The Problem of Action: Infrastructure, Planning and the Informational Environment

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"If you want to build a ship, don't drum up people together to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea" - Antoine de Saint-Exupery

Introduction: "Actions Speak for Themselves"

At the 2010 meeting of the 'Covenant of Mayors' held at the European Parliament in Brussels the mayors and civil servants in attendance were treated to a rendition of a song by Danish musician and composer Søren Eppler entitled "Me and You". Composed for the Zealand region to "provide optimism and energy"[1] on the issue of climate change, Eppler's song provided a performance of the desire and vision of the Covenant of Mayors: to promote energy efficiency and the development of renewable energy in the European regions. Weaving a picture of a harmonious coming together of nature, society and technology the song opened:

I dreamt that I was living in a culture, developing on (sic) clean technology
in co-creating climate
with the nature
that´s giving me this higher energy.

It ended with the upbeat message:

[1] Region Zealand 2010 Climate Song Leaflet

Finally we did do what we must do

Living in the dream that´s coming true

Finally we did do what we must do

We are in the Now - and in the New!

Living in the dream that´s coming true

We are in the Now and in the New![2]

Played by Eppler himself on a keyboard at the front of the banked benches of the European Parliament chamber, the song provided participants with a kitsch dream-image of a utopian future where not only were environmental problems resolved, but the governmental actors were assured, importantly, that 'we did do what we must do'.

The question of 'doing' or more precisely 'action', are foundational to the politics of climate change promoted by organizations like the Covenant of Mayors. The core commitment of the 6298 local authorities that voluntarily signed up to the Covenant of Mayors is agree to write a sustainable energy *action* plan. The Covenant of Mayors website states "In order to translate their political commitment into concrete measures and projects, covenant signatories notably undertake to prepare a *Baseline Emission Inventory* and submit, within the year following their signature, a Sustainable Energy Action Plan outlining the key actions they plan to undertake". The opening quote that 'actions speak for themselves' is taken from an early version

[2] The rendition was filmed and is available at: https://www.youtube.com/watch?v=NVsVhjgh_3I

of the Covenant of Mayors website, meanwhile the current website displays a montage photo superimposed with the words: Mayors in Action[3].

Figure 1. Screen Shot of Image from Covenant of Mayors website.

Calls to Action are ubiquitous within climate change mitigation policy. In Manchester UK, a city which has itself signed up as a member of the covenant of mayors and where I have been conducting an ethnography of climate change mitigation since 2011, there have been several climate change action plans, including the 2009 Call to Action, the 2009 Call to Real Action, the 2009 Manchester: A Certain Future – Our Co_2llective Action on Climate plan, and the Greater Manchester Climate Change Strategy which aimed to "set out common objectives and headline actions"[4] for the city-region of Greater Manchester[5]. Action appears as both the means and the ends

[3] http://www.covenantofmayors.eu/index_en.html
[4] Greater Manchester Climate Change Strategy. Greater Manchester Combined Authority Report, 29th July 2011 p2
[5] Greater Manchester is made up of the 10 local authority areas of: Altrincham, Bolton, Bury, Manchester, Rochdale, Stockport, Trafford, Tameside, Warrington and Wigan.

of climate change policy, an ambition that is both ubiquitous but which also suffers from complex problems of deferral.

For whilst discussions about what to do about climate change invoke action, these calls for future action are also founded on an ongoing assessment and evaluation that is concerned with the paucity of past action, the difficulty of acting in the present and the necessity of finding a way to act in the future. A frequent retort during discussions among people I did fieldwork with was a frustration with how to move beyond discussion and strategy, and to arrive at action itself. So, for example, at a meeting of an organisation called the North West Climate Change Partnership, during a reflection on the organisational form of the partnership itself several participants lamented that whilst the partnership was a good vehicle for networking, it never seemed to *do* anything. Delivery was said to be always just around the corner. Similarly, during a consultation process that was run to 'refresh' Manchester's climate change action plan in 2013, the observation was repeatedly made that there was a lot of writing of plans going on, but what are we actually going to *do.*

