

**Exploring Carbon Reduction through
Tales of Vision, Chance and Determination:
Developing Learning Histories
in an Inter-organisational Context**

Margaret Rose Gearty

A thesis submitted for the degree of Doctor of Philosophy

University of Bath

School of Management

June 2009

COPYRIGHT

Attention is drawn to the fact that copyright of this thesis rests with its author. A copy of this thesis has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with the author and they must not copy it or use material from it except as permitted by law or with the consent of the author.

RESTRICTIONS ON USE

This thesis may be made available for consultation within the University Library and may be photocopied or lent to other libraries for the purposes of consultation.

Table of Contents

Preface	9
1. Beginnings.....	19
Setting Out.....	19
The Storyline	19
The Context	20
Arriving at the Start.....	22
Overview of the Research.....	27
Gateway of Experience	55
Introducing Merton	57
Setting up the Read.....	57
Reading Merton	57
Reflecting on the Read.....	59
Part I - The field of inquiry and action	61
2. Bridging: The Context of the Field	63
Context of Local Government.....	63
Engaging in the Field.....	67
3. Questions of Theory and Purpose.....	83
Theory and the 'Big Issue'	84
The Left Side	87
The Middle - Practice and Choice	95
The Right Side	101
Concluding.....	123
4. Questions of Method	127
Research Orientation: Action Research	128
Coming to Learning History.....	140
Learning History.....	143
Closing this Chapter	165
5. Questions of Scope and Form	167
Inquiring into Scope.....	167
The Learning History Workshop	170
Inquiring into Form.....	185
Summary	188
6. Questions of Quality.....	189
Quality in Action Research.....	189
Personal Quality Criteria.....	195
Summary	205
Part II - Reflecting in the field	207
7. Questions of Participation and Perspective	209
Keeping Honest: Starting Stance.....	210

Keeping Honest: Adjusted Stance	215
Reflecting on Perspective Gathering	219
Guidance for a Responsible Learning Historian	226
Through the Quality Lens	228
Concluding.....	229
8. Questions of Learning History: Wittgenstein’s Ladder or Trojan horse? ...	231
Pluralism vs. Unity: Introducing Rhodes	231
Placebos, Horses, Ladders.....	235
Learning History: as Wittgenstein’s Ladder.....	238
Horse or Ladder?.....	250
9. Questions of Myth and Form	253
Surfacing Myths: Woking.....	253
Mythic Deprivation	255
Myth at Merton.....	262
Mythic Deprivation everywhere	264
Instilling narrative spirit: tips and trappings	268
The spirit of the Seanchaí.....	275
Concluding.....	283
Part III – Leaving the field	285
10. Bridging: From Story to Analysis	287
Analysis in Learning History	288
11. Questions about Innovation	295
The Scope of the Analysis	295
Presenting the Meta-themes	296
Reflecting on this Analysis	325
12. Questions about Theory in Practice	327
A Key Event.....	327
Pre-work at B&NES.....	328
Reflecting on the Pre-work.....	330
The Seminar Work.....	331
Reflecting on the seminars	339
Final Reflections	341
13. Questions about Theory in Theory	345
Theoretically where have I been?	345
Reflections on Theory in Action.....	347
Reflections on Theory in Theory	351
14. Questions about the Postheroine	361
A Resonant Question.....	361
A Lived Response	363
A Reasoned Response	365
Endings	379
Picking Fruit	379
Reflections on this Presentational Form.....	380
Afterwords.....	381

Bibliography	393
Appendices	401
Appendix A - Active reading guide	403
Appendix B - Active reader workbook.....	405
Appendix C - Letter inviting perspectives on Merton	410
Appendix D - Highlights of research for participants	413
Appendix E- Learning history workshop flyer	415
Appendix F - Digital story of the learning history workshop.....	419
Appendix G - Learning history artefacts.....	420

Acknowledgements

The work described here rests on the shoulders of many people whose generosity, care and wisdom have given me so much. In particular thanks go to:

The EPSRC for funding this doctorate as part of the Lowcarbonworks program.

The many research participants from local government whose engagement in the research has been so vital: in particular I'd like to thank Adrian Hewitt, Thurstan Crockett, Steve Waller and Jane Wildblood for their involvement.

Peter Reason for your unwavering and caring guidance, your warmth and your perfectly timed challenge and support. It has been a real honour to work with you.

Geoff Mead for your inspiration, your humour and your love of story. Your belief in the creative process of a PhD has kept this work alive for me.

