

Technologies of recovery: plans, practices and entangled politics in disaster

Lucy Easthope and Maggie Mort

Abstract: Recovery practices following the loss of home, sense of security, space and possessions, have recently become a focus of UK government attention. How people recover from disasters is seen to have a direct bearing on individual, community and economic well-being, so that the recovery itself becomes a form of social change. A plethora of instruments: templates, checklists and guidance documents have been produced to effect this recovery. We term these ‘technologies of recovery’, which work within a wider context of disaster planning aimed at bringing order where much is uncertain, reactive and dependent on emerging relations between people, things and spaces. While such protocols are not necessarily unwelcome, they carry many assumptions. We show how these technologies are built from official, distal narratives, versions of recovery remote from situated practices or recovery-in-place. Official emergency planning builds on ‘lessons’ from previous emergencies, to be then applied to future crises. Knowledge that is situated, complex and partial is potentially useless because emergency planners seek accounts that don’t depend on highly localized circumstances. From a five-year ethnography of both a flooded community and the development of government recovery guidance, it became clear that technologies or recovery became transformed and remade in localized practice when enacted by newly formed and precarious collaborations of residents and *local* responders. Operating alongside, and sometimes underneath, the official response, residents and local responders demonstrated a remaking of the politics of recovery.

Keywords: flooding, emergency planning, recovery practices, technologies

Introduction: flooding in Toll Bar, Doncaster, UK

Toll Bar is a settlement of 1,400 residents in Doncaster, South Yorkshire and is described as a ‘village’. It lies in a bowl-like area in a part of the UK hit most severely socially and economically by the closure of the pits in the early 1990s following the 1984–5 miners’ strike. In June 2007 parts of England experienced devastating and unseasonal storms and rainfall and South Yorkshire experienced severe flooding, with 48 areas of the large borough of Doncaster affected. In the borough 3,286 homes were flooded, with 2,275 suffering ‘major damage’ as defined by the local council and 283 businesses were also affected (Doncaster



Figure 1: *The purpose-built caravan park for council tenants in Toll Bar.*
Source: Photography by L. Easthope, 2007.

Metropolitan Borough Council, 2011). In the village of Toll Bar, a primary school, hundreds of homes, shops and small businesses were severely damaged.

The subsequent government-appointed ‘Pitt Review’ describes the flooding of 2007 across the UK (Pitt, 2008) as ‘extreme’, ‘exceptional’ and ‘serious’ and what happened in Toll Bar began as one of these extreme, exceptional, serious events. The flooding in this village started as a mingling of environmental frailties and human-made neglect ravaged by severe and unprecedented rainfall. But it also exposed a chronic weakness; this was not a one-off event but part of a way of life, part of what it means to live in that place.¹

A number of developments then occurred in the wake of the Toll Bar floods that clearly differed from ‘conventional’ emergency planning practices.² Flooded out of their homes, many Toll Bar residents spent the first weeks sleeping in nearby leisure centres, re-imagined as ‘rest centres’, making home in places like squash courts. Then residents of the council-managed housing asked to be kept together rather than being dispersed to temporary accommodation across the county. Unusually, to facilitate this Doncaster Council created and managed a large park of 50 mobile homes and a laundry area built on a farmer’s field (see Figure 1). Staying local proved critical to the way in which people were able to maintain or rebuild their networks after the floods. Importantly, the new caravan park was close by the majority of damaged homes and opposite the primary school. Not only did the residents stay local, but an adjacent temporary structure was set up by the council as a ‘Neighbourhood Support Centre’. Here council staff, which we term ‘local responders’, relocated to Toll Bar village from their offices in Doncaster, working initially on a 24-hour shift pattern. This relocation and continuous presence was critical: over time it became clear that

these local responders who had to follow the National Recovery Guidance (including technologies of recovery), were acting as intermediaries between the displaced residents and the distant authorities. This entanglement became a crucial aspect of the flood recovery.

This entanglement was new. Prior to the floods the Neighbourhood Manager explained that there was very little engagement between many Toll Bar residents and the Council; if you were seen talking to a council worker it was assumed that you were a 'grass'.³ But the floods meant that people had to interact, and later chose to interact,⁴ and then they got to know the council workers as individuals. The residents then became open to other council suggestions and suddenly there was 'take up' of things like council literacy and computing courses. People became aware of a council scheme that allowed them to access laptop computers and these started to appear at meetings of the residents and the 'One O'clock Club' (see later). They also obtained a 'dongle'⁵ that residents shared to give them Internet access. If they met in each other's houses to do this, they referred to this as hosting 'the Internet café'. It was in these spaces and through these relationships, that the politics of recovery began to be reshaped, as field notes from 2009 illustrate:

On a number of occasions [after the floods] I walked around the village with Pat. Everywhere we went people acknowledged him. Young boys and older teenagers would stop and chat to him. He explained to me that it was often these boys which had been considered 'trouble' before the floods. It was their 'anti-social behaviour' that had been included in the statistics before. Now if they were getting boisterous he could have a word and they would say to him 'Sorry about that Pat'. He knew their names; they knew his.

Planning and ordering: technologies of recovery

Many attempts are made to bring order to the messy realities of life after disaster and one formal attempt is undertaken through a process called Emergency Planning. More specifically, attempts to bring order to disaster settings in the UK are made through the use of particular emergency planning tools. Embedded in emergency plans, these instruments, often presented in the form of documents, tables and checklists, are developed centrally through a process of distilling and reducing accounts of previous emergencies. They are then sent out for use by those working in the field of emergency planning, which in the UK is a function of local government, police forces, health organizations and utility companies; a function given greater precedence since the passing of the Civil Contingencies Act 2004. The 'lead government department' for much of this work is the Civil Contingencies Secretariat, placed within the UK Cabinet Office. In 2007 the government initiated work to examine specifically the way in which communities and businesses 'recover' from disasters, subsequently issuing guidance and particular tools to emergency planners: the National Recovery Guidance (Cabinet Office, 2007).

