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Hydrology and Earth System Sciences
Discussions

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

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General comments

I was very pleased to read this paper. It analyses hydrological scientific practice and its interaction with society from a science-technology studies (STS) perspective and thereby helps hydrologists to understand why and how they can influence decisions. I believe this is an important topic that merits discussion in the hydrological (and other natural science) communities of which I was a member for many years, when I also asked these questions of societal influence. What I am missing in the paper is a political science perspective on how decisions are made, and how knowledge (scientific or other) plays a role in this. I will explain my views on this missing aspect at the end of

this review; I do not think it needs to be incorporated in the paper for it to be a very good and publishable article.

Specific comments

1. Some STS terminology is not properly introduced e.g. 'performative', assemblage', . . . I would favour avoiding this jargon and using 'common language' terms IF this is possible, even if it would be at the expense of theoretical precision. Translation of STS theory for the hydrological may sometimes have to be taken literally as 'translation'. If these terms are really necessary then a definition is needed.

2. I would mention the examples of Manning's N and flood mapping in the abstract and key words to attract non-STS readers. I would also shorten the description of the three perspectives in the abstract.

3. There are several lists of nested arguments, and I sometimes lost track of which list and which level I was reading. It is not always necessary to number the items/arguments. Considering the length of the text & complexness of the material, it is important to be as user-friendly as possible. Related, please be consistent in terminology. E.g. in Section 2.2: 'the second account consists of three hypothesis'. The first one is not labelled in the text (starts at Wynne (1992). The second one is labelled 'assumption', the third is labelled 'notion'. I am lost! Especially since the first (unlabelled) hypothesis presents a further three objections but then only lists two. . .

4. STS perspective 3 (presented in Section 2.3) (which is there labelled 'account': another inconsistency of terminology) in my view presents two different arguments: one as introduced in the first sentence (hydrological knowledge being distributed amongst non-experts too = knowledge production) which addresses the third hypothesis, and a second separate point which is explained n the rest of the first paragraph (the need to give meaning to knowledge if it is to be acted upon = knowledge use). In the latter, framing is indeed the key issue, as stated. The text starting 'it is reinforced by a second argument' addresses this second argument, also including the notion of democracy. I

think this second argument should be a separate one, so you'd have four hypothesis from STS.

5. Following on from the previous, scientists also frame issues when they produce knowledge. Although this is mentioned briefly at the beginning of the paper, it should be highlighted again in Section 5, in order to avoid the impression that it is only 'the public' who applies frames.

6. Being empirical and experimental is typically how you would address wicked problems (incremental policy making, adaptive management). This link could be made in Section 5.3

7. I suggest drawing from a few related papers by Demeritt et al. and Smith et al. (already communicated to the author).

Technical comments

I think overall Stuart Lane manages to convey and use STS theories in a clear and understandable manner; however, I do think that the paper it too wordy and can be ameliorated by micro-editing to make the text tighter and shorter. I hope the author will take the time to improve the readability of the paper so it attracts a wide non-STS audience.

Addendum/Post Script

My comments on the paper from a political science (PS) perspective are just an aside; they do not reduce my appreciation of the paper but serve to present, in my view, a completer picture of 'science in society'. My comments start with the same notion of framing that was introduced by the author to explain that complex socio-hydrological problems need to be somehow reduced in order for us to be able to deal with them. In the attached figure, the initial problem would be unstructured/wicked (top left) and needs to move towards the bottom-right, maybe via one of the other corners. This moving towards structured problems is framing (or 'problem structuring') and it hap-

pens along two axes: knowledge and values/interests. The participatory knowledge production (if I may label it such) proposed in the paper could be argued to draw in different values, though I doubt is really does: the problem has been framed already, the pool of knowledge is just expanded. It does not address the aspect of framing that 'is as much about statements about what the social could be, even should be', i.e. the values/interests axis. This latter framing is typically performed through political processes that lead to political decisions, not through a (changed) knowledge production. Put differently: knowledge production should not be conflated with decision making. Therefore participatory knowledge production does not imply any move towards greater democracy, as asserted by the majority of STS scholars and repeated in this paper. In the context of this paper (Section 1): how we predict water $\neq$ how we use water predictions for decisions. We elaborate this comment fully in our paper on post-normal science (another label for participatory knowledge production) (Wesselink & Hoppe 2011).

References

Hisschemöller M and Hoppe R (1996) Coping with Intractable Controversies: The Case for Problem Structuring in Policy Design and Analysis Knowledge and Policy: The International Journal of Knowledge Transfer and Utilization 8(4) 40-60.

Wesselink A J and Hoppe R (2011) If post-normal science is the solution, what is the problem? The politics of activist science Science, Technology and Human Values 36(3) 389-412

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 10659, 2013.

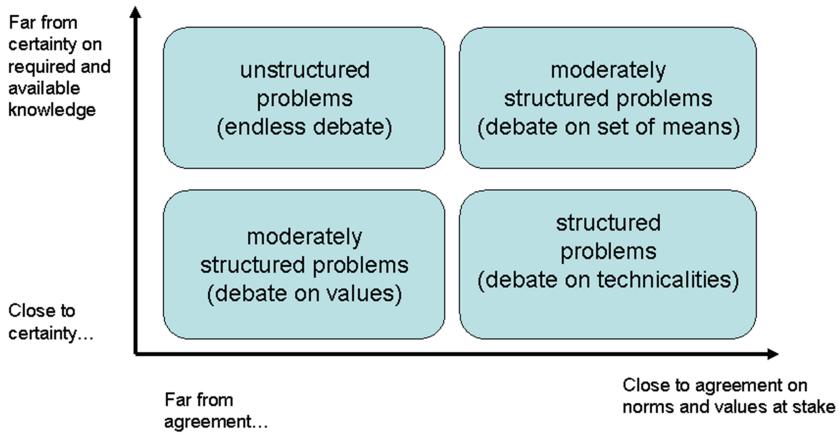

Figure 1.1. Simple typology of problem structures

Fig. 1. Typology of problem structures (Hisschemöller and Hoppe 1996)