My Lowcarbonworks project colleagues. In particular the inspiring and wonderful action research team: Michelle Williams, Gill Coleman, Carole Bond, Chris Seely and Susan Ballard. And Kate Tate for your unstinting and good-humoured support.

Fellow PhD travellers: Richard Johns, Jennifer Dodge, Bob Hudson, Nick Wilding and Dave Adams. It has been so rewarding to share some of this journey with you.

Readers, discussants and friends too many to mention. Especially Clare and John Malone, Jean Boulton, Genevieve Bartlett, Paul Pivcevic, Jill Glover, Rupesh Shah and Patricia Gaya-Wicks: thanks for the generosity of your support, time and intellect. What is here has been so enriched by conversations with you.

My wonderful Irish family: my Mum, aunt and my five brothers and sisters and their families. Thanks for always being there and getting even better each year.

And finally dear Andy, Isabel and Alex: for your unflinching loving support and enduring all this so stoically. For being the centre and the compass of my life. I dedicate this to you.

Abstract

In this work, the action research approach called learning history is being taken from its traditionally single organisation setting and into a field of local government organisations to address how a meaningful response to climate change might be accelerated through the connection of human experiences and situated learning. This thesis describes the development of what I now call “learning history in an open system” and explores the practice of it, its form, its scope and its potential for facilitating learning across a field. The inquiry brings narrative and participative approaches together with learning history to articulate a fresh methodological approach that has relevance for learning in any field of connected organisations. The thesis is itself presented as a layered learning and innovation journey reflecting in its form the subject of the research.

The subject of the study is technology-related innovation for carbon reduction. Five breakthrough low carbon projects from local government are featured. By creating learning histories of these projects the question of what it is to innovate has been explored, both narratively and analytically, not from a distance but from within the messy, uncertain human experience of change. The resulting picture, and one that is echoed in the journey of the research, is that of fallible humans innovating together with tenacity and vision in the face of shifting agendas and changing fortunes. The proposal is that innovation occurs in the micro-practice of the mundane moment, in well-timed ‘different moves’ involving non-heroic actors embedded with each other and with technology. The role of technology in this picture is explored and it is proposed this is a perspective that complements and challenges current models of sociotechnical transition in an interesting way.

It is by continuously expanding the narrative, theoretical and practical scope of this work, that a meaningful action research response to the ‘big issue’ of climate change has been sought.

Preface

It is July 2009. Two weeks ago I had my viva-voce examination in which I defended this thesis. And just last week the Lowcarbonworks project had its final project conference. This public funded project, of which my PhD has been a part started out about four years ago with high ambition. We wanted to explore how action research might help to create a step change in the adoption of low-carbon approaches and technologies.

We knew from the start of Lowcarbonworks that the impediments to change lay not with the technology itself but with a complex interlock of human, organisational and systemic factors. We talked a lot about being 'lock-in' back then. Lock-in was the force with which we would reckon, the puzzle we needed to unfurl. The question we asked was how might action research help society move away from its locked in dependence on carbon rich fossil fuel? Now at our final conference four years later, with some eighty cross-sector participants in the room, we still do mention lock-in in our presentations. But it is no longer central as an idea. It is just another story that helps us understand the world we are in. And alongside ideas like lock-in there are other stories at this conference. Real-life narratives: half a dozen of them or so, all featured in our final report. These narratives all include hard technology. One is about a zero-carbon factory in Sri Lanka, another about a waste-to-energy technology in Cornwall; a third is about compressed air as a possible carbon saving utility. But all the narratives are about more than the technology. They chart the highs, the lows, the sleepless nights, chance encounters, the grinding paperwork and re-worked ambitions of the people involved with these technologies. They hone in on what we call now the human dimensions of low-carbon technology. At the conference we run breakout sessions centred on these human narratives. Back at the café style table I am hosting, participants return fresh with anecdotes, links and insights from those breakout sessions. I notice how effortlessly they interweave what they have just heard with their own stories. I notice this in action and not for the first time I feel that thrill that narrative, story, learning history whatever I call it: 'really *works!*' I feel a glow because what is happening today has in no small way been influenced by my work. The creativity of this conference and the beautifully designed report represent the project's overall embrace of new forms of learning history at the

wider systemic level. What is happening here has been influenced by the journey described in this PhD which set out to explore a new way of going about systemic learning with the purposes of working in some meaningful way with the issue of climate change.

