

Sustainable flood memories, lay knowledges and the development of community resilience to future flood risk

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Abstract. Shifts to devolved flood risk management in the UK pose questions about how the changing role of floodplain residents in community-led adaptation planning can be supported and strengthened. This paper shares insights from an interdisciplinary research project that has proposed the concept of ‘sustainable flood memory’ in the context of effective flood risk management. The research aimed to increase understanding of whether and how flood memories from the UK Summer 2007 extreme floods provide a platform for developing lay knowledges and flood resilience. The project investigated what factors link flood memory and lay knowledges of flooding, and how these connect and disconnect during and after flood events. In particular, and relation to flood governance directions, we sought to explore how such memories might play a part in individual and community resilience. The research presented here explores some key themes drawn from semi-structured interviews with floodplain residents with recent flood experiences in contrasting demographic and physical settings in the lower River Severn catchment. These include changing practices in making flood memories and materialising flood knowledge and the roles of active remembering and active forgetting.

1 Introduction

This paper outlines interdisciplinary research¹ into the relationships between memories of floods, lay knowledge and actionable knowledge for resilience. A key question is how these different elements interact and relate to community capital and capabilities for adapting to floods and future flood risk. The research evaluated the extent to which communities that have a history of past flood events are more resilient to future flood events than communities with no previous history of flooding, or no shared memories of flooding.

¹. The Sustainable Flood Memories project [1] funded by the UK Economic and Social Research Council connects geography, environment, heritage, media, and cultural and memory studies. For further information, see: www.floodmemories.wordpress.com.

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2 Contexts

2.1 Policy shifts

The policy change from ‘flood defence’ to ‘flood risk management’ (FRM) (Tunstall *et al.* [2]) involved a shift to more distributed responsibilities for UK flood risk management. This shift involves the public as a key stakeholder taking some degree of responsibility for their own protection (e.g. by take-up of flood insurance, or flood resilience/resistance measures to their property). Clark and Priest’s [3] research on public awareness of flood risk, drawing on theories of ‘reasoned action’ and ‘behaviour change’, challenges notions that public information can alter public behaviour in clearly defined or predictable ways.

This increased focus on the ‘local’ and ‘personal’ is step-changing the roles of community groups in community-led adaptation planning, and increasing the role of Local Resilience Forums and community flood groups, that have now been co-opted by expert agencies into planning and governance structures (McEwen and

Jones [4]). Similarly, Parish Councils (lowest level of UK government), and even concerned/ informed/ active individual citizens, are being supported and encouraged to become part of resilience planning structures. Their monitoring of water courses and drainage systems at the most detailed, local level provides local information that can link into wider 'expert' knowledge systems. These local knowledges are often intimately connected with memories of, and emotional responses to, past flood events which persist in a number of ways.

2.2 Different types of knowledge

Within distributed flood risk management, different knowledge systems can exist. While traditionally the focus has been on western framings of expert science, other knowledges have been increasingly identified as important - both in their own right but also importantly in knowledge integration. Local knowledge is articulated in various ways – as lay, traditional and indigenous knowledge (hereafter local knowledge), with implications for mapping of knowledge and the redistribution of expertise (Whatmore [5]; Lane *et al.* [6]). The 2007 floods challenged the role of formal FRM and 'expert' knowledge in how to manage fluvial floods (Cabinet Office [7]). One element in the review process was that local flood knowledge and associated local senses/values of place are key elements in developing flood knowledge to build future community resilience (McEwen and Jones, [4]). This poses questions about how flood memory interweaves with different types of knowledge, and how this can contribute to the development of community capital and resilience building.