We term these particular tools, ‘technologies of recovery’: they are human and non-human; material and discursive, designed to change or manage human behaviour. At the deepest level this perspective draws on Foucault’s elaboration of technologies of power, perhaps most telling, that of biopower where the object of management is groups of people or populations. We then use ‘technologies of recovery’ in the sense that the tools and instruments we describe are embedded within policy networks, which can themselves be seen as technologies (Harrison and Mort, 1998). Drawing more particularly from Science and Technology Studies where empirical explorations of what counts as technology generated the sociotechnical perspective, in thinking about technologies of recovery we borrow from Pinch *et al.*’s discussion of ‘social’ technologies, which refers to artefacts and processes ‘whose purpose is to produce changes in human behaviour’ (1992: 266). In their case, Pinch *et al.* analyse devices and practices in health economics and show ways that such instruments work normatively. In our case the guidance documents, checklists, templates and other recovery tools developed in emergency planning are designed to effect a desired state or endpoint. To achieve the desired state multiple problems get reformulated in the ‘terms of a narrowly conceived discourse of macroeconomics’ (Ashmore *et al.*, 1989: 91) and in this discursive practice many diverse consequences can be subsumed into one set of aggregate figures: texts and plans are designed to produce outcomes within particular settings.

The ‘technologies of recovery’ are both social and material, made up of lots of small parts, which in the case of disaster recovery include guidance sheets, templates, flash cards, checklists and so on. They are a form of socio-technical intervention, acting on the simultaneous construction of a range of human and non-human actors, which include emergency planners, residents of the flooded village, household possessions, online forms and templates. Like the wildfire maps described by Katrina Petersen (this volume), actors produce artefacts that are imbued with different values, expectations and priorities. They are fashioned as objects, which shape a relationship between numbers of actors and ‘gain sense and significance within everyday activities and ordinary experience’ (Heath *et al.*, 2003: 77).

Initial policy level discussions about ‘recovery’ in Whitehall involved a collaboration of civil servants, academics, emergency planners and those considered representative of experiential disaster learning, such as in one case, survivors who had experienced the Carlisle floods in 2005.⁶ The aim appeared to be that different knowledges would be brought together to make a nationally available set of tools to be called the National Recovery Guidance, available to download from a Cabinet Office website. It would include explanatory information, recovery decision templates, topic sheets, checklists and links to other useful pages on the Internet. It would include forms with empty boxes to be populated by local planners with their own disaster specificities and geographies and the nature of the emergency. The National Recovery Guidance was launched to emergency planners by the Cabinet Office in November 2007.

C	Casualties
H	Hazards
A	Access
L	Locations
E	Emergency Services
T	Time

Figure 2: *Aide memoire.*

Source: Created by L. Easthope, 2007.

The Guidance is replete with textual devices such as flow charts to facilitate decision-making. The underlying ethos is that anything produced must be highly efficient and effective in a crisis. This is taken to mean clear and brief, and thus leads to a proliferation of field-based tools such as small laminated cards (eg with a list of instructions that a police officer could refer to on arrival at an emergency) that can withstand the effects of smoke or rain or whatever else a disaster may involve. Such instruments also act as a reminder to planners or to residents of a flood-prone area of points they should consider and so they aim to shape decision-making. An example is CHALET: a visual representation of how to get from A to B. CHALET provides stepping-stones through a messy, complicated time.

Figure 2 is an example of the Aide Memoire cards issued to emergency responders, who are expected to use this as a prompt to help them evaluate situations on arrival at the scene of an emergency. The mnemonic ‘CHALET’ is used in the sense of ‘make sure you have your CHALET card with you’.⁷

Planning and preparedness activities, such as completing local registers outlining major hazards in the area, occupy the majority of an emergency planner’s workload. To demonstrate and evidence that this work is being undertaken requires the generation of a plethora of plans and supporting documents. Again working from the view of policy as technology, Bloomfield and Vurdubakis in their analysis of information technology (IT manuals, consultancy reports and popular guides), state that in circumstances of technological development and implementation, texts constitute a ‘particularly potent set of intermediary devices’ (1997: 86). The texts they examine are involved in the implementation and development of ‘information systems’: an attempt to represent a heterogeneous network of people and machines and ideas, concerns, aspirations and project management tools. These plans, Gantt charts and checklists and templates ‘represent and therefore mobilize the heterogeneous human and non-human actors and materials constitutive of a...[] system’ (1997: 86), in the same way that the plethora of emergency plans aim to do. They have

a kind of textual agency (Cooren, 2004), in that they try to perform a version of recovery. Law describes how sociotechnical innovations, (the writing, the map) ‘open up the possibility of ordering distant events from a centre’ (1994: 104).

This brings us to a further and influential trope in our thinking – the role of plans. Emergency planning and planners attempt to find a path from an initial state, such as the aftermath of a severe flood, to a desired goal state given certain conditions along the way. For the community to achieve the desired goal state of, for example, a normal transport infrastructure or re-established tourism, it must undertake certain actions that are outlined in the rest of the guidance document. In framing ‘technologies of recovery’ as a way of thinking through what came to happen in Toll Bar, we start not from Lee Clarke’s version of plans as ‘fantasy documents’ (Clarke, 1999) though we find his work very persuasive for analysing other disaster settings, but in this context more from Lucy Suchman’s critique of artifacts of social ordering in her article ‘Plans, Scripts and Other Ordering Devices’:

I have argued that to treat a plan – or any other form of prescriptive representation – as a specification for a course of action shuts down precisely the space of inquiry that begs for investigation; that is, the relations between an ordering device and the contingent labors through which it is produced and made reflexively accountable to ongoing activity. Naturalizing plans as representations (mental or otherwise) existing prior to and determining of action obscures the status of planning as itself a form of culturally and historically situated activity, manifest in specific practices and associated artifacts. Taking plans as artifacts, in contrast, recommends a research agenda dedicated to examining the heterogeneous practices through which specific ordering devices are materialized, mobilized, and contested, at particular times and places, with varying effects. (Suchman, 2007: 187)

Recovery instruments may be presented as neutral and applicable to multiple situations (for example, because they are nationally available on an open-access website) but the ‘recovery’ that these tools are trying to effect is actually highly variable, messy and situated. Such recovery instruments may, like many social technologies, such as telecare alarm systems or public health leaflets, be presented as products of science, but this is highly problematic. These technologies may be highly unrealistic because they are only as good as the data and statistics fed into them; that is, any input such as a completed box on a template. They need to behave in a uniform, stable way, untainted – in the case of the Toll Bar floods – by the vagaries of the loss of home or space or things. They are attempting to idealize and singularize the multiple, messy world of disaster and they may attempt to be uniform and stable but the world of practice cannot reflect that. As Bijker and Law state, ‘Technologies always embody compromise’ (1992: 3).

Because both residents and council responders stayed local in Toll Bar the materialization, mobilization and contestation of technologies of recovery became visible. This also opened the way for detailed ethnographic work. ‘Contingent labours’ came into view: the local responders (acting as intermediaries)

and the residents worked on, and with, the National Recovery Guidance protocols to do something different.

