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Sustainability: new questions, new answers

Edited by Rosie Robison

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Acknowledgements

This collection, as well as being dependent on the generous contribution of time by each of the authors, was made possible through financial support from the Global Sustainability Institute at Anglia Ruskin University and the Cambridge Philosophical Society. The 2013 workshop at which the collection was born was funded through a Deputy Vice Chancellor Early Career Research Award from Anglia Ruskin University, and the Economic and Social Research Council's Festival of Social Science also supported an associated event in November 2015. In addition a number of people have provided invaluable feedback on the project: Claire Barlow, Alexia Coke, Andy Dobson, Bob Evans, David Fell, Chris Foulds, Julie-Anne Hogbin, Aled Jones, Renee Lertzman, Rosemary Randall, Joe Smith, Brian Venner, Dan Welch, Jill Whaley and Jonny Wentworth. The authors would like to thank each of them sincerely for their time. The research discussed in Sarah Marie Hall's article was funded by the Economic and Social Research Council (PTA-030-2006-00129) and the writing of that article was further supported by a Hallsworth Research Fellowship from the University of Manchester. The research mentioned in Alison Armstrong's article was funded by RESOLVE at the University of Surrey. Finally we gratefully acknowledge the work of Anglia Ruskin University's Design Team in formatting the collection, the beautiful illustrations drawn by Rachel Thompson for *The storyteller who wanted to change the world*, and we thank Barbara Watson, Dylan Winter, Annette's Allsorts and Energy Efficient Widcombe for permission to use their photos in *Know-how for keeping warm at home*.

Sustainability: new questions, new answers

Published November 2015

You do not need to seek permission to quote or cite this work; however please include (at a minimum) the author's name. Suggested format for academic references:

e.g. Hall, S.M., 2015. Everyday ethics: how families talk about consumption. In: Robison, R. (Ed.) *Sustainability: new questions, new answers*. Global Sustainability Institute, ARU: Cambridge, UK.

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Preface

The idea for this collection of short articles and accompanying artworks arose at a workshop on *Energy, Consumption and Wellbeing* held over 20-21 June 2013, hosted by the Global Sustainability Institute at Anglia Ruskin University, Cambridge, UK. Workshop participants had diverse backgrounds. Many worked within universities but their experiences also spanned the public sector, charities, journalism, policy and the visual arts. They had undertaken research across the fields of climate science, engineering, environmental science/social science, geography, mathematics, neuroscience, psychology and sociology.

Academic publications are rarely read by non-academics; they tend to be rather dense and may assume a lot of prior knowledge on the part of the reader. Many academic ideas therefore do not make it into the mainstream debate which, when it comes to sustainability, can be dominated by (now familiar) arguments over whether climate change is 'real' or not. The aim of this collection is therefore to present a number of short, accessible articles which give new perspectives on sustainability issues: some new questions and some new answers. Some articles do give a flavour of current academic research relating to sustainability, others are primarily opinion pieces. They are designed to be dipped into and can be read in any order. We hope they will be of interest to a wide range of people.

The book is divided into three parts. In 'Part 1. Sustainability and the everyday', four articles highlight how sustainability is intertwined with all of our lives. What affects a family's decisions about what to eat, our cities and the people who design them, our jobs and the way we use money, and how we heat and cool our homes. It is precisely because moving towards a 'more sustainable' society may involve rethinking just about everything we do that tensions and differences can arise. In 'Part 2. The great sustainability debate' we face head-on the conflicts which can feel so frustrating in this area. Why science cannot tell us 'the answers' of what decisions to make, how the wiring of our brains affects our view of others, the problems of trying to change people's behaviour, and why it is so difficult to put what we already know about good climate change communication into practice. One key conclusion from those articles is the importance of trying to understand others, and recognising that our own view may not be the only way of looking at things. There are many different ways of talking about, thinking about, or visualising sustainability. Thus, in 'Part 3. Sustainability: and now for something a little different...', three alternative pieces are presented: a photographer's perspective, a sustainability 'fairy story' in the oral tradition, and a discussion of mindfulness. Throughout the collection our personal reflections on working in this area are given.

At the end of each article you will find a suggestion for further reading or viewing, if you want to know more. We warmly invite responses, comments and conversations that may be prompted by the ideas raised here. Authors can be contacted individually (details at the top of each article), and at the end of the book you will also find details for sending us your thoughts.

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Part 1.

Sustainability and the everyday

Looking north through Halstow Marshes. A container ship brings goods up the River Thames into London.
February 2015. Copyright © Tim Mitchell.

1. Everyday ethics: how families talk about consumption

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Between 2007 and 2009, I spent two years carrying out research on consumption with six families in the UK. What I observed from the families changed my own view of the concept of sustainability. As a result, I have come to see that sustainability, despite being a term widely used in academia and policy-making, is unhelpful for fully explaining the decisions people make around their everyday consumption, such as where people get their food from or their chosen means of transport. In over two years of doing the research with families not once (!) did any of the participants talk about 'sustainability'. Until now my analysis and findings from this research have been heavily focussed on what participants did talk about, rather than what they did not. That sustainability is missing from participants' reflections on their everyday lives warrants further discussion.

Sustainability is of course more than just a word, and in fact represents a bundling together of a whole set of ideas, principles and practices about how to imagine, create and live in a more sustainable world. However, what I want to argue in this short article is that, as a concept, 'sustainability' is not an effective vehicle for mobilising social and environmental change (for example reducing carbon emissions, adapting to climate change, and eradicating poverty and social injustice) because it is not something that everyone subscribes to. Although I am not alone in critiquing sustainability in this way, what is rare is that I have come to this conclusion by bringing together ideas about family relationships, consumption and everyday life. For me, these shed light on the limits of 'sustainability' as a means of achieving social and environmental change, in a different and hopefully valuable way.

For many, particularly the most disadvantaged members of society, the concept of sustainable consumption does not hold significance in people's lives. There are bigger, more pressing issues to worry about – often day-to-day concerns about being able to keep oneself and loved ones fed, warm and clothed etc. These can leave little room to consider further repercussions of our consumption, and this is especially the case in this current period of austerity. Often academic literature (and the green movement more generally) has positioned people as being ignorant and unwilling, rather than trying to understand how everyday struggles of money or health are in themselves inherently ethical and involve much moral balancing.

And yet, it is not that the environment or society do not matter to people. On the contrary, all family members from my research spoke about social and environmental issues in one way or another. Rather, environmental and social concerns do not sit in a political or social vacuum – but in the contexts of people's lives, in their upbringing, memories and experiences. With this in mind, in the remainder of this article I am going to present a handful of extracts from my research to support and flesh out my argument.

Seeing sustainability through a family lens: upbringing, memories and experiences

As mentioned already, the findings I discuss in this article came from a research project that involved a detailed study of six families in the North West of England, from 2007-2009. It mainly involved observations of and interviews with family members over an average of one year, alongside some participatory tasks such as house tours and photo diaries. The purpose of the study was to explore how individuals develop moral intuitions and norms, and how these are translated into and expressed within family consumption decisions and practices. The project was not about sustainability; participants knew that I was researching their everyday consumption, but questions were never asked about 'sustainability', nor did any of the family members themselves use such terminology to describe their everyday habits or experiences. To explore this topic in a little more detail, I present in this article extracts from four of the six families. I have selected extracts that relate mainly to food consumption, though I could have easily chosen another aspect of everyday consumption. In the following discussion, all names have been replaced by pseudonyms.

The first extract comes from an interview with the Green family. Joseph and his wife Nicola were both in their mid-thirties at the time of the project, and lived together with their eighteen-month-old son, William. In this interview, I asked the family about how they make decisions about what they consume. Joseph responded with an in-depth description about his experiences of consumption from when he was growing up:

"... child obesity and things like that were not an issue back then [as a child]. Now they are. You end up looking at introducing more vegetables into children's diets, which is what we are conscious of carrying out with William, but we're really only just going back to where we were. It was the changes in diets in kids I guess from the nineties really, with microwave meals, processed pizzas and all the rest of it that's probably developed child obesity. Effectively we are going back to a more traditional diet. Because my parents grew up in the post-war years, when you're talking about real deprivation and rationing in their cases because they were both born prior to the war, so they can certainly both remember rationing, so they both had that sort of attitude, if you haven't got a lot to spend on food then you'd better make sure that everything you eat is nutritious, and it's very much sort of steeped throughout the generations of our family, so that's pretty much engrained in me."

Joseph Green, Interview, July 2007

In this short extract alone, Joseph weaves together a variety of issues related to the social and environmental impacts of consumption, including over-consumption ('child obesity'), controlled consumption ('rationing') and healthy eating ('introducing more vegetables'), that impact on the decisions he makes about what he feeds William. In doing so he flits with ease between various points in time - from growing up 'back then' in the nineties to the present day, to 'the post-war years', to decades of family 'generations'. Here, we see that consumption is not an isolated practice, but connects to a wide range of memories and experiences, places and times. Furthermore, Joseph's choices about what to buy and eat are embedded in his experiences of family and his upbringing, which in turn are central to how he enacts his own parental responsibilities.

The themes of upbringing, memories and experiences, when discussing consumption practices and social and environmental change, were widespread in my discussions and observations with all six of the families. The Johnson family - including married couple Ann and David, both in their late fifties, and their son Graham, in his early twenties - spoke in a similar way about the role of family and upbringing.

During one visit to their home, after we had eaten dinner and were sat around the table chatting:

Ann pointed to the garden and told me about the vegetable patch they had planted. Ann and David got up, and beckoned me to come outside with them to look around. We stood there for a good half hour talking about their new hobby, with them pointing out all the vegetables and herbs they were growing. They decided to start growing their own food quite recently, as something they had done in the past. When I asked them why they had decided to do it again, Ann said it was her idea, and that she used to grow vegetables when her dad was alive, which they both enjoyed doing together. She said that not only was it a nice thing to do, but they have the space to do it, so why not? There are also financial benefits, such as saving money, as well as it being good for the environment.

Johnson, Field Diary, June 2009

In this instance it was not enough for Ann and David to tell me that they had started growing vegetables, or to point through the window at the vegetable patch, but they wanted to show me, to be in the environment, to engage their (and my) senses when telling the story, touching the vegetables, smelling the herbs, taking in the fresh air. Moreover, the discussion here went beyond the moment in which it took place and our immediate senses. It was also bound up with longer-term memories and stories about family and upbringing. Ann associates the activity of growing her own vegetables with memories of her dad being alive and being in his company, as something they did 'together'. The family connection is being revived here in the form of vegetable growing, as something entrenched in the past but replicated in the present, as an 'enjoyable' activity she now carries out with her husband and son. In this extract the environment was also being experienced, sensed, remembered and imagined all at the same time, and entangled in a story about family. They do mention, perhaps as more of a postscript, the 'financial benefits' and the 'good' it might do 'the environment', although rather than describing growing their own vegetables as a sustainable activity it was instead framed in the context of reliving happy family memories.

The topic of doing good and making decisions about the right thing to do was also raised in an interview with the Robinson family. Emma and Tom Robinson were both in their late twenties, married, and lived with their three young children, Mary, Peter and Ben. They were keen on buying fresh food and vegetables, in part because of recommendations from Tom's nutritionist (he was diagnosed with Myalgic Encephalomyelitis, or M.E., not long before I met the family). The interview conversation was mainly for the purposes of clarifying what I had observed during my time with them in the preceding few weeks. In particular, I had noticed that they made a seemingly conscious effort to buy not just fresh but also locally-produced goods, and I wanted to know a little more about the reasons for this:

Sarah: You've said about how you don't like [buying foods] that have travelled too far?

Tom: No, the stuff that you get in [supermarkets] is not as fresh or nutritious.

Sarah: OK, is that mainly for health reasons then or is it also environment, like air miles and stuff?

Emma: Erm... no, we'd like to say it was but -

Tom: It's not mainly the environment factor, no.

Emma: It's funny because a lot of the things that we do probably some people might do because it's environmental, but we do because, it's more selfish [...]

Tom: We've become a bit more aware of [humanitarian issues], like with chocolate, the cocoa and that, and the basic wage that people get.

Emma: That's where the Fairtrade comes in [...] my uncle does a lot of work, you know, with Fairtrade, and it's him that's really sold it to me, he does it at any family gathering.

Robinson, Interview, July 2007

Here, Emma and Tom are very honest, explicit even, about their motivations for buying local foods. They recognise that such decisions can satisfy more than one demand but explain that, while they could pass off their choices as being environmentally motivated, their reasons are 'more selfish' i.e. they are related to health. The decision to purchase local foods for health reasons is driven primarily by principles of care and concern, as a means of providing Tom with the best diet possible to combat his illness. In later discussions both Emma and Tom also talked about the benefits to their children and making sure they have a healthy diet. This, as I have argued elsewhere, is a different but no less important ethical principle than consuming for social and environmental reasons. At the heart of their decision is a sense of collective, familial responsibility. Toward the end of the extract they shift to talk about Fairtrade, from which Emma moves seamlessly to a discussion of her uncle. She points out she has been informed by her uncle about this topic, that his experiences have made an imprint upon her. Significantly, this knowledge transfer took place at 'family gatherings' and is something she has carried with her from when it was 'sold' to her from a young age. Family lurks in the background of this conversation, at some points coming to the fore, at others being more implicit and inferred.

The same can be said for discussions with the Silva family. The first time I went over to the Silvas' house, couple Kim and Paulo, both in their early thirties, spoke at length about their everyday consumption habits. Almost all of these practices were discussed as being related to past experiences, most often with their own families when they were growing up, about which they were particularly nostalgic:

Kim said that she can remember living on a road when she was younger, and there being all the shops they needed on one strip, and that she'd like it to get back to being that way. She then added that they make an effort with their recycling, and that even though they don't have the facilities here at the flat, they take bin bags of things to her parents' house to recycle.

Silva, Field Diary, February 2008

The role of memory comes especially to the fore here, shaping Kim's ideas and hopes for the future. Like Joseph Green, Kim talks about 'getting back' to a better time, both reminiscent of their upbringing; that the future is not necessarily always about a forward trajectory, but can involve taking forward the positive elements from the past. There is a subtext here that social and environmental transformations do not have to be wholly revolutionary, but that there are elements of the past that should be drawn upon. Kim is here referring to supporting local businesses, and having everything you need in close geographical proximity, which is discussed as part of a fond childhood memory. She follows this straight up with a comment about recycling and how she takes recyclable goods to her parents' house to use their facilities, moving easily from one to the other as a conscious and related stream of thought, in the same way Emma moves from talking about food for Tom to learning about Fairtrade from her uncle. Family and upbringing, memories of different pasts and various everyday experiences are again intricately but effortlessly threaded together.

Conclusions

Family life and individual identities are built on memories, experiences and upbringing, and ideas of ourselves – as we were, are and want to be – are central to understanding how we develop relationships with other people and the world around us. The families I worked with did not describe social and environmental changes as 'sustainable', but spoke in terms of their own experiences, with a constant intermingling of the past and the present. Concerns about, for instance, child obesity, growing one's own vegetables, buying local food or supporting local businesses were not positioned as sustainable practices, they were instead discussed as activities informed and motivated by family.

However, reconciling this family focus and a personalised past with concepts of sustainability, built on notions of the future, is difficult. These ideas currently do not sit well together and effectively jar with one another, perhaps as a result of each focusing on a different timescale. It means that when people's actions do not fit with the prescriptions of sustainability they may be labelled as 'selfish', ignoring the everyday pressures that affect consumption decisions for ordinary people.

In sum, although there has been much discussion of imagining sustainable futures, these approaches pay very little attention to the past. As I have attempted to illustrate, the past, particularly upbringing and family experiences, matters to how people experience and talk about the environment and their relationship to it. It may be that by better understanding our pasts – couched in family, upbringing, memories and experiences – we are able to shape a more sustainable future.

Want to read more?

Email Sarah (sarah.m.hall@manchester.ac.uk) for a copy of *Exploring the 'ethical everyday': An ethnography of the ethics of family consumption*, a 10-page journal article where she discusses her research with families in more detail, which appeared in the human geography journal *Geoforum* in 2011.