Local knowledge can be vulnerable. The incorporation of local communities and their knowledge into flood resilience planning needs to take into account the changing nature of UK communities (Coates [8]). These cannot be assumed to be homogenous or contiguous in rural or urban areas. Rather they are likely to be plural, multi-faceted, fluid and made up of groups with a disparity of resources. Vulnerable groupings (by age, socio-economic class, ethnicity, disability) may be particularly exposed to changing flood risk, and may also be those least likely to develop a sense of place and community memories of past flood events which help them deal with future flooding. There is anecdotal evidence that traditional community flood resilience has reduced or broken down in some communities with transient or intermittent membership. This poses important questions as to how flood memories develop, what local flood knowledge comprises, and how it is developed and shared.

3 Framing Sustainable Flood Memory

Our research proposes the concept of 'sustainable flood memory' (SFM; McEwen *et al.*, [9, 11]; Garde-Hansen *et al.* [10]) conceived as an approach to memory work that is both individual and community-focused, and draws on materialised formal and informal memories (e.g. landscape, archival, technology, social media) so integrating individual/personal and collective/community experiences. Such memory is 'sustainable' in that it creates and supports conditions for its persistence and propagation, with heightened attention to exchanges within and between generations and to opportunities for social learning. It also generates strategies for assimilating and protecting associated lay actionable knowledges for dealing with flood risk so building community capita (e.g. as archives).

Evidence bases for SFM are the physical marks and material practices in the landscape, narratives, oral and archived histories, and equally folk memories, autobiographical accounts, personal stories and anecdotes of previous floods and their impacts. These may be embedded or require surfacing in local communities, to become connected as a 'watery sense(s) of place'. Through these processes, 'living with water' in terms of knowledge, expectation and resilience become part of understanding characteristics and distinctiveness of place and potentially 'community identity'. Hence, research with emplaced communities on collective and communicative flood memories should afford a way of thinking that connects knowledge-community-memory-resilience as an ongoing process of connection and transfer.

4 The UK Summer Floods 2007

The catastrophic floods (Marsh and Hannaford [12]) and management crises in Hull and the River Severn catchment in July 2007 represented one of the UK's greatest civil emergencies, with loss of life, houses/businesses devastated, and strategic transport, power and water infrastructures threatened, damaged and disabled. In the aftermath, a whole range of agencies and tiers of government reviewed procedures and planning in FRM from local to national levels (Cabinet Office [7]; DEFRA [13]). Several imperatives (e.g. need for adaptive capabilities after floods; community lead adaptation planning) have emphasised that research needs to establish how floodplain groups can be made less vulnerable, and more sustainable and resilient (Tobin [14]). Therefore, investigating the relationships between sustainable flood memory, local knowledge, and how individuals/communities deal with risk and effective community level planning in developing local resilience,

is important, whilst recognising that the concept of 'community' is itself contested (Coates [8]).

5 Methods

The research comparatively studied residents in four different floodplain settings in the lower Severn valley – a badly affected area in the UK Summer 2007 floods. These settings had different histories, types and levels of flood experience and types of 'communities':

- an established urban community flooded in 2007 with significant history of episodic extreme floods, regular flood experience, and corresponding flood memories (Setting 1)
- a newer' urban community with no previous flood history (without flood experience since 1947, with parts built post-1947) but flooded in 2007(Setting 2)
- a floodplain city area with history of extreme flooding including recent experience in 2007, and with significant transient or intermittent residency (Setting 3); and thus less chance of developing long term community cultures/knowledges
- an established rural community flooded in 2007 with a history of episodic extreme floods (Setting 4).

Sixty-five in-depth semi-structured interviews were undertaken with residents across the four case studies. Interviewees were identified using snowballing techniques, combined with a quota sampling approach based on gender and age (35 males and 30 females). Age distribution was 27 respondents over 65; 25 aged 41-65 years; nine aged 25-40 years; and four under 25 years. Interviews covered:

- 2007 floods: What happened? How did you react?
- Previous flooding
- Memory and resilience
- Recording the flood
- Sharing stories, images and other records
- Remembering and forgetting
- Maintaining/developing memories

6 Results

Initial analysis of the interviews indicated that a large volume of personal flood memories and interest in floods existed in the four settings. Memories of floods covered a spectrum of experiences including revitalised community spirit, and diverse emotional responses with awe, fear, excitement, grief and challenge all represented. The following synthesis briefly explores some emergent themes, with illustrative quotes that capture the diverse and changing ways of materialising floods and the

complex relationships between memory, knowledge and resilience.

