Climate change discourses in use by the UK public: commonalities and variations over a fifteen year period

Stuart Bryce Capstick

APPENDICES

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School of Psychology
Cardiff University
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This booklet is supplementary to the main thesis *Climate change discourses in use by the UK public: commonalities and change over a fifteen year period* by Stuart Capstick.

Appendices as noted in the text of the main part of the thesis are incorporated here.

List of Appendices

Appendix 4.1 Main research themes identified across original projects

Research theme	Example protocol questions/ moderator questions from transcripts
General knowledge of, and initial thoughts about climate change	1997: Have you heard of climate change before this meeting? When? Where? 2000: What sort of images or thoughts come to mind when you think about climate change? 2002: Are there any thoughts about global warming or climate change that spring to mind? 2003: Have you heard much about global warming? 2007: What do you think with regard to the issue of climate change?
Physical characteristics, causation and consequences	1997: Why do you think climate change is happening? [Is there anything] else could happen in 20 years time as a result of this thing called global warming? 2000: Do you think that the climate is really changing due to human actions or is it just a case of natural variability? How do you think climate change might affect the world you live in? 2002: Does anyone here think that any climate change we've got now is just part of that natural process or are most people fairly…? [Are there] any specific things you can think of that might be as a result of things warming up? 2003: Is there one area of activity that can be blamed for global warming? In terms of the impacts of global warming, what do you think is likely to happen? 2007: As far as you know, do you personally think the climate is changing and if so, are human actions responsible? Do you think climate change affects you and your life?

Level of concern, views on seriousness	1997: How important or non-important is [climate change] to you? Why? Are you personally bothered about climate change? Do you think that people should be concerned about climate change? 2000: Do you think climate change is a particularly important issue now/ in the future? 2003: Would you say that climate change is something that concerns you? 2007: Who feels climate change is a good [/bad] thing? Why do you feel that way?
Responsibility for responding to climate change	1997: Who should do something about climate change? Why? Do you think you should do something about it? 2000: Whose responsibility is it to do something, if anything, about climate change? 2002: Is it an individual's responsibility to do their bit or you know, or is it up to Governments, is it up to industry, or, you know, who? 2003: Whose responsibility [do] you think it is to slow down global warming? 2007: Which one, if any, of these do you think should be mainly responsible for taking action against climate change? (groups, individuals, government, etc.) Why?
Means of responding to climate change (including policy and individual behaviour)	1997: What do you think should be done about climate change? What do you think that people in [location] should do about climate change? 2000: What could be done, if anything, to slow down climate change? Do you think it's important to change your behaviour? 2002: On policy or on any other level, what do people feel needs to be done either about the way we're producing this energy or any other aspect of policy around climate change? 2003: What actions do you think individuals can take that would make a difference to global warming?

	2007: What do you think should be done to tackle climate change? What kinds of actions?
Portrayal of climate change; perceived views of others	1997: What kind of people talk about climate change? 2000: Do you feel you have enough information on climate change to decide whether it is an important issue? 2003: And where is the sort of most reliable and trustworthy information, would you say? 2007: Who would you trust to give you information on climate change?

Appendix 4.2: First focus group protocol

Welcome and introductions 5-10 mins

General views 5 mins

1. General perspectives on climate change, 'openers':

    a. **What sort of things come to mind when you hear the phrase 'climate change' or 'global warming'?**
    What do you know about climate change? Do you know anything about the science of climate change? What does climate change mean to you? As far as you know, what ***is*** climate change? Is it the same thing or different to global warming, or the greenhouse effect? How much had you thought about climate change before today? (what thought had you given to the matter?)

    b. **Is climate change something you are personally worried or concerned about?** (why/ why not?) How does climate change compare as an issue of importance to things such as terrorism or the economy?

Short exercise 1: Initial responses 2 mins

I now want to do a short exercise to try to get at people's reactions to climate change as an issue.

I'm going to pass round some of these cards which have a few words and short phrases on them. I want you to have a look at this and tell me any of these that spring out at you as being close to your own reaction to climate change – this could just be one word or phrase or several of them. So as soon as you think you've seen something that stands out, please say so and I'd be interested to hear more about why that is the case. Also feel free to add your own using pens and add to the card on the dotted lines.

then: 5 mins

c. Why did you pick that word/ phrase? Would you say that has always been your reaction? If not, how come you have come to think/feel that way? Does anyone have any different reactions? Did anyone have more than one choice? Did anyone add any new words to the bottom?

Scientific/experiential aspects 15 mins

2. Understanding as a **scientific**/ **experiential** issue

   a. **What thoughts do people have about whether climate change is something real, that it is either happening now or likely to happen in the future?**
   What makes you think this? Is climate change something you have experienced in your own lives? (if so, how); Is it something you are personally convinced about? (if so, why/ why not); does anyone agree or disagree with this interpretation?

   b. **Is anyone of the opinion that climate change is *not* something real –** that it is not something that is either happening now, or in the future? If you have your doubts about whether climate change is real, why is this? does anyone agree or disagree with this interpretation?

   c. **As far as you know, do you think that climate change is something that scientists are sure about, or is there still uncertainty?**
   Do you think it is a controversial topic for scientists or not? Has there been a convincing case made that climate change is really happening? What aspects are they still unsure about? How much disagreement do you think there is? How much uncertainty is there? How much evidence is there for climate change? Even for those who are convinced about climate change – do you have any doubts remaining and why? Would you be more convinced by a scientist who told you climate change was real, or one that told you the opposite?

      - If it has not emerged by this point:

        Is anyone here sceptical about the science or the politics of climate change and if so why? Has anyone heard much about the disagreements which have been going on in relation to scientific studies carried out in the UK? Has what has happened here had an effect on your views about climate change? (if so, how?)

   d. **To what extent do you think human beings are *in any way* responsible for climate change, and to what extent is it a natural phenomenon [or not happening at all]?**
   Does anyone think there are also natural processes that influence climate change? Which are more important, natural or human influences? Is it 50:50 natural:human or something different?
   In what ways do humans – and in what ways do natural processes – influence climate change?
   How certain/ likely do you think it is that there is a human influence on the climate, and why?

e. [For those of you who think there is evidence of any/ human-caused climate change] **What do you understand to be the main causes of climate change?**
As far as you know, what are the processes behind climate change? Why is climate change happening? What are the main reasons behind climate change? What have people and societies done that has caused it?

f. **What do you understand to be the main consequences of climate change?**
What effects do you understand it will have? Dividing this up, what consequences do you think it will have on the natural world? People? In other ways? Are these things that personally concern you? How serious do you think these things are compared to other issues in the world? Do you think is a particularly important/ serious issue – now/ in the future? How quickly or slowly do you think the effects of climate change will be felt (i.e. when)?

    - **Is climate change something you think will affect you personally – will it affect your own lives?**
    Do you think it will affect your own families? Bristol? The UK – or is it more an issue for other countries?
    Why/ why not? In what way? How will you deal with this? Is it something relevant/ important to you?

g. **Is climate change something that we can do anything about?**
Is it possible we can stop it? Is it too late to try to stop it? Is it too difficult to try to stop it? Can action be taken to prevent the worst effects?
What can be done/ what action can be taken to address climate change? How urgent an issue do you feel it is? if not now, is it something that can be addressed at some point in the future?

h. **Do you think it will be necessary for people now or in the future to take steps to adapt to the effects of climate change?**
What sort of measures will be needed to cope with climate change? Will these be large-scale or smaller? How quickly or slowly will it be necessary to adapt?

i. **Do you think people will have to change the way they live their lives, or make sacrifices, to help tackle climate change?**
In what ways? What other changes will society have to make?

j. **Has anyone heard the use of the word 'carbon' in respect of climate change?**
Does this term mean anything – if so what?
Have people heard of 'carbon emissions' – what does this term mean to you? In what contexts have you heard this word? What does it mean to you?
Have you heard of the word carbon used together with any other words – if so which and how?

(Carbon tax, carbon calculator, carbon offsetting)
Have you heard of a 'carbon footprint' – what is this? Are these ideas that ever relate to your everyday life – if so, how?

3. ***Responsibility and behaviour***

Short exercise 2: responsibility 5 mins

then review answers: 5-10 mins

a. **Who or what do you think is to blame for the problem of climate change?**

(why – those identified?)

[don't wish to prompt too much, i.e. 'individuals', 'government'…]

b. **Whose responsibility is it to do something, about climate change?**

(why – those identified?)

re. **government**/ individuals etc. as a response – ***what*** should they be doing about climate change? Do you think the government has already done enough, or is doing enough? Increased taxes? Would you support stricter laws if it meant these helped tackle climate change?

c. ***What* should be done about climate change?**

d. Do you think that our actions as individuals contribute (/lead) to climate change? 5-10 mins
What are the most important things we as individuals do that contribute to climate change? [impacts] Are there things that you personally do, that you think might contribute to climate change? (if so, what; what may have a *lot* of effect in causing climate change? What less so?) How important, overall, are the actions of individuals in respect of climate change?

e. Do you think there is a moral responsibility on individuals to do anything about climate change?
Is there anything that ordinary people can do about climate change – if so ***what****?*
Do you think it makes a *difference* what we as individuals do (and would that influence your own choices)?

What opportunities are there to do anything as individuals?
Could we be doing more to help address climate change? If so, why are we not doing so? (what are the obstacles to change e.g. 'modern life'))

- **Is there anything individuals can do in their lives to help address climate change?**
  What types of choices or actions do you think make the **most** difference (in terms of helping deal with climate change?
  What are the links between these and climate change?
  Do you think there are things we are encouraged to do, that actually don't make much difference?
  Has anyone any *examples* of how they have changed anything in their lives - or maybe haven't been able to do so?
  Why did you do this (what has motivated you to take action in respect of climate change)? Do you feel like this has made a difference?
  What are the *limits* to what you would be prepared to do?
  Has anyone ever felt that there is sometimes a gap between what they think they *should* be doing or *would like* to do, and what they are actually *able* to do or actually *get around* to doing? Why is this?
  What are the benefits (besides tackling climate change) of taking these actions? Are there any downsides?
  What sort of things get in the way of acting on climate change?

f. Do you think there are aspects of the way our society/ city/ country is organised that can lead to the problem of climate change? Or make climate change difficult to address?
Do you think the problem of climate change is sometimes in conflict with the other demands of society – such as economic growth or maintaining a standard of living? If so, how? Is there anything that can be done about this? Again, are there limits to this?
Do you think there are aspects of the way we simply go about our everyday lives that can lead to the problem of climate change? Or make climate change difficult to address?

g. Do you think more should be done at an international level to address climate change? If so, what? Do you think there should be more of an emphasis on richer countries (e.g. UK, USA) to act, than developing countries such as China or India?

4. Cultural **norms**; 'conversational norms'; perceptions about wider society/ norms

10 mins

   a. **Can you remember the last time you ever talked with anyone about climate change?** (did you raise the topic, or did they?)
   Is climate change something that you often or ever talk about with other people?
   If yes – what aspects are discussed; if no – why is it *not* discussed? (irrelevant/ awkward to raise? Is it the sort of thing you would talk about socially, or at work? If you have ever discussed climate change with people, what sort of impressions did this leave you with? What sort of people might raise climate change in discussion, and when?

   b. **Is climate change something that you feel that Britain or England as a country is concerned about?**
   Similarly, are there any ways in which you feel the city of Bristol or your local community takes climate change seriously? Does that have any relevance to you personally?
   Finally, are there any ways in which you feel that your family or immediate circle of friends or colleagues takes climate change seriously?

   Is climate change something we as a nation are doing anything about? (more or less so than other countries?) Is climate change something that you feel the government is doing anything about? Is it an issue worth changing society to address? (how could this happen?) What are the limits to what you think is acceptable in terms of changes to society that could address climate change?

   c. **Is climate change something that other people you know are concerned about?** Does that make a difference to you? (do you mind?) Why are some people more concerned than others? Do you think you would be prepared to do anything more or differently if you felt others were too?

   d. **How do you think climate change tends to be portrayed in the media?** (TV/ newspapers/ other)
   What sort of stories have you come across in the media? Do you feel it is accurately portrayed? Does media reporting match the way you feel about climate change personally?

   e. **How do you think climate change tends to be portrayed by the government and local councils etc.?**
   If responses forthcoming: what do you make of this? What sort of reaction do

you have to that? Is this portrayal convincing?

f. **How do you think climate change tends to be portrayed by business, such as in advertising?** Do you think companies do very much to help tackle climate change? Would it make a difference to you if they did more?

g. **How do you think climate change tends to be portrayed by environmental groups?**

h. **Which are more important to you in terms of your views on climate change – people you know, the media, government, business, or environmental groups?** Do you view some sources as more trustworthy than others?

