) of power and coercion shape technology

implementation and use. Our research indicates how we might address power within a sociomaterial perspective. Thus, rather than a pre-existing power structure coercing behaviour, we illustrate the continual re-performance of power relations through organizational narratives played out in the mangle (e.g. 24/7 connection, safety first) which may become sedimented through repetition but are still open to challenge.

In research into identity at work, identity regulation is often positioned as an effect of power relations within organizations (Alvesson & Willmott, 2002). We build on Alvesson and Willmott's (2002) list of targets of identity regulation, to demonstrate how the material is also implicated in identity regulation and how new forms of power relations are created: constituting the *responsive* employee as valued while the *unconnected* is excluded; and producing the *authoritative manager* in distinction to *lackey on the track*. Jones' (1998) idea of the double mangle is useful in drawing attention to a chain of agencies. Jones was specifically alluding to the (human) design of technology that might seek to produce particular human agencies (ways of using the technology). We do not focus on the prior design process but have noted how new forms of organizational power relations may be produced through sociomaterial configurations, such as management at a distance - the expectation of immediate responsiveness through (silent) emailing.

Our highlighting of power relations here could be further developed through consideration of Haraway's cyborg metaphor (1991). Haraway utilises this metaphor to

subvert the dichotomy of the *natural* and the *artificial* thus liberating ourselves (particularly women) from the dictates of explanations and expectations grounded in biological determinants. The cyborg is presented as a 'creature in a post-gender world' (p.150) and could also be a conduit to conceptualising a post-technology world in which employees are positioned positively as 'hybrid' (p.149) beings. This is of immediate resonance in theorising social media but would also encourage the deconstruction of a variety of other boundaries (e.g. between work/life, public/private) which currently reproduce power relations. The cyborg is a potent metaphor for change and offers a significant analytical tool for understanding the sociomaterial assemblage of identity which could be fruitfully further exploited.

A final methodological observation is to note that this study is based on narratives of connectivity produced by a variety of organizational employees. Such accounts are in some ways limiting, as we are not observing the practice of connection unfolding in real-time (cf Barrett et al, 2012). However, we have argued that observing such practice in this case is complex, given mobility, the chain of agencies and to some extent the invisibility of the materiality involved (Orlikowski & Scott, 2008). Indeed, the analysis of narratives allows access to interpretations of practice not otherwise available. However, it is clear that, with the increasing multiplicity of connections available to us, we need to develop new methods of exploring connectivity, such as the 'connective ethnography' of Dirksen, Huizing and Smit (2010). In order to further our

understanding, we may need to develop more sensitive and mobile research tools, recognising these also as sociomaterial assemblages ripe for deconstruction (and coming full circle back to Pickering's consideration of scientific machines). Having said this, Pickering (1995) suggests 'accounts pose no problem for real-time analysis of practice – they should themselves be seen as part and parcel of the mangling process….' (p.53). There is an increasing interest in the relationship between talk and materiality (e.g. Cooren, Fairhurst & Huët, 2012) and further work may seek to examine in more detail *discourses of sociomateriality* and their engagement in the mangling process.

In conclusion, this study adds to our understanding of connection by extending accounts of <u>degree</u> of connectivity (Kolb et al, 2012) to encompass a consideration of the <u>effects</u> of connectivity. Additionally, we illustrate how identity performances of connection are an emergent product of an entanglement of social and material agencies. Our analysis highlights the power relations also produced and reproduced in the mangle of practice and, utilising the idea of the double mangle (Jones, 1998), begins to consider the chain of agencies implied by connectivity. Future research, we suggest, should aim at further understanding how the sociomaterial lens may aid our understanding of complex connective processes and developing new research methods by which we can more appropriately follow sociomaterial connectivity.

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