2. Demand by design: how our infrastructure and professions shape what we do

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In recent years, there have been three questions which concern me: 1) how and why have our everyday lives become so resource intensive?; 2) why are current resource intensive patterns so persistent despite efforts to instigate change?; and 3) how might these trends be shifted, so that our patterns of everyday life are more sustainable? These questions form the starting point for this short article, in which I present some recent thinking from the social sciences, which has made headway in tackling these questions. I then build on these ideas, to point out some themes which future research might fruitfully explore.

To bring the ideas which I talk about to life, I use the example of the demand for mobility – by this I mean the contemporary need to move around and make frequent trips on a day-to-day basis. My starting point is that current levels of demand for mobility have not always been with us. Understanding the history that has led to this situation can help us think about how our mobility demand might be influenced in the future, for example to have less environmental impact. Within the article I explore and speculate about some of the interconnected social processes that create mobility demand.

The article is in three sections. In the first section, I make the point that people do not move around just for the sake of it, rather mobility makes possible many other social practices in working, leisure and family life. In the second section, I note how the pattern of these social practices are embedded in, interwoven with and shaped by infrastructure. In the third section I consider the professions which shape infrastructure, and therefore the demand for mobility, and suggest issues which may form valuable topics for future research.

The demand for mobility is made from patterns of practice

The starting point of this article is that the demand for mobility is directly related to the social practices that make up our everyday lives. We don't consume electricity, petrol or gas for their own sake, we consume them in the pursuit of everyday activities which help us live our lives and participate in society¹. For example, we consume energy to achieve socially-acceptable standards such as cleanliness through bathing, showering and doing the laundry. These activities may be part of parenting or home life, such as eating and all the necessary steps that make this possible (buying food, cooking etc.). Or they might be linked to exercise or leisure, for example swimming, skiing, going to the theatre or sight-seeing.

Taking this as our starting point, we can say that the demand for mobility at any moment is made up of the patterns of practice that constitute everyday life. This might be thought of on different scales, for example how do patterns of practice, and thus the demand for mobility, change across a day? across a week? by season? or across decades? Figures 1a and 1b illustrate this point visually, though please note, these are not real statistics but rather speculation, to help convey the idea.

Figure 1a. Demand for mobility changes across a day

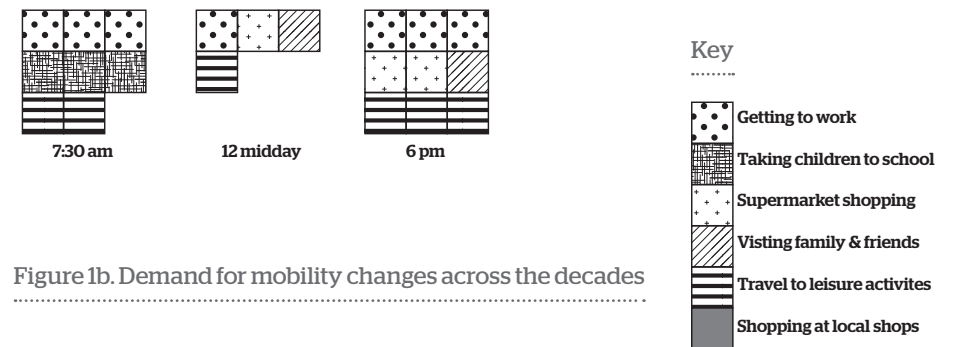


Figure 1b. Demand for mobility changes across the decades

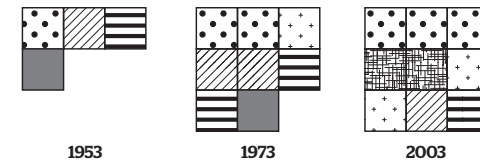


Figure 1a illustrates how mobility demand might change across a day. At 7:30am there is a high demand for mobility to get to work and take children to school. At 12 midday the demand for mobility is lower, and it is more mixed. At 6pm demand is comprised of homeward commutes, which might include a stop at the supermarket or gym. If instead we looked across a week, we might see a high proportion of weekday demand stemming from getting to work and taking children to school, and weekend demand instead associated with a supermarket shop, leisure activities and visiting family and friends. Here I speculate on how the demand for mobility changes across a day, along with changing patterns of practice. We can also speculate on how demand for mobility varies by season (at least in England's temperate climate). In the summer months there is no mobility demand from the school run when schools are closed, and an associated decreased demand for 'getting to work'. Transport mode might also vary by time of year. For example, we might expect greater car use for 'taking children to school' in the winter months, because of parental concerns about child safety on the roads.

Finally we could speculate on how demand for mobility changes across decades, illustrated in Figure 1b. Importantly, some forms of practice which now exist - for example a weekly supermarket

¹ Discussion of how resource consumption is embedded within our activities (and therefore cannot be addressed separately) has been a key focus of recent debate in the social sciences. If you are interested in understanding this in more detail some good places to start would be *Consumption and theories of practice* by Alan Warde, a 13-page article which appeared in the *Journal of Consumer Culture* in 2005, and *The dynamics of social practice: everyday life and how it changes*, a book by Elizabeth Shove, Mika Pantzar and Matt Watson, published in 2012.

shop - did not exist 50 years ago. Others which had prevalence then are now less common - such as buying meat from a local butcher - which probably created a less resource intensive demand for mobility. I also speculate that accompanying (often driving) children to school is a relatively recent phenomenon. Prior to policies of parental choice, children attended the most local school, and would have walked with older siblings and friends, or taken the school bus. We can similarly imagine that visiting family and friends is associated with greater mobility than in the past, because the geographic distribution of family and friendship networks has increased - partly because of the possibilities afforded by the car, and other technologies.

The point then is that current demand for mobility is created from the everyday practices that make up our working, leisure and family lives. These change - across a day, a week, the seasons and several decades. In the next section I talk about how these patterns are interconnected with the material infrastructure around us.

Patterns of practice are embedded in, interwoven with, and shaped by infrastructure

Contemporary practices like supermarket shopping require forms of mobility that use up a lot of resources, especially when contrasted with the past. It is important though to note that the development of supermarkets did not create, on its own, the demand for increased mobility for shopping. Other factors, such as a trend towards increased car ownership, and programmes of road building, had to be present. These different areas co-evolve, and become locked together across time. In contemporary life, it seems that owning a private car is the pre-requisite of provisioning a family home, when in fact this demand for mobility is the outcome of a historical process which includes the development of out-of-town supermarkets and associated forms of land use, the rise of the car, the gradual shift in shopping habits and routines, and the decline of high street shops.

In ways like this, patterns of practice and infrastructures are interrelated. Social scientists have explored these relationships in an attempt to understand how, and the extent to which, planning and design can shape what people do. Initial ideas that technologies and infrastructures 'script' social practices (i.e. they prescribe what we do) somewhat overstated the case - for example, although designs and plans might be made with a particular purpose in mind (as were, for example, the new towns of the 1960s/70s) such intentions do not directly transpose into practice; people are creative with the spaces they are presented with. A more nuanced idea than 'scripting' is that infrastructures and practices co-evolve. This refers to an iterative process whereby infrastructures and practices shape one another across long periods of time. Although the rates at which patterns of practice change, and the rates at which infrastructures develop are different, the two processes are intimately interconnected and influence one another. I explore three of these interconnections in the paragraphs that follow:

Land-use

The demand for mobility is an outcome of patterns of practice, and in particular, an outcome of where these practices take place. In Figure 1a I speculated that a weekday might consist of taking children to school, going to work, a trip to the supermarket, and going to the gym. It is obvious that the location of these different activities in relation to one another, and to the home, will have implications for the overall amount and mode of travel.

This is not a simple relationship - as has been pointed out "... there is a confusion of the need to travel (which can reasonably be related to land use variables) with the inclination to do so..."². That is to say, practices do not only take place in the nearest possible venue, other dynamics are at work. Further, the 'map' of places of practice does not take the exact form that designers and planners have in mind; spaces will be used and developed in unanticipated ways. Neither does it stand still; the patterns of practice as 'mapped' in infrastructure, as well as the patterns of practice which combine within an individual's life, both change.

Practices are linked to particular places

Particular places cater to particular practices. These categorisations appear normal and 'natural' to us because of their long histories of co-evolution, institutionalization and standardisation. Figure 2a illustrates some of these taken-for-granted relations between infrastructure and practices. This particular design of the world has implications for mobility demand; in other words, it helps to shape the 'map' of where we travel to undertake different activities.

To illustrate the point I take an example of a building local to me - Liverpool's Central Library (I have used this example elsewhere, see reference given at end of article). The Library reopened in 2013 after a large-scale refurbishment programme and the design of this new space challenges traditional ideas of what a library should be and which practices it should 'house' (see Figure 2b).

Figure 2a. Some of the 'natural' relationships between infrastructure and practices

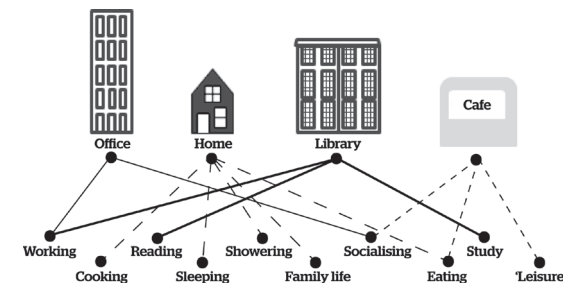
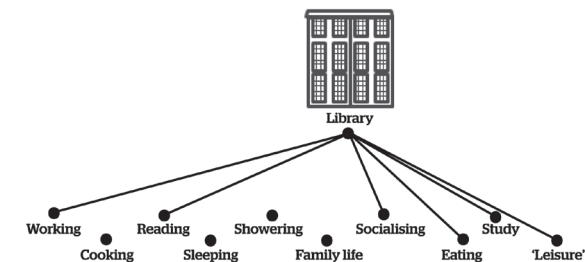


Figure 2b. New infrastructure can challenge traditions



2 In 'From 'predict and provide' to 'predict and prevent'?: pricing and planning in transport policy, an article by Susan Owens which appeared in the journal *Transport Policy* in 1995.

Rather than simply being an archive with facilities for reading, research, silent study, and the loan of books, the new library includes large amounts of empty desk space, electric points, computers, internet and print facilities, different forms of workspace (meeting rooms, games areas, reading rooms, lounge areas), a cafe and a tolerance of talking. As such the Library provides the infrastructural potential for practices of working, commuting, eating and socialising to happen in one place. In this way the library potentially brings to life the idea of 'hubs' in which people 'work from home' together, challenging the mobility demands created by the daily commute.

A second example of how place-practice relationships can matter for mobility has arisen from initiatives to promote cycling to work. The general assumption that office workers will arrive at work already showered and appropriately dressed (to meet cultural conventions of self-presentation and cleanliness) means that historically, offices have not had showers. When office workers are travelling by modes that require little exertion this is not an issue. However, with the new emphasis on cycling (from both health and environmental perspectives) some employers have begun to provide showering facilities at work.

Thus changing places for practice (like the library) can help to shift where practices occur, which in turn can have implications for which transport modes connect different practices together (e.g. how we travel from home to where we work).

The co-evolution of transport infrastructure and transport mode

Infrastructures can privilege or side-line different mobility practices such as driving, cycling and walking. Returning to the idea of co-evolution outlined earlier, mobility practices like driving, or cycling do not exist separate from infrastructure, rather the infrastructure forms an important part of these practices, shaping where, when and how they can be performed.

For a long time, in the UK, the design of road systems and of roads themselves has privileged motorised transport. For example, in the 1970s it was standard practice to re-develop town and city centres so that motor traffic was diverted around newly built 'ring roads'. Such designs aimed to provide motorists with free-flowing, and even aesthetically enjoyable journeys, yet it also had the effect of making centres relatively inaccessible via other non-motorised means.

At a smaller scale, standards of road design specified the detail of streets - including the width of roads for different forms of traffic, road markings, turning radii at corners and so on. This created roads which themselves privileged driving and 'bussing' over cycling and walking, and through-flow over a sense of place. The Department for Transport's *Manual for Streets* (2007) and subsequent *Local Transport Note on Shared Space* (2011) has started to challenge these design conventions, proposing infrastructures which lower the predominance of motorised transport, and give less privilege to ideas of speed, and the 'right of the road' (for motorists) that has become associated with it.

In his study of bicycle use in the 20th Century, Adri Albert de la Bruheze compares trajectories of bicycle use across nine European countries (and cities within them), including Amsterdam, Holland and Manchester, England³. Both places begin with high bicycle use in the period preceding World War II, but this usage declines in the post-war period. This trajectory stabilises at low levels in England (and in Manchester), whereas in Holland (and Amsterdam) there is a resurgence of cycling from the mid-70s. He points out that "Dutch transport policy and bicycle use were inseparable", with equal rights, which meant that bicycle paths were built and cyclists were able to use all roads. In contrast, in England (and other European countries) "many roads were forbidden for cyclists, bicycle lanes were

abolished and one-way traffic rules were introduced". He does not claim that such infrastructural differences should be interpreted as direct causal relationships - indeed he points out that bicycle use did not increase as much as expected when new cycle lanes were built in Amsterdam in the 1980s. However, the (all be it complex) relationship between infrastructure and mobility practice is hard to deny, and provides an interesting focus for further research.

In the first section of this article I pointed out that mobility demand does not simply exist, but is rather the outcome of patterns of practice which change across time. In the second section I discussed the ways in which patterns of practice are connected to infrastructure. In the third and final section I discuss the role of designers and planners.

Design and planning professions, and mobility demand

The design and layout of roads, or the use of land in particular places for particular purposes, does not simply appear from nowhere. This infrastructure is designed and planned by particular professions and occupations including transport planners, urban designers, town planners, landscape architects, architects and engineers. In this way the design and planning professions help make mobility demand, though the detailed dynamics of this relationship are complex. In this final section, I speculate on how the histories, structures, systems and working practices of these professions might inadvertently hold in place particular forms of mobility demand. I argue that these aspects will form valuable topics for future research.

Histories of working practices

The design and planning professions have a role in making, and re-making, normality - what we see as normal. Particular working practices and 'tools of the trade' develop over long periods of time. These can become so engrained in the everyday working practices of professionals that limitations or unintended consequences can become hidden from view. Regulation, standardisation and legislation can operate in a similar way. Made at particular historical moments to address the issues of the day, they may still persist in the working practices of professionals even when no longer relevant.

For example, 'predict and provide' has existed as the predominant approach to transport planning for the past 50 or so years, despite criticisms of such approaches which have circulated since the 1980s. It is an approach to transport planning in which "... demands are projected, equated with need, and met by infrastructure provision"², and is strongly associated with the 'promise' of post-war development, the rise of the car and the development of England's motorway network.

It is easy to see how such an approach might result in design for a particular normality which inadvertently exacerbates rather than challenges current problems. Researching the histories of particular working practices and professional 'tools of the trade', can help us understand what assumptions about patterns of practice and mobility demand are 'built into' designs, and to consider how these might be different.

The influence of different professions

Studies by sociologists and historians show that professions and their jurisdictions change across time. New professions emerge, others wax and wane, they may combine with one another, and increase or decrease in their organisational presence. At one time a profession may have full control, and at another it may be subordinate to another group. Design and planning are no exception. For example, architecture and town planning have been established professions for a long time, transport planning developed and gained jurisdiction in the 1960s and 1970s, and landscape architecture and urban design have emerged more recently, growing in organisational presence. What then, is the shifting composition of professions which shapes our world? How do new professions develop and

³ See his 5-page article from 2000 entitled *Bicycle use in Twentieth Century Western Europe: a comparison of nine cities*, available online.

gain in organisational presence and others disappear? How do the jurisdictions of professions shift and change? And what are the implications of all these things for what happens 'on the ground'?