5. **Retrospective temporal change**: participants' own views on how their perspectives might have changed over time

5-10 mins

a. **Can anyone recall when they first heard of climate change/ global warming?** I'm really interested to hear whether anyone's opinions about climate change might have changed over the past few years that the issue has been around – has anyone any experiences of *changed* opinions or feelings about climate change? Why is this – has there been something particular that has led you to change your mind?

b. Just in the past few months alone, have you become more or less sure that climate change is happening and/or serious?

6. **Discourse summaries**

Short exercise 3: Discourse vignettes **5-10 mins**

then review: **10 mins**

- Would anyone be prepared to volunteer a quote that they think is similar to how they themselves think about climate change?
    - What does this statement say – can you read it out?
    - Can you tell me why you picked that one out?
- Would anyone be prepared to volunteer a quote that they think is ***not*** similar to how they themselves think about climate change?

- Which number is on the back?… I read out
- Can you tell me why you picked that one out?
- Did anyone else also pick this one as not similar, or instead as *similar* – and have any comments to add to this?

Any final points? Any comments people wish to make, not covered so far?

7. Close

Appendix 4.3: Materials used in first focus group

Materials used:

- Initial reactions to climate change
- Responsibility for climate change
- Vignettes based on previous studies' participant quotes

A GOOD THING

A BAD THING

HAPPINESS

DON'T CARE

FEAR

BOREDOM

OPTIMISM

PESSIMISM

INTEREST

SADNESS

HOPE

GUILT

WORRY

AMUSEMENT

ANGER

Others…

WEARINESS

…… ……

…… ……

If you think climate change is real – or might possibly be real – then please answer the following questions:

Who or what do you think is to blame for climate change?

Whose responsibility is it to do something about climate change?

What should be done about climate change?

As far as climate change goes, I think that people need to be led and I think that's what the government's there for. Just asking people individually to do things, that's never going to happen, really the government will have to guide us if they can.

The top countries that are causing climate change can't agree to do very much about it. So I think it doesn't matter what we might do on a very small island called Britain we're not going to make a lot of difference.

It seems to me nowadays the seasons are sort of blending into one. You used to be able to distinguish between the seasons more clearly. That suggests to me climate change is something which is happening around us now.

I think that the world is at a point now where it's facing basically a really terrible situation. It's at the point where literally large parts of the planet itself could become uninhabitable.

I think as individuals we can do something about climate change, and we can slow climate change down, by taking individual responsibility for turning the heating off when you don't need it, flying less and so on. I think we're all responsible and we should all do our own bits.

Well I'd say I'm one of these selfish Western people who are glad of my home comforts. They say you shouldn't leave your television on standby, but I've always left it on standby. I just go on my merry way, and don't worry about the environment.

I mean you've only got to look at the weather we've had recently to see that something drastic is happening and changing. It does make you think something's got to be causing it, and there's no-one else here that's changing things apart from us and what we're doing.

These weather cycles go round every few hundred years or whatever and I don't think any climate change will last all that long. Climate change is just part of the Earth's natural cycle and what we're doing is basically insignificant.

It seems like when it comes to climate change you can't get two scientists agreeing with each other. You get so much conflicting information that you don't know what's right and what's wrong.

SIMILAR to how I think about climate change

Not sure

NOT SIMILAR to how I think about climate change

Appendix 4.4: Second focus group protocol

(Welcome back and overview of session)

1. **Reflections on first session/ opening**

"Has anyone has given any thought to the things we discussed in the last session, or done any further reading, or talked with anyone else about the issues we discussed?" (If you all forgot about everything until you came back that's fine too – but I'm interested to hear if this has been something anyone has thought more about.)

- Give any more thought to what we discussed last week?
- What were people's impressions of last week?
- Reading, or other research?
- Talked with anyone else?
- As it's especially relevant to this session, I want to ask whether anyone has heard any more about the Copenhagen conference that took place late last year…?
    - Did anyone see or read anything in the News, and what were your impressions?

2. **Perspectives on media reporting**

Reactions to news clippings

"The next exercise is designed to find out people's views on media reporting of climate change. For a lot of people, either the TV or newspapers will be an everyday source of information, and so it's useful to know how this is understood.

"The way we're going to do this is as follows: we've got a selection of newspaper clippings which represent different aspects of climate change. (Only headlines, as don't have time to go through full articles.)

"What I'm going to do is get people to separate into two smaller groups; I'll talk with one group and Lucy with the other. We'll tape-record each separately.

"We'll allow around 10 minutes to do this. Once we have separated, the thing I want you to do is – between you, and as a group – select 3 or 4 headlines/ pictures that stand out most to you: this might be for a number of reasons – because you think they hint at something important about climate change, because you *disagree* with them, or just because they are thought-provoking.

"Most importantly, the reason I am getting you to look at these clippings is to get a discussion going: about climate change in general, in relation to specific issues raised by headlines, and also about how you feel the media reports on climate change.

"Could I ask this half of the room to go with Lucy, and this half with me."

Once in groups: **give out sets of clippings; encourage people to pass around clippings until everyone has seen some of them; request views on which stand out – follow this with questions about why these were chosen.**

Moderator prompts: media reporting

First of all, quickly read over the newspaper headlines on your own.

Next, please discuss as a group the following questions.

Use the materials provided and any ideas you think are important to bring to the discussion.

1. Try to select which 3 or 4 headlines/ pictures *stand out most* to you as reflecting something important or significant about climate change?

2. What are you own reactions to these 3 or 4 headlines/ pictures?
    - What do you think the headline is trying to get at?
    - Do you agree with the content and tone of the headline/ picture?
    - What do they say about the relevance of climate change to society?
    - Do they say anything about the science of climate change – if so what?
    - Do they say anything about the politics of climate change – if so what?
    - What do they say about the news reporting of climate change?

Plenary: media reporting

Sub-groups reconvene: open discussion about which headlines were discussed and why.

3. Perspectives on policy: explanation

"What we are going to do now, is to consider the types of responses that can be taken to climate change. I appreciate from the last session that not everyone is convinced of the

seriousness of climate change – that perspective can be included in this exercise, as well as the perspectives of those who are concerned.

“The way this is going to work, is that first of all we are going to watch a number of video clips. The first of these is from BBC News and is about the Copenhagen conference.

“Then there follows a series of one-minute clips produced by a charity that has made a number of documentaries about climate change: these are intended to give a flavour of the different expert views on the subject, and relate to different issues. I’ve chosen these because I think they manage to sum up a fair reflection of the vast range of opinion and ideas in only a few short minutes.

“Once we’ve watched all these clips and talked about them a little, we are then going to go back into our two smaller groups and look in some detail at the sorts of ideas proposed to deal with climate change. This is in the context of the sorts of responses which have been suggested by the UK government, and more widely at an international level such as at the Copenhagen conference.

“Do take down any notes you think are of use, but you don’t have to.”

Clip: BBC News first day of COP15: reference to size of conference, backdrop of ‘Climategate’ and defence of science, Kingsnorth (3:30 minutes)

“Next, we’re going to watch a selection of views of different people from different professions and from around the world. I don’t expect you to necessarily agree with them – but I hope they are thought-provoking.”

<show clips> (all around 1 minute in length)

1. Dr. John Holdren (costs vs. benefits in economic and technology terms)
2. Carmen Pastor (human consequences – water shortages)
3. Prof. Bhagwati (social dilemmas; international/social justice)
4. Prof. Nick Stern (economics)
5. Pavan Sukhdev (carbon of different ‘colours’: fossil fuels, forests, oceans)
6. Calestous Juma (adaptation in Africa)
7. Anthony Giddens (risk paradox; individual distancing; targets vs. immediate action)
8. ‘Peem’ (Thai boy explaining how he is concerned and would tackle climate change)

Reactions to clips – moderator questions:

Does anyone have any reactions to any of these clips, that they want to mention?

Any particular points made that stand out to you – either agree or disagree with these?

Do the clips paint an optimistic or pessimistic picture – and is this reasonable?

What are the main sorts of ideas being proposed to address climate change?

4. Policy exercise

"The purpose of these clips was to give a very brief introduction to political processes in respect of climate change, and more generally ideas for addressing climate change, and some of the related problems and opportunities with this.

"What I want you to do now is to get back into the two smaller groups. There are some materials here which describe five different approaches to dealing with climate change. You'll have a chance to read these in some detail, but I'll just quickly introduce them now.

"First of all, is the idea that we are probably all familiar with, of tackling climate change at an individual level. This I've called '**lifestyle change'** and relates to actions that reduce individual contributions to the problem.

"The second option relates to **technological** solutions, some of which have already been developed, others of which may still need work – this includes everything from electric cars to wind farms and nuclear reactors.

"The third option is more to do with **international** approaches – specifically, ways of addressing the wide differences there are in carbon emissions in different parts of the world.

"The fourth is about **adaptation** – you heard one of the speakers in the clips mention this. This is the idea that given climate change is already happening, and will inevitably be a problem in the future, the best approach is to focus efforts on adapting to the changes it brings.

"Finally, we have the idea of '**geo-engineering'** – these are ideas concerning ways that the Earth's climate can be altered with the aim of reversing the effects of climate change.

"The way I want us to consider these, is for the purposes of this exercise to come to some conclusions about which types of policy each group believes is appropriate and likely to be effective – and which aren't; so it's about picking the winners and losers from this group. In reality, this is a little artificial, as more than one option may be desirable, however in getting

you to make priorities I hope this will show what are considered the more and less important issues, and why."

Policy plenary

"We are going to draw this session to a close shortly. I want to bring us together as the larger group now to see what have been the main ideas to come out of the group discussions.

"Perhaps I could ask the other group – which was your most favoured policy, and why?"

General discussion

Opportunity for any points not yet raised to be discussed.

Close

Appendix 4.5: Materials used in second focus group

Materials used:

- Newspaper headlines (including seven cartoons)
- Policy options (five sheets)
- Policy question sheet

Newspaper headlines (used in second focus group)

All headlines obtained during December 2009; photocopies of original headlines were used in the sessions.

