



Practices, the Built Environment & Sustainability

Responses to the Thinking Note Collection

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Foreword

In October 2014, the 'Practices, the Built Environment and Sustainability' (PBES) network produced a Thinking Note Collection, with the intention of fostering collaboration between network members, consolidating some initial thinking and ideas, as well as to provide an output to drive new discussions with other interested colleagues. The Collection was produced in relation to two summer workshops, which were hosted by Anglia Ruskin University's Global Sustainability Institute (GSI) and Aalborg University's Center for Design, Innovation & Sustainable Transitions (DIST), and were in association with the British Sociological Association's Climate Change Study Group (BSA CCSG).

Specifically, the Thinking Note Collection included nine 3-page Thinking Notes, in which PBES members succinctly tackled potential sticking points, novel synergies, and/or areas for future development in the PBES field and beyond. Topics ranged from time, narrative, and codes and standards, to know-how, feedback, and communities of practice.

In building upon this, we asked experts in the field to respond to our Thinking Notes in a similar format. We gave them the challenging task of formulating a short (around 2-page) Response that brought to the fore issues that they felt the Thinking Note Collection most saliently highlighted (or not), be it explicitly or implicitly. They were thus able to respond to specific Notes and/or to address cross-cutting themes that they regarded as particularly important.

We therefore hope that these 11 Responses meaningfully accompany the original Thinking Notes, and thereby provide an accessible resource for both those already interested in and those wanting to know more about the PBES field. In particular, we hope that these Responses spark discussion and debate both within and beyond the network, in addition to helping foster further connections, points of contact and future collaborations between interested researchers.

These Responses cover a wide range of topical points of debate, some of which have endured throughout the development of theories of practice, with others only starting to emerge more recently. All of the Responses focused in some way on how practices have been, currently are, and/or could be organised and performed, with each Respondent considering a very particular set of influences (as prompted by the original Notes themselves). Consequently, the Responses have been ordered into four thematic parts: (1) Theories, frames and lenses; (2) Materials of practice; (3) Knowledges, communities and learning; and (4) Change and new directions.

We would like to thank the Respondents for kindly taking the time to write these thought-provoking Responses, as well as the other network members who contributed to the original Thinking Note Collection, without which these ongoing discussions would not be possible.

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List of Thinking Notes (upon which these Responses are based)

Thinking Notes (TN):

TN 1 – Entities, performances and interventions

Nicola Spurling, Stanley Blue

TN 2 – Know-how, practices and sustainability

Sarah Royston, Matt Daly, Chris Foulds

TN 3 – Exploring the relationship between narrative and practice

Mary Greene, Lisa Westerhoff

TN 4 – How do material objects transcend the boundaries between professional and domestic practices?

Charlotte Louise Jensen, Faye Wade, Ida Nilstad Pettersen, Lenneke Kuijer

TN 5 – Can ‘systems of practice’ help to analyse wide-scale socio-technical change?

Rachel Macrorie, Matthew Daly, Nicola Spurling

TN 6 – The many faces of feedback: Beyond the kWh

Chris Foulds, Sarah Royston, Kathryn Buchanan, Tom Hargreaves

TN 7 – Conceptualising institutional codes and standards in the built environment

Faye Wade, Andrew Chilvers, Ellis Judson, Andrew Karvonen, Chris Foulds, Charlotte Louise Jensen

TN 8 – Time and practice

Stanley Blue, Mary Greene, Roxana Morosanu

TN 9 – The role of ‘Communities of Practice’ within the built environment

Rachel Macrorie, Sarah Royston, Matthew Daly

All of these Notes are freely available online and were published in:

Foulds, C. and Jensen, C.L. 2014. [*Practices, the Built Environment and Sustainability – A Thinking Note Collection*](#) (Eds.) Cambridge, Copenhagen, London: GSI, DIST, BSA CCSG.

PART 1
Theories, frames and lenses

TNR 1 – Systems, actors, ends, narratives and identities

Daniel Welch (*Sustainable Consumption Institute, University of Manchester*)

This Thinking Note Collection explores both important topics neglected in the current practice theoretical literature addressing sustainability issues – systems or supra-practice configurations, narrative, and processes of intermediation – and profitably engages with topics with more presence in the literature – knowledge, know-how and learning, time, and the role of standards. As there is no way in the space to respond in full to the richness of ideas offered in this Collection, I will instead offer a dialogue with what I take to be the more important themes, reflecting upon how they highlight lacunae in the current field.

As Macrorie *et al.* (TN 5) note, Matt Watson's notion of 'systems of practice' is an attempt to respond to the criticism that theories of practice focus on individual practices at the expense of larger practice configurations. Key here, as Spurling and Blue (TN 1) note is that '*Performances which actualise a particular practice entity (such as driving) are part of multiple practices*'. The performances which actualise 'driving' also include those of transport planners, car manufacturers etcetera. This draws our attention to the question of the unit of analysis. The basic practice theoretical move to make practices the unit of analysis has been extraordinarily generative for the study of sustainable consumption. Equally, discussion at the PBES workshop on this topic led to consensus that practices are not *always* the appropriate unit of analysis. The development of this problematic seems to me fundamental to the future contribution of practice theoretical approaches to sustainability issues.

The 'sustainability transitions' literature (within which the Multi-Level Perspective – MLP – is probably the best known model) tends to quarantine the contributions of practice theory to the domain of 'lifestyles' and 'everyday life'. There are good reasons why the study of consumption, and sustainable consumption specifically, is particularly amenable to practice theory (see Welch and Warde, 2015) but no a priori reason to restrict its application to this domain (as work in organisational studies demonstrates). Practices are not 'co-constitutive with sociotechnical systems' (STRN 2010, p.16-17), they are the components of which those systems are made. Scale is made, not given. However, practice as unit of analysis is not well suited to the kind of configurational analysis needed to address the larger entities and phenomena with which sustainability transitions are concerned; and practice accounts of scale-making are weak.

Watson notes that to represent objects of analysis (entities or practices) as components of a system requires demonstrating how those components are articulated in '*processes that lead to the emergence of a particular dominant structure*' (2013, p.120). Macrorie *et al.* suggest 'systems of practice' is mobilised as a concept to address how 'governing practices are implicated in the reproduction, reinforcement and transformation of social life' (TN 5, p.16). Perhaps this question should be turned into a definitional characteristic of the concept; a refinement on Watson's defining feature of dominance (and implicit relative stability). Such a tighter definition would justify their suggestion that the central problematic that the 'systems of practice' concept addresses is 'the extent to which transformations to sustainability can be governed', as well as distinguish 'systems of practice' from other forms of practice configuration (such as practice complex).

Something noticeably missing from Macrorie *et al.*'s (TN 5) 'methodological approaches' suggested for the analysis of systems of practice is the category of actor. This is a commonplace in current practice theory inspired work, but I am sceptical that it is tenable if we are to have an adequate account of socio-technical change and sustainability transitions specifically. Whilst practice theory's capacity to identify processes of endogenous change and 'horizontal dynamics' is a hugely useful corrective to commonplace assumptions about how change comes about, the eliding of purposive projects, strategic action and the role of collective actors in processes of socio-technical change is profoundly problematic. The problem is suggested by 'governing practices...implicated in... social life' (TN 5, p.16). 'Governing practices' are largely variants of very generic practices, such as those of bureaucratic organisation, and relatively generic practices, such as commissioning research. They are made distinctive as 'governing' firstly, at a high level of generality, by a

certain kind of problem-making, or style of reasoning, and characteristic relations to a set of techniques of implementation (as in theories of governmentality, cf. Wade *et al.*, TN 7). But where the issue is socio-technical change and sustainability transitions we also need to know, more specifically, how governing practices are made distinctive by the projects, engagements and ends to which they are put (sustainable development, or energy security, for example).

While in Schatzki's account human activity is fundamentally teleological – premised on 'acting toward an end from what motivates' (2010, p.71) – current uses of practice theory tend to occlude the importance of end-orientation in social being, emphasising the competent performance of practice as an end in itself. However, there are many forms of activity where the practice is the means to the end, not the end in itself. Such ends are often simultaneously the object of multiple practices (as in Spurling and Blue, TN 1), again underscoring the importance of developing concepts of supra-practice configuration. Schatzki offers us a model of activity explicitly 'closely related' to what some theorists call 'actors' orientations' (2010, p.71). One solution to the appropriate delimitation of the relevant unit of analysis is through the object or end to which activity is directed, as in the 'collective activity systems' of Cultural-Historical Activity Theory (see Nicolini, 2012; cf. Engeström, 1999 for an account of the evolution of the progressively expansive unit of analysis in CHAT perhaps resonant for other forms of practice theory). Incidentally, CHAT, then, offers another model of object that serves the mediating function of those addressed in Jensen *et al.* (TN 4).

