

heterogeneous associations” (p. 141). However, whilst Magnani’s narrative explicitly includes nonhuman entities, in contrast to Bled’s analysis (2010), it is not clear how they have any agency in shaping the organizing of human actors within the competing hybrid alliances which are set out. The focus of the analysis remains on the discursive contestation between groups of human actors. For example, whilst waste management technology (e.g. ‘ecoballs’) is identified as significant it is included as an inert extension of human agency, rather than analysed as potentially involved in organizing the engineers and waste. Additionally, a lot is bundled together in Magnani’s categories of actors, blunting the potential for exploring the dynamics of human-nonhuman entanglements.

From reviewing these two studies we find a recurring theme that although nonhuman entities are explained as being in focus in the researchers’ analysis there is limited consideration of their potential significance to agency dynamics. The studies overlook some of the possibilities of actor-network informed analysis by not fully exploring how nonhuman entities can be active within the relations of action. Consequently, there is a need to develop actor-network approaches to organizational studies of sustainability which pay close attention to tracing nonhuman entities within the networks, so that their potential significance in ordering can be more fully considered, analytically, practically and reflexively. We achieve this in our study into how a positional leader’s vision about sustainability becomes translated at a major brownfield development site by focusing on multiple actor-networks to develop the concept of delegation. Delegation refers to the idea that duties, tasks or roles can be delegated to other actors, often nonhuman actors, and these in turn can shape and inform human and other nonhuman action through their meaning and materiality. Delegation we argue is concerned with considering ‘crucial moments’ of translation through which actor-networks become generated and distributed, and the relations within them become configured and stabilised (Law & Hetherington, 2000). Delegation does not however presume that one actor is just replaced with another. From an actor-network perspective, actors are not wholly fixed, static nor predictable because actors always act within a network, as an effect of a hybrid.

Delegation occurs through mediators, which both order and form networks. Because mediators translate, distort, and modify the meaning of the elements they are supposed to carry in actor-networks, ideas of linear causalities can be rejected. Mediators are contrasted with intermediaries, which transfer meaning without change and transformation. As Latour (2005, p. 59) explains “causes do not allow effects to be deduced as they [mediators] are simply offering occasions, circumstances and precedents”. The general types of mediators, which need to be identified locally in any analysis, include texts and inscriptions, and artefacts. By using and adapting categories of mediators in our study we extend visibility beyond human intention, negotiation and alliance building to consider how nonhuman entities have the potential to have agency by being active in stabilising, converging or ignoring actor-networks.

By attempting to trace how particular mediators have been defined and mobilised in networks, we develop an argument about localised hybridity in relation to our fieldwork site. We argue that because actor-networks are hybrids constituted by the relationality of humans and nonhuman objects, everything that happens (or does not happen) can be understood as an effect of the hybrids that make up an actor-network. Consequently, we offer the term *localised hybrid* as a way to problematize conventional social science concepts of scale. *Contra* the idea of a network as a system with levels, layers or structures that can be mapped, for actor-network approaches the network is always a localised hybrid, an assemblage that

transforms over time and space and has no *a priori* fixed boundaries or borders. As we go on to explore our research suggests how new practices are interdependent with the strength of existing actor-networks, particularly where new visions are weakly developed in other actor-networks, which may be associated with stabilised effects. We suggest that new visions and practices around sustainability are translated, grafted, into existing actor-networks with a range of effects; some of which organize sustainability and some of which disorganize sustainability in particular ways.

We next introduce the research into attempts to promote sustainability at a high-profile brownfield development project and how we went about our actor-network informed analysis.

4. Methodology: Making sense of actions for sustainability at Brownfield

The fieldwork at Brownfield was undertaken by the first author who was at Uni X (see Figure 1). It involved interviews, project meetings, email exchanges, telephone conversations and document tracking with a wide range of actors associated with, or seeking to become associated with, the Brownfield initiative. The research engagement began in early 2011, when the first author attended a meeting between key tenant organizations at Brownfield following the completion of the first phase of building and preparing for major tenants to move into the site.

4.1 Research site



Image 1. Indicative photograph of a brownfield site.

Brownfield involved bringing together a range of organizations particularly relating to

‘creative industries’ to plan and develop the site as well as inhabit it when it was completed. Prominent in this initiative, to promote regional regeneration and competitiveness, was a communicated commitment by key leaders and other people at the organizations involved to transform a cleared piece of land into a space that would become a sustainability exemplar. Image 1 is indicative of the type of site, previously used for industrial activities, which was cleared for the construction of Brownfield.

The first author offered to undertake an unremunerated research role to find out from each of the major tenants what actions they were taking in relation to sustainability. He hoped this sharing of perspectives would contribute generatively towards the initiative. The primary aim was to gain a rich sense of how intentions for operating sustainably were being translated into action. From a paradigm of interpretivist and participative action-oriented inquiry (Marshall & Reason, 2007) the researcher was aware of their own involvement and engaged with developed practices of reflexivity (Cunliffe, 2003). During the year of engagement, fieldwork involvement was tracked through a research diary and by gathering materials including meeting notes, documents, records of telephone conversations and emails.

4.2 Mapping organizations and people involved in sustainability at Brownfield

The full scope of research interactions is shown in Figure 1 which depicts the main organizations involved (black circles) and the related (24) people (grey circles) associated with these organizations that were spoken to and met with during the research. A key figure is *A* (near the top left corner of Figure 1) who was the Chairperson of the organization (‘Developer’) which coordinated the building of Brownfield. *A* was also connected to two other organizations: University X and RDA (as per the key – ‘Regional Development Agency’) a public body whose function will be described below.