1. (Un)certainty of the science of climate change; scepticism and counter-scepticism

How I wish that the global warming deniers were right (Independent, 4/12)

Climate sceptics are flat-Earthers, says Brown (Telegraph, 5/12)

Hell-bent on sabotage or just misguided? Meet the climate sceptics. (Guardian, 5/12)

Undeniable truths about climate change (letters, Guardian, 5/12)

We have seen 'experts' cry wolf too often to take climate change at face value (letters, Telegraph, 7/12)

The past 10 years were the warmest in recorded history, figures show (Guardian, 9/12)

The climate denial industry is out to dupe the public. And it's working. (Guardian, 8/12)

Met office climate data released to calm email storm. (Guardian, 8/12)

'We won't let sceptics hijack climate talks' (Independent, 8/12)

How robust is the science predicting global warming? [Q&A, Telegraph, 8/12)

Scientists in no doubt as last ten years see record temperatures (Telegraph, 9/12)

Solar activity is to blame, say scientific sceptics. (Telegraph, 9/12)

Met Office reveals last decade was the hottest ever recorded (Independent, 9/12)

[Sarah] Palin joins naysayers to decry 'hoax' of climate change data (Times, 10/12)

Next year forecast to be hottest on record (Independent, 11/12)

Sunspots do <u>not</u> cause climate change, say scientists. (Independent, 14/12)

100 reasons why global warming is natural: 'No proof that human activity is to blame' (Express, 15/12)

Sussex will be desert before the climate deniers accept reality (Independent, 16/12)

Climate change 'lies' by Britain: Now Russia accuses Met Office (Daily Express, 17/12)

Met Office 'tampered with figures on climate change' (Daily Express, 17/12)

Intrusion of cold reality [that the current sub-zero temperatures imply protesters 'don't know what they're talking about'] (Express, 17/12)

It's reckless to be a sceptic on global warming (Times, 19/12)

Is man largely responsible for global warming? (Times, date unkown)

2. Consequences of climate change (general)

No apocalypse yet – but there are perilous tipping points around the globe (Times, 24/11)

Time to confront the invisible enemy that threatens us all. (Independent, 2/12)

Twelve days to save the world: we face a threat as terrible as that posed by Hitler. (Independent, 2/12)

Proposed cuts in CO2 can't stop a catastrophe, says Lord Stern (Times, 7/12)

From the 'third pole' to the rising sea, grim signs of deadly change. (Guardian, 7/12)

Sea levels may rise three times more than first thought (Independent, 8/12)

10ft seas mayhem to hit UK: Climate alert for our coasts (Mirror, 10/12)

Met Office sets 10-year deadline to beat climate catastrophe (Telegraph, 10/12)

Brown warns of climate change risk to humanity (Telegraph, 16/12)

The climate is changing and if we do nothing about it, we face grave threats to our civilisation, says Prince Charles (The Sun, 14/12)

Copenhagen cuts 'will not save planet': Leaked UN paper says pledges so far will still lead to catastrophic warming (Guardian, 18/12)

3. Consequences of climate change (human)

Major cities at risk from rising sea level threat (Times, 1/12)

Nations will vanish and millions will lose their homes to rising seas (Times, 1/12)

We used to say 'let's go up to the ice cap', now it's 100m below us (The Sun, 2/12)

The sea is killing our island paradise <accompanied by picture of islanders from the Solomon Islands> (Telegraph, 10/12)

What will happen when the world gets warmer? Four possible scenarios (Guardian, 19/12)

Melting glaciers could deal a fatal blow to a Bolivian city (Observer, 20/12)

Climate crises around the world (Times, date unknown)

4. Consequences (natural world)

Marine life imperilled as acidity rises at fastest rate for 55m years. (Guardian, 11/12)

Not long for this world? Global warming threatens survival of koalas and emperor penguins (Telegraph, 15/12)

5. Responding to climate change; Politics and political negotiation

Can we fix it? Perhaps, but it depends who you ask (Independent, 2/12)

Decision time: face the facts or give up (Independent, 7/12)

Climate talks are in disarray barely days into the summit, putting at risk international unity to fight global warming. (Guardian, 9/12)

Rich nations accused of Copenhagen 'power grab' (Guardian, 9/12)

Britain and France say banks must pay for climate change (12/12)

Poor nations threaten climate deal showdown (Guardian, 14/12)

Can China get by without coal? (Telegraph, 14/12)

Make the bankers pay for climate deal (Independent, 16/12)

Britain seeks to lead the world in cutting emissions. (Telegraph, 17/12)

China holds the world to ransom (Independent, 18/12)

Obama calls for decisive action but he arrives empty-handed (Guardian, 19/12)

Why can't our leaders see the big picture? (Telegraph, 19/12)

China blamed as anger mounts over climate deal (Observer, 20/12)

This fiasco will further alienate an angry public (Observer, 20/12)

China stands accused of wrecking global deal. (Independent, 20/12)

How a voice for everyone led to stalemate and a lot more hot air (Times, 21/12)

6. Payment mechanisms

‘Climate cash for third world may do more harm than good’ (Telegraph, 5/12)

Plea to reach out to each other as poorer countries dismiss $10bn offer as peanuts. (Guardian, 8/12)

Be proud we’re giving another £1.5bn to beat global warming, says Mr. Brown (just put our £800 billion national debt to the back of your mind!) (Daily Mail, 12/12)

Brown offers £1.2bn in a bid to break climate deadlock (Guardian, 15/12)

Climate: now we’re pledging an extra £6bn (Daily Mail, 18/12)

7. Reference to targets/ cuts in numerical sense

Greenhouse gas cuts just ‘token gestures’ (Independent, 7/12)

‘Only 50/50’ chance that 2C climate target will be met (Independent, 10/12)

Poor nations push for 1.5C limit on warming (Guardian, 11/12)

25% or 45%: Copenhagen comes down to a numbers game (Independent, 12/12)

Rich nations asked to double cuts in carbon emissions (Telegraph, 12/12)

8. Copenhagen reported as a ‘failure’

Hopes of global emissions deal at Copenhagen begin to fade. (Independent, 14/12)

Leaders accused of betrayal on climate as Copenhagen head for six-year ‘fudge’ (Times, 14/12)

Climate talks on brink of failure as time runs out (Independent, 17/12)

Better to have no deal than one that spells catastrophe (Guardian, 18/12)

This fiasco will further alienate an angry public (Observer, 20/12)

Copenhagen: A historic failure that will live on in infamy (Independent, 20/12)

Copenhagen: our lost chance (Independent, 20/12)

China stands accused of wrecking global deal. (Independent, 20/12)

The price of failure <pictorial page detailing effects of climate change> (Independent, 20/12)

9. Individual responsibility/ behaviour

Passengers face heavy taxes on flights to reduce CO2. (Guardian, 8/12)

Eat less meat and dairy: official recipe to help health of consumers – and the planet (Guardian, 11/12)

Eat less meat and dairy to save the planet, says quango. (Telegraph, 12/12)

Gutless, yes. But the planet's future is no priority of ours. (While Copenhagen may fall far short of the deal we need, leaders know voters are not prepared to change their lifestyle.) (Guardian, 19/12)

Failure at such a grand level means we have to act locally (Observer, 20/12)

Why isn't it easy being green? (Times, supplement)

10. 'Hypocrisy' (especially of politicians)

Climate change summit to produce as much CO2 as an African country (Daily Mail, 7/12)

The green hypocrites: Charles and premier take separate jets to lecture the world on global warming (Daily Mail, 16/12)

Mandarins saving the planet fly around the world (Telegraph, 17/12)

11. Protest/ public pressure

Will the world finally wake up to the scale of the challenge? (Independent, 7/12)

It's the protestors who offer the best hope for our planet (Independent, 16/12)

12. Addressing climate change: optimism

A positive vision from the chaos at Copenhagen (editorial, Telegraph, 17/12)

It doesn't have to be this way: Solutions that are at hand. [photo of solar panels] (Times, 23/12).

Take climate seriously. Make a joke of it. [… we need to find a new way of talking about it.] (Times, 4/12)

Some things we can be getting on with. (Even without a binding agreement there is plenty to do.) (Times, 24/12)

13. Moral arguments

Copenhagen must be a turning point. Our children won't forgive us if we fail. (Gordon Brown comment, Guardian, 7/12)

Fear and selfishness have created environmental crisis, says archbishop. (Guardian, 14/12)

This is bigger than climate change. It is a battle to redefine humanity:… survival depends on accepting we live within limits (Guardian, 15/12)

Copenhagen summit: Fighting for survival. Does the human race deserve to survive?... (Guardian, 18/12)

14. Cartoons

See subsequent pages for cartoons used.

Please see hard copy (newspaper cartoon)

Please see hard copy (newspaper cartoon)

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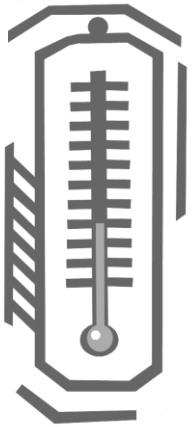
Policy options as presented to participants are given on the following pages.

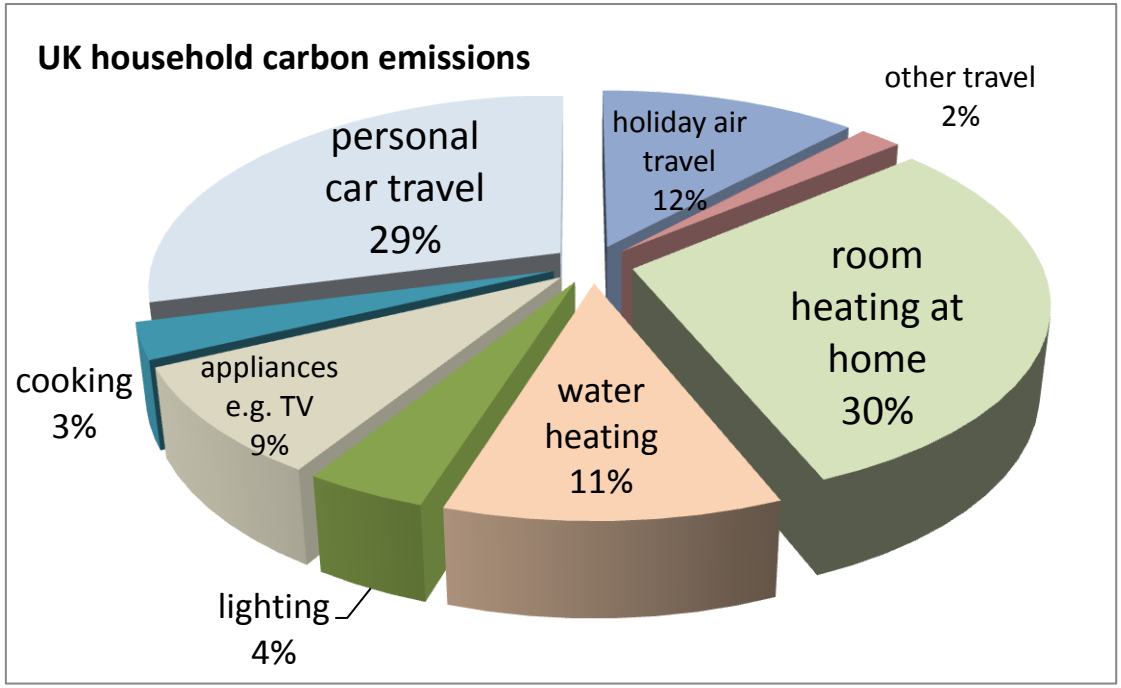
OPTION 1: LIFESTYLE CHANGE

Lifestyle change involves people altering the ways they go about their lives, specifically to address climate change. As well as the more obvious tasks like recycling, this would mean changes to the way we travel and use energy. Over a third of individuals' carbon emissions come from travelling by car and plane: lifestyle change might mean driving less or taking fewer flights. In addition, we might need to use less electricity and gas in the home, as over a third of our carbon emissions come from heating to keep rooms warm and water hot (see chart below).



Whilst it is harder to measure the effects of many of our other choices, there are also a range of 'indirect' consequences of lifestyles. The amount of products we buy, and what sort of products, can have a big influence on carbon emissions. For example, it is estimated that eating meat has more environmental impact than vegetables, partly because it takes more energy and fuel to produce it.

Although there are things the government could do to try to bring about lifestyle change (see box below), voluntary changes across society would likely also be needed.



Source for figures: Department of Trade and Industry report, 2007

Lifestyle change by individuals might be set in motion by the government using different approaches. Some of these are:

- **Education** and providing information
- **Enforcing** desired changes, such as by setting up new **green taxes** and other financial **costs** and **incentives**
- **Encouraging** community action

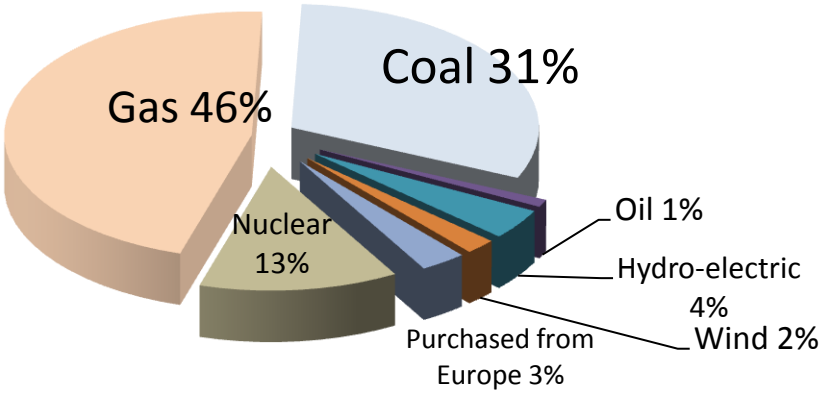
OPTION 2: TECHNOLOGY USE AND DEVELOPMENT

Using technology to address climate change would involve more use of existing technologies, as well as developing new technologies.