The ends which activity pursues, I would argue, takes us back to the issue of collective actors. Are the actors mutually supportive of the 'dominant structure', or are different actors pursuing different ends? Is the 'dominant structure' in a field of contention? What leverage do different actors have over the processes that stabilise incumbent configurations? Working through how we would articulate this in practice theoretical terms we would perhaps (contra the intentions of Macrorie *et al.*) arrive at something not a million miles away from more recent formulations of MLP after all; Geels (2011) defines different levels (let's call them zones if we want to avoid hierarchy) as 'different degrees of structuration of local practices', or different degrees of institutionalization understood as the stability and consistency of interactions and power relations over time and space (p.37).

There are crucially important dynamics at play in socio-technical (and socio-economic) change that cannot be captured through abstract practice dynamics (e.g. contagion, hybridisation, bifurcation): dynamics arising from the strategic actions of collective actors. Perhaps the most important contribution of practice theory has been to critique a paradigm of social action premised on methodological individualism, a 'portfolio model' of the actor (Hindess, 1988) and a structural overemphasis on the role of deliberation in human activity. But it is the paradigmatic privilege accorded that model that should be the object of that critique (Whitford, 2002) not the existence of actors or of deliberative action per se, nor the role of values, interests and identities in historical change. Foulds *et al.* (TN 6) have no difficulty in recognising a multiplicity of actors at play in the feedback mechanisms of 'smart' energy technologies. But there is a danger of simply switching from one pole – practice as entity, where actors have left the stage – to the other – practice as performance, which, obviously needs actors to perform (see Spurling and Blue, TN 1). The danger with the latter is perhaps that the category of actor seems largely untroubled by its encounter with practice theory. I concur with Schatzki (2002) that capacity for deliberation is a defining characteristic of the category of 'actor', and with Hindess (1988) that the category is not restricted to individuals. But shouldn't actors after practice theory be stranger beasts: socio-technical, at very least? Activity networks of distributed cognition? Something like Deleuze or Callon's 'agencements': assemblages of people, technical devices, and even codes or algorithms. What can theories of practice offer to the understanding of collective actors in processes of socio-technical transition?

Another important neglected topic addressed in the Collection is narrative. Crucially, as Greene and Westerhoff (TN 3) note, narrative is intimately linked to identity: individual and collective. And 'sustainability' itself, of course, is not understandable without recourse to some sense of narrative. While identity may be under-explored as a theme in contemporary practice theory this is not the case for some of its most influential sources. For Giddens, 'A person's identity is not to be found in behaviour... but in the capacity to

keep a particular narrative going' (Giddens, 1991, p.39). For MacIntyre, identity is that which is presupposed by the unity of character that the unity of narrative implies. There is no need therefore, contra Greene and Westerhoff, for recourse to a 'methodologically individualised' moment in order to address narrative.

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TNR 2 – Structure and agency in understanding and researching practices

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Several of the Notes in this interesting Thinking Note Collection implicitly or explicitly discuss the relationship between practices-as-performances and practices-as-entities. With inspiration from this, I will continue to reflect on this relationship in my Response, especially in connection with methodological questions, and I will do this by relating it to an older and broader discussion within the social sciences on the relationship between structure and agency.

Research on practices, the built environment and sustainability has been expanding in the last decade. In the majority of this research, there has been a strong focus on explicitly distancing research from more behavioral and individualistic approaches. This is most prominently expressed in the often cited 'ABC' article by Shove (2010). There might be good reasons to express that practice theory approaches are different from behavioral approaches, both when it comes to understanding everyday life and consumption and when it comes to a policy perspective of how to change practices. However, it is my impression that this need to distance practice theory research from an individualistic approach has also led to too much fear of studying (1) how the performances of practices vary between practitioners, and (2) how individuals perform practices across particular socio-material settings, including how individuals also take part in shaping structures.

Discussions on practices-as-performances and practices-as-entities resemble the classical discussion between structure and agency within social sciences. Practice theory approaches draws on both Bourdieu and Giddens (Warde, 2005; Reckwitz, 2002; Schatzki, 1997) and it is especially the understanding of the relationship between structure and agency that I want to highlight here. From Bourdieu (1990), it is his particular understanding of how we embody social structures into our everyday routines (through habitus) that is interesting. Whereas from Giddens (1986), it is the idea of structuration, and the recursive relationship between structure and agency that is relevant. Both approaches thus deliver a mediating point, or a third path, in the structure-agency debate. I will (together with Warde (2005), Reckwitz (2002) and Schatzki (1997)) argue that the positions of practice theory, as described by Schatzki and Reckwitz, follow this same line of mediating between practices-as-performances and practices-as-entities. It is thus relevant to see practices as something that is structured collectively as entities, though also including that individuals may have some agency in their individual performance of different practices and thus also contribute to the way these practices-as-entities evolve. The Note by Spurling and Blue (TN 1) delves into differences between how the relationship between entities and performances can be better understood; they use Schatzki to argue that performances can be understood as actualizations of entities across time and space (Blue *et al.*, TN 8). I think these discussions are relevant, but I especially think they are relevant to methodological questions.

In an account of how practice theories might engage in studying consumption, Warde (2005) distinguishes between the social differentiation of practices and the trajectories of practices. I argue that the majority of the research on practices, the built environment and sustainability has focused on the trajectories of practices: how practices-as-entities evolve over time and most often how they evolve in an unsustainable direction – which is of course an important research topic in itself. Less research has, however, focused on the social differentiation of practices: how there are variations within the performance of practices, focusing either on the social structuration within the performance of practices or on how individuals in different socio-materialities or time-spaces perform practices differently.

There are also several of the Thinking Notes which directly or indirectly relate to this topic of studying individuals and variances. For example, Greene and Westerhoff (TN 3) bring a methodological argument or apologia that the personal lived experiences in the lifeworld and phenomenological qualitative methods, especially the narrative, should have a place within social practice theory. Whilst I agree with their argument, I also see considerable potential for exploring how other innovative qualitative methods, such as sensory ethnography and videos (see e.g. Mackley and Pink, 2013), could be brought more into studying practices-as-performances as they are experienced by lived physical beings in their everyday life. This links to a

methodological point raised by Blue *et al.* (TN 8) on how to study time and practices. Moreover if we are to learn more about the know-how element of practice, as interestingly raised by Royston *et al.* (TN 2), I would also argue that it is these types of deep phenomenological qualitative methods that need to be brought more into the study of practices.

The other approach to studying variance in the performance of practices is through statistical quantitative methods, which I argue has been quite underrepresented to date in research on practices, the built environment and sustainability. This is despite classical sociological consumer studies having often studied social stratification within patterns of consumption. I would thus advocate that this could be relevant within a practice theory perspective as well, including questions like: who takes part in performing what practices? who are included or excluded? how are people performing the same type of practice differently? and, how does that influence the practice-as-entity? This also includes questions of energy poverty, as well as social justice questions regarding resource consumption, and hence such considerations could also be useful in exploring the potential social impacts of different climate policies. At present, big data relating to different types of practices within the built environment are available, and using these data for statistical analyses of variation in practices seems highly relevant for research on variations within practices, which is also noted by Macrorie *et al.* (TN 5) and Blue *et al.* (TN 8)

Therefore, what I appreciate in this Thinking Note Collection is that there is quite some interest on the relationship between practices-as-performances and practices-as-entities, in addition to some thoughts on methodological issues. However, I think these two sets of issues could be more fruitfully linked together.

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TNR 3 – Conceptualising ideal types, systems, lenses and standards

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My set task was to respond to the pieces written by Spurling and Blue (TN 1), Macrorie *et al.* (TN 5) and Wade *et al.* (TN 7).