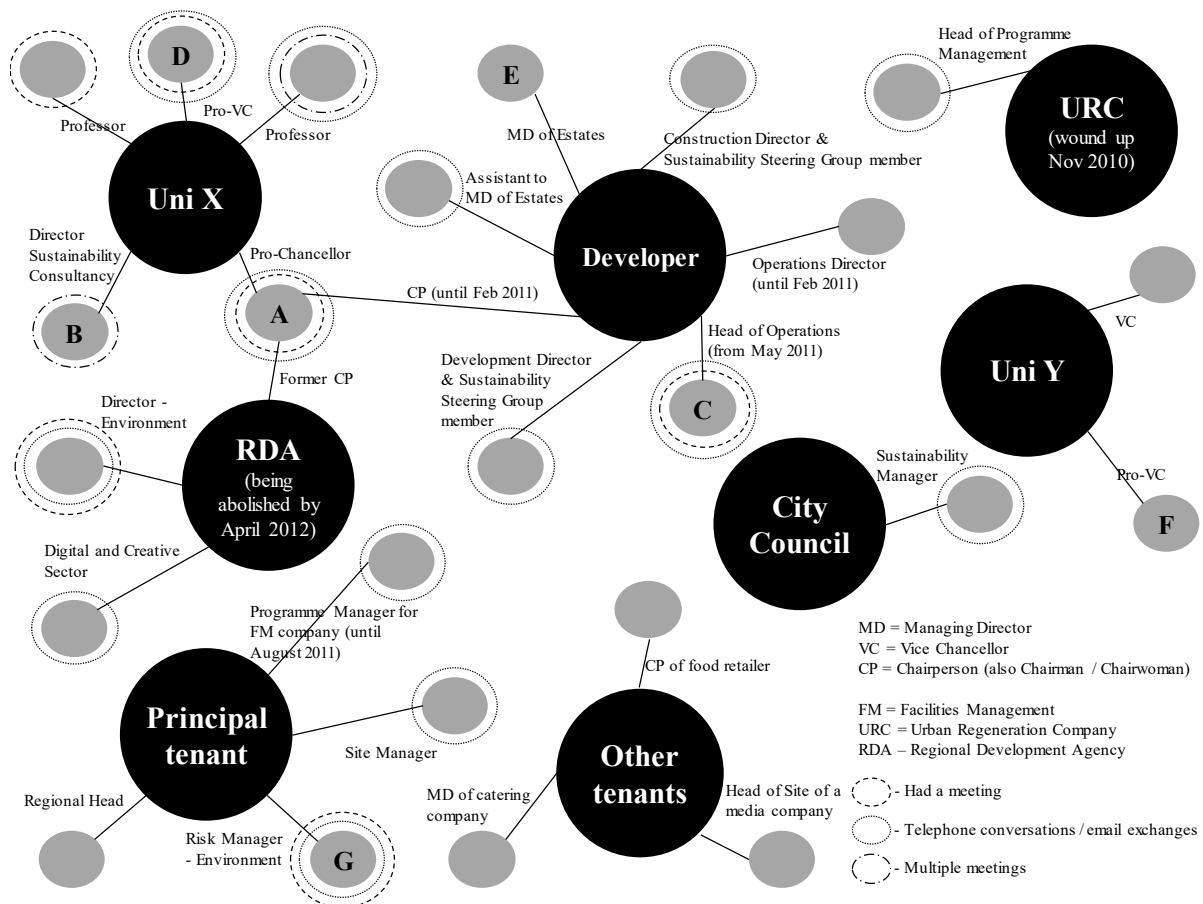


Figure 1 – A mapping of organizations and people involved at Brownfield

As will become apparent, most research access with the tenant organizations at Brownfield was achieved through engagement with people associated with the Principal Tenant in Figure 1.

Fieldwork was testing, because the initial rhetorics of senior leaders wishing to do things differently for sustainability at Brownfield were not strongly followed through into action. The account below documents the several phases through which potential action was scaled back. The researcher tracked the action and non-action persistently, deterred at times but understanding his experiences as informative arising ‘data’ and willing to respect and learn from them through appropriately tailored methods.

Following the fieldwork, the first author produced a time-line of events and sought to engage in appropriate mapping and analysis of the data gathered, that would do justice to the somewhat limited attempts at organizing for sustainability eventually achieved. This led to recognition of the significance of nonhuman actors in the unfolding practices of sustainability at Brownfield. The first author therefore invited co-authors to join him in analysis, recognising the appropriateness of, and wanting to enhance, an actor-network approach.

We decided to depict how the actor-network formed around sustainability at Brownfield by mapping data gathered particularly through engagement with people associated with the Principal Tenant in Figure 1’s map, to whom most research access with tenant organizations was achieved. In our account we thus offer an impression of how organizing for sustainability took shape at Brownfield.

We appreciate that we are unable to include everything (human and nonhuman) in tracing the mediators connected to the fieldwork space and implicated in the translation of sustainability. Our intent has been to adopt methodological sensibilities which, by unsettling key assumptions about human-nonhuman interactions, promote ways of researching that help to extend visibility on complex sociomaterial interdependencies. In particular, we want to readdress the issue of overlooking the potential significance of the agency associated with nonhuman entities which we identified earlier when reviewing organizational studies of sustainability informed by actor-network theory. Consequently, our “modest methods” (Law, 2004, p. 11) need to be responsive to how tracing sustainability at Brownfield necessitated significant researcher persistence to follow and be involved in associated actions.

To map the mediators involved in the performance of sustainability at Brownfield a core data document of ten pages was developed by the first author to act as a ‘scaffolding’ to support a grounded process of emerging key themes (Charmaz, 2014). Prominent themes related to processes and practices of measuring, outsourcing and automating implicated in how sustainability was being enacted at Brownfield. The final phase of analysis involved experimenting with how to identify and depict networks of mediators through which to express the dynamics associated with these prominent themes.