As John Law puts it, there is function in the plan as a written document:

... some materials last better than others. And some travel better than others. Voices don't last for long and they don't travel very far. If social ordering depended on voices alone, it would be a very local affair. (Law, 1994: 102)

Of course plans can be lost, burned, misinterpreted but if cared for and maintained Law suggests that then they will appear to travel well, across time and space; in this case from Whitehall out to Toll Bar.

Official narratives of disaster

The Symposium offers a range of subjects; choosing from over 20 sessions, aimed at tackling the most important issues in our profession, including case studies, (lessons identified from the past 12 months,) expert insights, master classes, energising practitioner skills and importantly offers an opportunity to horizon scan and gain insight into future risks and the environments we face. (UK Emergency Planning Society, 2011)

Events staged for disaster managers, such as the seminar advertised above, are often centred on the most recent disasters. At these events participants are asked to give presentations in a particular, formulaic style: 'PowerPoint' presentations conclude with a final slide listing lessons identified from an earlier operational response. These events are also used to launch new recovery devices. Certain disasters become particularly emblematic and in UK emergency planning circles (and now also in the media and even public awareness) are known simply by names or numbers such as '7/7', '9/11', 'Lockerbie', 'Buncefield'.⁸ These numbers are thrown into the dialogue: for example, 'we have learnt a lot about communications since 9/11', without further elaboration or explanation.

Ironically, even though these disasters are often known by their geographical name, situating them within the context of place is problematic. They are seen to be of little use to other planners if lessons cannot be taken back to their own practice and applied to their own problems. Yet knowledge that is situated, complex, and partial is potentially useless because what emergency planners also want is lessons identified that do not depend on a highly localized set of circumstances.

Access to telling disaster stories at these events is strictly limited so although planners sitting in the audience may believe that they are hearing 'everyone's' perspective, certain filters act to screen and reduce the narrative. Even when 'affected people' are invited to give a presentation, their experience is organized in particular ways. In 2009, a number of Toll Bar residents, who had become particularly and eloquently vocal about life after the floods had been invited to speak at a national planning event. The letter of invitation, in the jargon of the UK Civil Service, asked them to speak for no more than 25 minutes and to submit their 'PowerPoint slides' two weeks in advance (field notes, May 2009).

The women did have access to computers but were not employed in roles that involved using PowerPoint and they immediately felt alienated, saying that this event ‘probably was not really for them’.⁹ Outwardly, the Whitehall based planners employed strategies to ensure community engagement, but in practice they illustrate that they either do not understand how to undertake this or actually have no real interest in this kind of engagement or consultation. By requesting residents to produce only an ‘overview’ of their story, the most situated realities get occluded. But it is these realities that often reveal critical insights about recovery and the ‘contingent labours’ involved.

Of course there are numerous and competing accounts of any emergency. An official narrative is written/presented by emergency planners and other ‘official actors’ in one specific register, using terminology from a particular lexicon. It is promoted through specific artefacts, such as ‘debrief reports’ that are given meaning when they are shared by other emergency planners. Clarke points out that this is primarily concerned with making organizations work better, respond better, plan better. ‘But much of this . . . is about how organizations create the categories in the first place. As they create those categories they fashion a language with which to speak about uncertainty’ (Clarke, 1999: 136).

Consider this extract from the Pitt Review:

The floods that struck much of the country during June and July 2007 were extreme, affecting hundreds of thousands of people in England and Wales. It was the most serious inland flood since 1947. In the exceptional events that took place, 13 people lost their lives, approximately 48,000 households and nearly 7,300 businesses were flooded and billions of pounds of damage was caused. In Yorkshire and Humberside, the Fire and Rescue Service launched the ‘biggest rescue effort in peacetime Britain’.

(Pitt, 2008: 3)

Pitt received numerous submissions from flood-damaged communities, but more commonly their interpreters. In this extract, there is an attempt to convey the scale of the floods; to include deaths, injuries, homes but the narrative is still constructed through operational facts and statistics and there is almost no sense of space or place or person within the discussion. As Law points out, there is no method here for simultaneously juggling the social and the technical (1991: 8). Emergency planning speaks of the ‘technical’ easily enough, and then tries to bring in the ‘social’, but cannot shake off the technical frame.

Since 2008 the Cabinet Office produces a biennial register of the major risks facing the UK. This is a tool available online to demonstrate to both emergency planners and the public where risk management strategies need to be focused (eg terrorism, pandemic flu). Influenced by studies following the 2001 UK foot and mouth disease disaster (Mort *et al.*, 2005) a new category was introduced into this National Risk Register in 2010: there would now be an assessment of ‘psychological impact’. However, the extract in Figure 3 illustrates that the discourse about how people are affected by emergencies is framed in terms of facts and statistics: ‘ten different types of disruption are to be taken into account, from an inability to gain access to healthcare or schools to interrup-

Social disruption – the disruption to people’s daily lives.

Ten different types of disruption are taken into account, from an inability to gain access to healthcare or schools to interruptions in supplies of essential services like electricity or water and to the need for evacuation of individuals from an area.

In addition, the National Risk Assessment (but not, at present, Community Risk Registers) also attempts to estimate the psychological impact emergencies may have.

This includes widespread changes to patterns of behaviour or anxiety, loss of confidence or outrage that may be felt by communities throughout the country as the result of an emergency. (Cabinet Office, 2010)

Figure 3: *Extract from the National Risk Register, 2010.*

Source: National Risk Register, 2010 released to the public on 22 March 2010.

tions in supplies of essential services like electricity or water and to the need for evacuation of individuals from an area (Cabinet Office, 2010).’ Despite naming this ‘social disruption’, these cannot recognize the messier aspects of disaster such as relationship breakdown, alcoholism, suicide, domestic violence.

The intermingling (and sometimes unhappy co-existence) of a multiplicity of stories after disaster has been explored by authors such as Phil Scraton (1999), writing about the aftermath of the 1989 Hillsborough football stadium disaster and John Law’s exploration of multiple perspectives on the Ladbroke Grove rail disaster. Each narrative has its own truth and there is competition for them to be heard:

There is a regional dimension to the Ladbroke Grove Rail Inquiry. There are pigeonholes for this, and pigeonholes for that. Different days deal with different topics. And different bodies with an interest in the outcome of the Inquiry are represented, bodies which occupy a patch of socio-technical space, together with the rights, duties, responsibilities, problems and benefits which go with that space. (Law, 2000: 3)

There appears to be a link between dominant narratives of emergency and the roots of emergency planning and management as a discipline in a masculine, militaristic culture.¹⁰ Emergency planners, predominantly men, often embark on a second career in later life after many years of military or police service. They bring their past training with them and there were no additional formal qualifications required to become an emergency planner (Coles and Easthope, 2009). This militaristic and civil defence paradigm creates an unfavourable context for other stories to be articulated; emergency planners express an acceptance that these other stories are important but ultimately have little time for debates on multiple perspectives.