Training and 'good practice'

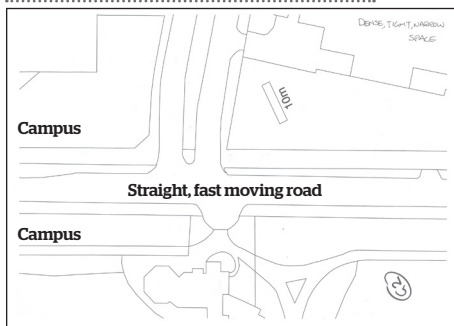
Different professions are trained in different ways, and their ideas of good practice, the ways in which they prioritise interests and concerns, and their associated histories of legislation and regulation vary. Figure 3, from a meeting between a transport planner and a landscape architect, illustrates how working practices of different professionals might have implications for an aspect of infrastructure. They show sketched ideas for a busy road which dissects a university campus, and is an important crossing point for large numbers of pedestrians.

I have discussed how the composition of the professions which shape our world is constantly shifting. Figure 3 illustrates how differently professions might approach the same aspect of infrastructural development. Combining these two ideas highlights how significant the shifting composition of professions might be for the version of the world that is made (e.g. how would the world shape up if landscape architects rather than transport planners were 'in charge'?).

National vs. local

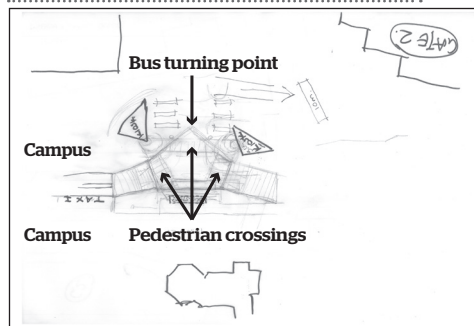
The final point is about the national and local arrangements which influence when, and at what scale there is scope to reconfigure infrastructure. Large scale investments which were made into, for example,

Figure 3a. Existing infrastructure



The existing infrastructure of part of a university campus that has funding to be redeveloped; a straight, fast moving road that dissects the campus in two. It is a safety concern due to high numbers of pedestrians.

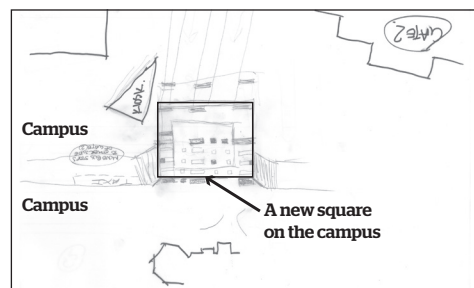
Figure 3b. Transport Planner's design



This design includes some distinct pedestrian crossing places, and a turning point for buses. Motorised transport is still privileged over walking and cycling, and the through traffic is privileged over those using the space (i.e. students and staff of the university).

Figure 3c. Landscape Architect's design

The design is a square within the campus that is a shared space. Every transport mode has right of way (including walking and cycling), so traffic must slow down and navigate around people. The shared space is privileged over the through flow of motorised traffic.



the redesigning of Manchester city centre (after the IRA bomb and for the Commonwealth Games), Liverpool city centre (for the European Capital of Culture 2008), and London (for the 2012 Olympic Games) are different in size and scale to the everyday work that forms the 'bread and butter' of many design and planning professionals. What then, is the scope of these different kinds and scales of development to reconfigure patterns of practice (and thus mobility demand) at a societal scale? Who makes and manages infrastructure in particular places? How are professional standards and ideas of 'good practice' (which cut across regional and national boundaries) mediated in local contexts?

Conclusions

In this short article I have set out some reasons why I think that design and planning professions are important for mobility demand. The main thrust of my argument is that aspects of infrastructure, such as the design and layout of roads, or the use of land, do not simply appear from nowhere. Rather they are designed and planned by particular professions and occupations. Infrastructure is central to the patterns of practice which constitute the demand for mobility, and designers and planners might inadvertently remake current unsustainable demands, rather than providing the potential for new patterns of everyday life.

Although I have not been able to cover all aspects of mobility demand, I hope that I have set out some convincing relationships between the demand for mobility, the design of infrastructure, and the histories, systems, structures and working practices of the professions. At the start of this article I set out three questions that are central to my research, and which are of interest to all those concerned with promoting more sustainable ways of life: it is my view that exploring the relations between the design and planning professions and demand will make some useful headway in addressing these questions.

Want to read more?

Take a look at *Interventions in practice: re-framing policy approaches to consumer behaviour*, a 56-page policy report which Nicola co-wrote as part of the Sustainability Practices Research Group's work, which was a collaboration between eight UK universities. It is available online or by emailing her (n.spurling@lancaster.ac.uk).

3. Working positively to redirect growth: a personal perspective

Tim Hughes, University of Cambridge, thh22@cam.ac.uk

It is with some trepidation that I write this article, and I will start by explaining why. As a researcher in systems engineering (developing mathematical techniques for designing systems which achieve desirable outcomes through the appropriate use of feedback), I am accustomed to working within the relative comfort of mathematical argument. By carefully stating my assumptions, I can speak confidently about my findings, reassured by a watertight logical argument. The broad subject of 'sustainability', addressed in this book, is much more messy. I am unable to reach the same level of confidence as I feel in the rest of my work. Consequently, to date I have kept my interest in sustainability mainly on a 'personal' rather than 'professional' level.

Much has been written on the topic of sustainability, and one wonders whether there is anything new to say. However, one intention of this book is to reflect the voices of those working in a wide range of disciplines. And so, in this article, I will use my own words to convey several observations on sustainability that I have read elsewhere and which resonated with me, and I add some personal reflections along the way. These observations offer a perspective on growth, encompassing both the present growth in the use of ecological resources, and the growth in the demands on individuals in the workplace. I have been encouraged and inspired by the vision of many authors who have articulated ways that we can redirect growth in order to both improve our wellbeing and reduce the burden we impose on the environment. In sharing this vision, I hope you might also find similar inspiration.

A key point that I wish to make in this article is that exponential (i.e. rapid) growth is an inherent property of certain kinds of systems. Also, this type of growth leads to big effects over time, even though the change from one day to the next can be barely perceptible. Exponential growth is where the rate of growth of something is proportional to the current amount of that thing, the textbook example being your bank balance. When something grows exponentially, the time it takes to double in amount is constant: if you have a loan which charges 10% interest, and you make no repayments, then the amount owed will double every 7 years.

The powerful effects of exponential growth were strongly articulated in a book I read recently: *Limits to Growth: 30 year update* by Donella and Dennis Meadows and Jorgen Randers. At first, the notion seemed so familiar to me (as a researcher in systems engineering) that I wondered why it needed stating. However, on further reading, I began to understand the reason for the emphasis.

Firstly, when there is a limit to the resources in the system (for example, global oil reserves in the world economy), then a system experiencing exponential growth can, from a gradual start, approach this limit very rapidly. Consequently, by the time it is apparent that the resources are being exhausted, it may be too late to take evasive action.

Secondly, exponential growth is a property of certain types of systems, and *to change the pattern of growth requires a change to the properties of the system*. For this reason, it is typically system properties which are responsible for outcomes that persist over time despite the use of interventions aimed at changing them. These interventions are typically ineffective because they are based on an insufficient understanding of the relationship between the outcome they wish to control and the

system which causes it. Indeed, in describing these systems, it is usual to encounter an apparent circularity: you have a large credit card debt, so you get charged a lot of interest, and so you have a large credit card debt, and so forth. This reflects the inherent circularity due to the feedbacks within the system itself. By understanding the effects of these feedbacks, it is often possible to re-design our systems in order to achieve favourable outcomes.

What lies behind the current direction of growth?

It seems to me that many current social, political, and economic systems are geared towards growth in a direction which is not favourable for society as a whole. The predominant concern addressed in *Limits to Growth* was the growth in the use of ecological resources which is leading to the exhaustion of many of these resources. Connected with this growth has been the emergence of a consumer-focussed society in which material possessions are used to convey the status and personality of their owner. This, in my opinion, has led to a growth in the demands and stresses on individuals in the work environment. Moreover, I believe that these stresses are compromising the capacity of society to challenge and re-engineer its systems in order to address the issues of ecological degradation. The persistent increase in environmental damage, despite the intentions of many to reverse this trend, provides evidence that changes to our systems are necessary. These will be most effective if they encourage preservation of the environment and mutual respect among people as the norms. In the following paragraphs, I will discuss seven of the mechanisms, and some of the feedbacks between them, which I see as partly responsible for these trends.

Overuse of environmental resources to repay debts

Our present financial system has created a high level of debt with a tendency for this debt to increase over time. One way this happens is through the interaction between bank lending and house prices. Banks have an incentive to lend money due to the profit they earn from interest payments. As there is a risk of borrowers defaulting on their loans, the banks find mortgage lending particularly appealing, since they are able to repossess property if repayments are not made. Due to planning restrictions and construction lead-times, an increased availability of mortgages is more likely to lead to a rise in house prices than an increase in the number of houses. Since housing is a necessity, then the demand for houses will not reduce much in response to these increasing prices. In fact, sustained increases in house prices have caused housing to be viewed as a prudent investment.

Consequently, the demand for borrowing increases, and banks are willing to fulfil this demand. Thus, an increase in the supply of mortgage lending leads to an increase in its demand which leads to a further increase in its supply, and so forth; and the level of debt grows over time. Those in debt then find themselves having to work long hours to service this debt. This also creates a drive for increases in human productivity. Regrettably, this often comes at the expense of the environment, as the simplest way to increase human productivity is for each worker to use more of the natural resources which are undervalued in our present economy. These points are explained with great clarity in the book *Modernising Money*, by Andrew Jackson and Ben Dyson.

Feedback between supply and demand

By using undervalued environmental resources, industry can produce greater quantities of goods than the present level of demand. To shift the surplus, demand is then created through advertising. To satisfy their aspirations for advertised products, people must either work longer hours or be more productive in order to earn more income. This causes a further increase in supply. In this manner, there

is a growth in the consumption of material goods. Moreover, this behaviour becomes normalised over time, to the extent that advertising is now so pervasive that its effects on our buying habits are rarely recognised, and society encourages people to aspire to a high income lifestyle irrespective of whether there are sufficient resources to support this.

Specialisation leads to dependency

It is the norm for many people in developed countries to aspire towards higher education and professional careers. Among the several reasons for this is a desire to attain status and to finance high levels of consumption in response to social pressures. To fulfil these aspirations, people are encouraged to seek jobs which have increased levels of training, specialisation, and responsibility. While this was undoubtedly beneficial in the past, it is questionable whether further increases in the levels of specialism and responsibility are appropriate today. In particular, it can cause a loss of skills which are important but undervalued in our present economy, and an increased dependence on others. For example, low wages and decreasing job availability has reduced the number of young people going into farming in the UK, which may lead to a greater reliance on imported food as the current generation of farmers reach retirement. An increase in specialisation can also cause greater geographical migration of labour, both of the specialist to the location of the specialised job, and of migrant workers from less developed countries to provide the services which the specialist no longer has the time or ability to complete themselves. In turn, society becomes more reliant on money to pay for services. It may also lead to a decline in the level of personal responsibility the specialist feels about subjects outside their specialisation, which they may consider to be 'someone else's job'. This could lead to a society-wide feeling of helplessness when faced with challenges which lie outside the domain of established specialisms, such as the current issues relating to the overuse of ecological resources.

Targets and metrics

There is a current trend towards a target-oriented culture. People are becoming increasingly reliant on metrics to judge success, and there is a drive to improve on previous performance. This culture is being passed down to subsequent generations through a teaching system which encourages the capable to take increasing numbers of examinations and expects annual improvements in examination performance. In addition, the present rise in the levels of student debt is likely to provide further incentives for people to seek higher paid jobs and work longer hours.

Short term gains and cost cutting

In the past, investment gains could follow from material growth as our capacity to use available environmental resources expanded. To maintain profitability in the face of depleting environmental resources, it is becoming increasingly necessary for companies to reduce their costs. This can result in efforts to reduce quality, reduce tax liabilities, or seek the most undervalued goods. By minimising their tax liabilities, some companies are no longer providing the tax revenues necessary to pay for the infrastructure (transport, education, healthcare) required to enable them to produce their goods. This expense then falls on the workers, who are again required to work harder to maintain their incomes. This is being further exacerbated by a financial system in which the people responsible for making the investment decisions have little knowledge or interest in the long term objectives of the companies in which they invest, and are encouraged to take risks to achieve short term gains as they are not personally liable when losses occur.

Influence of special issue groups

The high levels of economic growth over the past two centuries are in a large part attributable to a rise in the use of fossil fuels. This has led to a society-wide dependence on fossil fuels to maintain the standard of living we have grown to expect. As a consequence, the fossil fuel industry has considerable influence over decision making processes. As is clearly articulated in the book *The Burning Question* by Mike Berners-Lee and Duncan Clark, the value of these companies is based on projections of a continued use of fossil fuels for the foreseeable future. These companies therefore have both the motivation and the power to encourage society to continue to pursue increases in fossil fuel use.

Disconnect between cause and effect

The effects of ecological degradation typically occur with a time lag, are difficult to attribute to specific causes, and can occur in areas which are geographically remote from the original cause. It therefore does not seem surprising that there is a reluctance to make changes when faced with strong social pressure to continue with 'business as usual'. The tragedy, as I and many others see it, is that growth has gone beyond the point where we are able to satisfy our basic needs of food, health, and shelter, and yet continues to advance in the pursuit of increased material wealth. And, despite our capacity to satisfy our needs, there are still many who do not have access to basic goods and services.

Conclusions

So, is it possible to halt the growth in the amount of material goods produced, ensure basic goods and services are distributed to all, and maintain growth in human welfare? I feel this is possible, as positive human-to-human interactions, and positive interactions with the natural world, often serve to increase our wellbeing yet come at little or no environmental cost. If these interactions are also attributed a financial value then it is possible to maintain a level of economic growth without the same detrimental ecological degradation we are currently experiencing. Examples of the kind of changes which could effect this, relating to each of the seven preceding points, include: (i) taking measures towards reducing national and household debt, and excusing the debts of developing countries; (ii) decreasing the pervasiveness of advertising; (iii) assigning greater value to care and household work; (iv) reducing the frequency of school and university level examinations; (v) establishing a taxation system which is respected and recognised for the value it brings to society; (vi) reducing our dependence on fossil fuels while supporting the transition of the fossil fuel industry to more sustainable activities; (vii) engaging with the effects of environmental damage on people in other parts of the world, and in future generations, and feeling positive about the lifestyle changes we make to reduce this damage.

A transition to a society based around growth in welfare will require a change in our social systems, which are currently geared towards material growth. Envisaging a change in these systems often seems utopian, and a long way from the present situation. However, if a change does occur, it is likely to be gradual at first, so as not to seem so unusual. This is a feature of the exponential growth discussed at the beginning of this article, which starts off gradually, and then accelerates to the point of causing relatively rapid change. As an example, suppose a trend emerged towards people making a positive decision to dedicate more time to community-centred projects and household tasks such as childcare and cooking. People making this change then derive greater happiness from spending more time with their family and the local community, and from being able to see the effects of their work on a local scale. By seeing the positive effects of this on the wellbeing of individuals and society

as a whole, then more people are encouraged to make this change, and the benefits of this work become more recognised within society. Because they feel more respected and confident about their position in society, people become less inclined towards material goods. In time, subsequent generations come to aspire towards this lifestyle, leading to a further increase in welfare and decrease in the consumption of material goods.