Climate change is thus conceived in governmental organisations in Europe and the UK at least, as a problem that needs a form of intervention that counts as 'action' but that suffers from a constant sense of the deferral of this action, rather than getting to the point of actually doing. Yet in other respects, these are people who are busy and active in all kinds of ways. The day-to-day work of those who lament the

difficulty of acting, involves writing reports, meeting with people inside and outside their own organisational settings, sending emails, evaluating information, contacting potential partners, commissioning research, and managing relationships with people whose work might or might not be of benefit or help to the job of reducing carbon emissions. Why then, does this work fail to count as action? And why does it seem to them that action often fails in its capacity to take place in the present?

In what follows I suggest that the problem of action stems in part from the epistemological effects of systems of data collection and analysis that highlight the interconnected causes of complex problems in ways that transcend established disciplinary boundaries e.g. between nature/culture, science/government, economy/environment, individual/species[6]. I suggest that data frequently works to evidence the eco-systemic quality of relations in a way that risks disrupting a modernist version of planning where plans are meant to create the grounds for action. As techniques of planning are unsettled, I argue that the relationship between knowledge and action also becomes disrupted. What we see in the repeated call for action is, I suggest, an attempt to repair a relationship between knowledge on the one hand, and intervention on the other when cast into this eco-systemic viewpoint. People thus find themselves caught in an epistemological legacy where knowledge production inhabits an 'unreal', representational realm which is

[6] Discussions over the whether we are living in the time of the anthropocene provides a clear example of where epistemological divisions between human and non-human are being challenged by data on complex and interconnected social/natural systems (Serres 1995, Latour 2004, Edward 2010). Recent interest in anthropology on human/non human ecologies (Kirksey 2015) and feral biologies (Tsing 2015) is also prompted by this kind of evidence on ecosystemic relationality, although relatively little attention is paid in this work on the practices through which the information and data that underlies studies is actually produced (on the other hand see Walford (2012) for an example of the practices of scientists who produce environmental data).

contrasted to action's reality (Jensen and Winthereik 2013). At the same time, however, action cannot be validated without being itself transformed into information. As a response to this bind we find people attempting to formulate practices of world-making that are able to short circuit the knowledge-action relationship. Here, action comes to stand for itself (Wagner 1986 ,Riles 2000) as impacts are understood to be accrued not only through a direct cause-effect relationship between actions and outcomes, but also through the unquantifiable affective possibilities of collective transformation. In the conclusion I suggest that one response to this problem of how to act has been the emergence of experimentation as an method appropriate to social transformation in the face of eco-systemic relationality.

On Plans and Actions

In anthropology much of the discussion about the way in which we think and write about action in an analytical sense has hinged on the relationship between planning or design on the one hand and action or implementation on the other. Many ethnographic, ethno-methodological and philosophical accounts have been at pains to demonstrate that, contrary to a dominant western conceptualisation of a separation between cognitive subjects and enacted objects, between minds and environments or between plans and actions, action needs to be recovered from being the resulting phenomenon that follows from a process of imagined thought, and re-situated as a practical mode of being in the world (cf Gell 1985, Ingold 2000).

Ingold for example, one of the most vociferous critics of behaviourism or cognitive psychology, has produced a consistent and damning critique of conceptualisations of the relationship between humans and the worlds that they live in which supposes that thought precedes action. Instead, Ingold demonstrates how people do not somehow create an image of the world in advance of their action within it, but produce understandings of the world through situated, embodied engagement with the environment that surrounds them (Ingold, 2000).

Although working in a very different tradition within anthropology, Lucy Suchman, in her study of human-machine interactions comes to a similar conclusion, coining the term 'situated action' to describe how "people use their circumstances to achieve intelligent action. Rather than build a theory of action out of a theory of plans, the aim is to investigate how people produce and find evidence for plans in the course of situated action" (Suchman 2007: 70) If Ingold is interested in critiquing the plan in support of his effort to arrive at a theory of the continual processes by which humans and environments co-emerge in a process of constant becoming, Suchman holds onto the importance of the plan as a feature of modern knowledge, but shows how it too is the outcome of situated action.