6.1 Materialising floods

Methods of materialising, memorialising and visualising floods vary widely. Flood marking of maximum 2007 flood levels against physical or known points of reference occurred at several locations that have community resonance - on churches, public houses, teashops, garages (Figure 1).



Figure 1. Example of flood level marking at a public house by the banks of the lower River Severn

Flood materialisation occurred in newspaper cuttings; photography/film making; oral history/storytelling; and the emerging use of new technologies including social networking sites. Such materialisation varied in the extent to which it is official/unofficial, verifiable, and at personal or community levels. Physical locations for flood materialisation were in individual houses, and collated in official and informal archives but also in the everyday – through the resistance/resilience measures implemented post-flood in the home.

'We had a look outside her front door, which is always blocked with a flood barrier (that she is able to step over, though. Nevertheless, she seems to usually use her back entrance).'' (interviewer notes - woman, 82 years, Setting 3)

6.2 Active remembering

Active remembering drew on childhood flood memories and galvanised the development of 'associations' during floods. Some interviewees, with longer residency, in remembering the 2007 floods, referred to childhood memories of living with floods in 1947 and the 1960s, and 'awareness/knowing what you can and cannot do' in flood water. These memories embodied changing attitudes to living with water, and willingness to take risk. There was a strong view that people need to be aware of

the possibility of flooding, and its dangers as part of a 'watery sense of place'.

'I've always been brought up around flooding. As a child, we used to walk the floods. We've done it on Christmas Day, to walk to the pub [name] across the embankments, the flood barriers. There was water rushing; it was quite deep. All holding hands linked, and mum had wrapped scarves around our hands. We were walking along and [name] was tied to the dog, my little sister. [...] He's a big dog, a big lurcher cross greyhound, so he's a big powerful dog. [...] And then we all went to the pub for a drink. Well, they did; we all just played in the floods.' (male, 34 years, Setting 1)

Such childhood memories demonstrate a watery sense of place, with insights into past coping strategies and common wisdom that can be brought to present and future flooding.

Rehearsal and reinforcement of flood memory can occur through their on-going campaigning activities of associations (or nuclei of people; Hemming [15] to secure official inputs to local flood protection from organisations with formal FRM responsibilities. This keeps flood memory high in the consciousness of both the association and other community members. For example:

'In my day, 40 years ago, we wanted to improve the flood banks then, and we had a sub-committee within the village that increased the height of the banks, with completely our own efforts really. [...] We were already existing with a pretty good set-up really, and then after the 2007 flood it was realised by the village that the flood defences wanted making much higher and much stronger and so this sub-committee was formed of five of us I think, and we then started making plans to get grants.' (male, 75 years, Setting 1)

However, as noted below tensions can exist between active remembering within communities where memory in FRM organisations is not archived and lacks persistence.

6.3 Active forgetting

Some respondents were found to have a will not to remember the floods for a variety of different reasons. Some associated floods with painful/traumatic memories, and local knowledge could lack fine-tuning (e.g. that intense rainfall always leads to extreme floods).

'I think you've got to actually try and forget them cause they were terrifying. And if you try... If you think too much about it then you... I mean, obviously for two or three years after those floods every bit of rain, every bit of flooding terrified some people, absolutely terrified them. They thought that this was all going to happen again.' (female, 76 years, Setting 2)

Other respondents had 'moved on', with the 2007 flooding perceived as 'old news', and were unwilling to discuss their experiences. This poses questions about the characteristics of people who do not want to remember, and the implications for their adaptive capabilities and post-flood learnings, particularly when they are key players in communities. Active forgetting can also be linked to the perceived role of hard engineering. What messages are conveyed with new or upgraded flood alleviation works? 'It will never happen again' or 'this is a flood risk area?' An engineering intervention can only be effective up to design limits – the well-known 'levee effect' (Tobin [16]) – but can lead to the belief that residual risk is removed.

