Please Note: The following working paper was presented at the workshop "Demanding ideas: where theories of practice might go next" held 18-20 June 2014 in Windermere, UK. The purpose of the event was to identify issues and topics that constitute 'unfinished business' for people interested in social theories of practice and in the relevance of such ideas for the DEMAND Research Centre. This working paper should not be quoted without first asking the author's permission.

DEMAND iNG ideas

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Thinking about the next decade is too daunting so my list of unfinished business consists of more immediate puzzles that have arisen from working with others in the DEMAND centre. DEMAND's research is organised around the idea that energy is used in accomplishing social practices and that such practices depend on (and constitute) infrastructures and institutions. This basic starting point has generated a series of trickier and broader questions about how social practices relate to each other, via material arrangements and infrastructures, and through various forms of temporal and spatial coordination. My mini-manifesto deals with these topics, and with some ideas about prefiguration, obduracy and accumulation.

Infrastructures, material arrangements and practices

In the *Dynamics of Social Practice,* (Shove, Pantzar et al. 2012) we suggested that practices typically involve the integration of material elements, along with elements of competence and meaning. We discussed this proposition, derived from Reckwitz's summary (Reckwitz 2002), with reference to a selection of simple and hopefully persuasive examples like the toaster, the shower, or the Nordic walking stick. In taking this approach we chose to ignore a host of other more complicated cases, overlooking the systems through which electricity, bathrooms or walkable pathways are provided, and skating over the fact that such systems are co-constituted by the enactment of multiple social practices. Within DEMAND we have had to pick up some of the problems we previously left behind, including the challenge of conceptualising infrastructures like those involved in the provision and consumption of oil, gas and electricity.

Schatzki's broader concept of material arrangements which includes "humans, artifacts, organisms, and things of nature" (Schatzki 2010: 129), is useful in recognising a range of more extensive material relations amidst which practices transpire. For Schatzki, material arrangements, which exist but do not happen, includes all sorts of features some of which are integral to the reproduction of specific practices and others of which are not.

I have the feeling that there is something complicated, and something missing between this all encompassing concept of material arrangement, on the one hand, and an overly narrow interpretation of material element on the other. And I think this elusive something is important in conceptualising relations between practices and in conceptualising the dynamics of energy, mobility and demand. This agenda can be developed in different directions.

How material elements and arrangements overlap and figure in many practices at once

One future task is to better characterise and understand the types of relationships that exist between practices and material arrangements. These might include element-like relationships in

which some material artefact is integral to the conduct of the practice, alongside other genres of material configuration, interconnection and overlap.

For example, single purpose/single practice artefacts such as toasters or electric showers depend on multi-purpose, multi-practice arrangements of wires and electric power. Taking a shower presupposes coexisting (but different) multi-practice infrastructures of gas and/or electricity and of running water, drainage etc. In addition, what is an integral material element of one practice can figure as a less constitutive, more optional but nonetheless relevant material arrangement amidst which other practices go on.

Concepts of flow and of practice-arrangement-nexuses (Schatzki 2010: 137) give a sense of the multiple relationships involved, but do not provide a vocabulary with which to represent or distinguish between them.

How infrastructures are developed and sustained by and for many practices at once

Accounts of how networks and infrastructures come to be as they are (Hughes 1983; Rosen 1986; Graham and Marvin 2001), show them to be outcomes of investment, design and sometimes deliberate planning, often related to one or more visions of the future practices of which society is or should be composed.

Histories of infrastructures are largely histories of supply. What is missing is a more practice-oriented analysis of the development and ongoing adaptation of 'networks' not in the actor-network theory sense, but in the sense of material arrangements that are defined by multiple connections between multiple distributed 'nodes' and that both suppose and depend on the repeated, recurrent performance not of one but of many different practices.

From this point of view, the challenge is to understand how the networked features of (some) material arrangements emerge, and how these plug into and depend on a raft of specific but varied social practices. The internet, electricity, gas, water and road networks, along with office blocks, homes and cities could all be considered in these terms, though the links and connections at stake clearly differ from one case to the next.

In any event some new thinking is required if we are to conceptualise the dynamic 'lives' of material arrangements that enable, limit and are co-constituted by the enactment of multiple social practices. In short, we need to show how "nets of practice-arrangement nexuses"(Schatzki 2010: 130) are woven.