In the background to this debate is an argument about the status of planning as a modern form of knowledge. Ingold's critique of the plan is in many ways a critique of modern knowledge with its tendencies towards abstraction and reductionism. Just as James Scott (1998) illustrated through historical and ethnographic work, how the hubris of modernist planners worked to delimit the possible definitions of action, privileging the creation of the built environment by government experts, architects

and engineers with the effect of de-legitimising other ways of acting in the world and creating built environments, Ingold also worries about the dehumanising effects of rational modern knowledge forms.

Suchman's analysis of planning as itself situated action, on the other hand, recovers the humanity in the modern knowledge practices that Ingold aims to distance himself from and which scholars like Scott directly critique. By putting emergent social practice at the heart of planning activities, Suchman opens up the possibility of an anthropology of planned technical activity itself, a project that has been taken up in recent years by many anthropologists interested in the workings of the modern state (Ferguson 1990, Riles 2000, 2010, Gupta 2010, Bernstein and Mertz 2011, Hull 2012).

One argument that has emerged out of this work concerns the temporal qualities of planning and the implications of the future orientation of planned action. A recent edited collection by the anthropologists Simone Abram and Gisa Weszkalnys (2011), builds on an anthropological analysis of planning and intervention as sites of situated action in order to illustrate how planning relies on the temporality of the promise. For Abram and Weszkalnys, understanding planning requires that we understand its promissory qualities and the effects that these promissory qualities bring forth. Drawing on a series of ethnographic analyses of planned social change in very different locations they demonstrate how the planning of built environments entails a promise towards the future that is variously materialised, reformulated or fails, depending on the particular project and the circumstances in which it is pursued (Abram and Weszkalnys 2011). Focusing on the way in which plans embody this

promise towards the future, they argue that the politics of planning lies in the different ways in which promises are made, heard and interpreted by different actors[7].

Planning, as it has been described by anthropologists as a form of social practice, thus seems to lend itself to an ambition towards defined goals of material intervention, imbued with utopian images of how society can be transformed. Planning in these studies, primarily orients itself towards action by defining the parameters of future action in a promissory mode, and then putting in place the relationships, funds, standards and agreements that enable the work of bringing these infrastructural forms into being. As Penny Harvey and I have described elsewhere (Harvey and Knox 2015), this is a process that requires first a subjunctive engagement with an as-yet-unrealised future, and then a pragmatic process of bringing some version of that future into being through practices that work to demarcate and manage clear boundaries between the project itself and the sphere into which it intervenes.

In these studies of planning as social practice, then, the success or failure of planning derives from an assessment of the relationship between the promise and its actualisation in a particular material manifestation. Plans precede action, and action is still clearly understood as that which should follow once the plan has been made. Failure is determined either when action does not follow the plan and it does not become materialised, or when the materialisation of the plan through forms of

[7] See also Mosse (2004).

action do not achieve the effects which the promise set out. Action however remains relatively unproblematic as an ambition of these planners.

In the quote from Eppler's song, however, the status of the kinds of actions that he describes appears to be at odds with the temporalities invoked in the planning logics described by Abram and Weszkalnys. For Eppler does not describe a provisional future, nor does he hint at the contingencies of action in the present, rather he indexes the uncertainty of how to move between the present and the future by projecting forward into the future-perfect an imagination of a moment where we *will have done what we needed to do.* Here we do not have a plan of how to get to the future but rather an appeal to the future that requires as yet undefined action in the present. In a manner reminiscent of Massumi's description of the 'affective fact' (Massumi 2010) which emerges fully formed without having to be burdened with the time and weight of evidence (Massumi 2009), Eppler's construction also seems to evacuate itself of the normal content of planning. Here we do not have plans aiming towards a future, or actions in the present but rather a future that casts back on the present to pose the implicit question: what we do need to do to get to this imagined future state?