This may relate to technology used in electricity generation. Use of renewable energy – such as obtained from wind or tidal power – has the potential to lower the country's carbon emissions: most energy is generated from fossil fuels like coal and gas at present (see chart below). The government is also proposing an expansion in nuclear power stations, at least partly because generating electricity this way emits far fewer carbon emissions (once plants are up and running).

Another development is in personal transport: cars might be produced which run on less fuel, with widespread use of electric cars also a possibility in the future. Some other technologies which have been proposed to help deal with climate change sound promising – however, there is a great deal of debate around how practical they will be to implement. An important example is so-called 'Carbon Capture and Storage' which involves taking the carbon emissions from power plants and storing these under the ground. This technology is still in a trial phase, however.

Sources of UK electricity, 2009

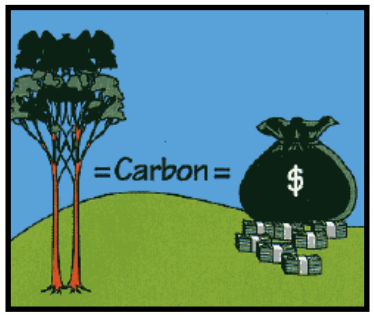


Source for figures: Department of Energy and Climate Change 2009 report

"Technology is bound to be of key importance in combating climate change. However, we have learned that technological innovation is difficult to predict—many of the most important innovations that have influenced our lives, such as the internet, came unexpectedly."

- Anthony Giddens, sociologist

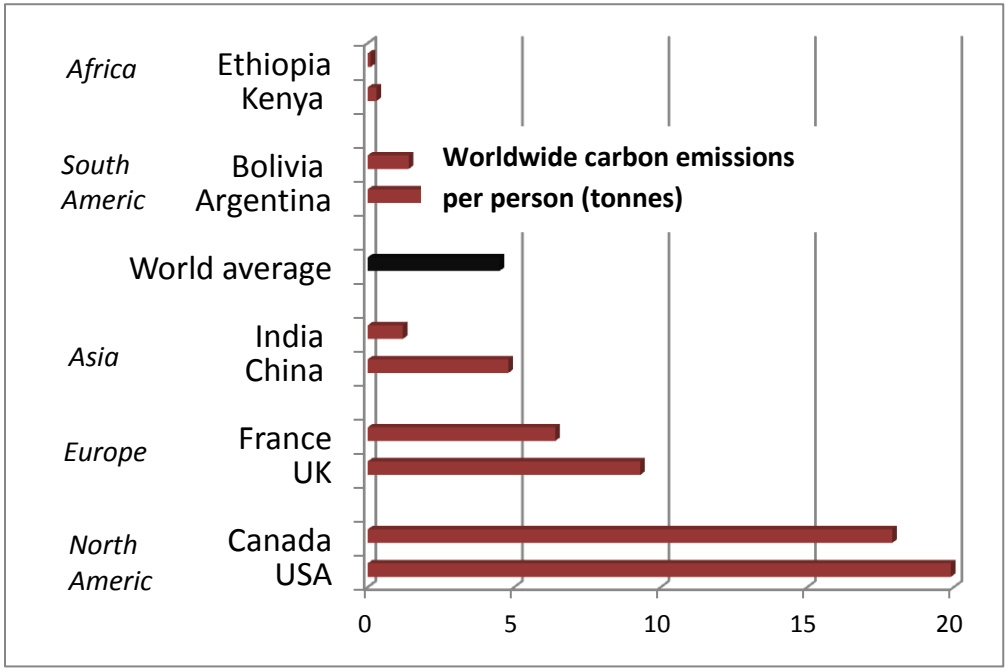
OPTION 3: INTERNATIONAL AGREEMENTS AND OBLIGATIONS



At an international level, much attention has focussed on how the needs of developed (or 'richer') countries can be reconciled with those of developing (or 'poorer') countries. The graph below shows the wide difference between carbon emissions in different countries and parts of the world.

Historically, nations such as those in Europe and North America have been responsible for the majority of carbon emissions put into the atmosphere. Now, there is a concern that if developed nations continue as they have – and countries like China and India continue to grow their industries at a rapid pace – the consequences for climate change could be severe.

For these reasons, various ideas have been proposed that involve agreements between nations. Many of these are about transferring money between countries, specifically to deal with climate change. In some cases, rich nations would pay for part of another country's share of emissions: the UK for example could pay a low-emitting country like Kenya to be able to use its allowance. Some countries with extensive forests (which absorb carbon emissions) may also be paid not to cut down or damage them. Finally, it has also been argued that because developing countries may be denied the opportunity to take the steps that developed countries already have, they should be compensated for this.



Some of the main ways climate change could be addressed internationally are:

- Higher-emitting countries **purchasing** 'rights' from lower-emitting countries. Such a 'carbon market' already exists in Europe.
- Through **paying** developing countries **not** to cut forests.
- Through **compensating** developing countries for avoiding use of fossil fuels.

Source for figures: US Energy Information Administration

OPTION 4: ADAPTATION

Adaptation refers to action taken because of the effects of climate change – either in advance of problems occurring or in direct response to them.

In the UK, it is expected that there will be more frequent flooding (from sea level rise and increased rainfall) and extremely hot summers. Adaptation may include allowing the sea to flood areas of land that cannot be protected, and higher charges by insurance companies to cover increased pay-outs. The NHS may need to offer extra help to at-risk groups affected during heatwaves. Farmers may need to grow different crops and cope with new diseases and pests.

In many parts of the world, adaptation could require more far-reaching measures. Some places are at increased risk of drought, meaning land may need to be managed differently. Where increased flooding is likely, measures such as raising the foundations of housing or building emergency shelters might be necessary. Diseases such as malaria may also become more common, requiring the adaptation of health services. Much recent political discussion has focused on richer countries (such as the UK) paying towards adaptation required by less well-off countries. However, some places may have to be abandoned altogether, meaning countries such as the UK may also be asked to take in 'climate refugees'.

Country	Area of adaptation	Example of adaptation
United Kingdom	Floods, sea-level rise	Higher insurance costs, loss of land
The Netherlands	Sea-level rise	Building of new storm barriers
Canada	Change in ice cover	Change in hunting practices by Inuit (Eskimos)
Bangladesh	Sea-level rise, salt-water intrusion	Stockpiling food, harvesting rainwater
Sudan	Drought	Changes to crops and farming practices

Source: IPCC 2007

Adaptation relates to dealing with the consequences of climate change. Examples include:

- Coping with **sea-level rises** by building sea defences or allowing the sea to reclaim land
- Coping with **drought** by changing **farming** practices, such as by using drought-resistant crops
- **Movement** of people from areas which have become uninhabitable

Mirrors in space

OPTION 5: ENGINEERING THE CLIMATE

Techniques to deliberately alter the Earth's climate are commonly termed 'geo-engineering'. These range from fairly practical measures to more large-scale ideas. There are two main types.

Firstly, techniques have been proposed to *remove carbon dioxide* – the main climate change gas – from the atmosphere. This might be done in biological or mechanical ways. Biological methods include adding massive amounts of fertiliser to the oceans, so that large areas of algae grow which will absorb carbon dioxide. Mechanical methods include 'carbon scrubbers' (see image below) which may be built to extract carbon dioxide from the air, and methods used to speed up processes by which naturally-occurring rocks react with carbon dioxide.

Secondly, techniques are suggested to deal with increased temperatures resulting from climate change by *reflecting extra sunlight back into space* (so-called 'solar radiation management'). The simplest way this might be done is to paint more buildings white.

'Geo-engineering' techniques consist of two main methods:

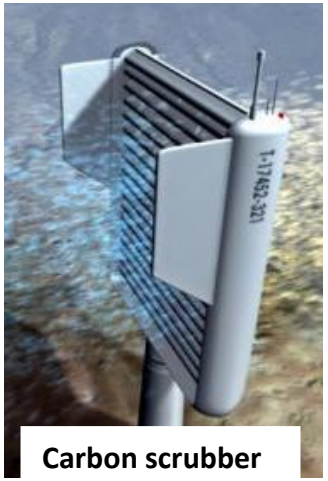
- **Carbon dioxide removal** involves taking this greenhouse gas from the atmosphere. This can be done **biologically** or **mechanically**.
- **Solar radiation management** involves reflecting increased sunlight back into space to reduce the temperature on Earth. This is done through using **reflective** surfaces, such as mirrors.

More ambitious methods include placing huge numbers of mirrors into space to reflect sunlight away from Earth (see image top left), or adding chemicals to clouds to make them whiter and so more reflective.

Because many of the proposed techniques are only at the ideas stage, it is not clear how useful they will be, nor whether they are even possible. However, the Royal Society has recently carried out a study into this area. The table shows scientists' rough estimates of how effective, safe and affordable some options might be – with each given a score out of 5.

	Effectiveness	Safety	Affordability
Ocean fertilisation	2	1	3
Carbon scrubbers	4	5	2
Absorption by rocks	4	4	2
Space mirrors	4	3	1.5
Desert mirrors	2.5	1	1
Whitening clouds	2.5	2	3

1 = very poor 2 = poor 3 = fair 4 = good 5 = very good



Carbon scrubber

Question sheet: policy choices

First of all, quickly read over the policy cards on your own.

Next, please discuss as a group the following questions.
Use the materials provided and any ideas you think are important to bring to the discussion.

Which ONE of the policies provided do you **most** favour – and **why**?

Which ONE of the policies provided do you **least** favour – and **why**?

What do you see as the strengths and weaknesses of the other policies?

More important than giving a definite answer to the questions, are the reasons behind your conclusions.

In examining these policies, please consider what you think would be the likely strengths and weaknesses of each of them. You might like to consider:

What could the policy achieve – and what couldn't it achieve?
What are the practical chances of the policy making a difference?
Who would benefit, and who would lose out?
Who would have to pay for the policy?
What are the conditions needed for the policy to work?
Any other points you think are important

Appendix 4.6 Expert perspectives video clips used in second focus groups

Speaker	Subject
Dr John Holdren, science advisor to Barak Obama	Costs and benefits of responding to climate change
Carmen Pastor, Peruvian water campaigner	Personal experience of problems from water shortages due to climate change in Peru
Pavan Sukhdev, UNEP Green Economy Initiative	Technical perspective on the carbon cycle and the importance of deforestation
Prof. Anthony Giddens, sociologist	The political challenges of addressing climate change
Prof. Bhagwati, economist	Economic mechanisms for addressing climate change
Prof. Nick Stern, economist	Economics of climate change
Rachata Jatabut	Young boy from Thailand discussing his concerns
Prof. Calestous Juma, Adviser to World Development Report	Adapting to climate change in Africa

Appendix 4.7: Ethics application, information and consent forms for focus groups

This Appendix includes:

- Ethics information submitted and approved for focus groups
- Information sheet
- Consent form
- Demographic recording sheet

Ethics submission (further information)

Project title: **Lay discourses of climate change**

Purpose of Project and academic rationale

Stuart Capstick, supervised by Prof. Nick Pidgeon, is seeking ethical approval for work that he wishes to carry out during the second year of his PhD studies.

Responding to human-induced climate change represents a major challenge in which the public's understandings are likely to influence both their participation in the democratic process and their own individual behaviours as energy consumers.

The project aims to identify and examine public understandings of climate change from a discursive psychological perspective. This is to say, discourse analytic techniques (e.g. Wetherell & Potter, 1988; Dryzek, 1997; Phillips, 2000) will be used to identify coherent sets of ideas about climate change ('discourses') which are available to, and used by, members of the public. Whilst discourses of climate change and environmental issues more generally have been identified in the field of political science (e.g. Dryzek, 1997), and in respect of the media and policy studies (e.g. Carvalho, 2007; Segnit & Ereaut, 2006) there have been very few attempts to specifically identify lay (i.e. public) discourses in the UK or elsewhere. This work is intended to complement quantitative survey-based research (e.g. Lorenzoni & Pidgeon, 2006), and approaches which have aimed to construct models of environmentally-relevant behaviour (often again through survey-based approaches, e.g. Stern, 2000).