Adhering to the classical unities of drama, the ‘Aristotelian rules of plot’, much critiqued by Erikson (1994, 2008), the official narrative has a beginning, middle and an end; it is coherent and the role provided for each actor/actant is clear. There are opportunities for certain actors to contribute to the formalized, ‘on the record’ emergency planning narrative in the UK such as in debriefing events held for the response agencies, to public inquiries, inquests and court proceedings. In Doncaster the official narrative was promulgated through reports produced by elected council members, submissions to the Pitt Inquiry between 2007 and 2009, and a ‘lessons learned’ event for emergency planners. The notion that there is definitive and objective knowledge about producing recovery is, however, an illusion. As Manuel Tironi (this volume) describes, ‘disasters dissolve any attempt to draw teleological diagrams’ and the abundance of meaning exploding out from them challenges a neat framing within the boundaries of pre-event, event and post-event.

In her argument for situated knowledges, Haraway calls for doctrine and practice that ‘privileges contestation, deconstruction, passionate construction, webbed connections, and hope for transformation of systems for knowledge and ways of seeing’ (Haraway, 1988: 585). However, there was little opportunity to undertake this contestation, construction, transformation at the national ‘Recovery Planning’ events held in 2007–2011 and attended by the authors. Many of the presenters at these events stated that the community must be ‘engaged with’ as part of the recovery plan. But the language used was simply not the language of the local communities, or indeed the vast majority of the population not engaged in emergency planning and response.

It is a principle of recovery that it must be conducted at the local level with the active participation of the affected community and a strong reliance on local capacities and expertise. (Field notes, September 2011)¹¹

A statement such as the above cloaks the entire process of talking with people, helping people and assisting them to access information and resources, in mystery. This suggests that the way that emergency planning is done actually impedes the meaningful engagement of those affected by the emergency and stifles other voices from the start. Emergency planners don’t always know how to ask questions, listen to answers and avoid alienation of the residents at the earliest stages of a supposed ‘process of engagement’.

The resulting technologies are blind to the subtleties that affect both recovery and also preparedness for future emergencies such as hope and trust, for example trusting that the emergency planners would be able to prevent a future flood now they had seen what had happened and how to stop it. There were times when Toll Bar residents openly challenged the official narratives.

‘I don’t know who they thought they were writing it for . . .’. (Field notes, September 2011)

This comment was made during a scathing critique of a new draft document sent out by the UK Environment Agency. The ‘opinions’ of residents had been

sought but it was felt that this consultation was, in residents' words, a 'tick box exercise' (field notes, September 2011). Other, different, competing narratives of what was happening in Toll Bar were not always heard at these official events, but they were aired elsewhere:

How many times have we said this? Are we interested in the process or are we interested in the product? This is about doing things right and doing the right things and I think that's what, that's what we did. I know what WE did and I'm not saying it didn't happen anywhere else, but when we had to do something we did it. How many people went out on Saturday evenings knocking on doors asking people if they wanted washing machines and cookers and things like that. (Discussion Group with local responders, June 2008)

In the above quotation it is the responders who are demonstrating that they have seen that there are critical gaps in the official guidance. However, this alienation of the residents' experiences, coupled with a close relationship between local responders and local residents, does leave both space and support for the creation of new local recovery practices to be 'trialled' and the official protocols to be transformed: in practice, in Toll Bar local responders and local residents reformed and reimagined the guidance. Below we focus specifically on an account of one meeting to show the way in which this happened.

Toll Bar gets put on the map: reclaiming 'the recovery'

It's nice to have Pam . . . she is a voice for us. (Discussion group transcript, March 2008)

Much of what was observed in the first year after the flood involved day-to-day efforts by residents to reclaim their lives. The effort that was required to function while living in caravans, managing children, visiting the laundry, arranging the delivery of new possessions was a major burden. However, in the second year, it became clear that as some people returned to their refurbished homes they were galvanized to undertake activities that would rebuild their community and also prepare it for future flooding. Measures that were put in place by residents as an initial response to the flooding stayed in place.

One resident, Pam Sutton, had a sister in London who ran a 'One O'clock Club' in a school. This was a meeting of local residents using a school room and Pam explained that she 'decided to copy the idea' in the aftermath of the floods (field notes, December 2011). Just weeks after the floods Pam initiated this on a Monday at the primary school in Toll Bar as a way of 'bringing the community together' (field notes, December 2011).

Pam talked frequently about wanting to bring the villagers together and how the village had lost its identity over the years before the floods. This became a particularly strong theme during and immediately after the flooding when the residents felt that they had been forgotten and abandoned. In echoes of commonly held beliefs about New Orleans (Lee, 2006), residents even raised

concerns that flood water had been specifically diverted into the village to protect the newly built college and commercial sector in the town centre:

Pam says: 'The Council has done us proud . . . although we were a compromise . . . we were cheaper to redo than the rest of the town or The Hub (the newly built college)', I ask her what she means by this and she says that she does believe that the water was diverted and Toll Bar was sacrificed to save the newer city centre areas. This is a view many residents have expressed to me but the council strongly deny. It is a view that the Mayor openly mocked in his presentation to emergency planners in June 2008. (Field notes, April 2009)

In their earliest days in the rest centres, residents were expressing concerns that the Council would use the flooding as a reason to 'erase' Toll Bar. They feared dispersal across the rest of Doncaster and the closure of the badly damaged primary school. This then influenced their concerns that the village was being marginalized. Pam, with support from members of the 'One O'clock Club' and local responders, frequently mentioned that there was nothing to mark the entrances to the village. Toll Bar was just 'merged' between two other villages. She worked with the local council to obtain funding for stone signage to welcome drivers and visitors entering Toll Bar (see Figure 4).