If the quote from Eppler's song and the more generalised anxiety about action indicates a fault line in the practices of modern government planning, then the question remains where this fault line has come from, and what responses to it are being devised. In what follows I describe the particular ways in which the relationship between planning and action is being destabilised. I argue that the current anxieties about action are appearing because the mapping processes which

have served well to demarcate spheres of intervention in an 'infrastructural mode' have become victims of their own success in their capacity to reveal complex lines of interconnection and relationality. Spun forward into a future anterior, informationally informed models of the future tell stories about where action will need to have happened but leave lines of causality opaque. The question of how to act is thus recast as a problem not just of knowledge, but of what other kinds of relational commitments might be needed to proceed in a world that is both over and under-determined.

Green and Digital

"*It is all very well to have these idealistic treatise on how things should be different but it doesn't tell people: what they should do when they come into work on Monday morning*." – Phil, Research Participant, November 2013

Above an upmarket upholstery shop in a leafy Cheshire town are the offices of a small IT company which is run by a man who is no stranger to the tension between action and planning. Zeb is both a businessman and someone who has for a long time been part of governmental efforts to bring public resources to bear on the development of IT infrastructures. I am introduced to Zeb because of a collaboration he has recently become involved in to explore how digital technologies might be implicated in providing solutions for climate change. Funded by the European Union FP7 programme, the collaborative project he is part of involves a partnership between the Cheshire IT company, a research institute in eastern Germany and officers working for the European Union. The aim of the project was to develop an

understanding of the ‘state-of-the-art’ of green-digital activities in European Cities and to develop seminars, training and an ‘action toolkit’ that will enable the spread of best-practice around Europe and beyond.

At the outset, the project was conceived very much in the framework of governance where a knowledge deficit must be filled and that this knowledge would inform action. The project aims were threefold:

1. Develop Framework and Tools

The project will develop a common framework, tools, and information resources for classifying, measuring, reporting and supporting city actions in the context of the Covenant of Mayors.

2. City Support and Action

These framework and tools will be transferred to cities and their implementation partners through a series of targeted exchange and learning activities with experts and other signatory cities with a view to triggering implementation. A strategy for continued exploitation and support activities beyond the project's lifetime will be put in place.

3. Outreach and Engagement

Networking and visibility events will be held to increase the number of signatories and showcase cooperation opportunities with key policy and practices communities,

including a special focus on engaging with Chinese cities currently developing similar initiatives.

Figure 2: Aims and Objectives of the Green Digital Project

An early preoccupation of the project partners was how to establish the parameters upon which future action would be able to take place and this involved developing an understanding of precisely the contours of the problem in hand. What, Zeb and his colleagues asked, were the significant relationships at play between digital technologies and climate change?

On the basis of reading various research reports[8] Zeb, his team and myself spent much time speculating about the multiple relationships between digital technologies and climate change that the project might want to address. These ranged from the idea that the capacity of digital technologies to collate and disseminate information could lead to the radical reorganisation of cities, to a worry about how to mitigate the carbon emissions of digital technologies themselves. One person pointed out that data was available that showed that server farms were large users of energy both because of the IT equipment they housed and the air conditioning they required to keep them cool. Was there a way to make them more energy efficient? Meanwhile the personalisation of smart phones raised the possibility that new ways of visualising energy expenditure and usage might reformulate citizen's relationship

[8] This included: a report by McKinsey on how IT can Cut Carbon emissions (McKinsey 2009), a report from the European Commission on ICT for a Low Carbon Economy (EU 2009), a collaborative report produced by The Climate Group, ARUP, Accenture, University of Nottingham entitled Information Marketplaces: the New Economics of Cities (Climate Group 2011); and the work of public intellectual Jeremy Rifkin (Rifkin 200),

with the city, with energy and with environment. Digital technologies seemed to offer the potential for monitoring the presence of practices, substances and things, of visualising carbon producing effects, and of projecting and modelling future energy scenarios.

The complexity of these issues was summed up when Zeb wryly observed that the rise in carbon emissions had tracked the rise in digital technologies. Stopping short of actually positing a causal relationship between these two processes, Zeb's observation nonetheless indexed the difficulty of disentangling digital technologies as a solution for carbon emissions from digital technologies as cause of the same problem.

