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Perspectives

Building a socio-technical energy research community: Theory, practice and impact

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ABSTRACT

Here I respond to the seven papers that look at my original paper on the use of physics in the social studies of energy [5] and offer up clarifications, extensions and some rebuttals. It is clear from the respondents that a shared vision for an inter- cross- and transdisciplinary agenda across physics and engineering with the social sciences exists, and major steps have already been made in bringing these perspectives together.

1. Introduction

It is humbling to be part of a global debate on the role of social studies in energy and the influence they might have on national policy. I am deeply grateful both to the editor and the respondents for taking these ideas, and scrutinising them. I hope we all the better for discussing them.

I want to start off by just being clear what I did *not* want to claim with my original article:

My call for more physics was expressly *not* a call for *all* social scientists of energy to use physics *as it is currently deployed* in all (or even some) social studies of energy. My call is for there to be *more* social scientists who work with physics and similar to develop *new approaches to knowing* about energy (in a physical and social sense) from what I'm calling a 'socio-technical research' perspective.

I do not want this to imply that *Energy Research and Social Science* should turn into *Energy and Buildings* – it should remain and build the community it has galvanised. But I do want some interested colleagues, more and more of them to embark on a collective venture that builds a new research paradigm. You are currently out there (including most, if not all of the respondents here) but we need more and we need to build methods and strategies of research.

This last point emphasises an implicit assumption, that socio-technical research is not the same as either just having social and technical researchers in the same research team or in having researchers trained in both disciplinary routes (though both a likely essential precursors). My claim is that we need to negotiate a new set of methods and/or strategies of research that build on new ways of thinking about what exists and how we record what happens with those things. That said, I have little doubt that those trained in both routes are at a distinct advantage in this regard and so should be central to this endeavour.

Also in relation to this, I am not saying that simply doing more research in and of itself will cause more impact. This is a misreading of what I've written. My claim is that by developing a *critical mass* of knowledge that interfaces heavily with engineering perspectives, this research helps engineers of energy *re-describe policy* and therefore *re-describe energy problems* and with it identify new kinds of solutions. It is a strategic rather than tactical move, if you like.

These points also hopefully lay to rest any notion that I am saying the inclusion of more kWh mentions in your articles is a magic bullet towards impact. Absolutely not. Nor of course that social science without physics has no impact, though more on this below.

2. Impact and impact

Implicit within my original article and those of many of the respondent's (Mallaband et al., Stern, Mazur, Spreng in particular) is a 'two-types' idea of impact on policy making (where impact on policy making is defined as 'affecting the direction of travel of decisions about policies made by national governments by virtue of conclusions reached on the back of evidence presented'). As a heuristic, we can think of these two types according to the following crude characterisation:

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Type 1: 'Accept/amend' impact: this is where social sciences of energy effectively adopt or otherwise do not challenge the standard mainstream way of thinking about or describing the energy system, and so have impact by deflecting the ultimate trajectory of policy. This could include de-risking delivery through the use of MINDSPACE-style tactics or the assessment of public attitudes regarding particular technologies, in order to then to develop further policy derived from the logic of the mainstream techno-economic framework. I would hesitate in calling any social science research in this setting interdisciplinary, or transdisciplinary, since it tends to involve social sciences input being limited to set of pre-determined questions. This is not the impact I am focused on here, though that is not to say it has no value.

Type 2: 'Reject/replace' impact: this is where social sciences of energy are implicated in reframing the nature of what an energy system is and generating new kinds of questions and approaches to investigating it. The new framework implies a new set of heuristics and policy goals which lead to further involvement of social science. This is very much the kind of impact I am interested in and reflects the nature of the wider calls in the social sciences for more impact. This of course has echoes of 'mode 2' knowledge production identified by Gibbons et al. [1] and thus confirms the link between the way in which research is carried out with the sort of impact it might have.

This bipartite definition of impact is not that new of course – in the UK, researchers on policy impact are often at pains to distinguish between impact in a direct sense (i.e. via a traceable link between research outputs and decision-making) and impact in an indirect sense (i.e. via transforming the framework of thinking in an area). Typically, the latter has a much longer timescale than the former, is collective and gradual as opposed to individual and discrete. This latter type of impact is very much the kind I am aiming for, in the (hopefully widely shared) belief that in so doing, better energy policy may be the outcome.

Having set out my stall on impact, and hopefully clarified my position and the conceptual space it occupies, I feel it is important I address each respondent's piece in turn. I've chosen to do this alphabetically by surname for want of a better ordering heuristic.