Discourses in the research process are considered to be cultural ideas which are not necessarily held consistently by individuals, but rather to be commonplace and stereotypical modes of representing an issue. The research is using a definition of discourse derived from social science of environmentalism/ climate change literature (Hulme, 2008; Dryzek, 1997) and Wetherell & Potter's general definition of discourses as "explanatory resources" and "interpretive repertoires":

> A 'discourse' is a socially shared explanatory and interpretive resource, embedded in language and culture, and enabling the mutual apprehension of climate change as an issue. Each discourse rests on a set of assumptions, judgements and contentions that provide the basic terms for analysis, debates, agreements and disagreements.

The research will be informed by and aim to contribute to theoretical work on risk perception (Lorenzoni et al., 2005; Adams, 2005), public engagement with climate change (Lorenzoni et al., 2007; Darier & Schule, 1999), personal and social responsibility (Bickerstaff et al., 2008), cultural representations of nature (Thompson, 2003), framing of environmental values and policy (Miller, 2000), climate change discourse studies (Etkin & Ho, 2007) and more generally the emerging role for Psychology in addressing climate change (Gifford, 2008).

The ethics application is being made to gather primary data by conducting discussion groups with small groups of members of the public (see below for further detail). This work is being directly linked to a wider, secondary analysis of data, which is attempting to detect longitudinal change in discourses over time (i.e. how understandings have changed over the decade or more in which research has been carried out). Given also that a major international political conference concerning climate change is to take place in December 2009 (the so-called 'Copenhagen conference') the research will also utilise this occasion as an opportunity to examine policy

framings in respect of the political issues being discussed therein. Given that the Copenhagen conference represents a critical moment in efforts to address climate change, and that policy outcomes will ultimately be reliant upon public participation and support, there is considered to be a valuable opportunity to attend to relevant public responses at this stage in the research process.

The research questions are as follows:

1. What are the dominant public discourses of climate change, and how might these differ from those that have been present in the past?
2. How do the prominent categories and themes pre-identified in previous research (e.g. the role for collective responsibility, self-efficacy, accurate understanding of the natural science of climate change, perceptions of climate change based upon personal experience) manifest and inter-relate within these discourses?
3. What are the evident (i.e. expressed in talk) and hypothesised consequences of identified discourses?
4. How are discourses used to make sense of and appraise policy responses to climate change?

Methods and measurements

The research is qualitative in nature, based on discourse analysis of focus group transcripts. Up to ten re-convened focus groups (i.e. twenty focus groups with ten groups) with members of the general public will be carried out. These will take the form of semi-structured discussions around the issue of climate change.

The methodology will entail 'reconvened' focus groups with members of the public. This methodology operates by having the same group of people meet twice: once initially and then a second time after a deliberation period. The purpose of this is to achieve a more in-depth engagement by participants with the issues under discussion. Participants will be recruited from the area in which the discussion groups are carried out, as such there is no requirement for them to stay over at a location other than their own home.

The primary method for conducting discussion groups will be the use of protocols of questions designed to initiate discussion. There will be two such protocols; the first to be used on the first meeting with the group of participants, the second to be used on the second meeting.

The first session protocol is devised with the aim of gaining insight into the public's baseline and general understandings of climate change as a natural scientific, political, social and behavioural issue. The first protocol will take the form of basic introductions to the issues and broad opening questions [in the thesis these are Appendices 4.2 and 4.4]. In addition, emphases on particular aspects of climate change will be incorporated. Also via the first session protocol, participants' responses will be sought to different pre-identified discourses which frame climate change in varying, sometimes contradictory ways. These pre-identified discourses have been derived from separate secondary analyses carried out during the first year of PhD study, and encompass a range of themes. For example, one discourse emphasises the centrality of personal direct experience in conceptualising climate change (e.g. relating it to the weather), whereas others emphasise relationships between personal and governmental responsibility. These are illustrated to participants as vignettes, which are adapted versions of direct quotations made by focus group participants in previous research. The use of adapted quotations enables authenticity and aids comprehensibility of discourses (i.e. as used in people's own words).

The second session protocol is designed to gain insight into responses to different political 'framings' of climate change. The political framings of climate change which are used, will derive from government literature produced in advance of the Copenhagen conference which is taking place in mid-December 2009, as well as alternative policy solutions which have been proposed in the academic and general literature (e.g. carbon taxation). Media reports relating to the Copenhagen conference will also be used to give context and familiarise participants with the issues. It is not possible to specify in advance exactly which media reports will be used, as these will of course emerge closer to the time. However, it is anticipated that themes pertinent to efforts to mitigate and adapt to climate change will be emergent.

Both session protocols are used to guide discussion towards particular topics and themes. The researcher will aim only to ensure that focus group discussions remain broadly within these themes (i.e. do not stray into irrelevant areas).

Should ethical approval be granted, discussion groups will be carried out soon afterwards. At the earliest pilot research will occur during November 2009, with most groups taking place early in 2010.

Participants and consent

Participants will be recruited by professional recruiters, for which project funds have been allocated. A professional market research company will be utilised to recruit participants. To some extent, the company are likely to require some discretion as to the exact recruitment methods used, however it is anticipated that procedures will involve either the involvement of participants from panels already retained on confidential databases held by the market research company (as is standard practice) and/or a more direct recruitment approach in a public place (such as a shopping centre) as is again standard practice for market research companies in accordance with the Market Research Society Code of Conduct. Potential participants will be approached to request whether they are willing to take part in the research – the conventions of voluntary participation and informed consent will apply at this recruitment stage. It will be following recruitment that the researcher himself will first meet with participants and conduct focus group discussions.

In addition to groups conducted with members of the public, a pilot stage focus group is also envisaged with undergraduates at the School of Psychology. This will be carried out in order primarily to trial procedures, though data obtained may be utilised in the same way as for other groups. In the case of undergraduate pilot groups, recruitment will by through the usual university procedures, with participants provided with appropriate credits for participation.

At recruitment participants will be provided with clear explanatory information relating to the project aims and rationale (see information sheet). Written informed consent will be obtained from all participants (see consent form). Participants will receive a small honorarium of approximately £50 for taking part, in the form of a cheque given directly after their second discussion group. Should any participants decide to withdraw at any point after giving consent, payment will still be made in full by cheque at that point. The funding budget for the project includes monies for the payment of discussion group participants.

Each focus group will be comprised of 8-10 people. The samples will be a cross-section of the public, in terms of socio-economic position, age, gender and ethnicity but will not be fully 'representative' in the statistical sense. All participants must be over 18.

Ethical considerations

1. Informed consent and debriefing

Participants will be fully informed about the aims of the research project in a manner that is clear and easily understood. Opportunities will be made available for them to ask any questions they may have, if they require further information. The research aims will be outlined verbally directly prior to the focus groups taking place. This will ensure that any consent given can be considered informed.

A modified version of the Cardiff University consent form template will be administered to all participants.

As there will not be deception involved in the research, the requirements for debriefing will be minimal. Participants will be thanked for taking part in the study and they will be informed that they have the right to access the information they give at any time. They will also be made aware that they have the right to ask for the information that they give to be destroyed or deleted.

2. Confidential not anonymous data collection

The data collection process will entail strict confidentiality but will not be entirely anonymous. Due to the nature of the research, it will be necessary for the researcher to be able to identify individuals who have participated in the project. In the reconvened focus groups, names will be used to engage them in discussion. Their names will be utilised in initial data transcription to identify voices on the tapes and identify quotes in the transcripts. Identifying each voice is crucial for the process and aids in obtaining a good representation of positions voiced in the group; this helps to ensure that the position of all participants are reflected, and that variation in opinions expressed by individual participants can be detected.

All data will remain confidential in accordance with British Psychological Society (BPS) 'Ethical principles for conducting research on human participants'. Actual names can only be viewed by the researcher (Stuart Capstick) and supervisor (Nick Pidgeon). Non-anonymised data will remain confidential during the research process and be used for the purposes of transcription only. Once the data has been transcribed, transcripts will be made entirely anonymous by using pseudonyms thereafter. All participants will be given an alias which will be used in any discussion of the research (e.g. with other researchers). All original transcripts (i.e. non-anonymised) and tapes with identifying links will be stored in a locked, secure location on university premises until the project publications are finalised. These will be retained until 2015(or for five years after the end of the project grant awarded) for the purpose of checking the original data sets for clarifications if necessary. The length of time before they are destroyed is decided based on an estimation of a reasonable time limit within which the publication process could be finalised.

In all related publications, participant's quotes will be made anonymous. In that context, only non-identifying generic terms (e.g. gender, age, whether the participant has children) and the alias will be used to describe participants. These linkages may be made as these are the criteria which may be important analytically for each participant respectively. In respect of whether participants have children or not, this has recently been identified as an issue which may influence responses (Platt & Relallack, 2009). The basic socio-demographic data connected with participants will be collected via a separate form. This will enable matching of participants with their socio-

demographic data at the time focus groups are carried out (e.g. person Y is 50 years of age and has no children); this data will be treated in the same confidential fashion as tape-recorded data and consent forms, i.e. will be anonymised as soon as possible after transcription. No data sheets containing sociodemographic information together with participants' actual names will be retained (i.e. these will be destroyed as soon as possible after the focus groups).

All focus group sessions will be recorded and transcribed by the researcher (Stuart Capstick). The data will be analysed according to standard qualitative research practice (discourse analysis).

Protection of Participants

For the focus group participants, although there is very little potential for concern, they may encounter information which they may not have been aware of prior to participating. The participants will have been made aware of the generic research area (climate change) and will be informed of the right to withdraw from the focus group at any point during the procedure.

In addition, and in accordance with the BPS guidelines, it is clear that participants could easily obtain such information as part of their ordinary lives and as such it does not represent an undue risk. Participants will be informed of the procedures for contacting the investigator within a reasonable time period should any concerns have arisen.

Estimated start date and duration

The estimated start date for carrying out focus groups is January 2010. Data collection will not continue for this project past January 2011.

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Information on the Research Project

The project is being undertaken by a PhD researcher (Stuart Capstick) based at Cardiff University. The project aims to examine the different ways in which climate change issues are understood by the general public. This is seen as important as the ways in which the public view the issue of climate change are likely to influence their own choices, and also the public acceptability of government attempts to address the issue.

What will your Participation Involve?

Should you decide to take part in the research, your participation will involve you taking part in two focus group sessions that are expected to last for around 1.5 hours per session. There will be a break between the two sessions, during which time you will be encouraged to discuss the issues with other people you know.

The focus group sessions will involve you participating in a guided group discussion about climate change issues. There will be approximately 6-10 people altogether in the group. The researcher will be present to facilitate and guide the discussion. The researcher will also be able to address any concerns you may have during the sessions. The focus group sessions will be audio recorded.

If at any point you change your mind about taking part in the research you can withdraw at any time by contacting us on the details provided below or speaking with the researcher.

Who is being interviewed?

Members of the public are being interviewed. There is no expectation that participants should have any specialist knowledge. The researcher is interested in all views held, and there are no 'right' or 'wrong' answers to any questions asked. Instead, your own perspectives, views and experiences are sought.

Anonymity and confidentiality

All data will remain confidential in accordance with British Psychology Society (BPS) principles and the requirements of the Economic and Social Research Council (ESRC).

During analysis and in any presentation of research findings, all names of participants will be anonymised (e.g. instead of 'John Smith' a code such as 'participant 1' will be used). No identifying information will be retained, only general data such as age and gender of participants.

Both the anonymised audio-recorded discussion, and anonymised typed transcripts, may be shared with other researchers at Cardiff University, and with the permission of the principal researcher, with other relevant researchers, including via the Economic and Social Research Council website. Participants may ask to see the data or request that it be destroyed at any time. The original (non-anonymous) interview tapes and transcripts will be stored at Cardiff in a locked location until 2015 (or for five years after the research is completed) after which they will be destroyed.

How will the data be used?

The data will be used in academic research and will be used to produce reports, presentations, conference papers, and academic publications. The data and/or subsequent publications may also be used for teaching purposes.