It became apparent as the research developed that there were significant symmetries between the attempts to organize for sustainability at Brownfield and the unfolding research processes, in both of which agency became translated into nonhuman actors and energies for engagement became diluted. The analysis presented here therefore draws on five strands of data:

Interviews with a senior manager involved in Brownfield about the initiation of and visions for the project;
A mapping of organizations and people interviewed and contacted (Figure 1 above);
A mapping of human and nonhuman mediators involved in delivering sustainability;
Case examples of how sustainability unfolded; and
The first author's attempts to engage with organizations at Brownfield.

In our findings, the latter is inter-twined amongst the other strands. As we go on to explore, key strands of reflexive commentary involve considering how the research engagement mirrored the issues at Brownfield, and reviewing what we were learning from an actor-network perspective.

5. Findings

5.1 Visions and intentions for Brownfield

The intention to make sustainability prominent in organizing at Brownfield can be seen in the excerpts below (incorporating our highlighting), from a document provided by *A* positioning the scope and agenda of the meeting in January 2011.

*'Our responsibility is to create a sustainable city having regard for our **impact on the environment in the widest possible sense**. Our opportunity is to **do things differently** and create a community that lives, works and entertains in a different way'*

*'[Brownfield] provides an excellent opportunity to develop a community that has **sustainability of resources and society at its heart**. ... [Developers] have a vision that sustainability will be **more than just a series of small initiatives**. Rather it will be a core component of [Brownfield] that is recognized in both local communities and further afield, and we are seeking to engage all our major partners in the way forward'*

When interviewed in March 2011, *A* traced back the original impetus behind the integral vision for sustainability at Brownfield to the previous Chairperson of Developers (his predecessor) who he suggested initiated the project. He described how the previous Chairperson's vision had included a focus on skills development within the communities close to the site. *A* centred much of his conceptualisation of the meanings of sustainability on the well-used environmental language of "Reduce, Reuse and Recycle". For example, he suggested that it was important to show people what happens when a product is discarded. *A* explained that Brownfield focused on experiences, "invisible trade", seeing creative industry being centrally about producing and creating experiences for people who engage with it, which meant that these ("cultural") experiences were more sustainable in terms of resource and energy use than buying and discarding physical products.

A positioned Brownfield in respect of sustainability as an "open minded community and clean sheet of paper to do things differently". This idea of unfettered space outside of existing actor-networks to realise intentions towards sustainability relates to the indicative picture of the cleared brownfield site. *A* described his strategy to realise a vision for sustainability as being about finding champions and promoting a "grassroots, bottom up approach" where building connections between "a lot of like-minded people with shared beliefs" was key. Consequently, he saw that trying to find ways to "do things differently" at *A* would involve promoting collaborations across the tenants with the focus on attempting to

cultivate action from a wide range of organizational actors.

5.2 Case examples of how the scope of enacted sustainability became restricted

Despite these clear and strong intentions to organize for sustainability, enacted sustainability became progressively diminished at Brownfield. We give two examples here of how this happened, and then elaborate the key associated happenings from both examples in Figure 2.

5.2.1 Attempts to engage people in 'defining' sustainability

The first example is about the attempted use of a consulting project to explore meanings of sustainability and develop collaborative action plans with tenants. *A*, drawing on his association with Uni X, proposed engaging with a range of academics approaching sustainability from different disciplinary perspectives (including management, geography, sociology and design) to help bring definition to the meanings to do things differently and inform possible action for sustainably at Brownfield. This *problematizing* was expressed through a consultancy proposal in September 2010 to conduct “an audit of the existing attitudes and approaches to sustainability issues in the main occupants” through interviews and a workshop. The Developer would then use the resulting report to “prepare for new tenants as well as provide the basis on which a more holistic approach to sustainability can be developed for Brownfield”.

A's *intersement* work, which sought to formalise a collaboration with Uni X and Developer, was unsuccessful. *E*, the Managing Director of Estates at Brownfield, resisted it, suggesting that tenants were not yet ready for these conversations as they were only starting to move in. *E* asked for a more phased approach at a lower cost. In October 2010 *B*, a Sustainability Consultant connected with Uni X and the original proposal, made a highly scaled down proposal focusing on the Developer alone and excluding other tenants. However, this was also not agreed.

As previously mentioned, the first author became involved with Brownfield by attending a meeting between tenants in early January 2011. He subsequently participated in these acts of *problematization* by making a proposal to conduct “interviews with the key future tenants and other important stakeholders ... to understand: what sustainability means to their organization; how they are going about doing it; and, their future aspirations”. *E* did not respond to this proposal. After some networking with other interested outsiders, the first author restated the proposal, now jointly authored with *D* (Uni X) and *F* (Uni Y) in March 2011. Concurrently *A* resigned from his role as Chairperson of Developer. In June 2011 *C*, a newly recruited Operations Manager of the Developer, provided the first author with a contact at the Principle Tenant. This was the only contact provided by the Developer during eleven months of attempting to complete the proposed research. Hence the researcher's attempt to contribute to *problematization* of sustainability at Brownfield, and to offer the perspective of an outsider to the initiative, did not substantially happen.

5.2.2 How sustainability criteria became obsolete due to the abolition of regional development agencies

The second case example of efforts to organize in ways that lived up to the intentions for sustainability at Brownfield relates to one of *A*'s other roles, as Chair of one of the Regional Development Agencies (RDAs), a public organization tasked with supporting regional economic development that operated largely autonomously of national government. The RDA administered European Regional Development and UK national funding for the Brownfield

development. Stipulated criteria included a ‘Sustainable Building Policy’ to “meet the challenges of climate change”. This was approved under *A*’s chairpersonship by the RDA Board in May 2007 and set down a range of standards (e.g. BREEAM – a certification process for assessing, rating, and certifying the environmental sustainability of buildings), primary performance criteria (relating to carbon, waste and water) and secondary performance criteria (including aspects such as: community engagement, training and employment, and transport systems) that would be tracked at Brownfield.