3. Castree and Waitt

Castree and Waitt's [2] forensic review of my paper aims to highlight 'empirical and logical flaws' in my analysis. Below I address each of the points they raise which is as much a chance to rebut, as it is to refine my position, clarify my ideas and accept the need to adapt my position in the face of perspicacious analysis.

Have I relied too much on my personal experience and not used enough empirical research or exploit the literature sufficiently? I can't but concede this point, though one might argue this is true of most conceptual papers such as mine. Of course, I wrote on a highly informed hunch, based in part on my observations and in part on what I read in the relevant literature. I am not the only social scientist to claim a lack of impact but nor am I the first to do so without a sound empirical grounding. I agree with Castree and Waitt's [2] and Mallaband et al.'s [3] call for an empirical study and would gladly collaborate with them or others interested in this (though see below for my preconditions on this). I agree also that I have partially ignored the wider literature on policy impact. In part this is because it is heavily weighted on areas of policy other than energy (e.g. [4]) but also because the literature in this area has tended to overlook some of the deep philosophical issues that Castree and Waitt's and other respondents have eloquently highlighted. Gaining useful advice from this area thus requires carefully picking through a crowded field and the respondents here have help directly in this cause.

Have I elided 'conduct of research' with 'communication/knowledge transfer'? Did I say too little about how socio-technical research can then be translated to impact policy? Probably – research articles rightly prevent extensive discussion. My main claim though is that such translation becomes less important if research designs (and methods) build in policy (i.e. social/societal) concerns in their DNA. My short reference to the work I've been doing at UCL and the fact I am here is testament to my belief that for Type 2 impact I needed to move closer to the source of knowledge production in order to effect 'better' knowledge transfer (both more often and with better impact).

Do I think that simply more research equates to more impact? No, it is *not* my belief that the simple volume of research will, in and of itself, cause officials to 'take notice' as Castree and Waitt put it. As noted above, it's not so much the quantity as the *quality* of the research that matters: socio-technical (or equivalent). My strategy, if you like, is for officials *not* to notice socio-technical research but for them simply to adopt what I would hope become mainstream ways of thinking about the energy system. It can only become mainstream if engineers and other physical scientists adopt new ways of knowing, and that is only going to happen if there are significantly more social scientists engaged in this endeavour than is currently the case. The volume of research that then emerges would be a good proxy for that activity, but it is not the end goal *per se*. From there, normal policy processes can continue but with the new description of new problems and new options opening-up to address them.

Do I have a 'cognitive and representational' understanding of research policy's role? Yes and no. Insofar as policy research is necessarily cognitive and representational (on account of the need for it to try and represent otherwise invisible societal concerns and to do so to inform reasoning about policy action) I agree, there needs to be this kind of socio-technical research. However, I reject the notion that this is the only form of research I hew to. In large part, my realisation about the need for this new kind of research paradigm stems directly from my interactions with interpretivist social science of energy and critical theorists (e.g. Elizabeth Shove, Tom Hargreaves, Dale Southerton, Evelyn Ruppert in the UK). I understood that these ideas could be transported into the realm of policy, and in so doing gave rise to my position in my original paper of this section [5]. I would contend that socio-technical research should be able to make sense of the interpretivist thinking insofar as it can start to operationalise those ideas in policy-oriented research that must take account of the physical characteristics of the context. Indeed, one might even extend the notion that socio-technical research can serve as a missing interface between social theory and interpretivist approaches with energy policy analysis to say that it may also be the place where physics of energy research and social theory can interact.

Have I used a narrow understanding of the policy arena? Yes, I have – and on purpose. I do focus on national policy making institutions as the core arena. This is mainly due to my own background expertise in them, but also due to the strategic ground they hold. Typically, the central government departments hold significant funds for research in energy policy – much more so than any other single actor. As such, affecting their way of seeing the world arguably has the knock-on effect on to energy policy directly. So the focus is, I argue, a strategic one, not a result of incidental tunnel-vision.

I note that Castree and Waitt [2] point out what might be a parochialism to my analysis – that the use of social practice theory in the Australian policy arena indicates a relative success of this approach in that context. I applaud that work and am eager to understand more of what Strengers and colleagues are doing in that regard. However, I wonder to what extent their success is due to them interacting only with consumer groups outside of the Australian Department of Environment and Energy (DEE)? Is