How energy becomes embedded in different social practices

Within DEMAND we are focusing on the question 'what is energy for?' on the grounds that demand arises from the enactment of social practices. But this is only half the story. We also need to think about how different forms of energy, along with related systems of provision, and infrastructural configurations transform and sustain the performance and range of social practices enacted today.

Exactly how different forms of power, or mobility, become integral to the performance of one or more practices is an empirical question, but one that is likely to involve some discussion of the

development (and loss) of infrastructures and of institutions and systems of provision. Each case will be different, but there may be some commonalities. For example, electrification is often associated with the delegation of competence and labour from person to machine/resource (e.g. hoovering as distinct from sweeping; washing with a machine rather than by hand). A second feature has to do with time: electrically powered drilling is much faster than most other forms.[1] And in terms of mobility faster rail systems have reduced the time it takes to travel from London to Lancaster – and to lots of other places too. This is important for the duration and timing of any one practice, and for how multiple practices are sequenced and scheduled through the day, the year etc.

One question for DEMAND is whether there is or has been a cross-practice trend towards increasing resource/energy intensity and if so, how and why might this be the case? Again taking this question forwards depends on analysing and conceptualising trends across many social practices at once.

How some material arrangements become critical for the conduct and circulation of many social practices

Although arguably constituted and reproduced one practice at a time, the electrification of daily life has become so widely embedded that failure (in the form of power cuts) has instant, far reaching effects. Nye's (2010) book on blackouts gives a sense of the interdependent complexes of social practice that now rely on the consistent provision of power. This points to a form of systemic co-dependence the compulsive nature of which is not fully captured by the appropriately flat concept of material arrangement.

A related, but different topic has to do with processes of international convergence. Social practices and daily lives remain immensely diverse, but there seem to be areas of increasing commonality, often with implications for energy demand. Examples might include the spread of the western diet, or the standardisation of indoor climates around the world. It is possible to point to the diffusion of requisite 'materials' e.g. air conditioning units, refrigeration, etc., and to notice the circulation of 'meanings' e.g. of a modern way of life. Mika Pantzar and I suggested that practices-as-performances are always localised integrations, but that elements travel and that their circulation is crucial for the reproduction of practices across space and time (Shove and Pantzar 2005). This is still only part of the story in that more is required to explain the multiple transformations involved as diverse sets of practices anchored in extraordinarily disparate material arrangements converge around an increasingly standardised form.

Various questions arise: for example, how do multiple forms of co-dependence between specific and/or overlapping material arrangements and complexes of practice coalesce? Likewise, how do previously vital relations of co-dependence fall apart, or take new shape. Again we are missing terms in which to organise these more collective forms of analysis. We are also short of experience in thinking about the role of industry, and of commercial interests and organisations – not as forces that exist outside of practice, but as sites in which integrative, cross-cutting connections are formed.

Loose connections and forms of relative independence: material arrangements and complexes of social practices

[1] http://www.lowtechmagazine.com/2010/12/hand-powered-drilling-tools-and-machines.html

It is not always the case, but some infrastructures last for much longer than the complexes of practices of which they were once a part. We are consequently surrounded by the remains of previously 'networked' material arrangements that are no longer sustained by the links that used to hold them in place. Disappearance is often partial in that contemporary complexes of practice draw upon bits and pieces of previously integrated material configurations, blending these into new combinations. Adaptation is constant. For example, parts of a once integrated freight network (the canal system) have been re-integrated into a variety of leisure pursuits. By contrast, in Stevenage, one of the sites of DEMAND research, miles of cycle ways remain relatively unused since people travel to different destinations, and often do so by car. These observations raise further questions about *adaptation* and the flexibility or otherwise of material arrangements in relation to complexes of practice. They also highlight the possibility that new variants or complexes of practices might form around infrastructural 'remains'.

Bringing these threads together, the first part of my mini-manifesto calls for more attention to be paid to different types of material arrangement-practice relations (shared, specific, stand-alone, networked, etc.), to how they are formed and to how they change at different scales. This is part of a bigger project of identifying and conceptualising dynamic processes that evidently involve multiple social practices at the same time. (I know all changes are a bit like this, but even so..).

Synchronisation, coordination and institutions

In my contribution to *Time, Consumption and Everyday Life* (Shove 2009) I fantasised about three imaginary indices that might be used to describe a) the ebb and flow of social practices in society (the fossilisation, innovation, transformation index), b) the social and spatial distribution of contemporary social practices (the chart-atlas of contemporary practice), and c) the extent to which people are, or are not engaged in the same social practices at the same time (the societal synchronisation index).