The preceding example may seem somewhat idealistic, and one may question whether it will lead to changes within the necessary time-scales, and of a sufficient magnitude, to address the significant challenges faced by today's society. It appears that our effects on the environment are already causing major changes to the earth (e.g. the melting of the Greenland ice sheet, the rise in the levels of atmospheric greenhouse gases, or, more controversially, recent increases in extreme weather events), and it seems increasingly likely that these effects will continue over the next century even if we stopped all ecological degradation today. Moreover, to make the changes required to reduce the risk of greater environmental damage will require concerted action on a global scale and soon. However, it is proving very difficult to agree on fair and proportionate changes for each country, and many countries are failing to meet existing pledges. This is evidence that the vision and leadership shown by those who wish to exercise positive changes on a global scale is hampered by the underlying behaviour of the systems within which they operate. I therefore believe that the most effective changes we can make, if we feel strongly about these issues, are on a personal level. Our actions will have an effect on others and, given enough uptake, may lead to an accelerating effect. I feel this is particularly likely to be the case if it becomes a part of our education and the values we give to our children, both through teaching and through personal example.

Want to read more?

Take a look at *Limits to Growth: 30 year update*, a book by Donella Meadows, Jorgen Randers and Dennis Meadows, published in 2004.

4. Know-how for keeping warm at home

Sarah Royston, Association for the Conservation of Energy, sroyston28@gmail.com

In recent years, researchers have become increasingly interested in how people use energy in everyday life, and the implications this has for sustainability. There has been research into what people know about energy and energy efficiency, sometimes called energy literacy. However, there is a difference between knowing facts about a subject (sometimes called *know-what*), and having practical knowledge that enables you to act (called *know-how*).

We use know-how in every part of our lives, including the many daily activities that use energy, such as cooking, cleaning and keeping our homes at the right temperature. Recently, researchers such as Kirsten Gram-Hanssen in Denmark have stressed the importance of practical knowledge in how people use energy. For example, whether we understand how to use our heating controls can have a big impact on our energy consumption. Meanwhile, researchers Gregoire Wallenborn and Hal Wilhite have suggested we pay attention to the more basic physical skills involved in energy use, and how habits can be 'remembered' by the body as well as by the mind - for example, closing doors to keep heat in, or drawing the curtains at night.

At the same time, there is a growing perception that conventional policy approaches based on the top-down provision of factual information have little effect on people's energy use. There are some early signs that this is being recognised in sustainability policy, with attempts to promote hands-on learning, such as the new 'Green Open Homes' Network. However, so far, there has been relatively little research on the practical knowledge that affects how people use energy in everyday life.

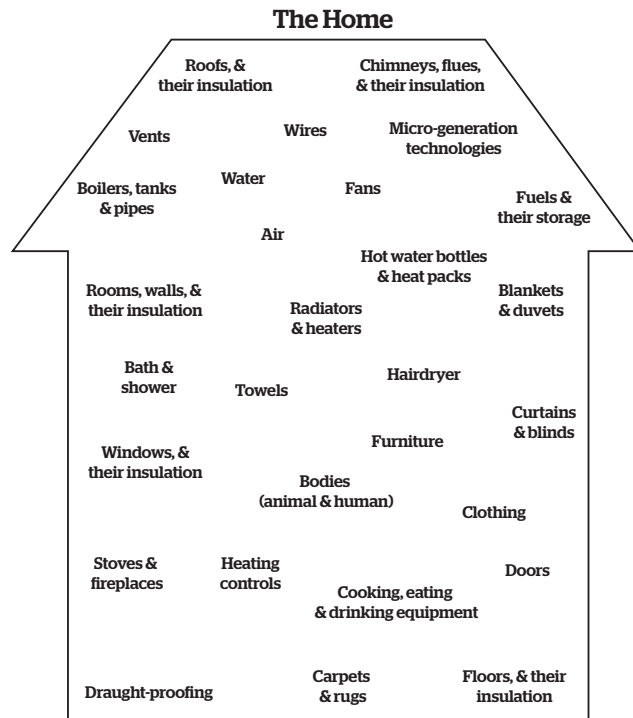
In this article, I explore some issues around know-how and energy consumption, focusing on how people keep warm at home. This is important because space heating represents 62% of energy consumption in UK homes (UK Housing Energy Fact File 2013). Also, with relatively inefficient housing and among the highest rates of fuel poverty in Europe, domestic warmth is a vital environmental and social issue for the UK⁴.

Keeping warm at home

Keeping warm at home can involve a lot of material objects, from long-johns to loft insulation. Sociologist Elizabeth Shove and colleagues have suggested that we should understand the home as a system, within which heat (and electric power) flow between different material things, such as appliances, bodies and the building. Some of the material things involved in heat flows in the home are shown in Figure 4, though it should be noted that these are just examples, not a complete list, and that there are also many things outside the home that affect its temperature.

⁴ You can read more about the UK's fuel poverty in *The Cold Man of Europe*, a 16-page policy report I co-wrote in 2013, available online from the Association for the Conservation of Energy.

Figure 4. Some of the objects and appliances involved in heat flows in the home



Controlling temperatures is part of most people's daily routines, whether they want to save money, reduce environmental impacts or just stay comfortable. This means managing heat flows to ensure that warmth is where it is needed, at the time it is needed. Doing this efficiently also means minimising unwanted heat flows - what we could call heat-out-of-place (such as heat that has escaped into your loft) and heat-out-of-time (such as the house being warm when you are out).

Managing heat flows means people are constantly participating in activities such as "observing, controlling, recalling, regulating, and leaving traces (like carbon footprints), of their warming and cooling activities"⁵. These are skilful activities, relying on various kinds of practical knowledge or know-how. This know-how may be conscious knowledge that is held in the mind, such as knowing how to programme the central heating. Alternatively, it can be more subconscious and physical; perhaps 'a feel for something' like lighting a fire. It may involve simple actions such as closing a window, or more complex skills such as installing insulation. Know-how is always changing, and different people draw on different kinds of know-how to manage heat flows in their homes.

⁵ From *Making sense of domestic warmth: affect, involvement, and thermoception in off-grid homes*, an article by Phillip Vannini and Jonathan Taggart published in the journal *Body & Society* in 2014.

Using know-how to keep warm

Understanding and monitoring heat flows

The first step in managing heat flows in your home is understanding those flows. Which places are hot and cold, and at which times of the day and year? Where is heat being lost or wasted? This monitoring can involve know-how for sensing temperature in various ways; for example, cold can be indicated by icy windows, 'dragon's breath' or even hard toothpaste, while warmth can be indicated by where a pet sleeps (see Photo 1)!

People can also use know-how to monitor where heat is lost; for example, you might notice a curtain moving and know there is a draught. Some people even check their roof to see how fast the snow is melting, to indicate if more loft insulation is needed. This kind of knowledge is often specific to one home, and is built up by the resident over time. If you have an ongoing understanding of heat flows in your home, you can use this to adapt to them (say, by moving to a less draughty position in the room). Alternatively you can try to change them by intervening in how heat is generated, moved or stored.

Generating and moving heat

An important area of know-how concerns the systems and appliances we use to generate heat and move it around the home. It is obvious that there are skills involved in lighting and maintaining an open fire, but there is also a lot of know-how involved in more conventional systems. For example, if you have central heating you may have to programme the controls or adjust a thermostat (or multiple thermostats), and watch out for problems like radiators that are cold at the top (and need bleeding). If you have electric storage heaters you need to know how to adjust the input and output controls based on the weather forecast and your plans for the following day. Renewable microgeneration technologies also demand their own forms of know-how - perhaps know-how that has not been needed in the past.

As well as these kinds of technical know-how, skills in improvisation and DIY also play a part in generating and moving heat. What do the following things have in common: foil-wrapped baked potatoes, wine bottles full of water, microwaved rice and old socks? The answer is that they can all be used to make DIY bed warmers! Some people also make improvised heaters, for example, using tea-lights and plant pots (suggested by the Daily Mail but condemned by the London Fire Brigade... see Photo 2).

Storing and trapping heat

Staying warm is not just about generating and moving heat but also about keeping it where you want it. Know-how can be useful in storing and trapping heat, especially when it comes to improving the energy efficiency of your home. Technical know-how and skills can be used, for example in installing loft insulation or draught-proofing. However, improvisation, craft and DIY know-how are also used in storing and trapping heat. For example, some people make homemade draught excluders - from simple ones using old tights stuffed with socks to elaborate animal shaped designs (see Photo 3).

Others use materials such as blankets, cushions, old clothes, bubble wrap or cling-film and a hairdryer to help reduce heat loss through their windows. Some people swap their summer curtains for winter ones, or add extra door curtains for cold months - perhaps a form of know-how that was common in the past but is now less often used.

Photo 1. Pets often find the warmest spot



Copyright © Barbara Waston

Photo 2. DIY heater video went viral in 2013



Copyright © Dylan Winter

Photo 3. Keeping heat in the room



Copyright © Annette's Allsorts

Photo 4. Draught-proofing workshop



Copyright © Energy Efficient Widcombe

Building up know-how

Where does this know-how come from? Sometimes, know-how can be transmitted through a diagram, video or advice leaflet. However, a key way in which we develop know-how is through our own experiences. Of course, this is especially true of know-how about our own particular home, appliances and so on. Do you have a temperamental boiler or a window or door that can only be opened/closed in a certain way? Do you have a room that is always colder than the others, which you avoid in winter? This kind of knowledge tends to develop gradually through daily life.

Another important source of know-how is interaction with others. This includes the habits that we learn in childhood, often from family members. Many people have learnt to conserve energy from their waste-watching parents or grandparents. But we can also learn from others, such as friends and neighbours, throughout our lives, and pick up new (good or bad) habits. Some organisations have used this 'social learning' approach to try and promote sustainable energy use. For example, Transition Town Lewes and Energy Efficient Widcombe have run draught-proofing workshops to help local people learn useful skills (see Photo 4).

What does this mean for policy and practice?

This very brief exploration suggests that know-how plays an important part in keeping warm at home, and so is likely to affect energy use. Certain forms of know-how (such as that around insulating the home, or making effective draught-blockers) might help people keep warm while using less energy. It is important to note that there are other forms of knowledge which are also important (such as factual information about energy), but there are nonetheless some suggestions we can draw on for policy on energy use in homes.

Between 2015 and 2020, energy suppliers are supposed to offer smart meters to all UK households. These are real-time monitors that provide feedback to householders on their energy use. However, smart meters' style of information provision (often involving numbers on a screen or graphical representations) has been criticised as inaccessible, and unhelpful in changing people's routines. A parallel set of policies could focus on more practical forms of knowledge, encouraging the development of useful know-how through experience-based learning and/or social interaction, for example, through libraries that lend eco-products; action-learning groups like Global Action Plan's Eco-Teams; workshops and skill-shares; in-home visits by energy trainers/advisors; or show homes and open-house events. Some of these approaches could also provide opportunities for intergenerational sharing of know-how.

Of course, it is not just individuals who need to 'learn more' in order to create sustainable patterns of energy consumption. We also need to pay attention to the wider context in which people act – including products, buildings, laws, incentives, social norms and many other factors. For example, another strategy is to ensure that the design of products and buildings helps people to develop and use warming know-how. This could involve controls that are easy to understand, or buildings that make it easy to adapt to changing temperatures (with blinds, shutters, windows that open, and plenty of doors that can be closed).

Finally, this discussion raises the question: what skills and know-how do we need if we are to keep warm in more sustainable ways? Related to this, are there forms of know-how that have been common in the past, and that could be revived to create less wasteful consumption patterns? Are there new forms of know-how that we need to develop, to cope with new technologies? These would be useful areas for research.

This has been a short review of a complex subject, but it highlights the fact that energy consumption is not only related to knowledge about kilowatt-hours, degrees centigrade and U-values, but also bound up with the practical know-how and skills we use in everyday life. This kind of knowledge seems to offer an untapped opportunity for policy and practice on sustainable energy use in homes.

Want to read more?

Email Sarah (sroyston28@gmail.com) for a copy of *Dragon-breath and snow-melt: Know-how, experience and heat flows in the home*, a 10-page journal article where she discusses the ideas raised here in more detail, which appeared in the journal *Energy Research & Social Science* in 2014. That article also includes references to key work by other researchers mentioned in this article (Gram-Hanssen, Wallenborn and Wilhite, Shove).

Part 2.

The great sustainability debate



Looking north through Halstow Marshes. A container ship brings goods up the River Thames into London.
February 2015. Copyright © Tim Mitchell.

5. Making good decisions: the role of science

Erica Thompson, London School of Economics, *E.Thompson@lse.ac.uk*

The perspective of a scientist is often described using words like 'objective', 'impartial', or 'neutral'. This scientific viewpoint and the associated mode of 'objective' sceptical enquiry are held in high regard as a powerful way of describing, understanding and predicting the behaviour of the natural world. These attributes are of course useful to society in many ways, but the relative balance of the many roles of science in society is constantly evolving. In recent years, the call for 'evidence-based decision making' has increased, the aim being to ensure that actions will result in desired outcomes. Thus it has become important for science to provide relevant and actionable evidence on topics such as public health interventions, economic policy, disaster risk reduction, and the focus of my own research: climate change and environmental decisions.

But scientists are also human, and the procedures of science are generated, reviewed, and carried out by individual researchers who hold subjective opinions and beliefs, meaning that the ideal of truly 'objective science' cannot exist. To what extent does this influence science and science-based decision making in the environmental context? And to what extent does pressure from society influence the behaviours and attitudes of scientists themselves?

Here, I argue that a more nuanced approach to the use of scientific evidence for decision making could be a route towards not only better science, but also better communication of scientific results and better use of this evidence to inform our responses to the challenges of the twenty-first century.

How are policy decisions made?

An implicit assumption underlying some discussions seems to be that if only we had full factual information about a situation, this in itself would be enough to make the 'right' decision or choose the 'right' policy action. Let us assume briefly that there are objective facts to be had, and that they can be provided in the results of scientific research (discussed further in the next section). Even in this extreme case, full knowledge of that objective scientific evidence could not dictate policy, because decisions are always made in the light of value judgements about preferred outcomes. Suppose we could predict exactly what would happen in the event of alternative greenhouse gas emissions scenarios; it would still be perfectly ethically consistent to decide that we do not care about any impacts beyond 2030 and that therefore no mitigation action should be taken. The point here is not that all value judgements are equally valid, but that they are all subjective, and that for some decisions there may be greater sensitivity to the choice of those value judgements than to the scientific evidence itself.

In other cases, of course, there may be clearer agreement on the value judgements and in that situation it is easier to see how the policy itself may be truly 'evidence-based'. An example is the case of public health interventions where one can directly measure mortality rates according to alternative actions - one implicit value judgement in this case could relate to the amount of money that the authorities are willing to spend per life saved. These relatively simple situations, where science ends up as the arbiter of the decision, are what proponents of 'evidence-based policy' would like to see reflected in the climate change debate. Unfortunately the complexity of the value judgements involved

prevents this from happening easily. A small example is the ongoing debate in the economic literature about the appropriate *discount rate*, a parameter which, among other things, reflects the degree to which the experience and welfare of future generations should be valued equally or less than that of people currently alive. This is effectively a moral or ethical judgement rather than a quantity which can be objectively determined, as is clear from the economic debate in which a wide range of discount rates have been advocated. Other value-laden issues in the climate and environmental decision making context include the intrinsic value of biodiversity and non-human species, the aesthetics of a highly urbanised and industrialised planet, and the degree to which monetary valuations such as GDP can measure progress towards a desirable future society.

All decisions must take into account both the scientific evidence and value judgements about the relative desirability of alternative outcomes. Clear separation of these two contributors may not generate consensus, but can at least help to elucidate the source of disagreements.

Scientific evidence for effective decision making

With these examples of the role of values in climate decision making in mind, let us now consider the evidence which scientists are expected to provide. As there are no 'facts' about a future which hasn't happened yet, this usually takes the form of "*if... then*" statements such as "*if global emissions rise according to the RCP8.5 scenario, then we expect Arctic summer sea ice to completely disappear by the end of the 21st century*". There is usually some scientific uncertainty accompanying these statements, presented either as a range of plausible outcomes or as a confidence level.

To some people, statements like "if we continue doing X then Y will happen" seem to be implicitly followed by "*therefore we must stop doing X*", but this is not what is being said, nor is it a necessary logical consequence. In order to derive a statement about what we *should* do from the evidence basis about what *is*, a value judgement about whether Y is a good thing or a bad thing must be applied. Scientific evidence, however strong it may be, cannot enforce certain decisions. The rhetoric around the role of the Intergovernmental Panel on Climate Change in climate change policy, using phrases like "the science has spoken", is unfortunate, since it shuts down debate about values, which I argue here is really the main debate that we ought to be having.