However, a newly elected Conservative led coalition government in 2010 announced the abolition of all RDAs by March 2012. This change in the party political landscape disrupted the potential for *interessement* associated with these connections and boundaries. The closure of the RDA meant that the sustainability related performance criteria would not be followed through. Also the RDA’s funding and convening power were not then available to enable networking and collaborative vision-development.

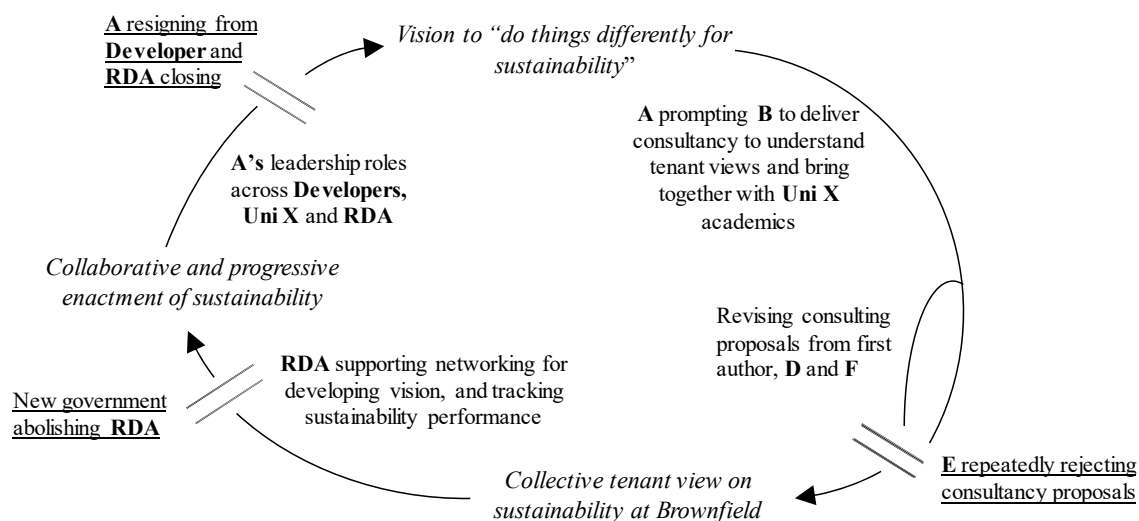


Figure 2 – Challenges to realising a progressive vision for sustainability at Brownfield

From these two examples we can appreciate that there was a detectable ‘failure’ to realise the espoused senior management intentions expressed by leaders such as *A* “to do things differently” at Brownfield. As presented in Figure 2 this ‘failure’, relating to a dilution of the vision, can be associated with people and organizations from the examples, which are shown in Figure 2 by double lines, that interrupt the flow towards an intended collaborative and progressive enactment of sustainability. As we go on to explore, the research interviews showed that what happened instead, was that sustainability became reduced to metrics substantially associated with policy and contracting actor-networks. Consequently, the possible ways that sustainability could become enacted at Brownfield were constricted, with little potential to be creatively developed locally.

Next we extend our analysis, applying our actor-network perspective by mapping mediators to trace what *did* unfold in respect of enacting ideas of sustainability. This step was undertaken because understanding what happened to intentions and to the related attempted fostering of collaborations within the complex landscape of power and politics, indicated by the two examples given above, can be enhanced by tracing the mediators (particularly nonhuman entities) in the processes of delegation.

5.3 Extending analysis: Mapping mediators and delegation

As we have indicated, actor-network studies (for example, Bled (2010) and Magnani (2012)) which have explored organizations and sustainability have not fully considered the potential for nonhuman agency in their interpretations. Through the next stage of our analysis we show how paying attention to mediators opens up greater reflexive potential for understanding the dynamics of actor-networks which shape meanings and activities related to sustainability, possibly unsettling and displacing human intentionality.

We present our interpretations of the mediators below in a list under categories which we developed. By drawing particularly upon a study by Gherardi & Nicolini (2000) of the ‘translation of safety-related knowledge’ we decided that listing the mediators was the most congruent way to present our account because doing so allows the framing that they can operate simultaneously across a complex field of action. This offers our analysis in a way that does not inappropriately depict and locate evolving mediators in processes of translation. By doing this we hope to foreground the partial and messy view which is appropriate, and which importantly we appreciate as reflective of how sustainability was becoming organized at Brownfield.

The key categories of mediators which we developed from our study are set out below.

Measurement devices that monitor and automate spaces of organizations

- Accounting processes used by the Developer for waste, water and energy usage
- Facilities management company’s computer systems to set temperatures and control heating in Principal Tenant’s buildings
- Benchmarking of waste, energy and water performance of Principal Tenant’s buildings
- Online carbon calculator for assessing Principal Tenant’s projects

Sustainability discourses and people's ability to use language in practice (including spoken visions about sustainable futures)

- Vision ‘to do things differently’ by the former Chairperson of the Developers
- Risk Manager at Principal Tenant co-ordination of data gathering, analysis and reporting about waste, water and energy use
- The environmental policy of the Principal Tenant, defined by waste, water and energy, became their organizational sustainability policy for Brownfield in 2009 with the addition of ISO14001
- Building specification auditing by on-site engineer for Principal Tenant during construction

Texts (funding frameworks, policies, technical standards, certifications, specifications and contractual terms)

- Public funding agreements (principally ‘European Regional Development Funding’) connected with an agenda for sustainability (low carbon) including local employment outcomes
- BREEAM Excellent required in Principal Tenant’s original building specification for Brownfield
- Principal Tenant’s organizational environmental targets: Energy - 20% reduction per person, transport - 20% reduction CO₂ per person, Water - 25% reduction, Waste - 25% reduction to landfill with recycling at 75%