And one of the stories featured at this conference is from my PhD research. It is the story of Southampton geothermal district energy scheme – a very successful carbon saving scheme run by the city council and its private partner Utilicom. Bill and Mike from Southampton arrive at the event and hug me warmly. I am pleased to see them again. In our breakout session it is the three of us that tell the story of this innovative project. I notice how I feel small but comfortable sitting between these two big guys and in that moment of noticing my eyes scan around and I clock that nearly all those who have turned up to my break-out session are men. Bill and Mike take turns to tell bits about the project. I intervene off the cuff to the audience pointing out the general themes that are implicit, or reflecting more generally or simply encouraging one or the other to go into the vignettes of the story that I know are significant. ‘Can you tell them about the lightbulb moment?’ I prompt. Or pointing to a truck with a huge 5.7Megawatt combined heat and power engine I ask Mike: ‘Tell us about the story behind that picture?’ I know the truck was so huge it stopped traffic on the M25 and that Mike heard this on national traffic news that morning. I know the whole story so well now. And internally, as I’m doing this I reflect: ‘oh – this is like a live narrated learning history!’ – and I make a mental note to tell some colleagues later. I know one or two who’ll be interested.

On the wall behind us I have pasted pictures of the heavy technology and infrastructure of the Southampton project. I have juxtaposed these with pictures of partners and agreements. At the end of the conference, in plenary, participants are invited to comment on the day. Mike stands up and says how he has enjoyed the day and being involved in the research which he has found to be ‘impressive’. He then goes on to say: ‘we’ve known Margaret a long time now – it’s nice to see her again – these days we consider her part of our team’. I feel touched on hearing this. And a little sad too. It is all coming to an end. And then I muse how strange it is to feel this genuine closeness because in spite of it all I only met Bill and Mike once. ‘There’s something about learning history I think’, again not for the first time, that moves the researcher very deeply in relationship with her participants. I understand this now, though still not fully.

Later my supervisor Peter Reason asks to be introduced to Jane: the sustainability officer from our local council here in Bath who is also in attendance. Jane greets Peter and says: “the work with Margaret on Lowcarbonworks has made such a difference to us – I now have real support now at director level within the organisation to address climate change – and a big budgetary commitment”. I know this already, but somehow it is a surprise to hear Jane say it like that.

The PhD that follows charts how, using an action research approach to guide me, I came to embed myself with practitioners and organisations from the field of carbon reduction in local government in the UK. In that field I did some good work. And as we shall see, this research has built capacity, learning and connection there.

I started in the obvious places and with obvious questions. I started with the language of the field: “lock-in”, “transformation”, “change”, “innovation” and I worked with questions like “how do we change?” “What barriers are there to change?” My rationale was that action researchers need to get stuck right in on the coal-face of big issues like climate change and they need to start where the prevailing discussion *is*. Recently there has been talk of building bridges out of action research in order to do good work in the world (Reason and Bradbury 2008a). It is my belief that not only do bridges need to be built, but the action researcher needs quite resolutely to cross them and try out her practices of inquiry in another’s field and in the context of the unsolvable problems of our times. So it was to a thrusting, urgent and often unfamiliar field of carbon reduction in local government that I brought my practice as an action researcher and I brought myself. And here I am sitting quite comfortably in it a few years later.

An approach like this is not without its shadow. By embedding oneself in a field – by becoming *of* it rather than participating *with* it - a whole set of new questions emerge around identity, voice and what can and cannot be said. There are dangers of co-option, selling out or the silencing of what is important in order to belong. Choosing the obvious rules out the less obvious. By working with ‘change’ and ‘innovation’ as theories for example I have excluded theoretical perspectives on ‘power’ and ‘gender’. By working with the theme of ‘carbon reduction’ I have excluded a more systemic interpretation of sustainability. At the end I will reflect on these kinds of exclusion. They are partly

redressed by the form in which I have chosen to write this dissertation. But partly these exclusions are simply a facet of this kind of embedded action research out in the world and engaging with the agendas as they are understood and framed there. I am suggesting this is a valuable and important kind of action research and one that links to the big issues of our time. But, like any kind of action research it is not without its challenges.