'And then after that in the 1970s we put up the new defences and it was working extremely well. People got more confident and the Council said okay, and some of the semi-derelect houses were bought and completely rebuilt and that sort of thing. So we were quite confident really.' (male, 75 years, Setting 1)

Active forgetting could also be linked to the devolvement of responsibility for dealing with risk to government agencies. In some urban floodplain groups, memories of the 2007 floods were articulated in terms of widespread disillusionment with, and distrust of, formal bodies (environmental regulator, local government). Present relationships were still soured by these memories.

'So I suppose we do our bit here, but I don't think the councils do enough to... You've got to go and interview them... I don't think they do enough to remember do they? They want to choose to forget...' (male, 34 years, Setting 2)

In others, flood memories embodied a more positive experience of working with official organisations to mitigate risk. Our research found that institutional memory in organisations with a stake in FRM can decay rapidly, with restructuring, staff changes/losses, and functions outsourced.

7 Implications for flood risk management

The emerging evidence poses questions for resilience planning and how to increase the adaptive capabilities and post-flood learnings of floodplain groups. Top-down flood risk management and the paradigm of flood defence can assume and enhance the dependency of groups and individuals living on floodplains. Under this paradigm main players in FRM were conceived as government and government agencies, and this legacy is persistence in the public psyche. Distributed FRM requires empowered and well-informed communities. To be effective, this new paradigm needs to draw on, and integrate other

knowledge systems. Understanding the relationships between flood memory, lay knowledge and resilience is critical in such decision making.

Our research has uncovered considerable local learning resources and data that support the concept of sustainable flood memory. This can be practiced vertically (between generations and over time) as much as horizontally (intra-generational; in the moment of flooding). It is the former memory process that is worth pursuing publicly. Creating strategies for vertical community memories of flooding has potential to produce social learning between groups and over time, so informing approaches to community flood education. Horizontal community memories show up the diverse ways that different individuals materialise flood memory during a flood event in a discreet moment in time (oral recordings, artwork, videos, photographs, social networking, diaries, news reports). It is the connection of the horizontal and vertical axes to provide opportunities for inter-generational learning of past coping strategies.

Active forgetting is only possible if community memory remains on the horizontal axis and memories are only passed down privately. Likewise, institutional memories need to understand how community memory functions and how best to engage local knowledge to increase the adaptive capacity/ post-flood learnings of floodplain groups. Contrasts can be made between the character and longevity of individual/ community and organisational flood memory, with implications for how organisations work with community.

But some flood risk communities nationally lack recent flood memory. While vertical reconnection with communal memory (oral histories) and archival memory is one way forward depending on timelines, extent of archiving and demographics in flood risk areas. Where there is no previous flood record, then it is all the more critical to link flood risk communities – local to local and local to global – in knowledge sharing and solidarity for resilience building.

To progress the thinking of SFM as an integrated concept-process-practice, several actions need to occur. There needs to be a rethinking of how lay knowledge integrates with expert science in decision-making. This involves engaging with anecdote and narrative as a form of data and utility. There is a need to revisit the actors whose knowledge underpins local flood risk decision-making and to construe the actors in local FRM in a more inclusive way. Players need to include formal and informal archivists. At a local level attention needs to be given to building, organising and sharing Sustainable Flood Memory.

8 Acknowledgements

This research was funded by UK Economic and Social Research Council Grants: RES-062-23-2783 and ES/I003576/2. The authors acknowledge the contribution of Owain Jones, Franz Krause and Nevil Quinn to the research and thank all participants in the project.

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