The marker stones took many months to arrange (completion of grant forms and national funding applications and local government contract tenders) but when they were positioned they were a clear, obvious symbol that the village was 'still there':

Pam says very fervently that the one good thing from all this is that Toll Bar is now on the map . . . 'we fought for that..we had to have a disaster to get a Christmas tree with lights on in the village.' They tell me that before the floods the council Christmas lights used to go up in Bentley and Askern on either side, but they would leave out Toll Bar. They had to rely on the lady with the paper shop who used to put lights in her big windows. 'We got bins in the village too' Pam adds. The stones at the entrance clearly are part of this naming and valuing that they feel has been omitted in the past. (Field notes, April 2009)

With a number of other residents and support from Rosalind McDonagh, the Emergency Planner at Doncaster Council, Pam went on to form a group that would alert the rest of the community to a possible flood:

Pam says she has become a flood warden so that she can be kept informed 'You need to be involved to get the information'. Pam says how she now has arrangements with friends to let each other know as soon as they hear anything. (Field notes, April 2009)

This group of residents, some in their 60s and 70s, now undertake flood prevention measures: taking it in turns to walk the length of the problematic Ea Beck¹² and feed back to the Environment Agency any problems such as obstructions they find. In December 2011 we watched as Pam and another resident spoke at a Cabinet Office event to explain this work to other communities. They



Figure 4: *The welcome stones placed at the entrances to the village.*
Source: *Photography by L. Easthope, 2009.*

reflected that since 2007 they had been given new powers¹³ as residents to do things such as close roads and to speak directly to the Environment Agency. The local council responders, working collaboratively, arranged to fund the radios and torches and fluorescent jackets for the residents.

One resident said:

... in 2007 we were on the Outside but now we are on the Inside. Now if we ring up and say there is a problem they [the EA and the Council] listen to us. (Field notes, November 2011)

Toll Bar Community Flood Wardens Plan

This is a voluntary plan that has been agreed by the self nominated Flood Wardens, The Environment Agency and Doncaster Council.

Useful Contacts:

Environment Agency Area Incident Room	0113 213 4810
Environment Agency Flood Line	0845 988 1188
Flood Line Quick Dial Number	138210 – Ea Beck at Toll Bar 123FWF677 138209 – Ea Beck at Tiltle Hills 123FWF675 138211 – Ea Beck at Tiltle Hills 123FWF676 138203 Ea Beck at white Cross Bridge 123fwf669
Environment Agency Incident Hotline	0800 80 70 60
Environment Agency Customer Services Line	08708 506 506
www.environment-agency.gov.uk	
Doncaster Council Customer Contact Centre	01302 736000
Doncaster Council Emergency Contact Number	01302 341628
South Yorkshire Police	0114 2202020
Doncaster Council Neighbourhood Team	01302 736310
DMBC 24 hour number	01302 341628

Plan prepared in partnership with

 Environment Agency	 Doncaster Metropolitan Borough Council	 South Yorkshire POLICE
---	--	---

Author EP Team	145 Toll Bar Community Flood Wardens Plan August 2011	Review Date April 2012
----------------	--	------------------------

Page 1 of 38

Figure 5: *Toll Bar community flood wardens plan.*
Source: Doncaster Metropolitan Borough Council, 2009.

This group of concerned residents was then described, documented, written about as ‘self nominated flood wardens’ (Figure 5). They had become ‘something else’, not just residents, and were now named actors within new technologies of recovery.

These plans in paper and electronic form were an important part of this change in Toll Bar. They gave the residents’ new status, permanence and transferability. These documents could be transferred between residents, the police or the Environment Agency in advance of the flood and therefore allowed Pam and the others to be ‘on the inside’ of a future response. The differences and discrepancies between the National Recovery Guidance and the local practices have

enabled something new to happen here: Whatmore and Landström (2011) explain that these differences are:

important in the context of flooding in which controversies often centre on discrepancies between the firsthand experience of flood events, the vernacular knowledge accumulated in affected localities, and the flood science that informs 'evidence-based' flood-risk management.

Their work draws on involvement with a group of social and natural scientists working with flooded residents, 'to interrogate the science that informs local flood management and intervene in the public controversy to which it had given rise'. A particular synergy with the Toll Bar study is how Whatmore and Landström focus on the artifacts that 'mediated a collective flood apprenticeship in Ryedale' and were then 'recharged as publicity devices through which the working practices and knowledge claims . . . gathered political force in the wake of the group's work' (2011: 585). In Toll Bar too, these artefacts of flooding recovery became potent devices of mediation that scaffolded attempts to support a recovering community.

Only by understanding the way that technological change is contingent is it possible to comprehend how recommendations in a government inquiry report written in Whitehall (the Pitt Review) are inextricably linked to a collective of people who walk the length of a river every four weeks; stopping for cakes baked by the children of an emergency planner, who walks alongside them. The recommendations of greater community engagement and the use of flood warden schemes made by the Pitt Review were to be followed up/enacted/audited. How they were to be enacted was a local affair. The strategic support meant that some resources were available, accessed through new instruments. Toll Bar has now been described, by 'outsiders', as having an 'effective' flood wardens scheme. In fact this was shaped by its history, politics and people. There was no internal logic here, no cause and effect: Pitt did not recommend something that the planners then put in place. Nor did the residents engineer this on their own. The flood warden's scheme was heterogeneously engineered by local residents and local council responders, using resources and shaping recovery technologies created far away.

The meeting

To effect what happened next in Toll Bar required a network that could link together heterogeneous and disparate groups and individuals. Residents and council responders were both part of this network. Together they began to shape the physical recovery tools: the texts such as community flood plans, the equipment (a flood response box and their own fluorescent jackets). How this was done was often most visible at occasions when the council responders and residents came together.

In September 2011 a 'Flood Wardens' meeting was held in a refurbished community building located opposite the school. Rosalind from the Council was

attending with a colleague, and a representative from the Cabinet Office. Previous encounters at early public meetings after the flood had been tense, uncomfortable experiences where the women of the village seemed cowed and diminished. This 2011 meeting could not have been more different: the chairs were arranged on all four sides of a square and there was no 'top or bottom'. Pam chaired the meeting but was sat amongst other residents. The meeting broke off while a cup of tea was made and there was some hilarity over which guest had brought the best biscuits; the Cabinet Office representative or the researcher (he had brought chocolate biscuits as well and laughs saying: 'Lucy said you will expect good biscuits').

A further difference was the presence of Easthope's seven-month-old daughter Elizabeth at the meeting. She started off in her pushchair listening to the voices intently and nodding at key points, which led to much laughter around the table. Rosalind leant over and lifted her out of the pushchair; she was then opposite Pam and started to engage her in a game of 'Peepo'. The meeting came to a halt while this game was played.