In addition, there are clearly many elements of scientific research that are shaped by human choices. An easy example is the choice of what subjects to research in the first place, whether that is a choice made by the individual scientist pursuing a topic of personal interest or a research council allocating government funds according to criteria such as expected economic return on investments. After the project has been chosen, there are strongly subjective elements in the choice of how to conduct the research: which protocols to use; which results to measure; which statistical methods to employ for analysis of the outcomes; which results to report upon; and, not least, the opinion of peer reviewers in deciding whether the work merits publication. And all science relevant to real-world decisions must operate in the real world and not in an idealised abstract setting where models are perfect, equations are followed exactly, and no confounding factors influence the results of experiments.

The upshot is that scientific evidence is itself contingent on human choices, which is not to say that it is somehow invalid or incorrect, only that we must take care in interpretation. This is not an academic philosophical point; in fact, it is at the heart of many current issues around trust in science. The earth system is very complex, and it is quite possible for multiple studies to give different answers to what sounds like the same question. When this happens, the media and the self-styled 'climate

sceptics' will occasionally jump on it as proof that scientists cannot be trusted, or that the results are somehow being massaged to provide the 'right' answer.

How can scientists guard against such accusations? Only by transparency about the true subjectivity of methods, and yet this is impossible to fulfil when the public image of science as an impartial, neutral arbiter requires that science is 'objective'. It seems to me that we scientists have created this rod for our own backs over the last century or so, by promoting science and the scientific method as a rigorous, objective, impersonal means of access to 'facts' and 'truth' about the world. My own opinion is that this is both misleading and counter-productive. Science is an excellent way of formalising our understanding of the world around us, making useful predictions and arriving at workable solutions to problems, but it is always contingent on human choices and interpreted by human minds. It is always changing, as the paradigms of past science are replaced by others.

If acknowledged, this could be an important point of communication between science and society. How should science inform our social aims? What kinds of science should be pursued? How should scientific evidence be incorporated into the decision making process? What forms of evidence do we require? How should results be presented and interpreted? These questions are considered by many scientists, particularly those who have the role of intermediary with decision makers or the political process, yet are not reflected in the polarised debate about controversial topics like climate change.

Value judgements for effective decision making

In the climate context, there is often a very blurry boundary between the question "is the climate changing?" and the question "what should we do about it?" An interview on the BBC's Today programme in February 2014 exemplified this confusion, starting with a question to climate scientist Brian Hoskins about whether the recent flooding was caused by climate change, but moving on to interview economist Nigel Lawson on the same subject. Lord Lawson is of course entitled to his own value judgements and therefore his own opinions on what should be done about climate change, but has no expertise on the scientific question. If the two questions were kept more separate, this would be clearer. Instead, they are often conflated, resulting, as in this example, in economists attempting to argue about science and scientists doing their best to avoid being questioned on matters of value judgements (since this is not seen as being appropriate when one is wearing a scientific hat).

Climate sceptics often argue with scientific results, whereas I would say that their disagreements are often more about the appropriate response to those results. This strategy seems perverse, yet works surprisingly well for many of the more high-profile sceptics. If it is the case that the offered solutions to the identified problem are unacceptable, then why not argue directly against those solutions? Do they genuinely think that the scientific evidence implies only one solution, which they happen to dislike, and thus that the only possible way to prevent that outcome is to discredit the science? Or is it the case that they feel that their ethical judgements are unpopular and would not meet with general approval? In any case, I believe that a more reasoned debate about values and ethical approaches, which are a necessary input to decision making, could help to find some common ground between alternative viewpoints, and improve trust in both scientific evidence and in the decision making process.

Conclusions

It seems to me that the discourse about climate decision making has thus far focussed to an undue extent on the science of climate prediction, and that this is mainly because it is simply easier to talk about. It would be easier if science somehow made those decisions for us without us having to have an immensely difficult cultural debate about what matters to us, which aspects of the earth system we value, and how we want to live in relationship with our ecosystem. But scientific results, no matter how certain, cannot imply decisions. Delaying action in expectation of greater scientific certainty will not reduce differences of opinion about the acceptability of alternative plausible solutions to environmental problems. The most recent Intergovernmental Panel on Climate Change report summarised thousands of scientific papers about the science of the climate, but we have no similar endeavour to summarise and reach consensus about our value judgements, or even to document differences of opinion. In my view such an endeavour is now urgently needed.

Want to read more?

Email Erica (E.Thompson@lse.ac.uk) for a copy of her article *Making our actions consistent with our scientific predictions*, where she discusses the disconnect between climate science research findings and the expectations of how scientists and scientific institutions should operate, published in the magazine *Weather* in 2011, also available online.

6. Sustainability, 'Us', and 'Them'

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As a neuroscientist, I study how our brains impose order and meaning on the information coming from the world around us. As a citizen, I follow important public debates and have become puzzled by how people can look at the same events and come to hold radically different views, which then lead them to denigrate those who disagree with them. Over time, these two interests have come together, and I now look at societal disagreements about important issues from the perspective of how our brains and minds work.

As an example of such societal disagreement, the public debate about sustainability and climate change has become fractious and polarised. At either end of the spectrum of public opinion are groups of people with strongly-held convictions about the reality of climate change, what its impact will be, and what we should do about it. Because of such deep disagreements, people often feel distrust about the motivations of those on the 'other side', which reinforces the negative tone of the debate. As several other articles in this book attest to, this is not the only problem for how we engage with issues of sustainability. But in this article I will explore a particular question that follows from my research work: can scientific insights into how we come to hold convictions and judge other people help us deal more constructively with fundamental disagreements about sustainability?

Windows on the world

In the 14th century, Jalaluddin Rumi, a Persian poet, wrote: "The truth was a mirror in the hands of God. It fell, and broke into pieces. Everybody took a piece of it, and they looked at it and thought they had the truth." This poetic image is not far from the current scientific view of how our brains perceive reality. In the book *The Physiology of Truth*, neuroscientist Jean-Pierre Changeux writes that our brains capture the regularities of the world around us through intricate processes of brain development and learning that have been tuned by millions of years of biological evolution. This view implies that our brains represent the complexity of objective reality not completely or truthfully, but to degrees suitable for survival. More precisely, our brains represent reality through 'mental models' consisting of our prior knowledge, beliefs and values. These models act as windows on the world which constrain what we perceive and how we interpret the information coming from our senses, meaning we can each interpret the same 'information' differently (see Figure 5).

Mental models are shaped by personal experience, and are to different degrees shared with and drawn from the experiences of the people around us or the wider cultural context in which we live. When we have shared experiences of concrete concepts that we encounter frequently, such as 'chair' or 'glass of water' our mental models may differ only in minor ways. We are all much more likely to use the chair for sitting and the glass of water for drinking than the other way around. However, the absence of shared experiences for more abstract ideas makes it possible for mental models to differ widely. Take, for example, a sentence such as "global average temperatures will increase by 3°C". For one person, the sentence may hold overtones of a fundamental threat to the planet, whereas for another it may hold the meaning of and be linked to memories of the pleasant weather experienced

during a holiday break in Spain⁶. The question to consider here is not if either of these mental models is 'true', but whether people with such different models are able to understand one another, and how they may judge other people holding very different views.

Figure 5. Mental models act as windows on the world

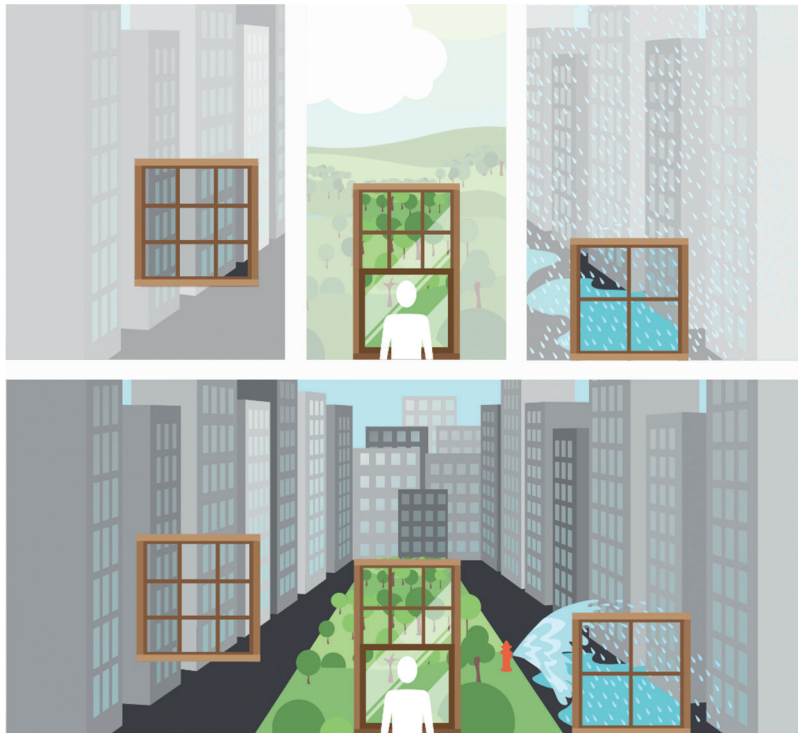


Image from the *World Development Report 2015: Mind, Society, and Behavior*. Copyright © World Bank.

How we see others

Our brains are especially well-tuned to living socially. We have a need for social connections, abhor feeling rejected, are good at learning from others, and, above all, spend a lot of our free time thinking about what motivates other people. This latter capacity for making social evaluations or mentalising is especially striking. In 1944, psychologists Fritz Heider and Marianne Simmel conducted a simple experiment to demonstrate its pervasiveness. They showed a short film with moving triangles and circles and asked subjects to write down what they saw. Almost all of them wrote a story with characters that felt emotions, and had personality traits, intentions and motivations. Although the film

contained simple geometric shapes, the movements and interactions of the figures activated the subjects' social thinking and their capacity for using stories to make sense of what they had seen⁷.

What the research since Heider and Simmel's experiment has shown is that social evaluations occur largely automatically, start early in life (from about 3 months of age), and are sophisticated in the social relationships they can follow. Take, for instance, a sentence like: "Dorothy said that she doesn't trust Bob because he is best friends with Carl who was nasty to her friend Alice." We have little trouble forming an idea of the complex web of relations between Alice, Bob, Carl and Dorothy. It is likely that other questions about their character and motivations automatically pop into our minds when thinking about them (e.g. "Why was Carl nasty to Alice?").

One of the reasons we make social evaluations is to distinguish good from bad, honest from cheat, trustworthy from untrustworthy. These mechanisms have formed in the prehistory of humankind when most of our social interactions were face-to-face. In our modern world, they can easily be triggered in other situations, as the simple shapes of the Heider and Simmel experiment show. They are also triggered when we encounter people's opinions via the media or online. Frequently, we have never met these people before. Our judgements are thus based on very limited information, and we have a large chance of getting our judgements wrong. Moreover, in the absence of personal interactions, it appears that our default judgements lean towards distrust rather than trust. These factors become even more critical for issues that are close to our heart, and when we encounter perspectives ('mental models') that are so different from our own that we can no longer understand how a decent or sensible person could hold those views. In these cases our social brains may resort to explaining them in various gradations of gullible, ignorant, stupid, crazy or evil.

In the comment sections of blogs and articles about climate change, this type of thinking can be easily seen. "If schools still taught thought, you might have spotted that everything that man-made warmists say is a lie", one commenter wrote. Or, from an exchange: "You got caught ... And your dishonesty and stupidity is obvious to all." To which the reply: "You accept the brainwashing idiot summaries of your cult leaders. So sad. As my above factional rational comment shows ..." If it wasn't so serious, it would be funny. In the long run these types of exchanges make the divisions deeper and can lead to a complete breakdown of trust between people on different sides. This has certainly been going on in the public debate about climate change.

Stepping out of the climate echo chamber

So what would happen if people with opposing convictions met in person? In May 2015, two prominent public figures in the climate debate met in a bar and had a few beers together: Anthony Watts (who operates the climate-sceptic blog *Watts up with that?*) and environmental activist, Bill McKibben. Both are well-known figures in their respective communities, but had never met in person. A day after the meeting, Anthony Watts posted an account on his blog which makes for interesting reading⁸. The first part of the blog post is about the things they discovered they had in common: stories about their families, the solar panels on their roof, how both have suffered abuse at the hands of 'crazy people' (Watts' words), and how aware they are of how others see them for their views. Finding common ground obviously does not resolve all disagreements, so in the second part of the post, Anthony

⁶ This is not an imaginary example. I have seen both reactions to the sentence.

⁷ This experiment is reported in the 17-page journal article *An experimental study of apparent behavior* by Fritz Heider and Marianne Simmel which appeared in *The American Journal of Psychology* in 1944. A copy of the original animation and the article can be found at <http://www.all-about-psychology.com/fritz-heider.html>

⁸ See *My one-on-one meeting with Bill McKibben* on the wattsupwiththat.com blog.

focussed on what separates them (technical aspects of the climate change debate). The third part of the post returns to social thinking and the question of “Who do we trust?”

By and large, the comments below the article – mostly from Watts’ fellow sceptics – were supportive of the meeting. Though some commenters continued to express distrust of McKibben, many felt positive about the rapprochement and agreed with the spirit of Watts’ statement that “if we could talk to our opponents more there would probably be less rhetoric, less noise, and less tribalism that fosters hatred of the opposing side.” Alas, the meeting proved a short lull in the online fights, as the next day a fresh controversy erupted, involving Watts and several climate scientists.

Trust in the climate change debate

It would be naive to think that, in and of themselves, personal meetings between people with widely different beliefs and values will resolve the polarisation. Watts and McKibben had always been civil to each other in the past. There was no animosity between the two to start with, which made it easier to find common ground. Others have had more frequent run-ins online, meaning that trust has been eroded and suspicion is likely to be high. Once trust is gone, simply bringing people together in person is not enough to restore it. As professional mediators know, both parties need to want to engage. What might prepare the ground for restoring trust, or avoid its loss in the first place, is to keep in mind that our social brains may misinterpret or overreact to the words or actions of others, especially when we do not know them personally, and when their views differ widely from our own. It may also lead us to underestimate how our own words or actions may have a negative effect on others. A simple rule – of not taking our own social explanations too seriously – could be the first step to stemming the loss of trust, and start resolving the ‘them’ and ‘us’ in the public debate about sustainability and climate change.

Want to see more?

Take a look at the documentary film *Right Between Your Ears* which Kris produced, exploring the feeling of ‘being right’, an experience that inspires both our best and worst actions. For latest information see the film website at <http://www.rightbetween.com/>

7. Why can’t they see sense? Supporting change in others

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This article is about something we have all experienced: wanting others to change. Whether you think sustainability issues are not taken seriously enough, or conversely that too much money and time is put towards ‘green’ initiatives, it is likely you have sometimes found yourself frustrated with the actions and words of others with differing views. We all occasionally (or often) wish that others would ‘see sense’ and act differently, particularly when it comes to sustainability.

Much sustainability research is concerned with investigating techniques which encourage different (more ‘environmental’) behaviours, and charting their success rates. However, in this brief article I am going to discuss some of the traps we fall into when we fixate on changing others, and how letting go of this goal can (ironically) bring greater success in achieving change whilst also reducing our own frustration.

I first explore how we feel when others try to change what we do, and the role of experts in this process, before outlining what I see as a more supportive approach to change. I briefly touch on the role of regulation before a quick look at the concept of ‘Nudge’, and how making this technique more transparent might improve it. Lastly I summarise key points which make up supportive approaches to change.

Dictating change can activate resistance

My first point is that when someone tells us we ‘must’ do something, we often experience an automatic reaction inside us which questions what is being suggested. ‘Says who?’ we find ourselves thinking. In this way dictating change to others does not get us very far.