In the energy world, there is increasing interest in managing daily and seasonal peaks, especially in electricity consumption. Since DEMAND argues that energy consumption is an outcome of social practice, it makes sense to ask what it is that people are doing at different hours of the day and night, and to learn more about the synchronous enactment of diverse social practices. There is no necessary link between synchronisation and 'peak' energy demand: e.g. sleeping is highly synchronised, but low energy. However, the project of reducing peak demand is different if that peak is made of a wide range of energy demanding practices, or if it is the result of the simultaneous enactment of 'the same' few high energy practices.

Ben Anderson has produced a simple measure of synchronisation (this being the inverse of variation in what respondents say they are doing at a particular moment in time), and has applied this to time use data linked to data on energy consumption and travel. The results are not that surprising: for example activities on Sundays turn out to be less synchronised than those on Wednesdays. Likewise, the reasons for travelling during the morning peak are more alike and the timing more synchronised than in the evening.

What is more interesting is why the enactment of different practices has the aggregated rhythm it does. To go further we need to consider the sequential ordering of different practices, their

duration and how they relate to temporally dominant 'projects' like the working day, meal times, or the week-end. Within DEMAND, Giulio Mattioli has been looking at recurrent sequences of 'practice' represented in time use data by coded activities such as preparing and eating food and then washing up. Understanding these temporally inter-dependent sequences is important for the prospect of 'shifting' activities or whole clumps of inter-linked activities to off-peak hours.[2]

In his article on squeezing time, Southerton suggests that individuals rush certain practices in order to make more time for others (Southerton 2003). This implies that some practice-related time-demands are malleable and that patterns of attention vary, to some degree, depending on the priorities of individual practitioners. Jalas addresses similar issues, but with a focus on how practices like those involved in caring for a wooden boat come to dominate the schedules of their enthusiast carriers. Both conclude that carriers' orientations are relevant but Jalas goes one step further, arguing that orientations are, to an extent, an outcome of the practice itself (Jalas 2009). This leads to other questions about how practices-as-entities acquire characteristic temporal features. For example, how does it come to be that the proper performance of a practice means it is enacted at the 'right' time, in the right order and for the right amount of time. Further, how do these features relate to the performance of other practices, and do how they change?

In working environments features of duration and sequence are often pre-defined. Zerubavel's (1979) detailed study of temporal rhythms in hospital life shows how the institution coordinates and schedules the practices of employees and patients alike. Institutionally determined patterns of timing and synchronisation variously relate to necessary or contingent forms of co-presence, coordination, sequence, cooperation and power, or to other institutionally timed 'events'. In this situation the carrier's orientation is of little or no consequence. Instead the rhythm of the hospital coordinates - and is made by - a distinctive organisation of practices and priorities.

In so far as peaks and off-peaks of energy and mobility demand are outcomes of practice(s), the possibility of deliberate peak load shifting depends on the relative fixity and flexibility of individuals, or groups of individuals, as carriers of multiple practices and on the repertoire of practices that are carried/enacted. This makes sense, but again I have a feeling that there is something missing. Ok we can focus on temporal rhythms as experienced by people who carry many practices. Ok, we can consider the typical temporal/normative 'features' of any one practice-as-entity, noticing that these change all the time. But how are we to conceptualise either the clumping together of sequences of practices, or what we might think of as more 'institutional' arrangements? Is it useful to think of an organisation, like a hospital, as an orchestrator of what people do and when they do it? To conclude that such an organisation is, at the same time, an outcome of what people do (Schatzki 2006), does not negate the processes of ordering and organizing that Zerubavel describes. However, it does suggest that other ideas are required to explain how temporal coordination is achieved. For example, how is it that Wednesday's practices appear to have more coordinative bonds than those that are enacted on Sundays? More broadly, are we how to explain the existence and the persistent

[2] The energy policy literature identifies a series of 'shiftable' practices, e.g. the laundry that can, in theory, be done at any time of day or night. There is some understanding of temporal rhythms in that meal times are not thought to be shiftable, combined with the belief that people will change their routines if price signals are strong enough.

and pervasive power of the 9-5 working day, or the working week – and the impact these temporal systems and/or dominant practices have on other areas of daily life?

