

Interactive comment on “Acting, predicting and intervening in a socio-hydrological world” by S. N. Lane

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The major issue: the need for a closer attention to the politics of socio-hydrology

I was very pleased indeed to received this review from Anna Wesselink as someone who has worked as both a hydrologist and a science-technology studies researcher. I very much appreciate the careful attention that she has given to the paper.

Wesselink argues, in my view quite correctly, that to have a fuller picture of the relationship between science and society, it is necessary to bring in a political science perspective. Her point that the question of framing “is as much about statements about what the social could be, even should be” is particularly interesting, to the point that I think it needs to be addressed in revision. The Figure that she presents effectively

C6079

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shows how framing cannot just be about a framing by knowledge; framing also arises through values and interests; and we might also recognize that there could be synergies between the two. Certain values and interests, if they have the capacity to do so, may sustain particular kinds of scientific enquiries to the exclusion of others; certain kinds of knowledge may sustain the values and interests of some and not others. I guess that this may, in some senses, lead to the particular kinds of techno-hydrological cultures that I refer to earlier in the paper and perhaps conceptually explains why particular ways of handling and managing water related problems become dominant over others. Who effects the transition from “unstructured/wicked” to “structured” becomes ripe for further analysis, both theoretically and empirically.

In the work that surrounds this paper, but something that I did not refer to in the original version, we did try to follow and to theoretise the ‘political trajectories’ of flooding as revealed through our work (Donaldson et al., 2013). Donaldson et al. show that ‘flooding’ cannot be separated from the ‘practices of flood politics’, and that floods get in the way of established practices or ‘political frames’. These frames are precarious, because they can be transformed by flooding, but also the object of management or manipulation so as to secure a frame’s maintenance when things get difficult. The power of such frames, and the efforts put into maintaining them, emphasise Wesselink’s point that knowledge production should not be conflated with decision-making.

But, we should not overlook the fact that knowledge production can both create the controversy that causes an issue to overflow beyond a particular political frame and also calm an issue down so as to sustain an existing frame (Donaldson et al., 2013). This is why if, as scientists, we are producing hydrological knowledge in a social context, we need to be acutely reflexive to those frames we are working with, supporting or other wise. This is also where I agree strongly with Wesselink that we need to understand the relationship between socio-hydrological knowledge production and decision-making and I think that the methodological sophistication of STS has much to offer us in this respect.

Perhaps the only point I would like to emphasise in response to Wesselink is that whilst knowledge is not a sufficient basis for decision-making, I think it is commonly a key element, notably where particular framings have become precarious (e.g. flood risk management in flood prone communities). In both of the case studies where we tried out Environmental Competency Groups we could not escape the fact that we were bringing some kind of framing to the problem: we had chosen two sites where flooding was a live and important issue. But, through the way we approached the problem, we were forced to reframe the problem that we had started with. Landström et al. (2011, 2013) describe how it was that the hydrological scientists in the project were forced to turn away from their own framings of the problem (as defined by their academic community) towards those of a different community (a group of local community members). Practically, these new framings meant that we could not use the mathematical models we wanted to, nor could we explore the kinds of landscape interventions that we were most interested in. At one level, the frame remained 'flooding'; but at another, the framing had evolved substantially as we had to develop new models and test interventions with which we were not entirely comfortable. This is where I am more optimistic than Wesselink that participatory knowledge production can contribute to the democratization of decision-making, even if on its own it cannot provide a sufficient account of how decisions are made. In both of the cases we studied, prior to our intervention, the problem had been closed down, framed as beyond all possible solution. Our interventions, very much in the words of Stengers (2005), slowed down the progress of the reasoning that these floods could not be managed. Whilst our knowledge production did not produce solutions, it did provide enough knowledge to reframe flood risk management strategies, where new and unforeseen 'solutions' are now being applied. It did this because the new knowledge that was created shook the existing and assembled systems of decision-making (see Lane et al., 2013) in the terms of these systems' own reference, that is knowledge. In turn, it gave to local members of the Competency Groups a newfound capability, through their knowledge, to influence decision-making processes previously closed to them. This was not because they were

C6081

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10, C6079–C6083, 2013

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not normally consulted, but because when they were consulted they did not have any meaningful knowledge to challenge those decision-makers, and the consultants that they employed. The Competency Groups were profoundly anti-technocratic in that, whilst the Competency Groups developed new forms of technical expertise, the right to hold that expertise was not defined by the level of an expert's technical certification. Of course, anti-technocratic does not mean democratic, but there is a debate to be had as to whether the shift in power that we have described in this work results in processes that are more democratic.

Specific comments

I appreciate the set of detailed comments made by Wesselink and there are two that I feel a need to comment upon.

It is clear that the article will benefit from some tidying up of the STS terminology such that non-STS researchers, and notable those with an interest in socio-hydrology, can translate the article effectively. It is also clear that I need to clarify the nested arguments somewhat.

Wesselink raises a very important specific point, that it is important to separate out the idea that knowledge is distributed across many more than those who are normally recognized as knowledgeable; from the question of those who are most able to make use of that knowledge, whoever they might be. I think it would strengthen the paper to make this latter point a fourth STS dimension. It would also allow me to develop the point about framing that Wesselink makes, that framing is a wider act associated with scientific practice, and that some of the participatory methods that I describe later in the article provide an opportunity for alternative frames to become dominant.

Finally, I would like to reiterate my thanks to Anna Wesselink for her very constructive review and the extremely valuable comments that she has made.

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