The result has been a piece of work that had a number of levels of action and contribution. First there has been the outer arc of work in the field. This has been significant. A series of learning 'events' occurred across the field of local government of varying depth. These included focussed interviews, seminars and participative workshops and presentations. Some twenty organisations in all were involved in the research and seven of these participated over a sustained period. Many reported or continue to report, as Jane did above, the value of their participation in the research. This value I would simply term as rich: it includes tangible results – increased budgets for climate change, ongoing use of the learning histories – but it also includes some less tangible but nonetheless important impacts: a sense of connection, an increased personal efficacy. Some participants reported quite simply feeling more courageous and confident as a result of their participation. And many participants reported learning, by which I mean a deeper understanding of an issue of importance to them. For some this was to do with low carbon initiatives, for others it was to do with the process of change and for others it was to do with the power of narrative.

Then alongside the work in the field has been the research arc of the work. By pursuing the problem of 'carbon reduction' quite doggedly but inquiringly I worked my way onto new theoretical and methodological ground. Methodologically I set out to understand how more connected learning between innovative projects might occur at the systems level. To that end I developed an existing action research methodology – learning history – from its usual organisational situation into a broader institutional setting. Learning history is a reflective process that involves the creation of a written history of a project or event. The later stages of the process then go on to focus on the pragmatics of working with that history with participants to maximise the learning from it. The methodology I developed: 'learning history in an open system' pays much more attention to these later pragmatic stages of learning history than has hitherto been the case in the literature. My

detailed research work on these stages articulates the challenges of energy and sustained engagement that arise there. In my thesis I will propose practices to address these challenges. My 'learning history in an open system' also articulates and addresses a hitherto unspoken conundrum implicit within learning history that has to do with its underlying commitment to myth. The myth conundrum as I might call it arises for the learning historian who wishes to keep faith with the mythic imperative but who finds herself in a workworld that is reluctant to formally acknowledge stories as important. Hence the mythic is consigned to the nether corridors of gossip and tittle-tattle. In this work a practice of re-instating and re-valuing the mythic is proposed. Connected with this mythic imperative I have developed the form of the learning history itself, liberating it from its traditional 2-column form into a more fluid form. Learning histories have hitherto been written in two columns. In one column runs a narrated description. In the other runs quotes from participants and researcher reflections. These comment on and converse with the narrated column and so enrich the overall account. The learning history I am proposing has a written form that is more fluid and less constrained. I suggest too that a learning history can actually have multiple oral, digital and written incarnations. These developments in form not only embrace the mythic but also help to energise learning history as an approach overall. They help to broaden its scope and potential by making it lighter and more adaptable to learning situations with varying resources and aims.

My theoretical contribution develops a currently significant set of theories in the field of sustainability transition research: sociotechnical transition theory. I claim my theoretical contribution to lie in the way I worked with narrative to enhance and re-humanise this set of ideas. This field of sociotechnical theory has emerged in the last decade from the Netherlands and is becoming increasingly influential in policy-making and research there and more recently in the UK. It poses change and societal transition as the result of an evolutionary process where different levels of sociotechnical activity in society interact to create windows of opportunity for change to occur. The theory conceptualises transition as a complex, dynamic process of intertwined social and technological developments. And it offers a language to help unpick this process. However it is limited in a number of ways. Human action within this framework is abstracted to the level of structured agency. This abstraction curtails the possibility for drawing out practical implications from this theory. Second this theory conceptualises the societal landscape as a socially constructed one of material infrastructure and macro political and economic factors. The

natural world is curiously absent from a model which, at its heart, is trying to understand how we might transition to a society that is more connected with the earth on which we stand. And finally the language of these ideas, because of their lineage in economics and innovation studies can still tend to collapse back into being technocratic. In my research I engage with these critiques and suggest that my contribution has been to address these limitations through the use of narrative. I suggest that the human stories of my learning histories and the thematic vignettes that I will draw from across these histories, re-humanise this theory and so create a link back to the natural world. So my contribution is to open up a vital route to the practice of transition rather than the management of it.

My handling of theory in this thesis follows a more complicated path than that of method. I do not simply lay out sociotechnical theory and then develop it. Instead I describe the theoretical exploration that led me there. So I start with the 'carbon reduction problem' and with a different set of theory – organisational change theory. As it becomes clear that taking an organisational view is inadequate to the question of how a societal shift to a low carbon future might take place, I then chart how my focus moves away from this theory set. I drill down into theories that address the micro-level of individual choice. I reach out to theories that take into account the broader systemic level of inter-connected organisations and macro contextual factors. And ultimately I arrive in sociotechnical theory, explaining why it fits and laying the ground to develop it. I describe it like this because I am proposing that, in addition to the contribution to sociotechnical theory, the way I have worked with theory is relevant to the field of action research. I am suggesting that by working inquiringly with the theory, in the way that I do, I am examining more closely than is usual the link between theory and practice. I will return to this argument in the afterwords of the thesis. Suffice it to say for now that I am suggesting that the movement through theory is illuminating and relevant and so I have not confined my description of it to its start or end point.