Who is funding the research?

The funding for this project is allocated by the Economic and Social Research Council.

Payment

You will receive a payment of £70 for taking part in the research.

The Research Team

Principle Investigator: Stuart Capstick (capsticksb@cardiff.ac.uk)

Supervisor: Professor Nick Pidgeon (pidgeonn@cardiff.ac.uk)

Contact:

Stuart Capstick (principal researcher)

School of Psychology
Cardiff Univeristy
Tower Building
Park Place
CF10 3AT

Tel: 07986 551477

Prof. Nick Pidgeon

School of Psychology
Cardiff University
Tower Building
Park Place
CF10 3AT

Tel: 029 208 74567

Consent form for Focus Groups

School of Psychology, Cardiff University

Consent Form - Confidential data

I understand that my participation in this project will involve taking part in a 'reconvened' focus group. I understand that this will involve participating in two focus group discussion around the issue of climate change which will last for around 1.5 hours, and no more than 2 hours, per session. I understand that there will be a break between the sessions in which I can discuss the issues with other persons. I understand that the focus groups will be recorded with audio equipment.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason and without loss of payment.

I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with Stuart Capstick or Professor Nick Pidgeon. I agree that anonymous data obtained in the interview may be utilised in discussion with other researchers, in any ensuing presentations, reports, publications, websites, broadcasts, and in teaching. I understand that both audio recordings of discussions and typed transcripts of discussions (in both cases having been anonymised by deleting names and other identifying information) may be made available to other researchers via the Economic and Social Research Council (ESRC) website.

I understand that the original and non-anonymous recordings provided by me will be held confidentially until 2015 (or for five years after the research grant expires), such that only the principal researcher (Stuart Capstick) and supervisor (Prof. Nick Pidgeon) can trace this information back to me individually. I understand that I can ask for the information I provide to be deleted/destroyed at any time and that I can have access to the information at any time. I understand that in all publications any information provided will be made anonymous with only pseudonyms and generic identifying features (e.g. gender and age) used as identifying features.

I agree that I have been provided with sufficient information on the project to give *informed* consent to the interview.

I, _____ (NAME) consent to participate in the study conducted by the School of Psychology, Cardiff University, carried out by Stuart Capstick under the supervision of Professor Nick Pidgeon.

Signed: Date:

Socio-demographic information

Please provide the following information, if you are happy to do so. You can leave out any questions you do not wish to answer.

Name: …….

Age: ……

Gender: Male Female

Present occupation: ……..

Highest educational qualification:

☐ None/apprenticeship/O-level/GCSE

☐ BTec/A level

☐ HND/degree

Subject: ……..

☐ Post-graduate qualification

Subject: ……..

Other (specify): …….

Do you have any children? YES NO

Appendix 4.8: Participants at Bristol 2010 focus groups

Note that the educational qualification 'none/GCSE' corresponds to 'none/apprenticeship/O-level/GCSE'; occupations are as supplied by participants.

Participant code	groups attended	Gender	Age	Highest educational qualification	Occupation
P1-2010	9th and 16th March	M	67	HND/degree	retired hotelier
P2-2010	9th and 16th March	F	31	BTec/A-level	project manager
P3-2010	9th and 16th March	M	65	post-graduate	retired
P4-2010	9th and 16th March	F	31	HND/degree	unemployed
P5-2010	9th and 16th March	F	21	none/GCSE	bar staff/ waitress
P6-2010	9th and 16th March	M	35	HND/degree	events manager
P7-2010	9th and 16th March	M	59	HND/degree	video producer
P8-2010	9th and 16th March	F	33	post-graduate	manager
P9-2010	9th and 16th March	F	23	HND/degree	health advisor
P10-2010	15th and 17th March	F	28	BTec/A-level	student
P11-2010	15th and 17th March	F	42	HND/degree	manager
P12-2010	15th and 17th March	F	25	HND/degree	operations coordinator
P13-2010	15th and 17th March	F	21	HND/degree	student/ receptionist
P14-2010	15th and 17th March	F	24	BTec/A-level	youth worker
P15-2010	15th and 17th March	F	29	BTec/A-level	administration assistant
P16-2010	15th and 17th March	M	65	HND/degree	retired commercial manager
P17-2010	15th and 17th March	M	29	HND/degree	web designer
P18-2010	15th and 17th March	M	25	none/GCSE	unemployed
P19-2010	15th and 17th March	M	39	MBA	consultant
P20-2010	23rd and 30th March	F	78	HND/degree	retired headteacher
P21-2010	23rd and 30th March	F	40	BTec/A-level	production coordinator
P22-2010	23rd and 30th March	F	28	HND/degree	human resources
P23-2010	23rd and 30th March	F	66	none/GCSE	retired
P24-2010	23rd and 30th March	F	23	BTec/A-level	employment adviser
P25-2010	23rd and 30th March	M	55	HND/degree	not given
P26-2010	23rd and 30th March	M	48	BTec/A-level	recruiter
P27-2010	23rd and 30th March	M	44	post-graduate	self-employed

P28-2010	23rd and 30th March	M	67	HND/degree	retired builder
P30-2010	24th and 31st March	F	36	HND/degree	ambulance technician
P31-2010	24th and 31st March	M	47	MBA	self-employed
P32-2010	24th and 31st March	M	44	BTec/A-level	insurance underwriter
P33-2010	24th and 31st March	F	47	HND/degree	illustrator
P34-2010	24th and 31st March	M	48	BTec/A-level	director
P35-2010	24th March	M	30	none/GCSE	not given
P36-2010	24th and 31st March	F	48	HND/degree	self-employed
P37-2010	27th April and 4th May	M	47	none/GCSE	postman
P38-2010	27th April	F	25	none/GCSE	mail sorter
P39-2010	27th April and 4th May	M	49	HND/degree	self-employed consultant
P40-2010	27th April and 4th May	M	32	none/GCSE	postman
P41-2010	27th April and 4th May	F	40	HND/degree	animal care
P42-2010	27th April and 4th May	F	34	HND/degree	primary teacher
P43-2010	27th April and 4th May	F	58	HND/degree	accountant
P44-2010	27th April and 4th May	M	41	BTec/A-level	firefighter
P45-2010	27th April and 4th May	F	25	post-graduate	PR executive
P46-2010	27th April and 4th May	M	24	HND/degree	customer services
P47-2010	27th April and 4th May	F	42	HND/degree	nurse

Appendix 4.9: Open coding of section of Bristol 15/3/2010 transcript

The following section of transcript represents the first (approx.) 10 minutes of discussion.

Transcripts	*Basic themes/ topics*	*Concepts/ abstract themes*	*Discourse (possible)*
R: I want to start off by asking, in a very general sense, what sort of things come to mind when you hear the phrase 'climate change' or global warming? What are your initial, immediate reactions to this as an issue.	Prompt: what comes to mind?		
P19-2010: A lot of conflicting information.	Conflicting information	conflicting information	
R: OK. Conflicting information. Anyone else?			
P17-2010: Concern.	concern		
R: Concern, OK.			
P15-2010: Extinction.	extinction		
R: Extinction of- ?			
P15-2010: extinction of various species.			
R: OK. Would that apply to the human race as well?		…	…
P15-2010: I guess so. Eventually.			
P16-2010: Too many vested interests.	Too many vested interests	social actors – conflict motives	
R: Too many vested interests.			
P13-2010: Fear.			
R: Fear. OK. That's quite a few so far. Any others round			

this side? P18-2010: What are we doing to combat the effects of climate change? And is it successful, well I suppose that's even more important. (4:00) R: Right, I'm going to come back to a couple of these. P19-2010, excuse me I'll try to remember the names as I go around and try not to get them wrong. P19-2010, I think you said 'too much conflicting information' can you tell me a little bit more about what you mean by that? P19-2010: Just that we keep being told about climate change, one [sic] people saying it's a perfectly natural thing, happens every few hundred years, few thousand years, others saying it's man-made, we had the academic information recently discredited which didn't help, whether the case is true or not that adds an element of doubt. So, it's just there is so much information it's like any argument, there's no definitive answer until it's reached the end which may well be extinction, but it's difficult at the moment to guess who's putting forward the information and why. So, you know, the oil companies may say 'it's nothing to do with us', and Greenpeace may be saying 'we definitely need to do this'. So trying to weigh up the thing on an everyday situation is difficult. R: So I think I saw a bit of nodding over here. Do you	What are we doing to combat CC? Prompt: too much conflicting Some say is natural Happens every few hundred, thousand years Other side: man-made Academic info discredited Elements of doubt Like any argument: no definitive answer Difficult to guess who putting info and why Oil cos. vs Greenpeace Trying to weigh everyday difficult	action on CC Two sides Uncertainty (doubt)] C-gate/ academic discredited No definitive answer Agendas Difficulty interpreting	mixed scepticism: natural + scientific uncertainty, natural causes difficulty interpreting …

agree with that sort of-? P15-2010: Yeah. Yeah yeah. There's such a lot of information out there it's the same as any social issue that you can read as many different article written by desperately educated and important people, and you can find as many as you want to back up your opinion whatever your opinion is on that subject. R: And P16-2010, I think you said something about vested interests? P16-2010: That's the refusal of people to put their hands up and say 'yes, we're contributing to this, or we're responsible for it, and we're going to do something about it'. Their interests are profit, national interest, whatever. Any excuse. R: So what would your perspective be perhaps on this idea of conflicting information? P16-2010: Very much so. From a conservationist's point of view they're prepared to go for the kind of headline information and therefore look at the doomsday scenario, whereas other people are inclined to play it down and so no, and actually rubbish the information. Again, it's a bit of both the topics we're talking about, vested interests but also conflicting information based on this. R: So where do you feel that leaves yourself? Where would other people feel that leaves themselves in terms	… Lot of info – same as any social issue Can read many articles, can find anything to back up opinions Refusal of people to put their hands up re. responsibility Interests: profits, national interest Conservationists: go for headline, doomsday Others play it down Conflicting info based on vested interests	*Social* issue – always info to support any position Vested interests – not acknowledging resp. Conservationists play up, others rubbish – conflicting info based on vested interests …	Relativism?: info to support any position Motives/agendas – not acknowledging resp Conflicting info, vested

of-? P16-2010: I think we've all got to try and cut through the crap and see what the realistic situation is behind it, and I suspect most people here have their own idea. R: Well I'd be interested to hear that. In terms of cutting through the crap if that's possible, what do people think that's possible and how can you do that? P11-2010: Well I mean the one thing I think is that whether it's a product of our own making or whether it's natural, none of us, or nobody seems to be able to tell us whether it's too late. So cutting through the crap is one thing, I mean that ultimately – can we do anything about it or are we all doomed? But if we can do something about it, what do we do? And how do we influence the other nations that don't seem to have signed up to anything? R: I mean what- there's a confusion people talk about- I mean what would your own balance of opinion be, your own perspective, do you think it's too late or do you think there's things we can do? P11-2010: I don't know. I sort of, I vacillate between putting my recycling out like I did tonight and despairing of everything and you know, it's, I've seen far too much and read far too much to be able to make an imformed decision about it really, we just have to do what we can.	We have to try to cut through crap Most people have own ideas … Whether natural/human – no one knows if too late Can we do anything or doomed? What do we do? How to influence other nations? Vacillate between despair and recycling Seen and read too much to be informed	Must interpret truth for selves Main concern: if too late or doomed … Vacillation in perspective See, read too much	interpret truth as indivs Inevitability/ catastrophe vs. possible action Ambivalence: Action and despair Difficulty interpreting