If in the Cheshire offices we were speculating about the complex lines of causality between digital technologies and climate change, in the research institute in Germany an academic research team were working on a theoretical framework that could tame and re-frame this complex of emergent relationships. The head of the research group, Kris, was keen to use the socio-technical systems theory of the sustainability theorist Frank Geels, which he felt offered a way of simplifying and making actionable these complicated interlocking relationships that everyone agreed the project was going to have to deal with[9].

Geels is well known amongst those working at the interface of policy and the social science of innovation for developing 'transition' theory. Transition theory aims to

[9] This practice of simplification has clear resonances with Latour's description of scientific practice in Science in Action where he describes how scientific practice (or action) depends on the successful creation of 'immutable mobiles' through processes of inscription (Latour 1987).

establish a method of dealing with environmental problems such as climate change, biodiversity and resource depletion that 'differ in scale and complexity from the environmental problems of the 1970s and the 1980s such as water pollution, acid rain, local air pollution and waste problems' (Geels 2011: 495). It is concerned then, with dealing with and mapping precisely the complex circular effects of the kinds of entangled relationships that Zeb's team were grappling with. Invoking what he calls a 'multi-level perspective' or MLP, Geels proposes a way of describing problems like climate change as the interlocking interplay between socio-technical systems of different orders, with a particular focus on sustainable development.

What is particularly interesting for this volume is that the socio-technical transitions and the multi-level perspective seem to both critique and extend forms of governance that would have been located within what we might call an infrastructural mode of planning. As touched on above, anthropological discussions of state planning have frequently centred on the way in which the improvement of society is pursued through infrastructural transformations in the built environment (Rabinow 1995, Bear 2007, Anand 2011, Collier 2011, Dalakoglou and Harvey 2012, Harvey and Knox, 2015). Thus planned social change has been a matter of demarcating the kind of society that is desired by creating material systems (neighbourhoods, electricity networks, roads, waterways, railways) that might enable that society to be brought into being.

What Geels' transition theory hints at is the limit condition of this infrastructure-state (Guldi, 2012). Transition theory aims to understand the relationship between what Geels terms infrastructural 'lock-in' and the potential un-boundedness or

'splintering' (Graham and Marvin, 2001) of contemporary infrastructural relations once they are conceived in the frame of ecological sustainability. Re-framed by problems like climate change, institutional actors have to consider not just specific instances of intervention via the implementation of discrete infrastructural systems but also to conceive of other ways of intervening in the complex entanglements between the social, economic, technological and natural worlds, and to find new means of accounting for these interventions. In transition theory this has led to the development of the idea of a multi-level perspective, or MLP, which aims to identify 'niche innovations', 'socio-technical regimes' and 'sociotechnical landscape', as three 'levels' that must be taken into account in attempts at a change towards a more sustainable future (Geels and Schot, 2007). In this effort to grid ecological complexity we see an attempt to resolve a tension between an approach to planning which works on the basis of demarcating boundaries around domains of intervention and an approach to planning which acknowledges the un-boundedness of the problems in hand.

The idea of the world as a system has a long history in ecological thought and indeed it might be argued that the anomaly in this story is the modern era where the idea of being able to separate out a domain of responsibility or action as a coherent or bounded technological form that we might call an 'infrastructure' was established (Callon, 1998; Harvey and Knox 2015, Graham and Marvin 2008). Claudia Aradau (2010) has argued that the notion of infrastructure as a generic object of state or governmental concern is a relatively recent historical object, having emerged as recently as the 1950s (see also Carse this volume). Whilst prior to this time nation-

states were of course concerned about what we now call infrastructural forms, things like roads, bridges, railways and energy networks, were not, prior to the 1950s, conceptually grouped together as a category 'infrastructure' (Collier and Lakoff, 2007).