There is never any sense that the meeting is outside of Pam's control: she allows the chatter and the laughter, laughs herself and then moves on to the next point. Everyone gets a chance to speak and a photocopy of letters of correspondence between Pam and the Cabinet Office and Pam and the Environment Agency and the handwritten notes of the previous meeting are passed amongst us. Later, copies of these documents will also be distributed to villagers (by Pam, who goes door to door) who cannot make the meeting but have asked to be kept informed. She addresses many of the issues at this particular meeting specifically to the colleague from the Cabinet Office with the preface of: 'You'll want to know this' or 'You can take this back with you'. She has copies of everything for him. Later the Cabinet Office representative thanks Pam and Rosalind: 'a lovely day' and says he: 'has never attended a meeting like it'. (Field notes, September 2011)

As Figure 6 shows, the notes of the meeting were later written in longhand, flowing script by Pam. Rosalind understands this from her position as intermediary and explains to us later that this is how the residents say they want it. They do not want the council to type them up despite this offer being made. Pam writes them out and arranges for them to be copied and distributed to residents.

Perhaps, here a new technology is created. It is different from something that the Council would produce on its headed notepaper and 'Microsoft Word' template but it has many of the same intentions. These notes allow the 'recovery' to be carried and transported to other villagers and then to other, more distant audiences such as the Cabinet Office. It does not matter that these notes are not formally typed: they will still get things done and enable new things to be enacted. The residents' actions are no less potent by being less 'formal': in this handwritten form they are personal and real. The residents also could retain control over the notes by not allowing them to be 'typed up'. Almost four years after the flood happened, this group of residents' relationship with the Council and in some respects the Government, is transformed.

Toll Bar Flood Wardens - Joint Meeting
held at Toll Bar Community Hall on Tues 3.5.11 at 11am

PRESENT: A. Buxby T. Sutton R. McDonagh M&C, M. Wood
E. Hillson M&C, K. Wilbur S. Mann Y.W. M. Muscroft E.N.
S. Maughan M&C, C. Butler M&C, A. Reedham J. Dwydale
ATTENDERS: S. Hickman A. Maltona S. Shelbourne S. Shelbourne

Minutes of last meeting agreed as true record with
no matters arising.

Exercise Watersmark - Rosalind M thanked everyone
for attending event at which Toll Bar's action plan
was gone through and each stage worked on in
groups to bring together a concise document for
future use as and when required if flooding
happens again. Several points came out of the
exercise of which the app in age groups got
interest was concerning and it was felt more work
needs to be done in schools to raise awareness.
The Villa Gardens pilot scheme using flood guard
boards to protect the bungalows was discussed but
residents had little information on how they would
work - Ian D to contact M Leaps Homes and Ros M
to push to get action from her side. A date for
demonstrating the scheme with also the relevant
people present to answer any questions needs to
be set. Also to come out of the event was Ros M
and Pam S. holding a meeting with Martin Hill
from Optima International, a local business in
the village, employing approx. 50 people. Ros M
gave Martin S. a business prompt sheet which

Figure 6: Handwritten notes of Flood Wardens meeting (September 2011).

Source: Toll Bar Flood Wardens Group.

Replacing lost items

The need for something different to be co-produced by residents and council responders first appeared in relation to lost personal items from the homes of the residents. Here, a deviation was necessary from the 'pathway' specified in the National Recovery Guidance (NRG). The politics of transformation in Toll Bar is not a story of obvious dissent and conflict. Instead where the NRG was mute or did not match the situated realities of life in this place the residents and the local responders found their only option was to work around the guidance. The situated responders came to see that the technologies of recovery would not work here without transformation.

A critical issue concerned uninsured residents, that is, those who did not have a contents insurance policy and therefore did not have a financial 'safety net' to



Figure 7: *A skip filled with personal belongings removed from the residents' homes, February 2008.*

Source: Photography by L. Easthope, 2007.

replace their lost personal items (that had been thrown into hundreds of council skips as illustrated at Figure 7). This is something that the National Recovery Guidance is deliberately mute on as it was government policy that everyone should have house contents insurance. In Toll Bar a lack of contents insurance was endemic:

They say a lot of people didn't have insurance and now some people who are trying to get some, have been refused insurance by three different high-risk specialist companies. Those that have claimed on it can't seem to get renewals ... she (the responder) was surprised when she found out how few people had insurance at the start and thought 'everyone would have it'. They tell me about the set of bungalows in Toll Bar that is occupied by the elderly. As they were bungalows, there was no upstairs to take things to and everything was ruined. The responder said that because the people were old she had assumed that they would be good with money and would have something like insurance but they didn't.. She says that they lost everything. It was heartbreaking as they had to watch everything they owned being put into skips in the front garden. She says that she can't see why insurance isn't taken out with rent [for council house residents]. (Field notes, March 2008)

In its guidance document 'Dealing with Insurance Issues' (Cabinet Office, 2011) the National Recovery Working Group set out starkly its stance towards the uninsured:

Dealing with the uninsured: Although Local Authorities have discretionary powers to commit expenditure in an emergency situation, Section 138 of the LG act 1972 and amended by Section 156 LG and Housing Act 1989, this is not usually used to cover the costs of the uninsured, but rather to fund the response and to deal with welfare needs of those affected. (Cabinet Office, 2011)

It also promotes the following statistics on the downloadable template:

93% of all homeowners have Home Buildings insurance in place, although this falls to 85% of the poorest 10% of households owning their own home. This insurance is a standard condition of a mortgage 75% of all households have Home Contents insurance in place . . . Half of the poorest 10% of households do not have Home Contents insurance. (Cabinet Office, 2011)

These figures become highly problematic in an area such as Toll Bar where there is a high number of low-income households and a much diminished uptake of contents insurance. The local council responders had to deal with this issue as it affected so many people, but this meant much more than just a deviation from the guidance documents. They instead had to develop an entire strategy themselves. They had to ‘get around’ the strong resistance expressed in the official guidance to funding or assisting uninsured residents. There was also equally strong resistance from other residents who had prioritized insurance. As one (insured) resident said: ‘We don’t have a Sky subscription but they do, and then they got help for not being insured’ (field notes, March 2008).