- RDA Sustainable Building Policy – metrics for BREEAM standard and also carbon, waste and water
- Construction partner’s sustainability targets for waste-to-landfill, materials, design and carbon emissions (e.g. target of 70% waste diverted from landfill)
- Forest Stewardship Council certification awarded at Brownfield along with project specific certification following an independent audit
- Contracts defining Developer’s ownership of assets at site including buildings, equipment and vehicles
- Principal Tenant’s contract with the facilities management company which includes energy reduction performance targets with financial penalties for non-achievement
- Policy to charge for car parking and use video conferencing by Principal Tenant

Technological artefacts, or work equipment of varying degrees of sustainability

- Shipping canal used to transport some building materials to construction site
- Small waste collection spaces in buildings at Brownfield
- New tram terminus, cycle and pedestrian connections added
- Combined heat and power energy system built
- Use of pull-printing and sourcing of furniture and carpets from the region by Principal Tenant

5.4 Mediator analysis: two supporting vignettes

From undertaking our categorisation of mediators and associated analysis to bring greater texture to the delegation associated with the mediators, and by drawing further upon our five strands of data (explained above), we develop two vignettes below. These offer some impressions of how leaders at Brownfield, seeking to translate the ambiguities of the global concern for sustainability into local actions, substantially appear only able to connect with what is graspable, communicable and already operating. This means that these leaders and other human actors are thus likely to reach for specialised and functionally different practices in other actor-networks, in this case ones which are becoming established in systems of environmental accreditation, perhaps conferring implied legitimacy. Hence, whilst our previously given examples, of how visions can translate into restricted enactments, show actions that interrupted human interactions in support of an idea of collaborative and progressive sustainability, our analysis of mediators suggests that relations with nonhuman entities are equally or perhaps more consequential in the dynamics of dilution, and so to the actions (and disconnects to leaders’ rhetoric) that unfolded. In the two vignettes, we offer some glimpses of mediator interactions involved in how sustainability became enacted. In support of this, Figure 3, which is presented after the vignettes, is an image of aspects of key interactions, within a messy field of action, to show how mediators can be seen as highly significant to the enactment of sustainability.

5.4.1 Vignette One: An open space crowded with mediators

Across the categories of measurement devices, sustainability discourses and texts there are recurring references to the monitoring of waste, water and energy usage. Referring back to the examples of *A*’s attempts to *interest* actors into a potential vision “to do things differently” we can understand that the mediators relating to monitoring waste, water and energy draw on the stabilised effects of other actor-networks and are significant in delegating and expressing sustainability at Brownfield. Consequently, an idea of Brownfield being an “open minded community and clean sheet of paper to do differently” as described in our examples of *A*’s intentions can be understood as misguided. The image of the cleared area of

land for Brownfield was not an open space for enacting sustainability but was already *enrolled* with mediators in other actor-networks, which stood for particular versions and performances of sustainability. In particular these constituted the strong environmental framing attributed to sustainability which relates to recurring references to waste, water and energy usage. This contrasts with very few social aspects (only about local employment outcomes connected with funding arrangements) being noticeable in our mapping of mediators. Consequently, the *problematization* and delegation of sustainability at Brownfield is narrowly focused, rather than appropriately broadly based to incorporate a nexus of challenges relating to environmental, social and economic problems. One example, of this is how the Principal Tenant's environmental policy later becomes their sustainability policy with the addition of an international standard for environmental management (ISO14001). This *enrolment* of a mediator from other actor-networks is important in how sustainability is delegated at Brownfield into specialised and functionally different practices. The functions and roles related to environmental and risk management can thus be appreciated as being stabilised as central in *mobilizing* sustainability. Hence "to do things differently" for sustainability is a weak actor network as the specialised practices of environmental management substantially stand for sustainability at Brownfield.

5.4.2 Vignette Two: Nonhuman agency in action

From the range of mediators we have mapped there is a prominence of nonhuman actors performing sustainability. It is unexpected that the work of achieving sustainability, a topic relating human values about how we organize our living and working, is substantially delegated into nonhuman entities. We see this as relating to the contractual arrangements at Brownfield being about the key tenant outsourcing to other organizations aspects such as building ownership, catering and building management. Consequently, the access and use of many resources for organizing were contractually defined which had implications in how sustainability was translated and delegated. For example, the Principal Tenant's offices were managed by a facilities management company. Through the contracting the Principal Tenant had insisted on having some very tight performance indicators around their energy usage, whereby if 10% savings year-on-year, based on their benchmarks with similar buildings, were not achieved the facilities management company had to pay a penalty charge. This performance indicator materialised into a computer system setting and monitoring building temperatures, which can be appreciated from the Risk Manager for Environment at the Principal Tenant's view about responsibility for being sustainable.

"It can be tricky as some of it [responsibility] is falling across boundaries. ... The facilities management company [are] ... in control of this building at this moment in time so how they run the plant to make it hot or cold [and] ... the lightings. ... There are conflicts. Staff will complain ... even though the building is on an optimum start system it might not be fully warm on occupation just because it works on averages. ... So the computer should target a building temperature for 21 by 9[am] ... if the weather is out of season then there is always a risk that it will be cold at 9. Then that can cause behavioural problems as the staff will ring the help desk and complain to the contractor. [The] contractor gets penalised for too many complaints so it can create a tension if you like between facilities management company and on-site staff and that's something we're struggling with."

This comment demonstrates how sustainability is being translated into a quantitative measure associated with energy use and building temperature with the management for this completed by a computer system, attempting to perform to the contracted reduction in energy use. Hence the 'dirty work' of doing sustainability, which in this case was about getting people to

use less energy in the workplace, is delegated to a computer system (Law & Hetherington, 2000). This helps us glimpse how this nonhuman mediator can be understood as constituting agency within the actor-network. We can also appreciate how such contracting arrangements can create rigidities within the ongoing translation processes associated with sustainability, an otherwise contextual and dynamic concept. This is because future attempts to *problematize* and *interest* to promote alternative translations of sustainability, in this case of keeping people sufficiently warm to be able to work, would likely struggle against a largely nonhuman actor-network that has *mobilized* and congealed with contracts that are financially costly to amend.