I'll comment on them in that order. For me, the Thinking Note by Spurling and Blue (TN 1) on entities and performances is simultaneously problematic and interesting. Although I partly disagree with the authors' starting point, I end up being quite inspired by the conclusions they reach. It seems to me that this Note slips between two topics: one is the relative stability or fluidity of different representations of performances and entities, and the other is what range of performances to consider when thinking about how entities are constituted. On the first point they suggest that the notion that an entity represents a block 'to be filled out' is overly deterministic: they are wrong, or rather, this is to focus on the 'block' part and not on the variable 'filling in' part. How much variation there is either in the filling in (e.g. as different children might do colouring in), or in the sum total of variants of a practice is an empirical question: talking of block is not the same as talking of fixed or enduring or standard blocks. A second related quibble is about the use of 'ideal type'. As I recall Weber used the concept in a very different way: treating it not as a singular or 'real' pattern but as an *analytic* point of reference constructed in order to make judgements about sameness and difference.

Accordingly, I disagree with this statement: "'ideal type" formulation of practice-as-entity is more deterministic and loses much of the iterative quality that is key for understanding practice dynamics' (TN 1, p.5). To frame it this way is to construct a straw position which is artificially set in stone (to mix material metaphors). I am, not surprisingly, happier with the use of the term (interchangeable with template) when used to describe provisional 'points of reference' such as those which are mobilised in ongoing monitoring – and in which the contours of the template are, of course, obviously also fluid: *to some extent*. I therefore quite agree that 'analyses have little value for understanding change unless the iterative relationship of performance and entity is brought back into view' (TN 1, p.6)... the difference is that I don't think that relationship was ever missing (not in Reckwitz's account anyway).

Despite the title and the apparent topic, this is not where the contribution lies. Instead, the more intriguing move is to consider the 'full' range of diverse performances that have a bearing on the reproduction (and of course the transformation) of a practice as an entity. Amongst other things, this includes the performances of those involved in designing and producing material elements (roads, cars) that are then mobilised in other performances (e.g. driving). Whilst it is confusing to squash these different roles into one (to assume that these are all equally and in the same way involved in the making of driving as an entity), this line of thinking points to a more fundamental issue which is about how complexes of practice are performed and reproduced/transformed as entities (or complexes of entities). How are sets of practices reproduced such that the connections between them are *also* reproduced? How do collections of diverse past performances (of planning, of driving, of car design) collectively prefigure future options? Are all practices, from this point of view, best understood as complexes of practice (past, and from different domains/realms)? These are key questions and ones that deserve more thought.

The type of thought that is needed is revealed, partly by its absence, in the piece by Macrorie *et al.* (TN 5) about systems of practice. The most useful section is the quotation from Matt Watson:

'Practices (and therefore what people do) are partly constituted by the socio-technical systems of which they are a part; and those socio-technical systems are constituted and sustained by the continued performance of the practices which comprise them...Changes in socio-technical systems only happen if the practices which embed those systems in the routines and rhythms of life change; and if those practices change, then so will the socio-technical system... [As such] any socio-technical transition has to be a transition in practices'

(Watson, 2012, p.488-489; quoted in TN 5, p.16).

But what Watson (2012) does not engage with, and nor do the authors, is the question of what constitutes a system. This is because the term sociotechnical system is borrowed without question. What defines a sociotechnical system? Not all interlinkages and connections are 'systemic'. And presumably there is a host of further questions not just about the character and composition of such links, systemic or not, but also more basically about how they are to be identified (note this is as much of a problem for STS as it is for these authors). Without further specification, the term 'system of practice' does not constitute a 'concept'. Rather, it figures as shorthand for 'anything other than a single practice'. Hence, the idea that referring to construction and housing management alongside what tenants do constitutes a 'system' of practice. However, the fact that studies like the DEMAND project on commercial offices involve different institutions does not, of itself, mean that there is some ready-made, or identifiable, system of practice that is being investigated. I go along with the general plea for thinking more about linkages and connections, but not with the currently fuzzy reference to 'systems'.

In theory, standards, the topic of the piece by Wade *et al.* (TN 7), might represent forms of linkage of which 'systems' are constituted (depending on what we take systems to be). Whether standards are interesting, and if so how, depends on the questions being asked. The idea of a theoretical 'lens' supposes that the question is the same and that different aspects of it are 'revealed' as different lenses are slotted into place: hence the lens of practice theory (Figure 1), or ANT, or whatever. If you look carefully on the picture you'll see there is a word of warning 'Caution: observation is theory laden' (Hanson, 1981). As Figure 1 reminds us, the lens metaphor is misleading. ANTists and Practice theorists would treat standards as different objects of enquiry, within partly different paradigms. The lens is not revealing different aspects of what standards really are: rather the lens is part of constituting the topic itself. This is an important theme, but not one to get stuck on here.



Figure 1 – The lens of practice theory (designed and produced by Sarah Royston)

For me standards are intriguing because of the multiple parts they play in reproducing/transforming practices. Maarten van der Kamp's excellent PhD shows how formal 'rules' of organic standards in farming are constructed, how they work out across a variety of farming practices, and how they sometimes act to 'carry' some but not other aspects of commonality. Depending on what we are interested in, it would be possible to take standards as 'sites' around which persistently diverse practices (farmers, certifying organisations, customers) revolve; or as 'carriers' / mechanisms / instruments of governmentality that hold these diverse practices together. As always, the questions we ask are important for what we 'see'.

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PART 2
Materials of practice

TNR 4 – Built stuff and systems of practice

Matt Watson (*Department of Geography, University of Sheffield*)

It has been a pleasure to read the collective thoughts of PBES network members. These Notes touch on and open up critical questions around developments and limitations of contemporary expressions of practice theory in relation to the problematics of shifting the organisation of social life onto more sustainable footings. Inevitably, many themes could not be fitted into these concise Notes. But perhaps most surprisingly relatively absent was the stuff of the ‘built environment’.

Of course, it was not entirely absent. Repeatedly the built environment is there implicitly, whether in the insightful discussion of codes and regulations in several of the Notes; in constituting the spaces needing lighting; in terms of interfaces like smart controls. But somehow, aside from brief direct consideration by Royston *et al.* (TN 2), the built environment continually slips from focus in the Notes as discussion covers rather more fluid and perhaps more immediately engaging terrain than that provided by bricks and pipes and tarmac and concrete.

One reason for the limited presence of built environment in the Notes may be that ‘environment’ does not work as a category of stuff within the analysis of practice. ‘Environment’ suggests that which is separable from the action to which it represents surroundings, but either stuff is pertinent to the performance of practice or it is not. The term ‘built environment’, therefore, fits uncomfortably with consideration of practice. However, it can stand as a descriptive category for a wide variety of artefacts with shared characteristics that have relevance to practice. For the purposes of this response I will refer to ‘built stuff’ to bring the material of built environment less problematically into discussion of practice.

It is worth bothering with this point because while the Notes do not touch a great deal on built stuff, they cover a range of contemporary debates and issues which cast distinctive light on how built stuff is itself implicated in the patterning, reproduction and dynamics of practices. From amongst the range of insights, the ones I want to work with here are those that push at understandings of the systemic relations in which practices are constituted and which performances of practices reproduce. This provides the means to go beyond reflections on the ways that built spaces and artefacts affect the performance of practices to begin to think about what is distinctive about built stuff within those systemic relations.

The discussion by Foulds *et al.* (TN 6) of feedback is a neat way into this move to the systemic. Their Note pushes ‘feedback’ in relation to practice from the relative immediacy of feedback iteratively informing and shaping the performance(s) of a practitioner – say through a heart rate monitor or a smart meter – to a much more socially collective and temporally extended understanding of feedback – ‘through iterative and cumulative processes’ (TN 6, p. 19). Within such a framing, built stuff could surely figure as a means as well as a result of feedback processes, often on an inter-generational scale. Patterns of practice at one time and place, through their constitution of norms of construction and design, codes, regulations, etc., feedback into the buildings and built spaces which share in the constitution of practices at a later time. In this way built stuff becomes part of the heterogeneous relations constituting feedback, as expansively understood by Foulds *et al.*

Arguably, this understanding of feedback makes sense most clearly when understood within a systems of practice approach – something which Wade *et al.* (TN 7) touch upon in their Note specifically focusing on codes and standards, with the recursive relations they engage with, between domestic practices, buildings, codes and knowledge regimes, being amenable to understanding (if not fully capturing) in terms of systemic feedback. Similarly with Jensen *et al.*’s (TN 4) discussion of the complex relations between professional and domestic practices and the traffic between them through LED lights and associated representations and materialities. Macrorie *et al.* (TN 5) take on the emergent concept of systems of practice directly, with well-structured discussion raising interesting points, and more pertinent questions, on the potential of the concept to enable analysis and understanding of change in complex systems through a practice theory approach. But all three Notes keep clear of locating built stuff firmly within their discussion, whether through

focusing instead on abstracted representations of buildings in codes and regulations, or specific technologies that become part of built spaces.