Ecological thinking, on the other hand, has existed as a shadow to the modern, infrastructural way of thinking throughout the 20th century. Ecological thinkers from Stuart Brand who set up the Whole Earth Catalogue (Brand, 2009), to Herman Daly, author of the idea of the steady state economy (Daly 1996), have long worked against reductive and bounded understandings of economy and nature. Closer to home, Gregory Bateson's (1973) unusual brand of cybernetic anthropology and the ecological anthropology of Roy Rappaport (1968) attempted in the 1960s to bridge the divide between the social and the ecological in non-modern settings, addressing human worlds in much more extended and materially embedded ways. Meanwhile, even academics working in planning have recognised that certain 'wicked problems' of which climate change is a perfect example, were always going to challenge the epistemological foundations of infrastructure planning (Rittel and Webber 1973).

Nonetheless, as climate change has emerged as a problem of of governance we can see how a more eco-systemic mode of imagining relations has begun to unsettle the epistemological foundations of modernist planning practices of infrastructure development. The political struggles in the field of climate change mitigation are no longer focused on primarily on the truth-status of anthropogenic climate change, but rather circle around the question of how to refashion contemporary forms of planning and intervention to deal with the social-material entanglements that

climate science now evidences (Knox, 2015). As we will see in the next section, this destabilises the epistemological basis of planned social change, and introduces the problem of how to act with which this chapter began.

Information (eco)systems

Returning to the EU green-digital project, Geels' socio-technical transition theory was seen by the German team to offer one way of understanding the complex field of relationships into which they were to going to have to intervene. The hope was that transition theory, with its re-gridding of complex intertwined relationships, would help them to be able to distil a set of actors and relationships through which intervention and action could be operationalized in this complex emergent field.

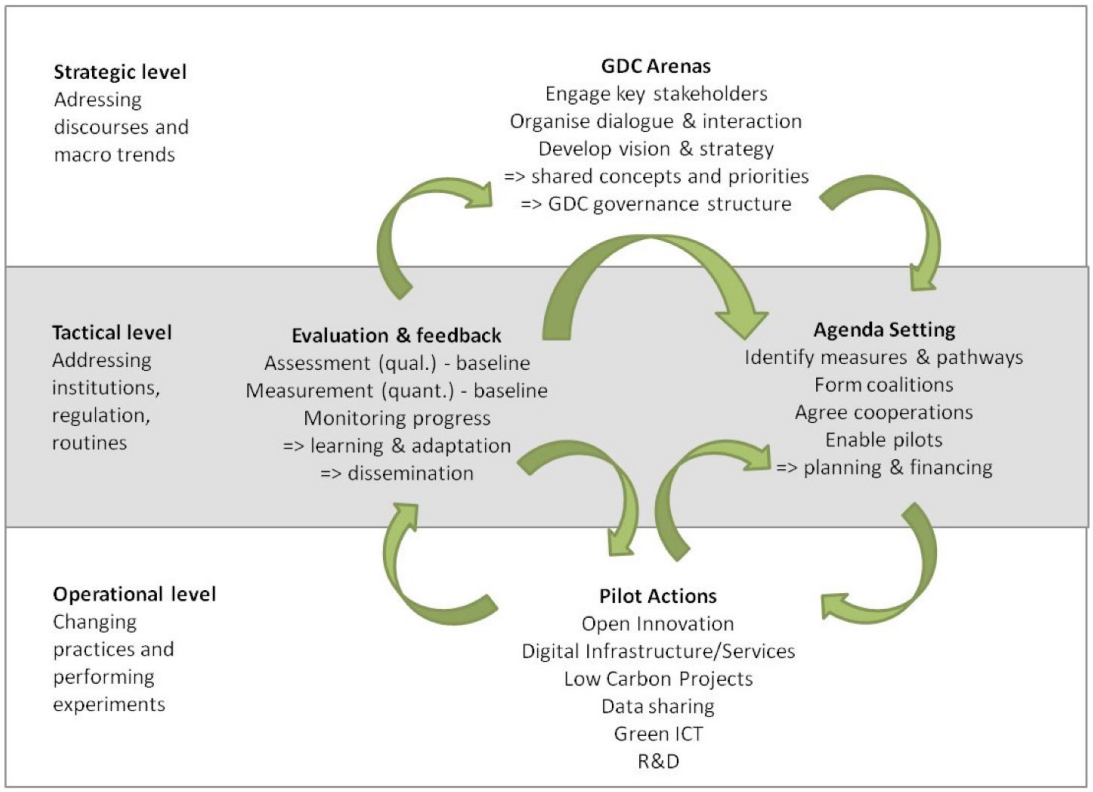

Figure 3: Overview of action fields for GDC implementation

Nonetheless, action was to remain problematic. Even having identified the people, locations and scales where actions might be both found and distributed, the team still had to do the work of deciding what would count as action.