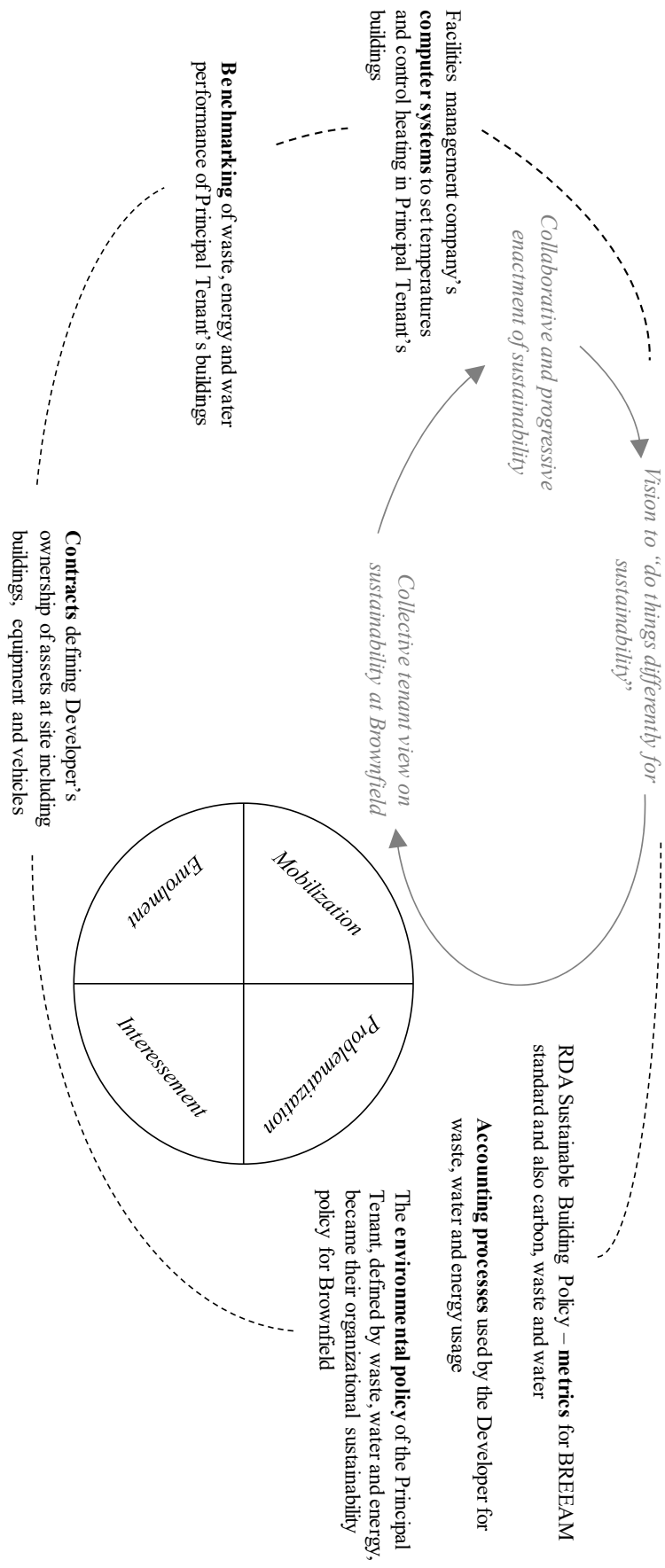


Figure 3 – Mediators shaping the enactment of sustainability at Brownfield

Through our actor-network analysis we have been able to consider how behind the competing human agendas and intentions to enact or resist visions of sustainability, lie associations between human and nonhuman mediators which reproduce material practices and are central in shaping possibilities for action (as suggested in Figure 3). In particular, we showed how nonhuman actors, which are typically overlooked in considering how to realise progressive visions for sustainability, are highly active in relations that stabilise actor-networks, allowing us to extend insights beyond existing actor-network theory informed studies of sustainability (Bled, 2010; Magnani, 2012).

6. Discussion

Sustainability is often related to a vision where social, environmental and economic concerns can be integrated and balanced. It is this global concern that actors at Brownfield drew upon as part of trying to define the meanings and implications for the development that could occur at this major redevelopment site. The global concern informed the articulated intention “to do things differently” which, as explored, involved a range of different actors who were variously attempting to span organizational boundaries to come together to organize for sustainability. We have analysed how sustainability is translated at Brownfield by drawing upon ideas from actor-network theory, extending this approach and methodology by integrating practices of reflexivity. We have sought to add richness to debates which consider the significant gaps between leaders’ rhetoric and organizational action on sustainability (for example, Carollo & Guerci, 2017; Ehrenfeld & Hoffman, 2013; Ihlen, 2015) by showing how actor-network approaches can help to extend visibility upon how such gaps can emerge and how the scale of action and effect is an accomplishment of sociomaterial networks.

Our actor-network approach, using the concept of delegation and mapping mediators, supported a broader attention to: nonhuman entities and their roles; the complications and dynamisms of network boundaries, connections and disconnections; and, the heterogeneity of mediators which could become part of conceptualisations of sustainability. To explore the possibilities for actor-network approaches to yield insights into how transformations to sustainability might be achieved we drew upon studies of sustainability (Bled, 2010; Magnani, 2012), and other aspects of management and organization (Bergstrom & Diedrich, 2011; Doorewaard & Van Bijsterveld, 2001; Gherardi & Nicolini, 2000). In our analysis we suggested that many of the mediators which we mapped can be understood as already being tacitly or potentially *enrolled* into this visibly cleared piece of land for Brownfield before the beginning of our story of intentions.