In a way this is remarkable only because of the name of the network. In the multiplicity of entities comprising systems of practice, or particular feedback loop relations within them, it is inevitable that analytical coverage will be uneven. But the network would seem an ideal situation for thinking hard on what is distinctive about built stuff in the distributed systemic relations constituting and reproducing practices.

Perhaps most obvious here is that built stuff has particular properties of obduracy. Jensen *et al.* discuss the obduracy of codes and regulations, but not the more readily apparent obduracy of buildings, roads and other infrastructures. Their obduracy lies first in their resistant properties. 'Built' stuff tends to be distinctive amongst artefacts in being relatively massive and hard – buildings, bridges, pipes, boundaries, etc. This resistance matters because of the ways in which built stuff both enables and constrains the performance of practices. In materialising the partially realised intentions, values and expectations of architects, engineers, planners and builders, built stuff creates a profoundly uneven landscape of affordance for different practices. Then this comes to matter further because their obduracy is also temporal – typically built stuff has a lifetime of decades, generations, often outlasting key purposes and practices that underpinned the specificity of their design. Obduracy also lies in the sunk investment built stuff often represents; and in the bundles and complexes of practice which can be dependent on particular material arrangements including built stuff.

Through these properties of material and temporal obduracy, built stuff is fundamental to the persistence and dynamics of systems of practice. Buildings both embody and shape institutionalised ways of doing; roads are co-constituted with the other entities and relations comprising systems of mobility. But just as built stuff both constrains and enables the performance of different practices, it also partly constitutes the possibilities for persistence and change in different systems of practice, perhaps principally through acting as a brake to systemic change through the various properties of obduracy that characterise them. However, a systemic understanding alert to feedback relationships makes apparent how built stuff is itself constituted and reshaped through those systemic relations, with ongoing iteratively changing implications for patterns of performance of practices.

As the Notes together indicate, there is abundant capacity for working through these and other lines of analytical development. Undoubtedly the network of scholars behind these Thinking Notes are better equipped than me for thinking through what matters about built stuff in relation to practices and systems of practice.

TNR 5 – Thoughts on the Smart Home

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This thought-provoking Collection got me pondering how the concepts, ideas and suggestions raised could be applied to the policy area of the ‘Smart Home’. Aside from being a key research topic of mine, the smart home is interesting because of its instability and relative fluidity as a site (or system) of changing practices. How we understand these dynamics, and where they’re heading next, provides fertile ground to consider some thoughts from this Thinking Note Collection.

Spurling and Blue (TN 1) offer useful conceptual ideas for thinking through how the process of defining practices opens up different possibilities and understandings of change. One form of definition they provide is the ‘ideal type’ practice-as-entity, which involves a commonly-held idea of the normal, typical or ordinary way to carry out a practice. In the context of the smart home, which is still anything but ordinary, the ‘ideal type’ entity can be found in the pages of smart home magazines and websites. Here there is the promise of a luxurious and pleasurable lifestyle, resonating with related ideas of home improvement. Lutron (2015) smart home automation company calls it ‘the essence of pleasure’. While the smart home itself doesn’t feature here as a practice, we could think of the work being done to bring these ideas into fruition as a practice (or bundle of practices) – ‘smart homing’ perhaps. We could also identify the ‘ideal type’ as a new suite of practice entities being imagined, proposed and demonstrated by smart home advocates and new recruits. These include hands-free vacuuming, smart phone-controlled air-conditioning, movement-sensing air circulation, or fridges that place online shopping orders for you. However, in these cases the ideal type may not have much bearing on what is actually happening in the (smart) home.

Spurling and Blue’s observation that there is not a straightforward correlation between entity and performance is particularly relevant here. If we take these authors’ second idea of practice entities being ‘all the performances [of practice] across time and space’ (TN 1, p.4), we potentially end up with a different and more varied set of smart home practice entities. ‘Smart’ home cooling remains the same as ‘dumb’ cooling if householders use smart home cooling devices as they would use any other cooling device. Spurling and Blue’s third point, that ‘performances which actualise a particular practice entity ... are part of multiple practices’ (TN 1, p.6), provides a more nuanced way of making sense of these dynamics, by connecting the performances of marketing companies, and their suggested ‘ideal types’, to what is being performed in the home. Following this idea, the performances of those who design, install, build, market and use these devices all contribute to the innovation and stability of entities which are bundled together inside the smart home.

A nice example of this is iRobot’s Roomba vacuum cleaner, which targets its marketing – or practice recruitment – towards women and pet owners. The Roomba can independently whiz around the room every day to suck up dog or cat hair, potentially changing ‘normal’ vacuuming frequency, and delegating the performance of vacuuming to a smart device. Pet owners do seem to be flocking to the Roomba, but perhaps for different reasons than promoted by its marketers. YouTube videos of pet owners encouraging their cats (and dogs) to ride the Roomba around the house for fun are widespread and highly viewed (Strengers, 2014). The culmination of these different practice performances (YouTubing, playing with pets, marketing smart vacuum cleaners) means that the entity of smart vacuuming, or Roomba-ing, carries *multiple meanings* of entertaining and cleaning up after pets.

The piece by Jensen *et al.* (TN 4) opens up alternative ways of understanding processes of change in relation to the smart home. Rather than following the different instantiations of individual performances, as Spurling and Blue suggested, one idea they propose is to follow ‘boundary objects’, such as smart devices, as they move from design labs, to manufacturing floors, to marketing spreads, to shop floors, and to the home itself. As the object moves, it demands certain competences from those charged with integrating it into the relevant set of practices – such as designing, manufacturing, marketing, shopping and vacuuming. It also carries meanings and materialities, which both persist and change as the object moves across boundaries. The object itself can be thought to have agency in this movement –both that which is inscribed within it, but

also simply by virtue of its materiality, which can manifest itself in unexpected ways. People who live in smart homes often talk about the technology as if it has a life of its own – or human-like characteristics – that are often not intentionally inscribed into these devices (Strengers, 2013).

Blue *et al.*'s (TN 8) thoughts on time and practices got me thinking more about the role smart objects play in bridging and transforming boundaries of time. We could think of smart devices as time machines, drawing on domestic ideas of the past, and utopian ideals for our future. While situated in real-time – and often heavily preoccupied with providing real-time feedback – smart devices are surrounded by past-time objects and infrastructures which both enable and limit their potential capability and movements. They are almost certainly also involved in making time (and taking time) as more tasks are delegated to smart objects, engendering new domestic rhythms in the home.

The agency and temporalities of smart devices also opens up the possibility of thinking about how they can carry, share and engender know-how and feedback, as in the pieces by Foulds *et al.* (TN 6) and Royston *et al.* (TN 2). As Royston *et al.* explain, smart home devices usually come with some form of 'know-what', or official instructions about how to use, operate and/ or manage these devices. The provision of know-what has preoccupied smart energy policy makers for many years. However, what seems far more important to the performance of smart home practices is the *know-how* acquired through interaction with things. Another way of thinking about this is to explore the multiplicity of feedbacks provided by smart devices. Foulds *et al.* discuss seven forms of feedback in their Thinking Note, many of which are relevant to the performance and ongoing transformation of smart home practices. These feedbacks all have 'multiple temporal scales ... and various (ir)regularities and rhythms' (TN 6, p.19) which extend current understandings of feedback in the smart home context, and provide another lens through which to examine change and transformation in the smart home sector.

Each of these thought processes places a different emphasis on how we might understand or look for change in relation to fast-changing policy contexts like the smart home. The Thinking Notes provide a rare opportunity to consider these possibilities from a number of perspectives, opening up different ways of understanding and potentially intervening in practice trajectories.

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TNR 6 – Sustainable bodies in practices

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In this response to the Thinking Note Collection, I would like to address a double theme that crosscuts most of the Notes, although they are hardly made explicit: bodies and sustainability. I suggest that linking both themes can provide new insights. I start with two observations: (1) a social practice is performed by a human body, and (2) sustainability concerns material flows. I contend that the conceptual problem of 'sustainable practices' calls for positioning bodies and environments as part of the ontology of the problem.