One form that was frequently mobilised to think through what would count as an action, and to describe how action would be marked, counted and measured was the spreadsheet. Spreadsheets provided a powerful way of gridding objects and the relationships between them. A 'refresh' of the Manchester action plan was structured around the gridded form of an extended spreadsheet running to 27 pages, which aimed to demarcate new actions in the areas of Buildings, Energy Transport, Green and Blue Infrastructure, Sustainable Consumption and Production. Similarly the green and digital project worked with the problem of how to constitute the field of action by collecting potential actions and lining them up in the spreadsheet format.

One of the main outputs of the green digital project was to arrive at a set of 'action tools' that would be able to appear on the project website as a repository of resources that the actors identified in the transition diagram could use. Before being uploaded onto the website however, these tools first had to be defined and the spreadsheet was a vital technology to assist in this process of definition.

By gridding actions against targets, the spreadsheet offered a means of making sense of the variety of different possible actions that could be imagined. The spreadsheet grouped actions into five different sheets pertaining to the categories of: all actions, culture, knowledge, practices and structure. In each sheet the tools

were given a title, a description, a type (indicating whether they functioned as stories, documents, templates or software) and a code which linked each tool back to the aims of the project document itself. There was also a column that described which 'level' of actor the tools would be relevant to (1, 2 or 3), linking the gridding of the actions directly to Geels' multi-level analysis (see figure 3). Through this emergent gridding exercise, a sense of the field of actions which the project was working to achieve was iteratively produced. The 'frame' of the spreadsheet both allowed for a structuring of what would otherwise seem potentially disparate activities – from an online portal for funding opportunities, to competitions, to pieces of software, to urban planning procedures or guidelines – to be brought together as 'actions' oriented to the ambition of mobilising digital technologies to achieve carbon reductions.

In spite of agreeing that the spreadsheet was necessary, Zeb worried that it risked over-objectifying what they were trying to achieve. Although the spreadsheet was the form through which actions could be demarcated, he was hesitant about assuming that the form would have a direct causal relationship with the outcome. Those who were engaged in the work of categorising and gridding this emergent, complex, interconnected problem were not so much attempting to get to an ultimate or singular description of the way in which the world is, but rather were experimenting with ways of patterning or making sense of a shifting terrain in order to provide orientation for intervention.

If in infrastructure based planning, then, people were able to make judgements about the success or failure of a project by assessing the alignment between the

promise and its materialisation in action, here the problem was the on-going question of how to devise a new mode of formatting that acknowledged projects, processes and initiatives as already existing but not categorised as action, and to use the categorisation of these practices as forms of activity in order to stimulate further similar actions. By categorising already existing activities as climate change actions, projects were simultaneously able to map the field of 'what we will have had to do', and to create the basis upon which more people might do more of this particular kind of doing.

Actions and Outcomes

This identification of actions as having already occurred and yet needing to be scaled up, expanded, generalised and normalised, raises the final question that I will address in this chapter how these already existing and future actions could be re-linked to the problem of climate change. Climate change 'action' is a field replete with discrete and distributed activities but the legacy of a modernist ambition of centralised control means that the question remains whether these activities 'add-up' to a concrete effect or whether they will in the end be wiped out by other sets of relationships and processes which trip them up, undermine them or cause them to fail to be taken up in different or more challenging contexts. The after-the-fact identification of actions raises the question of whether what people needed to do was to measure the effects of those actions to determine whether or not they really were the appropriate ways of intervening in climate change and reducing carbon emissions, or whether this process of measurement was folly in itself.