We are not arguing for things having been pre-determined and beyond human intention, but that a reflexive awareness of the potential sociomaterial intermingling of these delegations is important if actors are to be successful through processes of *problematization* and *interestment* at fostering their ambitions for sustainability. Through our analysis we have brought attention to some possible combinations of mediators which can stand for sustainability and interrupt the potential for more creative, collaborative and expansive versions to emerge. But being aware of how we are entangled in these sociomaterial networks may not mean that we are suddenly able to realise more ambitious visions of sustainability. Reflexivity can, however, help us to appreciate the dimensions of coordination involved in maintaining and extending a vision of sustainability as something different from existing forms of ordering. For example, we can understand how although technologies are integral in how sustainability becomes delegated, technical knowledge alone, like that deployed by people involved in the building and facilities management at Brownfield, seems

to follow rather than create the necessary strategic influence to bring about a comprehensive vision for sustainability. Consequently, a key area of attention is the relational work that can engage critically with managerial rhetoric and bring it into closer conversation with the dimensions and dynamics of day-to-day enactments of actions and visions.

Relational work is about expanding attention to the challenges and dynamics involved in forming alliances with (non)human mediators so that possibilities can be opened up for creatively enrolling them into enacting progressive visions for sustainability. From our actor-network informed study, achieving this relational work requires an appreciation that the possibilities for action are associated with forms of localised hybridity. Actor-networks can be understood as hybrids, because they are constituted by the evolving relationality of humans and nonhuman objects, so everything that happens (or does not happen) can be understood as an effect of the hybrids that make up an actor-network. This means that the local (referring to the cleared area of land in our study) associated with actor-networks which form Brownfield are hybrid effects of other 'locals', and so any new local practices can be understood to be interdependent with the strength of mediators in other actor-networks. In our research, we traced sustainability as being substantially delegated into a range of mediators involving specialised and functionally differentiated practices which were associated with professional environmental management, and contracting for outsourcing building heating and maintenance arrangements. Consequently, relational work which seeks expanded attention to (non)human mediators, beyond the political and power dynamics (see Section 5.2), can benefit from paying attention to the potential localised hybridity effects, such as those explored in the two vignettes.

By looking beyond organizational leaders' identity performances to how sustainability becomes translated into actions, the implications from our analysis for expanding attention to human-nonhuman interdependencies implies the need for a developed sense of leadership. This is because in seeking to take action or leadership for sustainability it becomes crucial to appreciate how different and perhaps incongruous actor-networks converge, and so understand more about what forms of localised hybridity are possible or desirable. In this way we can appreciate leadership as a relational accomplishment, which pays attention to the interminglings of human *and* nonhuman actors within processes of problematizing, interesting, enrolling and mobilizing. Sustainability comes into being as an effect of associations of heterogeneous human and nonhuman elements. This means that rather than imagining that we can start with a blank page or open space on which to inscribe human intention we need to appreciate how our local is entangled within other 'locals' across times and spaces. Consequently, we have shown how our analysis helps to develop "radically relational and symmetrical understandings ... challenging distinctions between global and local, close and far, inside and out, notions of place, propinquity, and boundedness" (Farias, 2010, p. 8).

By paying attention to ideas of localised hybridity the disconnections that can emerge between leaders' visions and realities can be better understood, and likely productively drawn upon in *problematizing* the possibilities of multiple potential pathways of delegations which stand for sustainability. Also, in relation to leadership processes, others' 'experiments in regional development' advocate "university-based action research as a potential catalyst for going on in a different mode of humanity" (Gibson-Graham, 2011, p. 12). However, at Brownfield the universities, to which we are associated, were dismissible actors when seeking to *problematize* sustainability as a prompt to alternative ways of understanding and doing regional development in a capitalist world. Hence, those seeking to take leadership by

intervening in spaces of action for sustainability, as the first author attempted, can also benefit from a developed and enriched sense of the complex relational work that is required to successfully support people, organizations and societies to work within hybridity effects. They would also benefit from a sensibility for the likely limits to their agency in complex spaces.

In developing an actor-network perspective to explore how senior leaders' vision and rhetoric at Brownfield did and did not translate into actions and organizational transformations, we found engaging with reflexivity to be crucial. The attentions that reflexivity brings, by seeing our knowing as spatially, socially and historically located, prompted us to engage closely with the limits of our visibility on the unfolding of action at Brownfield. Doing so is core to enacting our actor-network approach with methodological modesty (Law, 2004). The concept of localised hybridity, which we have developed to describe interdependencies between actor-networks, refers to the mediators and processes of delegation at Brownfield, and also to enhancing notions of researcher reflexivity by bringing attention to the potential significance of nonhuman mediators to shaping our visibility when tracing actor-networks. What this means is that we can appreciate the constricting of possibilities for sustainability as about both how visions became delegated at Brownfield to specialised and functionally differentiated practices, as well as restricted researcher imagination about what could be perceived as a mediator associated with sustainability. For example, as shown in our analysis, we can understand an active complicity at Brownfield, by actors including ourselves, to focus on environmental dimensions (e.g. energy, waste and water) and blindside social aspects, which is a recognised criticism of the field of sustainability studies (Boström, 2012; Eizenberg & Jabareen, 2017). As we have mapped, accreditation schemes, certifications and codes related to environmental dimensions are figural as accepted and measurable ways of organizing for sustainability (Brigham, Kiosse, & Otley, 2010), whereas aspects such as community development remain nebulous and less congruent with the dominance of 'ecological modernisation' which involves managerialism for greener capitalism (Mol, Sonnenfeld, & Spaargaren, 2009). Also, once the RDA no longer supported and enabled engagement with expanded notions of sustainability across the region, economic interpretations might be favoured as less contested to advocate. It is possible too that alternative forms of organizing which may be more equal and democratically engaged in sustainable ideals, but not constituted by 'formal organization' (i.e. office buildings, legal incorporation, job specifications, remuneration schemes etc.), might have been less visible to our mapping.