My first observation deals with the centrality of bodies in practices. Indeed a human body is always involved in all given examples of practices (e.g. showering, cooking, driving, reading, monitoring), and doing and performing implicitly implies the action of a body. I can write this Response only because I have a body, and you can read it only because you have one too. My second observation relates to the definition of sustainability. Environmental problems are generated through the displacement of diverse materials, and social problems relate to the access to resources. Sustainability can then be defined as the circulation of materials and energy compatible with the reproduction of ecosystems and practices. This reproduction can imply a transformation if its rate fits the pace of species evolution and if it allows humans to live prosperously. My two observations lead me to the following sociological and ecological statement: bodies are reproduced (and evolve) through practices within material flows. This statement is also a kind of transcendental argument for it enounces the condition of possibility of creating this present Response. My body and my environment are concurring with my existence. This is obvious but, if that matters for the problem to be treated, it should be part of its description.

Bodies constitute the materials links between practices and the environment. When a practice is described, the body is the part that interacts with elements whose tracks eventually lead to ecosystems. In order to appreciate the place of bodies in practices, the following counterfactual might be pondered: if human bodies had been different (e.g. in size, need, longevity, reproduction rate), what would sustainability have meant? The issue that crosses sustainability and body combines the question of the number of human bodies with the way these bodies mobilise materials elements to perform practices. Since the number of people cannot be voluntarily changed, the issue is about transforming practices.

The interaction of a body with its surroundings is not simply an external relationship between two well-delimited spaces, but an intimate composition of heterogeneous entities. The performance of a practice is understood as the effacement of sharp boundaries between actively tied elements (Rouse, 2006). The materiality of objects is intelligible when objects are operated or touched by the body (Jensen *et al.*, TN 4). Perceptions and sensations constitute immediate feedbacks of performance: practices are self-monitored and continuously adapted to a changing environment (Foulds *et al.*, TN 6). In this case, the environment is the immediate and perceptible surroundings of a body, and it is usually changed in the course of a practice. Competence both emerges from, and guides performances (Royston *et al.*, TN 2). Body appears here as the locus of both continuity and change: it articulates the double movement of making sense of what is happening (projection, images) and of accumulating knowledge and experience (know-how, skills) through the integration of material elements. Bodies have obdurate qualities (Spurling and Blue, TN 1) and co-evolve with their environment. Bodily experiences can be partially expressed in language (Greene and Westerhoff, TN 3) and then shared. They do not relate however to the phenomenological body of a primal subject having a true and pure relationship to the world, but to the entanglements of the body with its surroundings. Bodies arrange the conditions of existence, which are historical. Imitation and other learning processes are particularly observed in communities of practice, in which tacit knowledge can be shared (Macrorie *et al.*, TN 9). The intelligibility of a performance comes from its comparison to other relevant performances, and skills are acquired through exercise. Learning is not, however, always a gentle process since behaviours can be rebuked and sanctioned so that bodies are made docile and disciplined (Foucault, 1977).

Modern practices are imbued with machines and other labour-saving technologies (Blue *et al.*, TN 8). Productive practices since the 19th century and domestic practices since the middle of the 20th century have quantitatively and qualitatively expanded with the use of machines. As the environment has been enlarged through infrastructures, bodies have been released from many tasks. Technology and infrastructure play an important role in organising systems of practices (Macrorie *et al.*, TN 5). From a sustainability perspective, it is important to make a distinction between bodies and machines. Bodies are organic and nourished with food taken from plants and animals. Whereas, machines are compound with strange and various minerals and rely on channelled (mostly non-renewable) energy. The extension of delegation of tasks to machines is clearly unsustainable. It is then important to understand how practices have co-evolved with machines.

The material components of practices have increased and bodies have simultaneously changed. Bodies have been freed from painful tasks, and have been shaped for other activities. Bodies have been disciplined, and they are now modified, built, augmented and normalised (Desmond, 2003). Post-humanists even contend that it is possible and desirable to escape from our meaty bodies. Bodies are not only the active and material components of practices, but they are also images presented to others. Bodies are often disengaged from 'dirty activities', whilst 'beautiful bodies' tend to be fostered. Bodies are increasingly involved in practices where images dominate. Practitioners are recruited to constitute their body as more perfect, more efficient or more competitive. Sweating, suffering or ageing bodies are abnormal bodies that must be cured. Obesity is described as an epidemic that results from the evolution of practices (e.g. eating, physical activities) and that can be healed with specific activities. In sum, practices seem to be more and more specialised, and as part of which are often separately developing skills and images in addition to delegating physical activities to either machines or specific moments.

In reflecting on the links between sustainability and bodies, I would like to raise questions about the 'normality' of modern practices. Sustainable measures are not the same when addressed to non-equipped bodies or to fully furnished bodies. Practices are demanding and orienting material flows that sustain them. The development of machines removes bodily efforts from daily activities, whilst creating standardised environments. Contrasts in many material demands (e.g. temperature, food, light) have been replaced by contrasted moments in which more equipment is involved. I think that we lack investigations on the plasticity of bodies and social norms that co-evolve with both technology and body representations. How would it be possible to configure bodies and infrastructure so that they would require less resource? Which experiments and interventions on bodies would make contrasted resources and effort both sustainable and desirable? Which kind of joy and intensity are linked to practices in which bodies and learning processes are central? What are the self-representations of the body when performing a practice?

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PART 3
Knowledges, learning and communities

TNR 7 – Knowing about know-how

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This Thinking Note Collection is a rich source of discussion points for the continuing development and application of research using theories of social practice. In the spirit of ‘thinking’, each Note puts forward carefully articulated and thought-provoking ideas. With the aim of guiding the further development of just a few of these ideas, this piece is in response to Royston *et al.*’s (TN 2) Note on know-how.

The idea of knowledge, competency, skill or capacity as a key component of achieving social and environmental change is not new. It has been considered an essential device in the toolkit of policy-makers and other change agents for decades, as Royston *et al.* clearly point out. The first part of the Note introduces know-how, explains why it is important and discusses in part its relationship to other practice elements. The authors comment that know-how is important for two reasons: (1) as a core element of practices; and (2) to link the performances of individuals with ‘wider social practices’, to link mind with body, and to link past with future performance. The second point would benefit from further elaboration as much of this reasoning could be applied to any element of practice. To take this further, it would be interesting to explore what it is about know-how in particular that enables it to link mind with body, and to link the past and future performances of practices? Also, what is meant exactly by the term ‘wider social practices’? And how does know-how link the performance of individuals to the practice entity?

In the second part of the Note, the authors review three different know-how-related topics: (1) know-how and embodiment; (2) know-how and collective experiences; and (3) know-how, disruptions and moments of change. Each of these topics is substantial in and of itself, and the authors set themselves a challenging task to explore each without being able to go into detailed exploration. Bearing this in mind, the following critical comments pick up on a few points that would benefit from further elaboration or adjustment, and are designed to assist in developing the ideas raised in this Thinking Note.

In agreement with ideas of plurality and the existence of multiple knowledges, the authors rightly allow that ‘knowledge comes in different forms’ (TN 2, p.7), commenting the most common are ‘know-how’ and ‘know-what’. A useful way to expand on this point might be to query what actually counts as knowledge in the first place before turning to discussions about what form it comes in – although to some extent, these are intertwined and cannot be separated.

What is counted as knowledge in different situations can quickly become political, in that some knowledges will be excluded while others are included, or some will be given more credit or have more agency than others. Probing what it is that counts as knowledge expands the possible types of knowledge recognised. For example, ‘know-when’, ‘know-who’, and ‘know-why’ might be included along with know-how and know-what. The authors almost come around to this point later in the Note when they discuss the problems of ‘binary-poles’ and propose that know-how and know-what are simply dimensions of knowledge rather than fixed categories. Instead of saving this gem for last, this point could be moved up front and centre, as it is, in my view, one of the most important points the Thinking Note makes.

Putting these ideas aside, the remainder of the piece turns its attention solely to know-how (as to be expected from its subject). The authors state intriguingly that ‘not all know-how is necessarily tacit’ (TN 2, p.7). This phrase suggests the authors believe know-how is more complex than has presently been described in the literature, and may include other more transmittable or describable forms. Further discussion or examples on this point would be useful, perhaps in relation to the ideas discussed later in the Note about embodiment and collective experience. Further work may be required, but it would be interesting and most likely quite useful to know, for example, when is and when is not know-how embodied, and what is the relative importance of each, and in what types of scenarios?