R: So you feel you've read too much information? P11-2010: Yeah I've really confused myself! R: Because sometimes people say 'oh you need more information, we need more education', would that not be-? It doesn't sound like that's what you're- it's almost like you're- you've read too much? P11-2010: I think there is too much out there and it comes back to what P19-2010 said about conflicting information, there isn't anybody saying 'this is what's right' and I suspect that's because nobody knows so therefore it should be taken to a much lower level of these are the things that you can do to ease pollution and use of resources and you know food miles and all this sort of thing, and really clear guidelines, and people can choose to do it or not. P17-2010: I think people need- regardless if things are going bad or if things are not really happening I think people should just be more efficient at whatever they do, regardless of climate change or no climate change, you know, if people just did their things better, improve waste- you know, make sure they're not wasting energy or make sure they're putting things out in the right places, it's got to be good, even though the effects might be minimal. R: OK. Can I ask P10-2010, what do you make of climate change, if you can get past your tongue piercing? <she	I've confused myself … Too much info out there Nobody saying this is right, because nobody knows Take to practical advice, levels Regardless: people should be more efficient Shouldn't waste Good even if effects are minimal	Confused Too much info, nobody knows … Arguments for action transcend CC	info … Relativ'm: nobody knows Everyday actions Non-conditional action

mentioned she can't talk very well because she had her tongue pierced that day> P10-2010: I don't really know much, but I put my recycling out- that's just my contribution towards helping. I would like to know a bit more. R: Do you think that- do you feel like when you're doing things like that that it makes a difference or-? P10-2010: Not really, just for me. It does- the waste aspect makes a difference, that kind of thing. R: Yeah. I mean what's your take on climate change, do you think it's something real and serious, or is it something that's more undecided like some people here? (9:30) P10-2010: I think it's a bit more undecided. At the same time … different climate changes happening all over different countries, obviously disasters striking at certain times of the year, so I think it can be serious [?] R: I just want to ask for anyone I've not heard from yet, sorry can you just remind me of your two names again, which way round it was? P13-2010: I'm #. R: # and # what's your opinions on climate change in general terms?	Recycling contribution … Can be serious Relates CC to extreme weather events?	… disasters	… …

P13-2010: Something to do with recycling, I get really frustrated because I do my best to put the recycling out, and I put the papers out and everything out in all the bins that they ask you, but then the people who are actually doing the recycling, half the time don't come to get it anyway, and then it just builds up and they complain because there's too much of it to take. So it's a- like an environmental issue. So I think it's down to a lot of people to contribute and all the different- in a lot of things, all the different industries to just contribute and do their best to help- and when there is a breakdown in that then it's not going to help. And then I find myself just thinking 'well, they're not going to take it, I might as well just chuck in the bin anyway and chuck it into a bin where it's actually going to be somewhere safe that I don't have to walk over it because it's spread all over the pavement'. R: Do you- sorry, you were going to say? P14-2010: I think everybody- if everybody did their bit I think- I think it could make the world a better place if people appreciated things more and everyone kind of did their own little bit towards helping the environment. I honestly think that erm- lately there's an advert for everything, you know the Home Office have got an advert about abuse in relationships, there's adverts now for Chlamydia and contraception, there should be more public awareness in regards to climate change for young	Recycling: I do my best But it's often not collected Builds up, there's too much It's an environmental issue Down to a lot of people to contribute Find myself thinking… If everybody did their bit, would be better Helping the env't	Own actions not reciprocated by those who collect recycling … Reflexive: find self thinking commonsense reasoning 'do your bit'– general applied to the specific of CC	Relational responsibility efficacy of action Collective efficacy (generalised), 'do your bit'

people as well so that they can treat the world and, you know, treat everything, you know with respect, because you see so many young people, or not even young people just spitting on the floor and chucking things about and it just makes me think 'you're either really uneducated in the subject of climate change or you really don't care', I don't know why that is, I just think it doesn't help.	Analogy: advert about STIs Should be more public awareness YP – treat world with respect Spitting/ littering makes you think they don't care about CC	Public awareness needed Connecting spitting/littering to CC: associative overlaps/ conflation	info/education moral (pejorative): respect for world around env'l issue overlap (littering)

Appendix 4.10: Ethics application for secondary analysis (information included in proforma)

The research entails secondary analysis of pre-existing focus group and interview data, for the purposes of exploring public understanding of climate change over the period 1997-2007.

The secondary data to be used has been obtained with the permission of the original researchers, and was obtained through a number of separate research projects carried out at UK universities over the period 1997-2007.

The data is already pre-anonymised and contains no sensitive personal information, in accordance with data protection practices. The secondary analysis is closely aligned with the research objectives of the original studies: to investigate the ways in which members of the public understand and interpret climate change as a physical/scientific and social phenomenon.

The rationale for the study is to investigate temporal variations and consistencies in understanding. For example, has scepticism about climate change increased over the period of data gathering?

Datasets will also be compared, in a similar fashion, with primary data gathered by Stuart Capstick as part of PhD work, which has been approved separately by the ethics committee earlier in 2010.

Appendix 4.11 Participant codes used in analysis and reporting

Note that year and month of sessions is given in US format.

1997/8 focus group participants (all Manchester)

Code	Gender	Year-month (all Manchester)
P1-1997	M	1997-5; 1997-6; 1998-1
P2-1997	F	1997-5; 1997-6; 1998-1
P3-1997	F	1997-5; 1997-6; 1998-1
P4-1997	F	1997-5; 1997-6; 1998-1
P5-1997	F	1997-5; 1997-6; 1998-1
P6-1997	F	1997-5; 1997-6; 1998-1
P7-1997	F	1997-5; 1997-6; 1998-1
P8-1997	F	1997-11
P9-1997	F	1997-11
P10-1997	M	1997-11
P11-1997	F	1997-11
P12-1997	F	1997-11
P13-1997	F	1997-11
P14-1997	M	1997-5

2000 focus group participants (all Norwich)

Code	Gender	Year-month
P1-2000	M	2000-11
P2-2000	M	2000-11
P3-2000	M	2000-11
P4-2000	F	2000-11
P5-2000	M	2000-11
P6-2000	F	2000-11
P7-2000	F	2000-11
P8-2000	F	2000-11
P9-2000	M	2000-11
P10-2000	M	2000-11
P11-2000	M	2000-11
P12-2000	F	2000-11
P13-2000	F	2000-11
P14-2000	M	2000-11
P15-2000	M	2000-11
P16-2000	M	2000-11
P17-2000	M	2000-12
P18-2000	F	2000-12
P19-2000	M	2000-12

2002 focus group participants

Code	Gender	Year-month (location)
P1-2002	F	2002-10 (Liverpool)
P2-2002	F	2002-10 (Liverpool)
P3-2002	F	2002-10 (Liverpool)
P4-2002	F	2002-10 (Liverpool)
P5-2002	F	2002-10 (Liverpool)
P6-2002	F	2002-10 (Liverpool)
P7-2002	M	2002-10 (Liverpool)
P8-2002	M	2002-10 (Liverpool)
P9-2002	F	2002-9 (Cromer)
P10-2002	F	2002-9 (Cromer)
P11-2002	F	2002-9 (Cromer)
P12-2002	F	2002-9 (Cromer)
P13-2002	M	2002-9 (Cromer)
P14-2002	M	2002-9 (Cromer)
P15-2002	M	2002-9 (Cromer)
P16-2002	M	2002-9 (Cromer)
P17-2002	M	2002-9 (Heysham)
P18-2002	M	2002-9 (Heysham)
P19-2002	M	2002-9 (Heysham)
P20-2002	F	2002-9 (Heysham)
P21-2002	F	2002-9 (Heysham)
P22-2002	F	2002-9 (Heysham)
P23-2002	F	2002-9 (Heysham)
P24-2002	F	2002-9 (Heysham)

2003 Interviewees

Code	Gender	Year-month (location)
P1-2003	F	2003-2 (Hants)
P2-2003	M	2003-2 (Hants)
P3-2003	F	2003-2 (Hants)
P4-2003	M	2003-2 (Hants)
P5-2003	F	2003-2 (Hants)
P6-2003	M	2003-2 (Somerset)
P7-2003	F	2003-2 (Somerset)
P8-2003	F	2003-3 (Somerset)
P9-2003	F	2003-3 (Somerset)
P10-2003	F	2003-3 (Somerset)
P11-2003	M	2003-3 (Somerset)
P12-2003	F	2003-3 (Hants)
P13-2003	M	2003-3 (Hants)
P14-2003	F	2003-3 (Hants)
P15-2003	M	2003-3 (Hants)
P16-2003	F	2003-3 (Hants)
P17-2003	F	2003-3 (Hants)
P18-2003	F	2003-3 (Hants)
P19-2003	M	2003-3 (Hants)
P20-2003	F	2003-3 (Hants)
P21-2003	M	2004-3 (Warwickshire)

2007 focus group participants (Cardiff); all July/August

Code	Gender
P1-2007	F
P2-2007	F
P3-2007	F
P4-2007	F
P5-2007	F
P6-2007	F
P7-2007	F
P8-2007	F
P9-2007	F
P10-2007	F
P11-2007	M
P12-2007	M
P13-2007	M
P14-2007	M
P15-2007	M
P16-2007	M
P17-2007	M
P18-2007	M
P19-2007	M
P20-2007	M
P21-2007	unknown
P22-2007	unknown
P23-2007	unknown
P24-2007	unknown
P25-2007	unknown
P26-2007	unknown
P27-2007	unknown
P28-2007	unknown
P29-2007	unknown

2007 focus group participants (Glasgow); all July/August

Code	Gender
P30-2007	F
P31-2007	F
P31-2007	F
P32-2007	F
P33-2007	F
P34-2007	F
P35-2007	F
P36-2007	F
P37-2007	F
P38-2007	F
P39-2007	M
P40-2007	M
P41-2007	M
P42-2007	M
P43-2007	M
P44-2007	M
P45-2007	M
P46-2007	M
P47-2007	M
P48-2007	unknown
P49-2007	unknown
P50-2007	unknown
P51-2007	unknown
P52-2007	unknown
P53-2007	unknown
P54-2007	unknown
P55-2007	unknown
P56-2007	unknown
P57-2007	unknown

2007 focus group participants (Norwich); all July/August

Code	Gender
P58-2007	F
P59-2007	F
P60-2007	F
P61-2007	F
P62-2007	F
P63-2007	F
P64-2007	F
P65-2007	M
P66-2007	M
P67-2007	M
P68-2007	M
P69-2007	M
P70-2007	M
P71-2007	M
P72-2007	M
P73-2007	M
P74-2007	M
P75-2007	unknown
P76-2007	unknown
P77-2007	unknown
P78-2007	unknown
P79-2007	unknown
P80-2007	unknown
P81-2007	unknown
P82-2007	unknown
P83-2007	unknown
P84-2007	unknown

2010 focus group participants (all Bristol)

Code	Gender	Year-month-day
P1-2010	M	2010-3-9; 2010-3-16
P2-2010	F	2010-3-9; 2010-3-16
P3-2010	M	2010-3-9; 2010-3-16
P4-2010	F	2010-3-9; 2010-3-16
P5-2010	F	2010-3-9; 2010-3-16
P6-2010	M	2010-3-9; 2010-3-16
P7-2010	M	2010-3-9; 2010-3-16
P8-2010	F	2010-3-9; 2010-3-16
P9-2010	F	2010-3-9; 2010-3-16
P10-2010	M	2010-3-15; 2010-3-17
P11-2010	F	2010-3-15
P12-2010	F	2010-3-15; 2010-3-17
P13-2010	F	2010-3-15; 2010-3-17
P14-2010	F	2010-3-15
P15-2010	F	2010-3-15
P16-2010	M	2010-3-15
P17-2010	M	2010-3-15; 2010-3-17
P18-2010	M	2010-3-15; 2010-3-17
P19-2010	M	2010-3-15
P20-2010	F	2010-3-23; 2010-3-30
P21-2010	F	2010-3-23; 2010-3-30
P22-2010	F	2010-3-23; 2010-3-30
P23-2010	F	2010-3-23; 2010-3-30
P24-2010	F	2010-3-23; 2010-3-30
P25-2010	M	2010-3-23; 2010-3-30
P26-2010	M	2010-3-23; 2010-3-30
P27-2010	M	2010-3-23; 2010-3-30
P28-2010	M	2010-3-23; 2010-3-30
P30-2010	F	2010-3-24; 2010-3-31
P31-2010	M	2010-3-24; 2010-3-31
P32-2010	M	2010-3-24; 2010-3-31
P33-2010	F	2010-3-24; 2010-3-31
P34-2010	M	2010-3-24; 2010-3-31
P35-2010	M	2010-3-24
P36-2010	F	2010-3-24; 2010-3-31
P37-2010	M	2010-4-27; 2010-5-4
P38-2010	F	2010-4-27; 2010-5-4
P39-2010	M	2010-4-27; 2010-5-4
P40-2010	M	2010-4-27; 2010-5-4
P41-2010	F	2010-4-27; 2010-5-4
P42-2010	F	2010-4-27; 2010-5-4
P43-2010	F	2010-4-27; 2010-5-4
P44-2010	M	2010-4-27; 2010-5-4
P45-2010	F	2010-4-27; 2010-5-4
P46-2010	M	2010-4-27; 2010-5-4
P47-2010	F	2010-4-27; 2010-5-4

Appendix 5 Physical discourses of climate change: extended interpretation and participant quotes

This Appendix is an extended version of the material given in chapter 5. Additional participant quotes and commentary are included here.