However, the lack of insurance actually also presented an opportunity in Toll Bar. It was, in the first few months after the floods, an early example of co-production of recovery. Without this deviation from the guidance, many residents would have been unable to replace many of their lost items. Solutions involved utilizing support that was available from voluntary organizations and church groups, but with local responders acting as a gateway to put uninsured residents in touch with organizations that were supplying free electrical goods as a charitable gesture or grants for the purchase of small items. As one responder said to me:

What else were we supposed to do . . . these were people with nothing . . . we could have obeyed the official guidance but there were two little kids in there and just bare floors. (Informal discussion with Neighbourhood Management Team members, March 2008)

A further deviation in Toll Bar, and an opportunity for residents and responders to collaborate, was the embracing of donated items and other charitable items:

At a conference last week they mentioned that people in the UK don’t tend to accept second hand and charitable items after floods but here I notice a big poster entitled ‘List of Donated Items’ with things like ‘pair of curtains’ on it. In an accompanying newsletter that I read it says that this is proving popular with people being able to swap things and you should bring along your things. (Field notes, January 2008)

The entanglement of council responders (the Neighbourhood Management Team) and residents, who were physically placed together, and whose lives entwined through cups of tea and frozen pipes and sandbags meant that omissions in the National Guidance could be worked around locally. The production

of these solutions also enabled the forging of relationships, which sustained throughout this work and served to scaffold it:

They need you as well, you feel like the community needs you. (Discussion Group with Neighbourhood Team, June 2009)

What the local council have set up that and they're a wonderful team, and it's not just for the council people they've done it for all the people in the village . . . they've really been supportive of everybody in the village. And you know, I just hope that it continues and I don't want them to leave (laughs). (DMBC, 2008)¹⁴

Is it all going to regress [if Toll Bar neighbourhood team is wound up]. You can't just do that to a community. They need support. We're the fourth most-deprived school in Doncaster. I don't want you to go. Things would deteriorate. Other people in the community have told me the same. You've got ideas, you don't sit in an office and do nothing, you carry out tasks, you listen to people, and it's working together as a team with everybody, with the school and the community. I think that's what makes the difference, I really do. It's been a unique experience that I don't want to lose it. (DMBC, 2008)

Oh no I don't want them to leave, they've been fabulous for the school and the neighbourhood, for the school and the community. We've been able to work together for the betterment of the community really . . . they've been really useful. (DMBC, 2008)

Conclusions

The National Recovery Guidance was provided to emergency planners by the Cabinet Office to help them 'produce' recovery in localized settings. Generic and applicable to multiple situations, once these instruments arrived in Toll Bar they began to be locally re-imagined. Perhaps this transformation is unremarkable, for Toll Bar after the floods is like all of the social world: 'multiple and paradoxical' (Ashmore *et al.*, 1989: 192). Generic tools get appropriated at a local level. Plans and protocols leave the environment in which are created (Whitehall) and are then reformulated by residents and responders. The daily interaction and entanglement of local residents and local council responders allowed the Guidance created far away to be made to work locally. This process has often been explored in Science and Technology Studies. What became visible is that, like so many other 'social technologies', technologies of recovery, when appropriated by new users were capable of being 'employed in ways quite different from those which were originally intended' (Bijker and Law, 1992: 8). Using the Guidance and intermediaries to access grant money for a carnival or for a commemorative stone placed in a garden created by men and women who came together at a club initiated by one resident was a novel act, part of the politics of recovery. Each time technologies of recovery are used in this way they get reshaped a little. They are not on a trajectory of change powered by their own momentum, they continue to be shaped by the way that they are put to work.

But the politics does become remarkable. It became clear that what was being observed in the localized setting was not always a story of ‘them and us’. Council staff found themselves co-located with displaced residents, boundaries began to dissolve and the Neighbourhood Management Team, for the first time, were seen as ‘on the same side’ as the residents. This was an emergency where the operational responders were placed within the recovery, so proximately and for such a long period of time, that identities began to merge – people were ‘in this together’. What was also remarkable was that this co-production had ever been allowed to happen at all. As described in the introduction, this entanglement of council responders and local residents was precarious. Residents slowly began to engage with their council neighbours and experience joint working, whereas before the floods there had been times of little engagement and minimal trust. What began as a fragile relationship, slowly strengthened, could so easily never have happened.

The presence of the Guidance and its material forms served an additional purpose as reassurance, and this reassurance played its part in forming these relationships. Initially for planners, when faced with scenes of devastation and incongruous images of displaced people setting up home in community centres, or personal possessions mingling with wastewater and rubble in streets, a template that appears to categorize chaos into workable themes and then provide a lead for action is essential. Also initially, for residents, the presence of actors wearing jackets embellished with official logos and holding clipboards (containing documents to which they, residents, have not had access) provides the impression that experts have specialist knowledge which will necessarily help them. However, in the process of ‘meeting the locals’ (in the shape of people, spaces, intermediaries, local temporalities) what was a reduced and distilled approach requiring the erasure of those features, instead got entangled with them. As we said in the introduction, the flooding of Toll Bar is not a one-off event but part of a way of life, part of what it means to live in that place. Entangled responders and residents, placed together, co-produced a transformed set of practices which enabled other things to happen. Such transformation may also be omitted from the official narratives and analysis of life after disaster and instead, once again, much of the variety, dilemmas and tensions may be occluded. In the wake of the disaster at Toll Bar, entangled politics produced a recovery which could be recognized locally and processed nationally.

The many factors that collided to form a perfect storm in the recovery of Toll Bar shaped outcomes that may be unique and may certainly be problematic to replicate. A different set of factors may collide in other places to produce an aftermath that is so very different. Guidance on how to perform ‘recovery’ to effect any positive action must take these networks and intersections into account. By remoulding recovery instruments both residents and responders showed that they never saw the technologies as static; they took them and made them do something that needed to be done. Together, they had found a way to make the technologies work in this place.

Acknowledgements

We wish to acknowledge the support of all the residents and the responders of Toll Bar who contributed to this study.