The idea of learning by doing, discussed in the embodiment and collective experience paragraphs, has merit, but elevating it as an ideal form of recruitment may ignore other (multiple) ways practitioners are recruited to practices. Further exploration of this subject may prove useful.

The discussion of disruption makes some important points; yet, it is unclear how disruption is particularly important for know-how, as opposed to having an effect on all elements of a practice. The problem in singling out elements for treatment is that it diminishes the importance of the interconnectedness between the elements, eroding the argument for focusing on practice entities as the unit of study and change. In the case of disruption, it is difficult to imagine the lopsided accumulation of know-how in a practice without the accumulation of (or changes in) meanings/images and materials, using the Shove *et al.* (2012) definition of a practice. There is also the question of practice change, or the inherent dynamism of practices, that goes against the bulking up of one element while the others remain unaffected. Another way of conceptualising the effect of disruption is that responding to disruption becomes a practice in itself, where know-how could be thought of as 'knowing-how to adapt' to, or deal with, disruption. Depending on the disruption and the practice/s affected, know-how in this way could be thought of as meta-knowledge, a meta-element or the 'connective tissue' (Shove *et al.*, 2012, p.35) that is part of multiple practices.

As a result of foregrounding know-how above materials and meanings/image (which may be directly attributed to the way in which the topic for this Note came about), in several parts the other practice elements have been largely forgotten. It is possible as one idea for future exploration, but would need careful articulation, that not all elements are always necessary to achieve social change; however, by definition, this approach would not qualify as a 'practice-based approach'. Relatedly, in their final comments the authors propose some questions for empirical work and questions relating to the transmission of know-how. These are valuable questions to pose, but, in my view, they need not be put forward at the expense of treating know-how in isolation from the other elements. As a temporary move, there is merit and it is probably necessary to take this step to find detailed new insights about know-how in particular, but the elements should not be isolated from each other for any considerable amount of time, and when it happens their separation should be carefully explained.

To conclude, this thought provoking Note has uncovered some fundamental dimensions and challenges in using theories of social practice to achieve change in a built environment (and other) context/s. The singling out of know-how as an exercise certainly has merit as a temporary measure or heuristic device, but know-how cannot and should not remain isolated for long without running the risk of practices being split into their constituent parts. Ideas for further exploration include what counts as know-how in certain practices and when, what mechanisms are at work in the transmission of know-how (perhaps across generations of practitioners?), more detailed analysis of recruitment through learning by doing (how does this involve the other elements?), and more in-depth exploration of the detail of know-how, in particular, how it joins body and mind, and how it links past practices to the present.

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TNR 8 – Is Practice Theory in need of the concept of Community of Practice?

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Reading through the nine thought provoking Thinking Notes, it becomes clear that practice theory has much to offer scholars interested in finding sustainable models and solutions for the built environment. But the Notes also raise intriguing questions and points to substantial challenges that practice theoretical approaches must face to become helpful. One of practice theory's fundamental challenges is to understand and explain how practices get going, how they evolve, and how change and stasis is established. Macrorie *et al.* (TN 9) suggest that the concept of Communities of Practice (CoP) 'has potential for analysing how, and why, practitioners ... are recruited to and/or defect from, more (and less) resource-intensive practices' (TN 9, p.28). Furthermore, the authors see the concept of CoP as a productive vehicle for interventions in practices – they 'propose that CoP could help inform policy initiatives and practice in the field of the built environment' (TN 9, p.30).

Since Jean Lave and Etienne Wenger (1991) introduced it, the concept of CoP has indeed been used – and some would say misused – in a variety of ways, serving different purposes. In reflecting on the notion of CoP almost 20 years after its introduction, Jean Lave mentions that the concept of CoP 'has taken on a life of its own, sometimes in felicitous and generative ways, but at other times in ways that give me a pause' (2008, p.283). Lave and Wenger intended CoP to be 'an informal label for a knot of ideas developed in the process [of analyzing situated learning, AB]' (*ibid.*), but the label stuck and travelled into management – assisted by Etienne Wenger's subsequent writings (e.g. Wenger *et al.*, 2002). Today, CoP is an established concept that is taught at business schools and adopted in HRM practices in companies as an organizational means for designing knowledge sharing practices and optimizing productivity. I am in no position to judge if CoP is indeed successful as a design instrument in this context. But I suppose that Macrorie *et al.* are more interested to inquire if CoP could become a useful concept for researchers concerned with the analysis of the dynamics of social practices – how do actors get enrolled in new practices?, why do they defect from these?, etc. These questions are indeed of importance – especially if practice theory has ambitions of providing analytical input to intervention initiatives, or, even more ambitiously, to design sustainable innovation.

To evaluate the merits of CoP I think it is essential to focus on the purposes to which it is put to use and what job the concept of CoP is supposed to do. Originally, Lave and Wenger introduced CoP in their efforts to theorize how *learning* could be understood in ways that did not presume the dichotomies of mind and body, rationality and emotions, etc. that are invested in cognitive psychology's account of learning. As indicated in the quote above, CoP was originally meant as an informal and *epistemological* label to understand how *learning* could be theorized in terms of participation in practice, and *legitimate peripheral participation* was introduced as a productive theoretical perspective for conceptualizing learning – and eventually processes of transformation in, among, and of practices. Thus, CoP was initially intended as an epistemological and analytical concept, but it has since then 'travelled', and obtained still more ontological significance both for some analysts in academia, and practitioners in business and industry. Many authors have expressed their worries in regard to this ontological drift of CoP, and pointed out to the inherent structural-functionalist heritage drawn upon when introducing 'community' into the equation (e.g. Nicolini, 2013). I share this concern and, thus, hesitate to embrace the notion of CoP without reservations.

However, putting CoP back in Lave and Wenger's original framework, I think it still has much to offer practice theory, and that thinking about how practitioners are enrolled in, and defect from, practices are essential inputs to policy. Let me use the rest of my sparse words in this Response to explain why.

Scholars taking a practice theoretical perspective on human activity, practices and material arrangements are challenged to account for how practices change or do not change. Convincing and elaborate accounts have been given to meet this challenge (e.g. Schatzki, 2013). Here, change and stasis is accounted for in a symmetrical way by juxtaposing actors' enactment of practices, practices' confederation into bundles of practices, and material arrangements' prefiguration of practices. In my opinion, this systematic account gives

us both a good framework to theorize change, and good concepts to analyse the dynamics of practices. However, in my opinion, Schatzki's perspective needs to be supplemented with a theoretical account of *persons'* engagement in social practice – a theory that can help us understand how *people learn*. Persons engage in some practices and not in other practices. Persons move across different practices and transform and are transformed by practices on their way. Schatzki is absolutely clear on this point. But why do persons stick to some practices and not to others? Persons are pursuing goals, objectives and projects and they form learning trajectories (Dreier, 2008). Practice theory needs to be supplemented with a social theory of learning that helps us understand the phenomenon of persons engaging in social practice and how they come to form learning trajectories and, eventually, personhood. This is where Lave and Wenger's account of Legitimate Peripheral Participation (LPP) in social practices can be of help. Lave once said that, without a coherent theory of social learning, practice theory is bound to collapse 'like a table without a leg' (quoted in Nicolini, 2013, p.78). We need theoretical accounts and concepts that can help us understand the concrete *mechanisms* of processes of learning, and I think that the LPP-approach is helpful here.

Some practice theoreticians think differently. For example, Stephen Kemmis *et al.* argue that Lave and Wenger's approach does not support a practice theoretical account of learning: 'Lave and Wenger and others who have followed them have seen the world of practices through the eyes of individual practitioners who encounter one another in their practices, and who learn to adapt themselves and their actions to collective interactional requirements. The world seen by these theorists of "community of practice" is a world composed of sovereign individuals – aggregates of individuals – who learn to enter the interactional dances already available in organisations' (2014, p.3-4). However, I think Kemmis *et al.* are misreading Lave and Wenger. Lave argues that "'Community of Practice" was a way to give scope in time/space to an understanding of "practice" so as not to reduce social life to only its interpersonal transactions, interactions, and problem-solving activities' (2008, p.284). Introducing a supplementary perspective on 'persons in practice', and accounting for persons' 'learning trajectories' in practice theory does not equate to understanding people as 'sovereign individuals'.