An example is the right to smoke. In September 2009 the renowned artist David Hockney wrote a piece for the Guardian newspaper, entitled *The anti-smoking bigots should butt out*. In this article he complained vigorously about ‘anti-smokers’. His article gave the impression that he felt an overly interfering state and ‘busybodies’ were telling him he ‘must’ stop smoking. And to counter this he says he’d prefer to live “50 years as a free person [than] 70 years as a slave”. This is a key point: freedom is incredibly important to us. When someone seems to want to limit it we do not like it, and may even react before considering if what they are suggesting is a good idea or not.

Something that was not discussed in Hockney’s article was that choosing not to smoke can also be an expression of our freedom – our freedom to prioritise our health. If all one’s peers smoke it can need a great deal of assertion to stand up for one’s health and choose not to.

Who knows best?

Hockney was complaining that others were telling him what to do, when he had not sought their opinion, and did not value it. However, we do sometimes see the value in seeking opinions from those who are more informed than ourselves, such as doctors or lawyers. We are most likely to trust

expert opinion when the expert in question also engages with our own experiences and knowledge. The experts I have most respected are not those who claim to know best in all respects, but instead recognise that listening to people's particular circumstances and taking these into account strengthens the decision made.

This approach is reflected in changes to the medical profession over past decades. There is a much greater emphasis now on a patient's right to choose their own course of action than there was historically when 'the doctor knew best'. Personally, I prefer the newer model.

The 'deficit model', discussed in the next article in this collection by Adam Corner, is an assumption that people who act differently to us are somehow simply lacking in information, and if they were better informed they would make the same decisions as we do. Whenever I find myself thinking someone else would agree with me 'if only they had the same information I do' then I remind myself that they may feel exactly the same way about me.

But, if we feel change is desirable or necessary, how do we facilitate this without imposing our opinions in the style of the deficit model?

An alternative approach – supporting change

I am interested in the process of supporting people (including myself) to make changes that they themselves would like to make, but which are hard, and which they may struggle with. Examples would be things like quitting smoking or reducing one's carbon emissions. The aim is all about giving control to the individual. My views on this have been very much influenced by the work of Gillian Riley, who has worked for many years with people trying to take control of addictive behaviours, including smoking and overeating.

In many approaches to behaviour change, how each individual feels about the particular problem or solution is seen as irrelevant, or simply not acknowledged, because someone else has decided the change is necessary. In this circumstance, I feel that actions to achieve the change can very easily move towards 'the ends justifying the means'. And it is in exactly these cases that people may, quite rightly, feel their life is being overly interfered with.

Crucially, in the approach to seeking change I am advocating, goals are constructed by starting from the priorities of the person involved. It is important to recognise the autonomy of others and the fundamental limits to our own powers of influence; it is in fact very difficult to force someone to do something if they are determined not to. Recognising this in fact increases our own influence, because we remove the automatic resistance people put up to our advice if they think our primary goal is to change them according to our own agenda. We also allow people to find their own solutions, which are far more likely to fit with their own life, and be sustained in the longer term.

As well as letting others choose their own goals, we are free to choose our own. We might be surprised at how much influence we have through the example of our own lives, if we are consistent in our words and decisions. Our actions can have a subtle, slow-burn effect on others, which is often more effective than words. After all, when was the last time you did something that no one you knew had done before? Pretty much everything we do is in some way copied from those around us. And whose advice do you most value? Often it is those who quietly go about their lives without trying to tell others what to do. Paying attention to our own actions, including our automatic behaviours, is the subject of the final article in this collection, by Alison Armstrong.

The role of regulation

In this article I have talked a lot about giving other people autonomy, but what about when we feel that someone's actions are having a direct, negative, impact on others, or ourselves? Do we then have some right to say what they should, or should not, do? Climate change is a particularly tricky issue in this regard, as it is so very hard to attribute particular actions to particular consequences.

There are two points I want to make here. The first is that there is a difference between personal interactions and policy. It is part of the role of policymakers to regulate, and they have been given a mandate to do so. We all rely on regulation to give us structure, and good regulation should make life easier – when people follow traffic rules for example. But when we take on the role of 'regulating' others ourselves in a personal capacity, without their permission, that is a different matter. In this article I have been primarily interested in looking at our day-to-day interactions with others, but there is also a clear need for good policy, which in an ideal world would be created with the help of an engaged electorate.

The second point is that sometimes we act simply through the fear that someone's actions *might* negatively impact on someone else, not because we have evidence that they do or will. We may be speaking up on behalf of 'other people' whom we perceive to be the victims of the situation, rather than on our own account. This is not to say that supporting the causes of others is not worthwhile, it is just that in that case we need to be careful about whether we are really identifying the true root of the problem. We are much better at doing this in situations where we are the affected party. In addition, there are often alternative changes which could resolve the problem through changing our own behaviour, or meeting the other party halfway.

A look at 'Nudge'

Finally I thought I would illustrate my ideas with a short discussion of 'Nudge'. This concept was introduced in a widely read book of the same name by American professors Richard Thaler and Cass Sunstein, published in 2008. Briefly, Nudge is about making the 'default' options for people those which are in some sense 'in their best interests'. Thus, for example, food in supermarkets could be arranged in such a way as to maximise health, by having fruit and vegetables displayed prominently, and sugar based foods less conspicuously (pretty much the opposite of current practice!). This is a technique aimed at achieving behaviour change (e.g. people eating less junk food, and experiencing better long term health outcomes), whilst not prohibiting any options (e.g. by banning junk food).

Although I am sympathetic to the aims of Nudge, there is one main criticism I have of it: they do not seem to advocate telling people what they are doing. At the start of the book a list of different options for how one could arrange food in a school cafeteria are proposed, and the argument is made that the best of these is to try to arrange the food in a way that will lead to the healthiest choices. However, alongside this rearrangement, one could explicitly tell the children that we are all influenced by food positioning. We can (and do) learn, both consciously and unconsciously. We know supermarkets always place chocolate by the tills, and this can make it easier to dismiss as a 'marketing ploy'. In the same way, we are likely over time to adjust our behaviour a little to 'Nudged' situations – like when we block out information in online ads. We are most likely to be successful at making decisions we are happy with when our conscious goals and the subconscious triggers in our environment are working together. And when attempts are made to influence people without being explicit about what is being done people rightly feel a sense of outrage when they find out.

Conclusions

In this article I have tried to pin down an issue which to me is central in sustainability, or any work in fact which aims to improve wellbeing. That is, how does one work for change whilst recognising the autonomy of others? Key points in the article were firstly that when we tell others they should change, we are likely to elicit a defensive reaction which in fact means they will be less amenable to our proposal. Secondly, if we genuinely want to support change, we will need to listen very carefully to those concerned, and be prepared to change our own opinions in response to what they say (otherwise why should they?). In particular, we may decide through conversation that a different change is more desirable. Thirdly, regulation has an important part to play but it is important not to try to 'regulate' others when we do not have their permission to do so. There will be many other places where our support is wanted and valued. Fourthly and finally, I have taken a quick look at 'Nudge' and highlighted the need to always be open about what you are doing, and why.

If you work in sustainability you might be interested to notice when conversations about behaviour change take a judgemental turn. Perhaps talking about 'other people' and their behaviour, rather than taking a genuine interest in finding out what these 'other people' might find most helpful. If you have come to this collection through a personal interest you might find conversations with people of differing opinions to you go more smoothly if you concentrate on finding out what is truly important to that person and what their underlying worries are, before jumping in to disagree with their explicit statements. Often you may find they are concerned with the removal of freedoms, either for themselves or a particular group. I find I can lessen both my own frustrations and the defensive reactions of others, by remembering that other people have a right to make their own decisions, which may be different to my own.

When we want change very badly, it is most effective to work for that change supportively.

Want to read more?

Take a look at *In Time for Tomorrow?* the book by Rosemary Randall and Andy Brown which accompanies the Carbon Conversations course. This includes a chapter on *Talking with friends, family and colleagues*, which discusses the feelings underlying the conversations we have about sustainability.

8. The contradictions of communicating climate change: can we 'practise what we preach'?

Adam Corner, Climate Outreach, adam.corner@climateoutreach.org.uk

I study the psychology of communicating climate change. But like everyone else, I struggle with the many and varied contradictions of modern society when it comes to applying what I know about sustainability to how I actually behave. As someone living in the UK with a house, a family, a job and hobbies, I inevitably consume energy at an unsustainable level. As is now well-established, there is frequently a gap between people's attitudes and behaviours, despite their best intentions. Researchers who study what other people think about climate change, energy and consumption are no more immune to this 'value-action' gap than anyone else.

But there is also a cluster of contradictions that are specific to the practice of communicating about climate change itself. Despite decades of research on how to engage the public more effectively, the lessons of climate change communication are not widely put into practice. Climate change communications researchers struggle to apply (or convince others to apply) the evidence that we ourselves have unearthed.

Lessons from social science

There is now a considerable body of research on which to base campaigns and initiatives on climate change. For example, it is now well established that:

- scaring people into sustainable behaviour through guilt-trips is likely to backfire;
- it's difficult to overcome the 'psychological distance' between our daily lives and the intangible risks of climate change;
- beliefs about the climate are influenced by daily and extreme weather;
- whether people care about climate change is not simply (or even mostly) a question of how much they know about the subject; and
- it is values and cultural beliefs, not facts and figures, that drive public engagement with climate change.

But many scientists, policy-makers and campaigners are still doggedly clinging to a watered-down version of what is known as the 'deficit model' of science communication (which assumes that people will care more about climate change if their 'deficit' of knowledge can be filled with scientific facts). Several decades of social science research have shown that this model simply doesn't stand up to scrutiny: it is a discredited 'theory of change'.

Explaining 'the science' in ever-louder and more concise terms will not reach those who have not yet been convinced. Fighting sceptics has become a cottage industry. But too often the 'myth-busting' and 'debunking' of fallacious arguments ignores the research that tells us very clearly that more information isn't going to be the solution. Twenty-five years of reports from the Intergovernmental

Panel on Climate Change and pronouncements from national science academies have left public opinion largely unchanged since the mid-1990s. One study in the journal *Nature Climate Change* found that levels of scientific literacy acted to amplify existing beliefs – that is, sceptics with a science degree were likely to be more extreme in their views⁹.

A different theory of change

A wealth of research shows that it is values, social norms, cultural beliefs and political ideologies that determine scepticism about climate change – as detailed in the further reading suggested at the end of this article. The scientific facts will bounce off unless people are inclined to want to hear them. But even that is not the full story – because it matters *which* values are invoked in campaigns to communicate climate change.

Take, for example, the UK government's flagship 'Green Deal' policy which, when launched in 2012, aimed to make 14 million homes more energy efficient by 2020. The push for enhanced domestic efficiency is driven by the UK's targets for reducing carbon dioxide emissions, which are enshrined in the 2008 Climate Change Act. But other than the clue in the name ('green'), it was difficult to find any direct link in Green Deal promotional literature between the scheme and climate change. It was billed as simply an economically sensible course of action: save money by saving energy in the home.

Perhaps this is all it was designed to do: an economic stimulus for short-term energy savings. But if that was its only purpose, it was short-sighted. Economic incentives have been found to be unlikely to produce substantive engagement with the underlying issues of climate change and sustainability¹⁰. In fact the Green Deal itself has now been scrapped as it has not delivered sufficient uptake, based on these economic incentives. If – as is surely the case – there will be more public-facing sustainability policies after the Green Deal, then they need to acknowledge the developing public dialogue on climate change. A different theory of change is required.

The contradictions of communicating climate change

All of this does not simply mean swapping one deficit model ('more science!') for another ('more social science!'). Providing policy makers with the 'top ten tips' for communication is no more likely to be effective than providing members of the public with the 'top ten tips' for energy saving. Any serious strategy for public engagement must be grounded in the values of different audiences. Making progress means rethinking the very idea of what public engagement with climate change means.

The reason the lessons of social science are not being applied is because they pose a huge challenge for the practice of science. Most scientists are reluctant to violate the norm of scientific practice that says they should 'stick to the facts' and not get their hands dirty with discussions about values or politics. This is entirely understandable, but if the facts won't speak for themselves, then who ought to be communicating with the public about climate change? Who does have the authority?

⁹ The short 2012 article was entitled *The polarizing impact of science literacy and numeracy on perceived climate change risks*, by Dan Kahan and colleagues.

¹⁰ For example, in the 2012 article *Self-interest and pro-environmental behaviour*, authors Laurel Evans and colleagues describe experiments where participants were given environmental or financial information about a pro-environmental behaviour (car-sharing), and it was separately recorded whether they recycled their information sheet or threw it in the general waste at the end. Those who received environmental reasons to car-share were significantly more likely to recycle (thereby indicating greater engagement with the underlying issues), whereas those who received financial information to car-share were not. It appeared in the journal *Nature Climate Change*.

This question cuts to the heart of the assumptions that underpin science, and its role in society. Both scientists and policy makers face a common challenge, in that neither are particularly willing to wade into the murky waters of engaging with people's values and personal beliefs. But at precisely the point where a careful, values-based public strategy of public engagement is required, there is a vacuum.

These are the contradictions at the heart of communicating climate change. I don't think that we can expect significant progress to be made until we have confronted them.

New conversations about climate change

I believe that we may need new cultural institutions – at the interface between academia and the rest of the world – to communicate climate change, and that this is unlikely to be achieved without support and recognition from research funders. Scientists are bound by the need to 'stick to the facts'; policy makers claim their hands are tied. I believe there is a democratic mandate from the public to get things moving, but no-one seems to have the task of leading this. It follows that we need new ways of thinking about science in society if we're serious about climate change.

New cultural infrastructure that bridges the divide between 'the science of climate change' and 'what we should do about it' is urgently required. The purpose of these new, hybrid institutions would be to catalyse new conversations about climate change.

Imagine an international programme of climate change debates and conversations – events designed not to make an economic case, put forward scientific facts or win an argument, but to allow people to express and discuss their concerns, fears, dreams and hopes for the future. Aren't these the things that climate change is really about? Isolated examples of these kinds of initiatives exist, such as an exercise called *World Wide Views* which involved hundreds of people from around the world just prior to the UN climate change negotiations in Copenhagen, 2009. When they have taken place, a striking pattern has been observed: people move from a lack of interest to a position of engaged concern.

Without a doubt, important questions about access to these kinds of initiatives would remain: some of the groups most affected by climate change in poorer countries are also the most likely to be excluded from deliberative processes like these. But what could be a more useful democratic function than providing the fora and support for the world's citizens to talk to each other about how climate change will impact on their future, and how they want to respond to it?

Want to read more?

Email Adam (adam.corner@climateoutreach.org.uk) for a copy of *Breaking the climate change communication deadlock*, a 3-page commentary he co-wrote which appeared in the journal *Nature Climate Change* in 2014.



Part 3.

Sustainability: and now for
something a little different...

Looking north through Halstow Marshes.
February 2015. Copyright © Tim Mitchell.

9. The Shades

Tim Mitchell, photographer, www.timmitchell.co.uk

It's a lot of effort to get out here but when I arrive, after an hour or so, it's worth it. I can feel the stress lifting off my shoulders as I drive up over the last hill, look out over the marshes of the Hoo Peninsula and then drop down into them. I have to walk the last mile or more, depending on how wet the marshes are. It can be hard going. Boggy even. But it's a fair price for the rewards I find there.

It's effectively off the map yet only just outside the M25 in Kent. A mere 30 miles from central London. I've been commissioned to come here once a month to maintain a time-lapse camera and document the environmental work carried out by the new London Gateway Port. But it has surprised me over the months, as I accrue time here, by becoming the place where I recover.