Notes

- 1 As part of the study Easthope staged an exhibition with local responders and local residents that displayed art work, poetry, video testimonies relating not just to the 2007 floods but to the many years of earlier flooding. This included records that demonstrated over 700 years of flooding in that area of Doncaster.
- 2 Easthope has worked in the UK field of emergency planning for 15 years.
- 3 A 'grass' is a colloquial term for somebody who informs on other members of the community to the police (eg for a crime) or to the local council (eg for benefit fraud).
- 4 'People don't think we are grassing any more. I will come back here' (field notes, April 2008).
- 5 An electronic key that provides Internet access.
- 6 Easthope was a member of these working groups and was able to draw on her notes here.
- 7 An example of its inclusion in a hospital emergency plan is at p. 21 on the webpage www.miltonkeynes-northamptonshire.nhs.uk/resources/uploads/files/PH_10.pdf (accessed 8 February 2013).
- 8 7/7 refers to the terrorist attacks by four suicide bombers that occurred in London, 7 July 2005. Lockerbie refers to the terrorist bombing of a Pan Am airline, which blew up over 800 square miles of England and Scotland. The majority of the wreckage devastated the Scottish town of Lockerbie and killed 11 people on the ground as well as the 259 people on the plane. Buncfield was an oil storage depot in Hertfordshire that caught fire and became Europe's biggest peacetime blaze.
- 9 Field notes, May 2009.
- 10 Characteristics such as nurturing or listening may be derided. This can be illustrated through the use of the derisory term '*pink and fluffy*' by emergency planning practitioners and emergency responders to describe either negatively or apologetically any work that is related to supporting people after death and disaster. Anne Eyre (2007: 29) explores the way in which the specific term, 'pink and fluffy' is directed towards Police Family Liaison Officers deployed to support families after sudden deaths. It is used with other derogatory phrases such as their work being concerned with 'hand holding'.
- 11 'Recovery Planning' presentation by Lincolnshire Emergency Planning Unit in 2011.
- 12 This beck was identified as a major cause of much of the flooding in Toll Bar and surrounding villages. Since 2007 it has been a focus for much of the improvement works carried out by the Environment Agency.
- 13 These are not statutory powers but by this they mean that the 'official' response agencies have 'given' them a role in the response.
- 14 In 2008 Doncaster Metropolitan Borough Council (DMBC) commissioned a research student to gather opinions of the Neighbourhood Management Team. The council supplied the authors with the data and with the report supplied to the council. They had asked team members, residents, other local responders and primary school teachers to reflect on their experiences in the year after the floods.

References

- Ashmore, M., Mulkay, M. and Pinch, T., (1989), *Health and Efficiency: A Sociology of Health Economics*, Milton Keynes: Open University Press.

- Bijker, W. and Law, J., (1992), *Shaping Technology/ Building Society*, Cambridge, MA: MIT Press.
- Bloomfield, B. and Vurdubakis, T., (1997), 'Paper traces: inscribing organizations and information technology', in B. Bloomfield, R. Coombs, D. Knights and D. Littler (eds), *Information Technology and Organizations: Strategies, Networks and Integration*, Oxford: Oxford University Press.
- Cabinet Office, (2007), *National Recovery Guidance*, available at: http://webarchive.nationalarchives.gov.uk/+http://www.cabinetoffice.gov.uk/ukresilience/response/recovery_guidance/generic_issues/structures_processing.aspx (accessed 8 February 2013).
- Cabinet Office, (2010), *National Risk Register*, available at: www.gov.uk/government/publications/national-risk-register-of-civil-emergencies (accessed 1 May 2013).
- Cabinet Office, (2011), *National Recovery Guidance – Infrastructure Issues – Dealing with Insurance Issues*, available at: www.gov.uk/national-recovery-guidance-infrastructure-issues#dealing-with-insurance-issues (accessed 1 May 2013).
- Clarke, L., (1999), *Mission Improbable*, Chicago: University of Chicago Press.
- Coles, E. and Easthope, L., (2009), 'Back to school qualifications, competences and cultural change', presentation to the FEMA HE event, Washington 2009 and reproduced in *Blueprint – Journal of the Emergency Planning Society*, Autumn: 22–24.
- Cooren, F., (2004), 'Textual agency: how texts do things in organisational settings', *Organization*, 11 (3): 373–393.
- Doncaster Metropolitan Borough Council (DMBC), (2008), 'Neighbourhood Management Team Data – Notes', unpublished.
- Doncaster Metropolitan Borough Council (DMBC), (2011), 'Presentation given by emergency planners', Emergency Planning Society Conference, Coventry, UK, July.
- Erikson, K., (1994), *A New Species of Trouble*, New York: W.W. Norton & Co.
- Erikson, K., (2008), 'Preface', in I. Convery, M. Mort, J. Baxter and C. Bailey, *Animal Disease and Human Trauma: Emotional Geographies of Disaster*, Basingstoke: Palgrave Macmillan.
- Eyre, A., (2007), 'Family first', *Police Review*, 14 December: 28–31.
- Haraway, D., (1988), 'Situated knowledges: the science question in feminism and the privilege of the partial perspective', *Feminist Studies*, 14 (3): 575–599.
- Harrison, S. and Mort, M., (1998), 'Which champions, which people? Public and user involvement in healthcare as a technology of legitimation', *Social Policy and Administration*, 32 (1): 60–70.
- Heath, C., Luff, P. and Svensson, M., (2003), 'Technology and medical practice', *Sociology of Health and Illness*, 25: 75–96.
- Law, J. (ed.), (1991), *A Sociology of Monsters: Essays on Power, Technology and Domination*, London: Routledge.
- Law, J., (1994), *Organizing Modernity*, Oxford: Blackwell.
- Law, J., (2000), 'Ladbroke Grove, or how to think about failing systems', Centre for Science Studies, Lancaster University, available at: www.lancs.ac.uk/fass/sociology/research/publications/papers/law-ladbroke-grove-failing-systems.pdf (accessed 1 May 2013).
- Lee, S., (2006), *When the Levees Broke: A Requiem in Four Acts*, Home Box Office.
- Mort, M., Convery, I., Baxter, J. and Bailey, C., (2005), 'Psychosocial effects of the 2001 UK foot and mouth disease epidemic in a rural population: qualitative diary-based study', *British Medical Journal*, 331 (1234): doi: 10.1136/bmj.38603.375856.68.
- Pinch, T., Ashmore, M. and Mulkay, M., (1992), 'Technology, testing, text': clinical budgeting in the UK National Health Service', in W. Bijker and J. Law (eds), *Shaping Technology/ Building Society*, 265–289, Cambridge, MA: MIT Press.
- Pitt, M., (2008), *Learning Lessons from the 2007 Floods: An Independent Review by Sir Michael Pitt*, available at: <http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/> (accessed 1 May 2013).
- Scraton, P., (1999), *Hillsborough: The Truth*, Edinburgh: Mainstream Publishing.

- Suchman, L., (2007), *Human – Machine Reconfigurations: Plans and Situated Actions*, 2nd edn, Cambridge: Cambridge University Press.
- UK Emergency Planning Society, (2011), *Condition Critical: The EPS Resilience Symposium*, Conference web page (archived).
- Whatmore, S. and Landström, C., (2011), 'Flood apprentices: an exercise in making things public', *Economy and Society*, 40 (4): 582–610.