So, is practice theory in need of the concept of CoP? Definitely not when CoP is gaining ontological weight. But practice theory needs to be supplemented with a social theory of learning that recognises 'persons' in practice, and that tries to understand how persons learn. In Lave and Wenger's initial account (1991), CoP served as an epistemological label that helped us understand the dynamics of learning processes in social practice, and that pointed to the normativities ('legitimacy') of 'belonging' in social practice. When we want to understand why people are recruited into, or defect from, sustainable practices, we need to understand how they learn. We need – among other things – to identify the teleoaffective structures of the practices, and we need to understand how persons come to share, or not share, the projects and goals of the practices. A social theory of learning – like the LPP approach – is preoccupied with understanding the *telos* and the *mechanisms* of participation in social practice (Buch 2007).

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TNR 9 – The role of embodied know-how in transformative policies

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I find all of these Thinking Notes interesting and much of the ‘thinking’ at the cutting edge in the ongoing development of social practice theory and its various applications, including the important application to sustainable energy use in buildings. I will comment on the Notes by Royston *et al.* (TN 2) and Macrorie *et al.* (TN 9), which share issues and two co-authors (Royston and Daly).

The Note by Royston *et al.* takes up the theory and applications of know-how, important to the further consolidation of practice theory and conspicuously absent in the theoretical platform for transformative policies for energy consumption in buildings, which as the authors rightly point out is anchored in rational choice and ontological individualism. Know-how operates at a level below or beyond reflexivity. Yet policies aimed at changing practices are almost uniformly based on deductive, rational and/or moral arguments for change. There is a ripe potential for the development of a new policy agenda that acknowledges know-how and engages with it. The author’s raise a few important questions regarding the development of a know-how based agenda; I will return to those in a moment. First, a couple of comments on the very brief review of theory on know how (addressed in the introduction of the Note). There are several directions of relevant theoretical inquiry. One line of work from the sociology/anthropology tradition draws on Mauss, Bourdieu and their concepts of habitus and disposition. Another that is not mentioned by Royston *et al.* or in other recent revivals of practice theory is the early 20th century work in institutional economics. Habit, experiential knowledge and disposition were important concepts in the social theories of Veblen, Dewey and others. Geoff Hodgson (1997; 2004) has written a couple of good summaries and reviews of this work and its relevance for understanding what he refers to most often as behavior (he rarely uses the vocabulary of practice, though he is clear in his distinction between behavior and the behaviorism of psychology and mainstream economics). Thirdly, there are the theories of Hajek and Polyani (1969) on tacit knowledge (see Verplanken and Aarts, 1999; and Oguz, 2010 for discussions). These threads of theory could be useful to the authors in their further work on know-how and its relevance to practices.

The third section of the Note on images and materials consists mainly of a set of unanswered questions regarding the relationship of know-how formation to the material environments in which practices take place. In my opinion this reflects the state of the art in this important domain of theory which is still characterized by more questions than answers. The relationship between materiality and action remains under-theorized and represents an important domain for further development. As I see it, there has been resistance in the practice theory camp to attributing knowledge to objects (in the tradition of Heidegger and Latour) and a lack of attention to a bridging theory of knowledge that distributes knowledge and agency between body-minds and the materialities with which they engage (Wilhite, 2008). In my own research on household consumption, while originally skeptical to and cautious about sliding into a deterministic view of technology agency, project after project has revealed the power of sophisticated household appliances and building technologies to influence action and to act as a catalyst in transforming practitioner know-how.

The agency in ‘modern’ building technologies and urban infrastructures embedded the guiding principles of 20th century Western political economy: to save time, increase speed and reduce labor. There was an indifference to, or active promotion of, an increasing amount of energy consumed, or pollution emitted. Thus, it is no accident that the materialities of modernity have over time encouraged a habituation to expansive consumption (Wallenborn and Wilhite, 2014). This is relevant for the questions taken up in the final sections of the Note by Macrorie *et al.* on how to transition from regimes of technologies that foster energy expansion to those that foster reduction. Here, I think the authors are correct in directing attention to codes, standards and regulations for reducing energy use (and material throughputs) aimed at the designs and scripts of technology producers, provisioners and practitioners. In recent work, I contend that a ‘contractive’ transformation will not happen in any comprehensive sense until there is a transformation in the political framing of national economies, including an abandonment of growth and the embracement of

new forms for indicators of economic progress such as improved wellbeing and human development. These synergies between household practices and macro-economic framing constitute one of the important frontiers for social practice-oriented research. They were the subject of a recent PhD course held at the University of Oslo entitled 'Consumption, capitalism and social change', attended by 26 PhD students, and of my new book in the making, *The Political Economy of Low Carbon Transformation: Breaking the habits of expansive capitalism* due out in autumn 2015.

This relationship between household practices and transformative politics brings us to Macrorie *et al.*'s discussion of 'Communities of Practice'. Once again I find the issues outlined to be very pertinent and indicate that the authors are in touch with recent developments in the field. They are correct in writing that research in this domain has not strongly engaged with politics and power. As indicated, my view is that this engagement is important, first because encouraging community transformations represent an alternative to holding our collective breath while we wait for national policies to align themselves with sustainability goals, and secondly because the interaction and interface of community practitioners with local political structures and actors is very important to a successful local transformation. It is important that research on community practices engage with questions about how political contexts, agents and power relationships affect transformative efforts.

The thoughts on collective know-how and its links to the discussion of know-how (in Royston *et al.*) are well drawn out and important. Community transformations are interesting research subjects because they are sites where people purposively deconstruct and rebuild know-how regarding deeply entrenched patterns of everyday living. They offer an opportunity for developing a better understanding of the processes related to bringing know-how to the reflexive surface and re-submerging it into the common sense of more sustainable ways of community living. These processes are likely to vary considerably by place, size, cultural context and particular characteristics of the participants, but if given sufficient attention, it should be possible to begin to draw out what is important in forming and reforming collective know how.

The final point by Macrorie *et al.* on nurturing the links between communities is also important. How to encourage practice sharing and social learning between collectivities deserves more attention, as well as how public policy can most effectively intervene to promote intercommunity links and webs of practice both across Europe and between European efforts and South-centered movements such as Living Well (Bien Vivir) (see Salleh, 2010).

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PART 4
Change and new directions

TNR 10 – Change and intervention

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I am very pleased to be asked to respond to this Collection. It is a rich discussion of many topics germane both to conceptualising and investigating social life, including its built dimensions, and to moving societies in the direction of greater sustainability. Indeed, I would say more specifically – given that the collaborators share a practice theory approach to these topics – that it is a splendid compendium of reflections on (1) key dimensions of what I call the ‘plenum of practices’, (2) changes in this plenum, and (3) possible points of intervention in the plenum that hold promise for turning social life toward greater sustainability.

The following remarks focus on the issue of intervention. In my opinion, the key to identifying promising interventions – for any purpose – in social life is a good conceptualisation of social change and of its possible determinants. If one’s goal is to turn society in a particular direction, one needs a propitious account of forms and causes of change. Analytically, moreover, a rough distinction can be drawn between components of practices (or, rather, of bundles of practices and material arrangements) and aspects of the wider nexuses formed by practices. It follows that, from the perspective of practice theory, promoting a specific kind of change requires exploring those practice components and aspects of nexuses that are most pertinent to changes of that kind.

The Thinking Notes principally focus on five components of practices: practice as entity and as performance; know-how; objects; codes and standards; and time (all of these are also components of practice nexuses). Of these, the middle two, above all, objects and codes/standards, are of particular importance in thinking about possible interventions. I highlight objects and codes/standards (understood as linguistic/numerical formulations) because they are tangible and because things that are tangible are generally manipulable. This manipulability, together with the fact that objects and codes/standards contribute significantly to the maintenance and evolution of social life, indicates that alterations in them are possible sources of change. Manipulating them, as a result, is a palpable form of intervention. Know-how is trickier in this context, since its formation and evolution are less overt and directly manipulable. Among other things, know-how can develop “concomitantly” (Dreier, 2009) and haphazardly, and significant effort is required to shape its development. Meanwhile, the relation that time bears to social change and intervention depends greatly on the form of time in question. In the present context, it is particularly important to think about one of its forms, namely, activity time à la Heidegger’s (1962) temporality (*Zeitlichkeit*). The connection of activity time to teleology and motivation makes it more directly related to change and possible intervention than other forms of time. There is nothing like changing the teleological futures toward which people come (their ends) in seeking to make a difference to future events.