Paradoxically, I've also come to realise it's a place where, by stepping out of the city, I can survey society's consumption on a large scale, from afar. From any single spot on the 10-mile square, sea-walled marshlands I can observe in the distance, in all directions, the infrastructural tendrils that supply the city. The chimney stacks of three power stations, the cranes of three ports, strings of electricity pylons, gas towers, oil towers, a former oil refinery which has become a distribution terminal for oil products, landfill hummocks (now covered in grass and skylarks) and wind turbines, turning like clocks on the horizon. Rotting military installations dot the marshes and what I'm told is a former radar test building sits just behind me, now abandoned. Radar was a technology developed for defence during World War II, and now guides the steady stream of passenger jets above me into London's airports. I'm told those radar test buildings were subsequently used by a mobile phone network provider to develop its beacon technology. Thankfully, I don't get a phone signal when I'm on the marshes.

Slicing calmly through all of this are the container ships. They catch the attention as huge, silent and slow moving buildings in the blue-haze distance. Disconcertingly weaving their way up the Thames estuary, larger and larger, bringing almost all the material things we consume, quietly, into our lives¹¹. They feel like sombre resource-coffins, marking the end of mineral lives, as many of the newly formed products within will most likely be cast aside within weeks, days or even minutes by our wasteful hands. Ships powered by the monetised entropy of energy and minerals. On their side of the sea wall, lining their path like runway lights, is an unending tidemark of plastic waste - all of which is made from oil and gas. Objects thrown away and objects lost from ships. Some sections of the sea walls themselves were actually stuffed with landfill during their construction.

I can see industrialised farming from where I stand too. In the distance are the long polytunnels and huge monocultural fields. Evidence of heavy machinery is impressed into the muddied tracks beneath my feet. Could these picturesque livestock-speckled marshes be classed as industrial? Since Roman times we have been pushing back the sea (a process called 'inring') to create livestock grazing, which increased for the wool trade and then to feed our insatiable appetite for meat. To keep this man-made, sunken land drained, heavy machinery is used to clean (or 'slub out') old ditches and dig new ones.

¹¹ See, for example, the 2013 book *Deep Sea and Foreign Going: Inside Shipping, the Invisible Industry That Brings You 90% of Everything* by Rose George.



Early morning on Halstow Marshes. Arable fields and Grain Power Station chimney can be seen in the background.
December 2014. Copyright © Tim Mitchell



The Shades House. Former public house.
June 2014. Copyright © Tim Mitchell



View across Halstow Marshes in North Kent, over the Thames to a former Shell oil refinery in Coryton, Essex. Now a distribution terminal for oil.
December 2014. Copyright © Tim Mitchell



Restored borrow dyke. Cleaned out as part of the London Gateway environmental mitigation works carried out in its surrounding environment in order to compensate for its own environmental impacts. Reeds will now re-establish themselves and it is hoped that water voles will then repopulate the ditch. The old sea wall (pre-1953 North Sea Flood) can be seen on the left. A higher one was then built beyond this, claiming further mudflats from the Thames.
January 2015. Copyright © Tim Mitchell



Halstow Marshes with a cargo ship slowly moving down the Thames in the background mist.
January 2015. Copyright © Tim Mitchell



Looking west from Halstow Marshes to Tilbury Power Station and docks with the glow of London behind them.
March 2014. Copyright © Tim Mitchell

But tides are turning now and we are embarking on a managed retreat, as we realise we can't continue to hold the sea back. All this I see from my reedy, panoptic hide.

Standing in a field, it seems to me that my peaceful spot sits amid the country's fusebox. A buzz of consumption-in-progress, all created by the complex interweave of human practice and infrastructure, as discussed by Nicola Spurling in the second article in this collection. But on this particular spot, the third voice in this interweave is the landscape; a layering of human, animal, vegetable, mineral and element. This third voice is the one I'm enjoying the most but I can't deny what's in the background.

The birds are the first thing you notice in this flat landscape. They love it here and we're getting to know each other. I'm becoming an accidental ornithologist. I still don't know their names but I'm learning their idiosyncratic shapes, sounds and movements. The different ways they move in flight. The colours they flash. They're developing characters. Not something I had expected. And I see how they react to me specifically, as there's only us here. Mostly, they give the human shape a wide berth.

This is where Boris Johnson, the current Mayor of London, wants to put his new Thames Estuary Airport too (aka Boris Island). I think he's relying on no one knowing this place. It's not been boldly declared a National Park because it doesn't conjure the idyllic or the sublime. There are no other humans here but everyone else is here, as a result. It's bio-diverse in flora and fauna. Not quite a man-made ghetto yet. I'm told it's the UK stronghold for water voles but I've not seen any so far. They're shy but they love the ditches, drains, borrow dykes, saltings and fleets - all created by those clever engineers. This whole sub-sealevel landscape hinges on a tide-triggered sluice flap.

There's a lone building, bang in the middle of the marshes. The first few people to mention it to me simply refer to it as The Shades and mumble something about smuggling. It's a creepy building, sat there, miles from anywhere, until you find out it used to be a pub called The Shades House. I wish it was still open.

The Shades seems like an odd name until you've spent a whole hot summer's day out on these marshes, with no cover for miles around. Then it makes sense. I'm told it was frequented by those who used to work the marshes and fields. There have been two sea walls built since then, each newer one higher than the last, pushing the sea back each time and leaving the pub high and quite literally, dry. It's odd to think of enough people being out here to warrant a pub. I'm used to having the marshes to myself. This is symptomatic of a Moving Baseline Syndrome - a term commonly used to describe our ongoing cognitive normalisation of the now precipitous rate of biodiversity loss.

Standing here, I think I'm less interested in the photography and more interested in just being here. In the past I've taken on the challenge of learning photography (an industrial-era technology) in order to represent my surroundings, but taking on the challenge of just being present and listening to what I feel from an open - or as some would say, empty - landscape, is a new one for me. How do I convey this? How do I act on it? The photograph is not the landscape. The map is not the territory. My wellbeing feels tied to this place and the time I spend here. Somewhere I can connect to. Somewhere I can hide in plain view and survey what would otherwise be invisible to me, were I inside the city.

Want to see more?

Visit www.timmitchell.co.uk to see more of Tim's work.

10. The storyteller who wanted to change the world

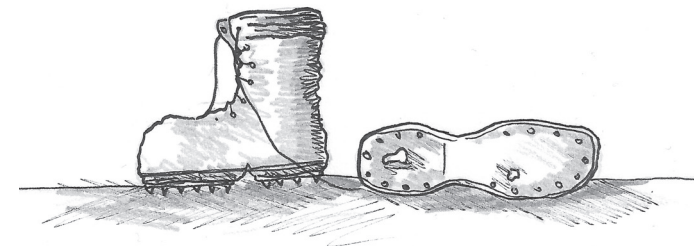
Rachel Howell, The University of Edinburgh, rachel.howell@ed.ac.uk
Illustrations by Rachel Thompson, www.rachelthompsondesign.co.uk



here was once a young woman who loved to tell stories. In this she was encouraged by her grandmother, who was also a storyteller, who said to the young woman: "Use your gifts - use them for good." She also said: "Find what it is that you love to do and makes your heart sing, and do that. Because what the world really needs is people whose hearts sing." And so the young woman told her stories.

She lived in a very beautiful land, and she lived very happily... until things began to go wrong. It was as if there was a blight on the whole land. First there was drought, and the crops failed. And then rain, rain, rain, never-ending rain, and everyone was flooded. And from further away came stories of people who were starving, of terrible storms wreaking havoc, of hundreds of thousands of refugees. Finally, the young woman could bear it no longer, and because she'd been inspired by a lot of stories, she decided she would go on a quest to discover the cause of the problem. To find the witch who had set a wicked spell on the world, or the heartless giant who was sucking the life-blood from the land. And, because she had been inspired by a *lot* of stories, she had a pair of iron-soled shoes made for her, in which to walk the world over.

And so she set off, and she walked the world for a year and a month and a week and a day, visiting people who had suffered from this strange weather, listening to many wise women and men, staying with people who lived in cultures very different from her own, and learning from them. Finally she came home, with holes in the bottom of her iron-soled shoes: older, and wiser, and very downcast.



And she went to see her granny.

"Granny, I think I've found the cause of all these problems we're having," she sighed.

"Why so downhearted then? Isn't that what you went to discover?"

"Yes, but Granny, it isn't a wicked witch, it isn't a heartless giant, it's all of us! It's to do with how we all live our lives, every day! See, Granny, I've discovered that everything fits into one web of life; everything is part of one great Earth system. But we've grown too big for our boots. We're taking

more than our fair share and we've put everything out of balance, and that's what's causing all these problems."

Her granny sucked her teeth.

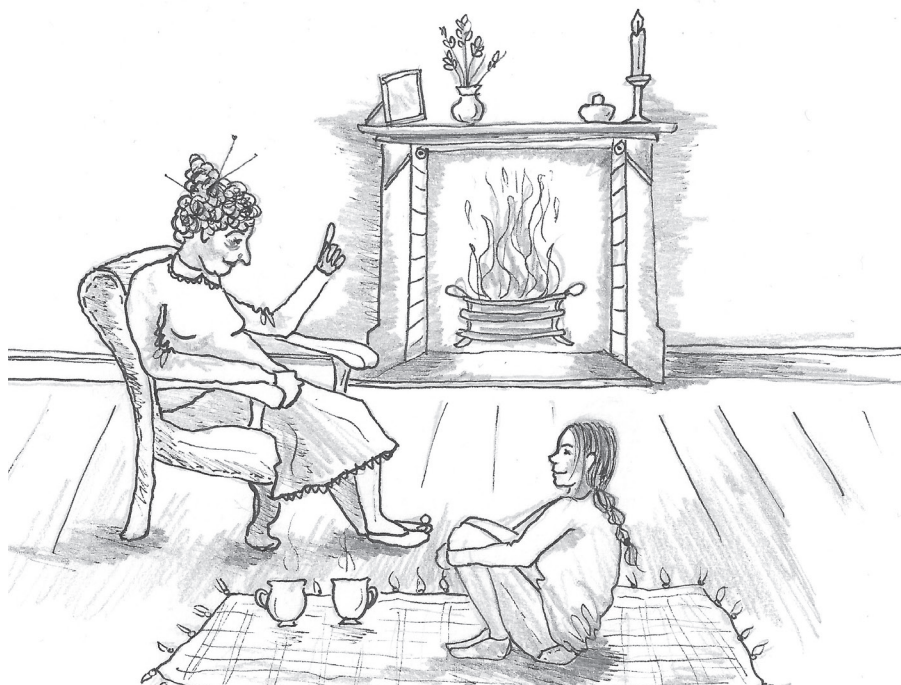
"Well, isn't it better to know the truth?"

"Yes, but Granny, a witch would be scary, a heartless giant would be terrifying, but at least I'd know what to do about them. I don't know what to do about this! How am I to persuade everybody that we need to change how we live? It's not even as if people are necessarily doing *bad* things. They're often doing good things in bad ways. What can *I* do about *that*? I'm just a storyteller. What good are stories? You've got to help me, Granny - you're very wise."

Her granny thought for a moment or two, and then she said, "Well, I can't give you an answer, my dear. All I can give you is what I've learned. And if you want me to do that, you'll have to sit up with me all night long, and never stir, or speak, or slumber, or snore. Can you do that?"

"Yes, Granny, I can do that."

So her granny banked up the fire and they sat down by the hearth with big mugs of hot chocolate, and food to keep them going through the night. And all night long the grandmother took her granddaughter on an amazing adventure to the four corners of the world, and back in time too. And all this without stirring for an inch or a moment from where they sat.



"Once upon a time in a land full of humiliated people there was a leader with a toothbrush moustache and a twisted heart, who told a powerful story about the woes of that land: where they had come from, who was to blame, and what should be done about them. And his story captured the hearts of his listeners and turned them to evil, or merely to cowardice, and *six million people* were killed in concentration camps."

The young woman shuddered with horror.

And then:

"Once upon a time in a land across the sea lived a woman just like me, who one day was simply too tired to stand at the back of a bus. And the story of her refusal to do so scurried through the streets, and gave hope to a people, and found its way to the greatest storyteller of the age, who began *his* story "I Have a Dream". He told a story of the oppression and the longings of millions, which set alight a great movement for justice."

The young woman thrilled with hope.

And so it went on, all night long: epic stories and small-scale stories; stories that women tell to give each other courage in childbirth; stories of ordinary people cast down into debt and despair because they listened to the tales told them by conmen, who would have them believe strange and terrible stories about what they needed to be happy. Then finally, as the first rays of the sun crept over the windowsill and the last embers of the fire fell to ash on the hearth, the old woman stopped speaking.

The young woman, who had sat all night long without stirring or speaking or slumbering or snoring, shook herself and exclaimed, "Granny, it's *all about stories* - the stories we listen to, the stories we live by, the stories we ignore! The question is not whether a storyteller *can* make a difference, but *what* difference she will make!" And she kissed her grandmother quickly and ran out into the wood.

There she stayed. Three days she stayed, sleeping and wandering and thinking, and wandering and thinking and sleeping. When she emerged she put on a good stout pair of walking boots (because she'd realised that iron-soled shoes are not at all comfortable), and she set off with a story to tell.



It was a story of how humanity faced one of the greatest challenges it had ever had to face with courage, and ingenuity. A story not of doom and gloom, but of joy and hope. She travelled telling her story, and she found others who had stories to tell too, and she listened to their stories of how they were learning to do things differently. How they were doing old things in new ways, and sometimes new things in old ways, finding a better way to live. Taking a bit less and sharing a bit more. Stories

of how they were having fun doing this, and reaping many benefits. This group of people wove a wonderful story together called The Great Turning, and they made it real in how they lived their lives.

No doubt you'll want to know whether the young woman achieved her aim of inspiring people to change with her stories. But you know, I can't tell you that. I can't tell you the ending of this story, because we are right in the middle of it, now. All I can give you is the question that I was left with when I heard this story. Will *you* join The Great Turning?

Note: I am indebted to Joanna Macy for the phrase *The Great Turning*, which she characterises as "a name for the essential adventure of our time: the shift from the industrial growth society to a life-sustaining civilization." See: <http://joannamacy.net/thegreatturning.html>

Afterword: what is a 'fairy story' doing in a book of articles about sustainability?

In December 2012 a storytelling festival was held in Aberystwyth. One of the events involved creating and telling a ten minute story in response to the question "Can storytellers save the planet?" I wasn't very keen on the form of the question, as I believe the *planet* will do fine in the long run; the issue is whether we will act to save humanity from needless suffering, and other species from extinction. Since this issue is of grave concern to me, and I believe the role of stories is crucial to how we approach it, I agreed to take part. *The storyteller who wanted to change the world* was my contribution.

Later came the option to include the tale in this book, and with it, my concern about whether a story would be taken seriously. When the possibility of illustrations was mooted, I requested that they not be coloured, so as not to make my piece seem too childish. This led to the suggestion that maybe I could change some aspects of the story if I wanted to make it less like a 'fairy tale'. Perhaps the activities of the central character, the young woman, could be made more contemporary - could she go on a gap year and then become a journalist, for example?

However, to recreate the story in such a way would be to attempt to turn it into a naturalistic, literary short story, rather than one in the oral tradition (no written version of my tale existed until I transcribed a recording I had made of it). The two different forms involve very different tools. A modern, naturalistic short story relies on the writer's talent for characterisation and dialogue, on nuance, on the authenticity of the voices created. In the oral/folk tradition, however, the power of the narrative is derived from analogy and from the use of symbols (e.g. iron-soled shoes, indicating the hard journey to be made, and their abandonment when the young woman realises the journey can be made joyfully), plus archetypal characters such as the seeker and the wisdom figure that tap into deep-rooted cultural myths and meanings. Although I make no claims for my story's merit, the oral form is one I feel more confident using than attempting a realistic, contemporary written fiction, and it is well-suited to my purpose.

What we have come to regard as 'fairy tales' were not originally exclusively children's stories; nor were they only for entertainment. Many of these stories have been lost, and others have come to us only through edited and Disneyfied versions created for children, in which the protagonist's adventures are no longer presented or understood as allegorical quests for meaning, purpose, or personal and spiritual development. However, traditional folktales endeavoured to explain life: how it came to be, and why things happen. They expressed beliefs, fears, and values, and the telling of these stories helped create and transmit community identity, culture, and wisdom. In other words, these stories were a community's attempts to understand the world around them, find their place in it, and pass on what they had learnt. A story that aims to engage with the great challenge of how to respond to climate change fits well with this tradition.