We have demonstrated how an actor-network lens can bring theoretical framing to help make sense of the complex sociomaterial interdependencies in networks through which attempts are made to organize for sustainability. However, such an approach cannot give us a comprehensive "God's eye view" on these interdependencies, as we are produced by and embedded within them (Whittle & Spicer, 2008, p. 619). In our performance of 'modest methods' we have shown how we have developed an actor-network approach that helps us "to become more reflexive about the on-going, heterogeneous and multiple processes of translation" (Sage et al., 2013, p. 288). In doing so we have tried to be clear about how we have worked within our inevitably partial visibility on multifaceted streams of action. The first author followed the actors as far as his persistence could take him during the fieldwork because sustainability could not be grasped as a global sociomaterial hybrid. In particular, we recognise that, as described, the first author's access to people associated with Brownfield to understand the field of action was itself challenging to realise. Specifically actors at the Developers thwarted and delayed the provision of promised key contacts at the tenant

organizations. In some ways the first author's experience of the difficulties of making connections and pursuing research about sustainability at Brownfield mirrored how visions about sustainability were constricted. Tempered by being reflexively aware of these limitations, our actor-network approach has extended understanding of the action at Brownfield, aspects of which we notice are implicated in other locations and associated with other attempts to realise ideals of sustainability.

7. Concluding remarks

Sustainability remains a major practical and ethical challenge for organizations, citizens and societies. At Brownfield we found that human intentions expressed about sustainability remained substantially at the level of pronouncements and aspirations with few significant actor-network building activities beyond, despite clear attempts to develop grass roots and other involvement and innovate thinking. The possibilities for transformations "to do things differently" were largely unrealised, with sustainability becoming delegated into specialised and functionally differentiated practices in other actor-networks. We showed some of the ways that the possibilities for new practices associated with sustainability are interdependent with the strengths of existing actor-networks. Additionally, our approach, which focused on mapping mediators, and associated immutabilities in the making, has offered insights about how nonhuman entities can produce significant agency in how sustainability is organized.

Through our study we have sought to advance ideas about localised hybridity, suggesting that delegations to mediators mean that new visions and practices around sustainability tend to be ignored or grafted on to existing actor-networks. As we have shown, the attempt to develop new ways of thinking as the key to sustainability is a weak actor-network. Instead, sustainability was enrolled around a range of enactments which have been stabilised in other actor-networks. Consequently, our analysis suggests that sustainability rather than being a linear and progressive development toward a different future and openly amenable to committed, visionary leadership, is bound up with contested and uneven visions and practices that are variously visible, routine and interdependent. Durepos and Mills (2012) have criticized actor-network theory for not taking history seriously. We have sympathy with their concerns, but our analysis suggests that due regard can be paid to embedded and existing networks, local hybrids, which may prove relatively stable in the kinds of circumstances we have depicted at Brownfield. We suggest that adopting an approach of reflexivity in relation to research and localised practices has advantages over focusing on and making assumptions about organizational history.

Our study has shown that sustainability is irreducibly hybrid as it is translated into actor-networks that produce the effect of specialised expertise and functional differentiation. This does not mean that the grand claims of sustainability that characterised the beginnings of the Brownfield project have been turned into insignificant organizational processes. Although that could be the case, this is an empirical question for those who would wish to continue to "follow the actors". Sustainability concerns do not always map neatly on to pre-existing practices or institutional power relations and divisions. The process of delegation producing localised hybrids always has to be accomplished as contingent and uncertain rather than necessary and secure. In our study the fate of sustainability, at the time our research was undertaken, as specialised and functionally differentiated practices constitutes important local hybrids that influence and structure action and inaction. This means that the focus of research that is interested in promoting sustainability should be on the relational formation and stability and flexibility of actor-network theory's hybrids that produce sustainability effects

across times and places. For Latour (2005), the global is local at all points and the challenge is to follow the associations that constitute changes in scale of action and effect.

Many find it difficult to grasp what organizing for sustainability might entail. By bringing greater attention to the significance of our interactions with nonhuman mediators in attempts to organize for sustainability, our research hopes to offer some insights into the qualities of relational work that are likely necessary to “do things differently”. We posit the importance of managerial and organizational action around localised hybridised networks for sustainability. Localised hybrids may then become global if their relational associations hold across times and spaces. Paradoxically perhaps, because attempts at change for sustainability at Brownfield seemed, at that time, apparently so compromised, our reflexive analysis does indeed point towards ways of doing things differently methodologically which we offer as a potential contribution. We challenge dominant modes of social science inquiry by imagining and performing a reflexive, fine-grained form of attending to the action.

We have shown that the consequences of paying attention to the reflexive features of actor-networks, in particular the making of localised hybrids and the range of actors included as having agency, are significant for those interested in fostering sustainability. Our approach invites a different theoretical lens, new modes of inquiry and, importantly, a sensibility that is attentive to reflexive aspects of research, practice and intervention. We believe that this methodological modesty provides a basis for further action-oriented research and practice. Through our actor-network lens, being lost in delegation does not mean that the human intentionality that we traced has been consumed and forever lost, or that more human efforts towards trajectories for organizing for sustainability at Brownfield would be futile endeavours. As we have explored, whatever happens next emerges from and through the becoming of localised hybrids, and appreciating more about this relationality should help our search for more sustainable pathways by providing different ways of intervening and researching. By embedding ideas and practices of reflexivity in how we have developed and enacted our actor-network approach we hope to have offered some expanded possibilities for what it might entail to take action for sustainability within an awareness of our entanglement in contingent and consequential sociomaterial hybrids.

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