The Notes highlight several important aspects of practice nexuses: narration, feedback, and the organization of nexuses. All of these are potentially crucial for understanding change and possible intervention.

The organisation of the nexus of practices is addressed by Macrorie *et al.* (TN 9), and by Macrorie *et al.* (TN 5). Human activity proceeds in a plenum of practices whose organization opens some paths, closes others, makes some paths easier or more straightforward or less expensive or less sanctioned and others harder or more taxing or more expensive or more sanctioned, and so on (see Schatzki, 2002). Understanding the form(s) of organisation that help effect this is key to grasping how social life changes and how it might be turned in a certain direction. Because communities of practice à la Wenger (1998) bear a close conceptual connection to practice theory, they are *prima facie* a particularly suitable form of order to discuss in these Notes. It might be, however, that other forms, such as interaction chains, organisations, and institutions figure more prominently in social life on a practice theory ontology. Indeed, communities will not be a primary form of order in the practice plenum, so long as they are construed as groups or collections of individuals—this pervasive construal contravenes the tendency of practice theory to treat individuals as devolving from practices.

Meanwhile, the legacy of systems theory in social science counsels caution about talk of practice 'systems'. To my ear, talk of systems connotes systemicity and brings with it conceptions of dynamic ordering that draw on such ideas as structural functions, autopoiesis, and complexity. Because, in actuality, the interconnectedness – in German, the *Zusammenhang* – among practices/bundles is contingent, sometimes irregular, and tied to particulars, the term 'systems' can be misleading. Other terms such as 'nexuses', 'clusters', and 'constellations' better describe this nexus. Their use also leaves open whether further terms such as 'community' or 'organisation' capture forms of order in the nexus. All this, however, might just be my ear: the term 'systems' *can* be used loosely and nontechnically. In any event, the goal in this context is to understand how the organisation of the interconnectedness of practices bears on social change and on points and prospects of intervention.

Narrative is the more unfamiliar item on the above list. Greene and Westerhoff (TN 3) are right that practice theorists have insufficiently attended to narrative and to discourse more generally. Narration and discourse are crucial to social life because, among other things, they carry perlocutionary effects, affect human thought, and topics, ideas, and states of affairs are formulated in them. They thereby orient and motivate actors and practices. Rhetoricians have long known this, as have assorted theorists of politics or communication. They – like a motley crew of political figures – have also appreciated the power of formulations to alter the direction of social change. Narratives and discourses span nexuses of practices while also suffusing particular ones. Determining their composition and their relation to practices and nexuses, thereof, is an important matter.

Finally, the phenomenon of feedback – as Shove *et al.* (2012) and others have emphasized – is central to understanding social change. Accordingly, intervention in feedback paths and loops holds promise for inflecting change. I believe that the topic of feedback needs to be complemented with, and largely approached through, a wider topic, namely, that of chains of action. For most feedback paths or loops are composed of such chains, and chains of action are the arteries of change more broadly. Tarde and Latour share this view.

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TNR 11 – Notable thoughts and empirical directions

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In responding to the Thinking Note Collection I was struck first by the condensation of thinking, writing and (presumably) discussion around theoretical approaches. There are many ‘hooks’ around which common points of interest can emerge – nutty problems, data puzzles or open questions. Perhaps it was to do with the structuring of the September event or the composition of the group but it remains interesting, in a non-judgemental sense, that theory proved to be the most attractive bait.

Perhaps not unexpectedly the resulting discussions therefore provide a fascinating first step in laying out what each (or an integrated) theoretical approach may have to offer to the gnarly problem of understanding energy-using social practices and providing options for change. It is fairly well understood that change is necessary and is usually explicit in most of the Notes. It is therefore refreshing that the Notes and the research field as a whole do not shy away from their fundamentally applied end-game – disrupting the status quo as a way to tackle the energy security/carbon/cost trilemma.

Several Notes expand on this theme by starting to discuss the way in which embedded theoretical assumptions can lead to policy (or commercial, NGO) intervention discourses and thus actions which reify often fuzzy theoretical concepts. What appears a sensible abstraction to understand social processes then becomes a generally nonsensical formulaic abstraction for prescribing them... Thus the role of ‘ideal types’ or ‘know-what’ is clear in some forms of active informational and stereotype based interventions and generalised ‘governmental processes’. Indeed the early discussion of practices as ideal types versus performances highlights some of the difficulties of deciding what (practically) to do once theoretical paradoxes or contradictions are revealed.

As an example, Spurling and Blue (TN 1) conclude that social practices as ideal types and as performances are significantly different. This may be true but it seems to me that with a little lateral thinking we can allow for both since they appear to represent different aspects of the phenomena under study. ‘Ideal types’ are perhaps analogous to ‘modal values’ – the most frequently observed – whilst performances emphasise the heterogeneity or variance over both space and time. To a statistician it is not sensible to have one of these ‘measures’ without the other. Thus, to take Spurling and Blue’s example of the ‘5 mile’ cycle, this may be the mean but, unless we know the shape of the distribution (it could be very skewed, it could be clumpy, it could even be bi-modal!), it is of very little help in understanding what is actually going on (Sofoulis, 2011). This is especially so when we want to describe and understand processes of change. In this instance we need to be able to say sensible things about how the mode (or mean) changes, for whom *and* how the heterogeneity (the nature of the distribution) of performances change. We may also need to think about multiple ‘modes’ – several ideal types – some of which may be reified through different power relations in policy, NGO or commercial intervention discourses but which, as Spurling and Blue imply, may also provide indicators of possible future directions. In the end it may be that to choose between intervention approaches following from embedded ideal types (‘defining the norm’) and those that follow from performances (‘adaptive innovation’?) is a political choice about how social change should be enacted. This is especially so when we may also need to think about the unintended consequences that may flow from re-configuring one set of practices.

This then leads on to a second difficulty – that of complexity. Nearly all Notes comment on the inherent complexity of the problem but Macrorie *et al.* (TN 5) make this abundantly clear in their discussion. If it is difficult to think about ‘modes’ and variation for one social practice how are we to do this for networks or systems of practices? Perhaps we should be looking to other fields, such as the study of ecosystems, for methodological apparatus that can help us not only to model constantly evolving complex systems of interacting entities, but also to frame understandings of resilience, fragility and inertia. Interestingly the consensus in studies of ecosystem stability suggests that diversity and stability go hand in hand provided there is sufficient flux in population sizes and flexibility in resource-consumption relationships (Loreau and

de Mazancourt, 2013). Can 'ideal types' enable flexibility in resource-consumption relationships? Probably not.

Interwoven systems of practices then lead directly to what we are coming to term non-energy energy policies (Shove and Walker, 2014). Since the consequence of change to one set of practices may well be a ripple through to sets of others, it becomes immediately apparent that disruptions can have unexpected sources. Thus, some aspects of the evening peak electricity load are a consequence of employment and travelling practices (Anderson, 2014). If we wish to address evening peaks, then we may well get more purchase from changing these than through higher energy tariffs.

All of this does rather beg the question of how to analyse 'complexity' empirically if our 'target practice' at any given time 'depends' on a range of intersecting factors. Not only this, but our more nuanced view of systems of practice needs to be able to analyse the rich detail of change. Have different people (or groups of people) changed their performances of given practices (Powells *et al.*, 2014)? Have they shifted these performances or have they stopped performing a set of practices completely? Or, to invert the thinking – have some performances of practices recruited more enactors at the expense of others? And crucially, how can we 'see' such change? As a more than occasionally theory-free empiricist, who frequently feels that strong theories are oft skating on thin data, this raises the question to me of where and how all of this will play out when the theoretical rubber hits the data road. *Target practice* will certainly be needed...

So, I end with a challenge. This group is exceedingly well placed to provide a step-change in the analysis of social practices in the context of sustainability and the built environment. To do this, the group needs to push the theoretical insights emerging in this Collection through the inevitable mess of real life data. In doing so, the work will be able to build evidence and insight-based bridges to policy analysts and practitioners alike. With a following wind and some judicious dissemination-for-exploitation, it may even turn out to be significantly *useful* – and how's that for a Study Group of the British Sociological Association?

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