My heroine exclaims that this challenge is "*all about stories* - the stories we listen to, the stories we live by, the stories we ignore!" Our lives are directed and given meaning by stories, conscious and subconscious narratives about the world and our place in it. We behave in certain ways because they fit with the roles we take on (for example as 'professional workers' or 'responsible parents'). We buy things because we accept the script that deems these products necessary or desirable. And we respond to the way issues are framed.

So far, stories about climate change have tended towards narratives of threat and even catastrophe. They play on fear and guilt. Too often they lack any focus on realistic solutions, and frame personal action as sacrificial or outlandish¹². Or else they focus simply on facts and figures, and not the values that really motivate action (see also the eighth article in this collection, by Adam Corner). But people do not like feeling afraid, guilty, or helpless. They do not want to wear hair shirts or appear abnormal. 'Climate change' is a phrase associated with negative images and feelings, and people involved in trying to encourage lower-carbon lifestyles have begun to avoid using it, as I have found in my research (see the paper referenced at the end of this article). New stories are needed.

My tale doesn't mention any specific solutions either. Instead it offers an idea of the direction that I suggest these new stories, and new responses to climate change, need to take. Some projects have begun this work - for example, the Transition movement, with its positive, empowering language and focus on the many benefits of reduced dependency on fossil fuels. Of course, individual and community action is only one element of what we need; a new political narrative and structural change at all levels of society are essential too. But in whatever arena we are seeking to 'change the world' I believe we need to shift our focus away from the question "how can we deal with climate change?" and ask instead, "how shall we seek to create wellbeing for all in future?"

Want to read more?

Email Rachel (rachel.howell@ed.ac.uk) for a copy of her 20-page article *It's not (just) "the environment, stupid!" Values, motivations, and routes to engagement of people adopting lower-carbon lifestyles*, where she discusses her research with people who are making large lifestyle changes. It appeared in the journal *Global Environmental Change* in 2013.

12 Some of these issues are discussed in greater detail in *Warm words: How are we telling the climate story and can we tell it better?* a 30-page 2006 Institute for Public Policy Research report by Gill Ereaut and Nat Segnit, available online, and in *Carbon Reduction Activism in the UK: Lexical Creativity and Lexical Framing in the Context of Climate Change*, an article by Brigitte Nerlich and Nelya Kotevko, published by the journal *Environmental Communication* in 2009.

11. Mindfulness and sustainability: happy bedfellows?

Alison Armstrong, Present Minds, www.presentminds.org

Sustainability is a word of our times, often disregarded by those generating policies, but of great significance if our society is to continue, and more broadly if we as a human race seek longevity. There are many definitions of sustainability, but broadly, I am taking sustainability to imply behaviours that could, if all individuals conduct this behaviour, be continued forever. This is rather vague, but does for me provide a useful extreme argument when trying to understand whether a particular behaviour is sustainable. Current UK consumption levels, for example, are clearly not sustainable, since it has been estimated that should all worldwide citizens maintain a Western lifestyle, three to four planets would be required to provide the material resources.

Mindfulness is a concept that comes from Buddhism (although similar concepts can be found in many other religious traditions), but has been removed from these religious roots to be a secular practice. Simply put, it involves individuals deliberately focusing their awareness on the present moment, and this is often cultivated through meditation techniques, see explanatory box below. It has many health benefits. The repetitive return of attention to the present moment increases the potential for self-regulation of emotions, thoughts and behaviours, which carries associated benefits of reducing habits and increasing self-efficacy (our own belief in our capabilities). In addition the focus on the present automatically implies non-focus on the past (which can be symptomatic in depression) or future (which can be related to anxiety and worry).

What is 'mindfulness' practice?

Formal mindfulness practice is done at times specifically set aside for meditation. This can include awareness of breathing, of body sensations, or of sound etc. At the early stages, the intention is to simply bring attention back to the point of focus whenever it wanders into thoughts.

Informal practice means the intention to be present throughout the day with whatever is occurring. One could start by selecting specific activities (such as making tea) and to deliberately be present for that activity rather than allowing the mind to wander.

To read more about mindfulness, I would recommend *Brilliant Mindfulness* by Cheryl Rezek (for secular practice) and *Mindfulness in Plain English* by Bhante Gunaratana (which includes some Buddhist thought).

My research on mindfulness has centred on its relevance and associations with consumption behaviour (for example what we eat, buy and use), motivated entirely by the perceived need to reduce overall societal consumption levels in the West in response to calls for sustainability. Therefore, although much of my comment in this article about sustainability is biased towards consumption behaviour, it could apply to other behavioural domains too, such as sustainable business, recycling behaviour, sustainable individual health regimes, and so on.

Several other authors and researchers are working under the assumption (as I did) that mindfulness could be beneficial for (or at least linked to) a general move towards sustainability¹³. In general I retain this view, but I feel that we are at a point where an unpicking of the relationships between these concepts could be helpful: both to be clear about the potentials and limitations of such an assumption; but also to understand where the most promising links could be developed so that their impact can be increased. It is my aim in this article to begin this process. In the next section I more explicitly explore the links between mindfulness and sustainability, before going on to discuss the limitations.

Exploring the potential of mindfulness for sustainability goals

Clearly, I am supportive of any technique that has the potential to improve individual wellbeing, and that can have subsidiary links to sustainability, but there are other reasons and evidence for the hope that mindfulness can be supportive of sustainability goals.

There are several outcomes from learning mindfulness, aside from the potential for self-regulation and the reduced likelihood to experience depression or anxiety. These are maybe less intuitive, and are as much to do with the quality of the awareness we direct to the present moment as to what we focus on. For example, guidance in mindfulness practice is frequently explicit about the development of a non-reactive, non-judgemental, and accepting stance towards our experience. This sets up a non-evaluative framework, and one that includes qualities of our heart as well as our head. In fact, mindfulness as a word could just as easily exist as 'heartfulness' since the Pali language from where it originates does not distinguish between head and heart¹⁴. So we adopt a kindly stance towards our experiences.

This seems to have the knock-on effect that people practicing mindfulness develop a kinder, deeper, and more accepting relationship with themselves. And this in turn seems to increase confidence to live according to deeper values, or it enables certain values to become more apparent¹⁵. A participant in one of my research studies described it this way:

"I think [the desire to buy ethical products has been] enhanced [by learning mindfulness] ... because it all comes down to a realisation I had ... which is that, this kind of wanting to respect the world and the people in it, is something that I've had for ages, but it's very hard to have that sort of relationship with everything around me, if I don't have the relationship with myself. And... having built up more of a relationship with myself ... I'm now finding it easier to open that up to the world around me and the people that I'm interacting with."

What is clear for this individual was that she valued respecting the world and other people prior to learning mindfulness, but that her increasingly positive relationship with herself (which could include confidence, embodiment, and self-esteem) enabled her to increase the importance of this value in her life, and increased the possibility that she would act on it.

¹³ For example, in *Mindfulness and Sustainable Behavior: Pondering Attention and Awareness as Means for Increasing Green Behavior*, Elise Amel and colleagues found evidence linking mindfulness with an individual's claims about their level of sustainable behaviour. The 12-page article appeared in the journal *Ecopsychology* in 2009.

¹⁴ The Pali language was one of the Indian languages that was current at the time the Buddha's teachings were first being written down.

¹⁵ For example, in *Promoting Altruism Through Meditation: An 8-Week Randomized Controlled Pilot Study*, Erik Wallmark and colleagues found that mindfulness was associated with increased feelings of empathy for others in need. The 12-page article appeared in the journal *Mindfulness* in 2013.

Similarly, a different participant from a different study described how her circle of moral concern was widened by her meditative practice, which changed her behaviour:

“Where have these flowers come from that you see every time we pull into a petrol station? And I see these flowers wrapped in cellophane. I see also the faces of the people who’ve grown them in these polytunnels, wherever they are, and children and whole families in them, and I just couldn’t buy them.”

It is not a new idea that mindfulness meditation techniques lead to a widening of moral concern or sense of connectedness with people far away. What is less clear is whether the people drawn to meditation are more likely to already hold such values. Irrespective, the increased importance of these types of values has clear implications for sustainability, since one of the barriers to people adopting sustainable behaviours is thought to be that the impacts of non-sustainable behaviours occur at geographical or temporal distance from the behaviour itself. If mindfulness helps to bring people and places from far-off lands or future times ‘closer’, then there is surely more potential to consider their wellbeing in consumption decisions.

It can seem counter-intuitive to expect a practice based on self-awareness and self-focus to not lead to selfishness, or self-absorption. And in fact, I am suggesting that the opposite occurs: that practising self-awareness strengthens values such as consideration of others, even if far removed geographically and temporally, and leads to wider circles of moral concern. This is one of many paradoxes that emerge when we begin attempts to understand mindfulness and its effects. It is the direction and quality of the awareness that is developed in mindfulness practice which ensures that selfishness and self-absorption are not emergent outcomes. Specifically, the direction of awareness towards one’s own experience, and the quality of non-judgemental acceptance.

Another very significant potential for mindfulness in addressing the unsustainable nature of our behaviours is in its ability to interrupt habits, automaticity, and the unconscious following of social norms. We all have habits and automatic behaviours, and they are extremely useful for our efficient functioning. However, there are many things that we do and think habitually and automatically that are unhelpful and could be challenged. Mindfulness is extremely helpful for this. The first thing occurring when we learn mindfulness is that awareness is raised, and therefore habits become visible to us where before they were not seen. Then mindfulness practices allow us to introduce choice into how we will proceed. For example, say we habitually buy the same brand of porridge each week. There is nothing inherently wrong with this. But once we are aware of this habit, it can be helpful to introduce choice and curiosity about this purchase. Do we need more variety in our diet? Do we know anything about the ethical policies of the company? How far has this product travelled? And so on. This is a trivial example, but seen in the context of unsustainable behaviours this might hold considerable potential. We might be more likely to change our electricity supplier to a green provider rather than automatically leave it as it is; or to choose a more local holiday rather than our habitual trip to the sun; or to challenge policies in our work environment that are unsustainable rather than automatically allow ourselves to assume our boss will not listen; or to begin using the waste food collection service offered by our council even though no one in our neighbourhood does. This last example also touches on the very powerful social norms that govern much of our behaviour. We know that a very strong predictor of behaviour is the behaviour of others in our social setting. Yet these behaviours may not suit us, may not lead to our optimum wellbeing, and may not be the most sustainable option. Some research exists to support these ideas; both from my own PhD research and from others who have shown that both social comparison and the motivation to comply with norms decrease with mindfulness training¹⁶.

Limitations and potentials

The fact that mindfulness seems to impact positively on morals that are supportive of sustainability is very encouraging, and is one of the strongest arguments for mindfulness and sustainability to be considered good bedfellows. However, there is no specific discussion about morals or ethics within mindfulness training, and therefore its effectiveness may not be guaranteed and may not be rapid. Had mindfulness not been removed from its religious context, then teachings on moral and ethical behaviour, speech, attitudes and thoughts would be inherent in the training, and therefore the potential for these qualities to emerge is possibly more likely. This is perhaps one of the most significant impacts of removing the religious framework. When asked about this, the Dalai Lama has said:

“The secular use of mindfulness is not going to make people saints, or change their values, but is going to lessen their suffering. That alone is good in itself.”¹⁷

And less suffering may include fewer behaviours that are unsustainable in terms of consumption, health, social functioning or ethics, such as compulsive buying, alcohol or drug addiction.

Another aspect to bear in mind, and that potentially limits how ‘useful’ mindfulness may be in addressing the problems of our unsustainable behaviours, is that mindfulness practice requires time, commitment, dedication, and perseverance. It has been argued by Jon Kabat-Zinn, medical professor and renowned mindfulness expert, that over the short-term, informal practice of mindfulness may be as effective as formal practice. But generally it is understood that the positive health and behavioural changes occurring from mindfulness practice require formal meditation. Thus we may find ourselves in a situation where the negative impacts of our unsustainable behaviour become severe and significant long before the positive potential of mindfulness is realised. In addition, the number of people actually practicing mindfulness meditation, while increasing at a rapid rate, is still relatively small, and not yet at the critical mass needed to trigger larger scale changes. This is not to say that we should give up on mindfulness as a part of moving towards a sustainable future, but that we should remain conscious of the timescale over which mindfulness may impact.

I have mentioned that acceptance of ourselves and our situations and environments is a part of mindfulness practice, and so it is. But here another paradox emerges that requires careful consideration: should we be accepting of everything, since if so, will we accept the status quo of the unsustainable nature of current individual and societal functioning? But acceptance in the mindfulness context does not imply that we should not seek change, nor that we should become mere passive observers of our experience¹⁸. In a nut shell, we should apply discernment about what we apply effort to accepting, and what we should seek to change. For example, we cannot usually change the day-to-day structural obstacles that impede our intentions to behave sustainably: we cannot take public transport instead of driving if none is available. Therefore, on a day-to-day basis, we can have the intention to accept this reality. But this does not mean that we should not also write to our public transport providers, to politicians, and to transport charities to galvanise action in providing more public transport provisions. Part of the key to this process is to also remain unattached to the outcomes of these efforts, otherwise we may set up another source of stress and frustration in our lives.

¹⁷ As described by Daniel Goleman in his book *Destructive Emotions And How We Can Overcome Them, A Dialogue with the Dalai Lama*.

¹⁸ For a lovely exploration of this and other apparent paradoxes in mindfulness practice and theory see *Dialectics of Mindfulness: Implications for Western Medicine*, by Sebastian Sauer and colleagues, a 7-page article published in the journal *Philosophy, Ethics, and Humanities in Medicine* in 2011.

¹⁶ My PhD, completed in 2012, was entitled *Mindfulness and Consumerism: A Social Psychological Investigation*. Two further articles exploring the links between mindfulness and social norms are *Mindfulness and Self-Acceptance* by Shelley Carson and Ellen Langer (from the *Journal of Rational-Emotive & Cognitive-Behavior Therapy* in 2006) and *Examining a Model of Dispositional Mindfulness, Body Comparison, and Body Satisfaction* by Pietermel Dijkstra and Dick Barends (from the journal *Body Image* in 2011).

Conclusions

Mindfulness is not going to be the answer to all the problems and difficulties that are inherent when trying to promote sustainability in all walks of life. However, it can be an extremely supportive and encouraging practice that provides confidence, awareness, choice, self-regulation, empowerment, increased positive mood, acceptance, and a greater potential to live by the values and morals that will support sustainability goals.

Want to read more?

See *Mindfulness in the Marketplace: Compassionate Responses to Consumerism*, a collection of essays edited by Allan Hunt Badiner, published in 2002.

Energy, Consumption and Wellbeing workshop, 20-21 June 2013



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[back row, l-r] Aled Jones, Sarah Royston, Kris De Meyer, Rachel Howell, Erica Thompson, Tim Hughes, Tim Mitchell
[front row, l-r] Nicola Spurling, Sarah Marie Hall, Rosie Robison, Julie-Anne Hogbin, Rosemary Randall

Alison Armstrong, Alexia Coke, Adam Corner and Renee Lertzman were also involved in the preparation of materials for the workshop and/or took part in sessions by Skype

Now what are your questions, and answers?

We warmly invite responses, comments and conversations prompted by the ideas raised in this collection. Do contact rosie.robison@anglia.ac.uk if you have a sentence (or more!) of feedback, if you would like to use or build on any of the ideas in this collection, or if you would just like to stay in touch with the project. We may also have hard copies of this book available for use by individuals or organisations.



Sustainability is all about climate change and the environment, right? Wrong. In this collection of articles and artwork find out how our families, cities, jobs, bank accounts, homes, institutions, minds, conversations, media, images and stories are bound up with sustainability.