This then is a summary of my proposed contributions: to the field in which the research took place as well as to the academy in terms of methodology and theory. I lay them out here so the reader can hold them in mind. In the thesis that follows I will not be explicitly tracing out these outer arcs I have just described. We will be following instead a narrative arc, one that is more reflective and closer to my inner experiences and

processes of decision-making along the way.

I think to my viva just ten days before. There my examiners and I discussed at some length the form of my PhD and the creative tension there is between saying something subtly on the one hand, and being direct and overt on the other. The thesis that follows falls on the indirect side of that tension. It is understated. It is a reflection on the process and experience of embedding myself in a field and working to bring value there and for the field action research and theory more generally. But as it is a reflection it will not thrust the outer arcs of my work at you. These outer arcs in the field of local government, in my research project Lowcarbonworks, in the wider community of action research practitioners and ultimately in the wider communities of sustainability practitioners and sociotechnical researchers were very direct. They were overt. And they had an impact. And I will relate these to you. But I will tell you about them via my inner narrative arc. I will tell you how they terrified me, how I went forward and what choices I made. And in the folds of this narrative arc you will see many things that are tacit and unspoken. You will see some of the tensions there are with bringing the whole of oneself into a field and trying to do some work there. The result is something of a field-manual. It is written in a way that is intended to reach out to other practitioners.

Why do I describe it in this way? Why not just give account of it in a straightforward way? Part of my thesis is that at the heart of learning lies a plurality of narrative and voice. I simply cannot make this claim in a singular and direct way. Even by summarising on the previous page my methodological and theoretical contribution I feel uncomfortable for what such a summary might falsely imply. Yes of course this thesis is about this contribution but beware if this seems to be all it is about. If rich learning is to occur at all levels in the system – and here now I include other action researchers or practitioners who may wish to learn from my thesis – then my writing must be plural, engaging and multiply voiced. In this way my thesis is itself another step in expanding scope – a practice that again I will argue is vital if action research is to reach beyond the particularity of its own practice and scale up to make a difference in the world. And another part of my thesis claims that what is an essential facet of innovation and learning is the well-timed, unattached, different move. So in the service of an increased scope, reach, and repercussion I offer the form of this thesis as a departure. It is one of many different moves I have tried to make with my work these past few years. Such moves I

make faithfully, hopefully even. I can't fully know their impact at the time. But I do know their intention is to contribute another path, another way, another story.

So my thesis is written in a way that is consistent with my arguments and with the learning history method I am describing. It is multi-layered, and narratively oriented. Using vignettes, reflective passages and digital media as well as written artefacts, the storyline of a journey is layered on the starting desire to accelerate learning about carbon reduction in the field of local government. You are invited as reader to participate with me in that journey. At the end I will refuse to come to a single point or to create a happy ending. There are you see many points: some spoken, some tacit. Recently I have likened what I have done in this thesis to the work of the pointillist painters who through the laborious creation of tiny dots of paint created an image when viewed at the right distance. My favourite pointillist painting is "An afternoon in the park" by the 19th century French painter Georges-Pierre Seurat. I saw a painting of his once in Munich and stood for ages moving back and forth looking at the dots and then stepping out until the dots blurred and an image appeared.



Figure 1 Un dimanche après-midi à l'Île de la Grande Jatte by Georges-Pierre Seurat

The detail like that in the man's hat on the right hand side was full of tiny, detailed brushstrokes. I wondered was the painter an obsessive languishing in detail, or was he a master? Perhaps he was both? In the writing that follows I will lead you along the narrative inner arc of my research that at times goes into the detailed practice of my research in the way Seurat painted that hat. Brush stroke by brush stroke. You will see the detailed practice and thought that made up some of the outer arcs. And in these strokes you will see different things: my own idiosyncrasies perhaps at times, or a richer texturing of what I am saying in others. And, in some of the vignettes, I hope you might see yourself: your own stories, hopes and fears. With each chapter there is a form to step back from and see. A picture of sorts. And at the end of the thesis there will be shapes. Then again we will step back and look at it all. But if this form has worked then people will see different things depending on where they stand. So if you are ready. Then let's begin.