More immediately, the idea that peaks and troughs in energy demand are outcomes of the temporal location of a series of bounded and therefore shiftable practices misses the point. Peaks and troughs are consequences of how relations between practices play out through the day, and across seasons, years and generations. From this point of view there is no such thing as 'a' shiftable practice: all are meshed in relation to each other whether as preconditions, co-requisites or variously causal sequences. In this context, 'flexibility' is a matter of reconfiguring relations within a complex of practices. The scope for doing so depends, in part, on the existence of dominant and for whatever reason non-negotiable demands/practices.

The second part of my mini-manifesto again calls for more understanding of how practices relate to each other this time with a focus on how some practices or sets of practices come to dominate the coordination of others. I am unsure about how institutions and organisation ought to figure in this discussion, but I think they have a place.

Prefiguration, obduracy and accumulation

One of the challenges for DEMAND is to find a useful and sensible way of contributing to discussions about the future. Current government policies rely on scenarios and analyses of options for promoting efficiency and decarbonising energy supply whilst maintaining current standards of living. In effect these methods suppose that present practices will remain the same far into the future. This is highly unlikely: practices change all the time – but what, if anything, do we have to say about possible directions of change, or about the potential for deliberately steering the range of practices that might be enacted in the years ahead?

The terminology of 'path dependence' has used to describe points of no return in the development of sociotechnical systems. The classic example here is the persistence of the deliberately awkward QWERTY typewriter keyboard and of the skills involved in using it (David 1985). Is it at all useful to think about practice-path-dependencies and 'lock-in' in similar terms? More specifically do current practices, and material arrangements throw shadows into the future?

Schatzki suggests that present practices prefigure the social future. He writes as follows: "Prefiguration is the social present shaping/influencing/affecting the social future, above all, the nascent social future" (Schatzki 2010: 140). In his words, "Prefiguration is better understood as a qualification of possible paths of action on such registers as easy and hard, obvious and obscure, tiresome and invigorating, short and long, and so on." (Schatzki 2010: 140). Past and present practices influence judgements of hard, easy, etc. but Schatzki's point is that they do not *make* future paths. The future is inherently open, but prefigured in that not all possible paths are thought to be equal.

This conclusion does not close off lines of enquiry which go further into the topic of how and by whom terms like 'hard' and 'easy' are mobilised and used, which ask about how the 'inconceivable' is made, and about how material arrangements feature in this process. Hommells addresses some of these issues in an article which starts by underlining the obduracy of urban structures: "Once the high-voltage electricity distribution system is in place, it is hardly conceivable to deconstruct it and

shift to a decentralized system of windmill power generation; once a city's downtown area, including all its buildings, roads, and distribution networks, is there, it displays obduracy and offers resistance to change (Hommells 2005: 329). This extract focuses on the hardware and on what it is that makes the infrastructure itself 'hard' to unpick. It says nothing about the practices that the high voltage system enables, but by rights both are at stake. In other words, qualities of obduracy and resistance to reconfiguration or unpicking apply to sets of practices as well as to the material arrangements that such practices co-constitute.

There is more to discover about how 'blocks' of obduracy are established in, and through social practice, and about the extent of their future reach. Hommels goes on to distinguish between three types of obduracy: that which is associated with persistent mental models and frames; that which has to do with being embedded or multiply anchored; and that which relates to forms of momentum or long term cultural tradition. In theory all three are part and parcel of making the range of arrangements to which prefigurational judgements of 'easy', 'hard' etc. are applied – and all three are also part and parcel of the judgements themselves.

For an individual, as for an organisation or a city, the chances of taking one but not another path of future action vary depending on past and present practices (hence the idea of prefiguration). So far so good, but just what is it about these past and present practices that makes a difference?

As indicated above, some clumps of past/present practices may prove to be obdurate or sticky: hanging together in ways that make persistence the 'easier' route to take for all sorts of different actors/practice-performers. But for an individual, the range or array of 'easy' or plausible options is also likely to depend on a more personalised repertoire of resources and capabilities – again born of past practices. This suggests that there might be different modes of accumulation, loss and storage to consider with respect to individuals, institutions, complexes of practices and societies. The accumulation and distribution of requisite elements is clearly part of prefiguring future lines of action, but the processes involved are probably not the same as those that constitute obdurate configurations.

Since this is an exercise in looking ahead, it is appropriate that the third part of my mini-manifesto calls for more systematic and careful consideration of how past and present practices and material arrangements flow into the future.

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