One response has been to return to the route of measurement, a choice that often leads to the accusation that all that is being done is to devise indexes of success which themselves are frequently revealed as flawed and meaningless (see Knox 2014, Verran 2012). A second response is to retreat from a concern with whether people are capable of knowing whether what they are doing is having a beneficial effect, and replacing a form of managerialism with a form of moral pragmatism understood as a 'faith' in the belief that they are doing the right thing. Zeb's concern that the aim of the spreadsheet might slip from a heuristic tool to a pseudo-scientific stabilisation was something he shared with others in working in climate change mitigation. Many of those involved in devising 'actions' that could reduce carbon emissions saw these actions as contributing not so much to a tangible structure of carbon emissions reductions, indexed by something like the spreadsheet, but to a more ineffable process of change where people would begin to do and think things differently. Thus just as Zeb worried that 'Regrouping things into a table format isn't supposed to be a scientific exercise' others worried that people were focusing on the cause-effect relationship between action and outcome rather than, as one environmental consultant put it when talking about putting food miles on packaging, it being 'as much about people gaining a political understanding rather than necessarily dictating some moral line'. Actions, then, were often seen as a means to generate energy, enthusiasm and awareness, what was often called 'culture change,' rather than necessarily being expected to directly reduce carbon emissions. Thus, in a meeting of people trying to reduce Manchester's carbon emissions Zeb chose to paraphrase the Saint Antoine de Exupery quote that opens this chapter and quipped,

'*plans are nothing, planning is nothing - all we have is ships and the longing for the open sea*'.

Conclusion

It has been noted in various different discussions about urban settings that we are living in a time of experiments (Jensen 2015, Jensen and Morita 2015). Many of the 'actions' that are devised in climate change mitigation are also conceived as 'tests' or 'pilot' projects which people hope might provide a model that can be scaled up from experiment to infrastructure in the future (Bulkely and Castan-Brotó 2012, Karvonen 2014 , Huse forthcoming). In Manchester there were several of these experiments, which ranged from experimental eco-houses to pilots of national government schemes, from prototype open-source energy monitors to test-models that would be able to measure energy efficiency improvements in people's homes. Part of what seems to be a broader movement of 'prototyping culture' (Corsin Jimenez 2014), the experiment here seemed to offer a form of practice that was appropriate to the condition of acting without the conventional parameters of a modernist plan, without a clearly demarcated frame and without the potential of measurable effects. The experiment is one answer to the problem of action, offering the possibility of escaping the difficulties faced by those working in bureaucratic settings who are still in hoc to the practices of framing and forms of boundary-work that have dominated planning practices since the 19th Century.

This chapter has argued that the appearance of these new techniques of governance – the experiment, the un-accounted for action, the re-description and re-imagination

of already existing practices as the basis for future-action – are crucial for understanding how contemporary governmental actors are imagining and formulating infrastructures of the future. As people re-evaluate the relationship between a future version of the world that emerges out of complex ecosystemic relationships and action in the present that can no longer be deterministically measured as the direct cause of particular future effects, the imaginaries of what infrastructure might be and how it might be planned is also being reassessed. In one sense infrastructure might be seen as being freed from the discipline of planning, allowing for a splintering or opening up of infrastructure, as it becomes more experimental, more distributed, but also more entangled with private capital. On the other hand, there are hints of a new discipline, where other normative moral judgements about the benefits of particular forms of intervention trump rational forms of planning. Building on the work of those anthropologists who have critiqued the abstractions and framing of rational plans and the centralised infrastructural forms that these plans have enabled, I suggest that the appearance of modes of intervention that put action first also need to be critically assessed, for the affective basis of interventions that draw on people's 'faith' or trust in the signs of a portentous future to justify action in the present, brings their own forms of closure. Moreover, attending to other people's reworking of the relationship between the plan and the action, offers an opportunity for us to revisit anthropological debates about how people proceed in the world, and the role that informational models of complex and entangled eco-systemic processes play in the means by which people find ways of choosing how and when to act.

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