5.1 Status and practice of climate science

Overview: main characteristics and ontology of the discourse

Climate change is understood as a scientific concern. Truths about the veracity (reality or lack of existence), causation (human or natural), and the future consequences and implications of climate change, are knowable through the techniques and expertise of science. Equally, limitations in knowledge and lack of certainty are explained in terms of (climate) science practices and capabilities. The discourse for the most part draws on a positivist epistemology, whereby truths are objectively, empirically knowable – although this assumption is called into question in more recent talk.

Metaphors, rhetorical devices, recurrent motifs

- Truths/ 'reality'/ 'facts' to be detected, proved, disproved, predicted
- Scientific processes: empiricism (e.g. use of evidence, theory-testing)
- Technical/natural scientific language: e.g. measurement, analysis, research
- Scientific debate/disagreement; evolution of ideas and theory in science
- The role of experts and expertise in interpreting scientific knowledge
- Emphasis on depersonalised physical causes and effects (e.g. temperature, 'humans') rather than social aspects

Characteristics of the discourse

i. Consensus and uncertainty in climate science

Notions about *consensus and uncertainty* are commonplace in portrayals of climate science: ranging from the perspective that there is no consensus agreement or definite knowledge whatsoever among the scientific community, to the perspective that scientists are mostly or entirely certain about aspects of the science.

Whilst these ideas may at times refer to specific features of climate change (e.g. whether an anthropogenic component has been established, whether there is consensus that temperatures are rising) at other times it is unclear to what aspects of climate science notions of consensus/ uncertainty are applicable, or else this may be portrayed in generic or non-specific terms. For this reason, these portrayals are considered below as a whole, rather than separately in relation to different aspects of the science – however, where specific aspects (e.g. concerning human causation) are relevant these are referred to in turn.

One of the most commonplace means by which *un*certainty is conceptualised, is using the notion that there are *contrasting opinions* in existence among scientists: this view of climate science appears across all datasets. For example, in 1997 P1-1997 states that "they [scientists] are not sure… People have got one opinion about what it's going to be and another group have got another opinion"; in 2000 P7-2000 remarks "I'm interested in the idea of climate change but I'm not quite sure- there's quite conflicting views about what's actually happening". In respect of the attribution of climate change to human or natural causes, P4-2003 argues that "the actual cause in the change in the weather… the experts are all divided on that"; and in 2007 P79-2007 states (also in respect of attribution) that "I've read and seen two different arguments that state two different completely conflicting views".

Implicit in many participants' assertions, is a view that conflict in opinion is an inherent characteristic (i.e. is normal or 'typical') in science: P3-2000 for example – in response to a moderator question about whether climate change has human or natural causation – states that "in a way typically with scientists if you ask them or you hear debates, they'll say 'yes it is' and then another scientist might well say 'well maybe not'".

Another means by which uncertainty arises, is in the portrayal of *climate science as yet-to-be decided*: the notion that 'the jury is out' features in participant assertions across the datasets. This perspective often draws on the more generalised and positivist view of science as an establisher of definitive 'truth':

which in the case of climate change is not yet accomplished; as P11-2000 complains, "what I don't like is that there is no definitive scientific argument that… you can trust". The use of the idea of 'proof' points to this understanding of science – applied to climate change – where P7-2002 asserts "I'd love somebody to prove it you know". Similarly (and with specific reference to attribution of cause) P1-1997 argues that there is a lack of 'proof': "they reckon that the global temperature has gone up… but they can't prove that it's because of human intervention".

Other participant excerpts suggest a contrast between an establishment of truth as the proper objective of science, and the current status of climate science. The idea that it is premature to draw conclusions about climate change emerges, as where P14-2003 states that "it's too early to say… it's too soon to judge", and subsequently that "I'm not sure whether we're at that stage where we can wholeheartedly say: 'yes, there is…. global warming"'.

The positivist notion of "hardened facts" is used by P15-2007 also to make the argument that the realities of climate change are yet-to-be established:

> There need to be hard facts before we actually point our fingers and people need to come to consensus all throughout the world… The step forward for this is it should be basically research hardened facts and that everybody come[s] to a consensus.

P1-2000 also suggests that the "reality" of climate change is not yet established, including by way of an analogy with uncertainties in understanding BSE-related illness[1]:

> We need… people to… try to get to reality. Every time I read something where it says 'as a result of so-and-so, climate change if you like, we may find so-and-so': that's no good. It's rather like we may find we'll have BSE-related illnesses… We *may* <italics in original transcript>. Every time all these people keep saying 'may' or 'possibly'… I keep waiting for someone to say: 'right, we have done a detailed analysis and that is what is what is going to happen. Then I think we've got something we can hang our hat on… At the moment we don't seem to have that.

ii. Methods and prediction in climate science

Where uncertainty is considered to be a factor in climate science, this is also commonly attributed to the *methods* and *predictive power* of climate science.

[1] Bovine Spongiform Encephalopathy, a disease that can be passed from cattle to humans that was of particular public concern at the time these focus groups were conducted.

In terms of the methods used to draw conclusions about climate change, P14-2003 – who is quoted above asserting that it is "too early" to be certain – builds on this argument by arguing that "the indicators they use and the machinery they use to measure certain things… like rainfall and all the basics have change so much over the years that it's not 100% accurate". P22-2010 argues that there is uncertainty ("does anyone really know?") in large part due to changes in the methods and techniques of climate science, whereby "things that we are measuring today we haven't measured in the past". In respect of the particular hypothesis that sun spot variability may be responsible for climate change, this participant also refers to an argument made by an acquaintance, who "was saying about sun spots… he was saying this is one of the big things that's used to explain that climate change is happening, but we've never recorded it before so we don't know it wasn't there before".

P22-2010's argument is similar to one made in a 2000 group, some ten years previously: following a discussion among participants about whether the burning of fossil fuels was responsible for climate change (as well as more general reference to environmental degradation), P10-2000 argues that "this comes back to the point I was making about having the science and the knowledge and the resources to record things. If they're not recorded would anyone have noticed?" The notion that changes may appear to be occurring only as a consequence of newer methods applied (effectively a 'false positive' or type 1 error argument) recurs in other datasets. Thus for example P14-2002 argues with reference to ozone depletion[2]:

> We don't know whether… these cycles [i.e. natural cyclical variation in climate] have been happening before. If you take the ozone layer for instance, they say there's a hole appeared in it, they only discovered it about 10 years ago. I mean they didn't have the instruments to measure it 50 years ago, there might have been a hole there [i.e. previously] and it's closed up again, we don't know.

A method particularly pertinent to climate science, is the use of computer models. As an underlying method, these may be considered questionable in themselves: "we're talking about using computer models and how accurate can we [be]?" (P17-2002).

That climate science entails 'prediction' is also considered in several places to undermine certainty. From a 1997 focus group, P10-1997 argues that "nobody knows because you can't really predict what's going to happen to the weather that far in advance".

[2] It is not clear whether the participant's argument entails conflation of climate change with ozone depletion, or uses an analogous reference to the measurement of ozone depletion: either way, the point made refers to the relevance of methodology in science.

A recurrent means by which the predictive capacity of climate science is considered limited, is through reference to previous inaccurate predictions made by environmental scientists: in essence, that *precedence exists for erroneous prediction*. As P1-2000 reflects in 2000: "I think back to 20-25 years ago when… scientists were talking about the collapse of… the world because of pollution… and it's not happened, and it's interesting why it hasn't happened, why science thought that was going to happen"; similarly, in 2010 two participants agree that past predictions of "horrendous" futures were overstated:

> P32-2010: Do you remember that [TV] programme World In Action… you used to see the headlines were absolutely horrendous, you know, in twenty year's time this is going to happen. And even as a kid I thought, that'll be horrendous, but I look back now and think: 'well none of those things happened'.
> P31-2010: Or if they did happen, they weren't so bad after all were they?

Featuring in two of the datasets, is the specific notion that in the past scientific predictions have been for dramatically lowered temperatures, thus pointing to a limited capacity for climate prediction of any sort. As P11-2000 argues, "everyone assumes that the temperature will continue to rise… are these inevitable scenarios? 20 or 30 years ago they were talking about an impending ice age". This argument recurs in 2010, where P28-2010 attributes his own stated scepticism about climate change to this problem of prediction: "One of the reasons I am sceptical is because in the 1970's it was going to be the start of a new ice age. So in thirty years we've gone from the start of a new ice age to global warming".

iii. Agreement among climate scientists

Whilst assertions regarding lack of certainty are commonplace, nevertheless the counter perspective – that there *is* certainty or consensus – does also emerge often. Where a *consensus position* is affirmed, this in all cases asserts that climate change is 'real' and/or human-caused[3]. For example, in respect of whether the climate is changing, P8-2000 argues that "almost all the information that we've seen shows that we have some- global changes are taking place"; P2-2003 suggests that "I don't think they can actually prove it down to the last- to the nth degree, but there's a lot of evidence pointing in that direction". In 2007, P65-2007 notes "the vast majority of people who have investigated this" have found changes in temperature. In 2010 P2-2010 asserts that "they know it's going to happen, they know it's happening for records going back hundreds of years… the weather patterns are changing and

[3] No participant in any group argues that there is a scientific consensus that climate change is *not* real or does *not* feature an anthropogenic component.

there is no doubt about this, it's a real thing"; and P7-2010 states that "as I understand it, scientists agree pretty much, apart from a few loonies, there is such a thing as climate change".

In a number of places – and exclusively among the later (2007 and especially 2010) groups – percentage figures are used to express degrees of certainty about climate change. Consensus among climate scientists is affirmed on several occasions in this way: P13-2007 asserts "it's the fact that… there's 90% of environmental scientists do agree now that there is climate change"; in a 2010 group P33-2010 states that "it's just the facts… it's 95% of scientific knowledge" and P34-2010 that "the science is accepted by… 90% of scientists"; in a separate 2010 group, P40-2010 states that scientists are "90% sure" that climate change is "happening", with P44-2010 also stating that "I've heard figures like 90% of the scientists think that it's happening". In another 2010 group still, P25-2010 argues that "there is a consensus of about 95% of the scientific community that global warming is very serious… and is almost certainly caused by man".

iv. Expertise in climate science

The place of *expertise* as a factor influencing the status of climate change knowledge is referred to across the datasets. Notwithstanding the portrayal of divergent opinion among experts, most usually the ascription of expertise to scientists is taken to contribute to a position of (relative) certainty. For example, in respect of what she has read about climate change, P17-2003 asserts that "I feel I ought to believe it because most of it has scientific backing and if it's following scientific research, if it's following a lot of analysis of data, then hopefully they're giving us the correct picture". P2-2010 similarly affirms a trust in the practice of climate science, in respect of the particular work of the Met Office: "we have to put our trust in some people and… the Met Office… have been recording the weather for a hundred and twenty-odd years… and you kind of expect them to get their numbers right, to have basic maths".

Despite assertions such as these, expertise in itself (not necessarily confined to climate science) and the reliance upon it is often portrayed as problematic. As P22-2007 puts it, "we don't as individuals go and test what gases are coming out of planes and cars and we're only told aren't we… we don't know for definite". In 2010 groups, P20-2010 states that "there's the fear- there's the experts, do they really know what they're on about?" and P31-2010 questions a reliance on experts in any sense, by way of analogy with economic expertise: "these people [climate scientists] *are* experts , but, you know, we have expert economists that screwed up the economy, so why is a scientist going to be any more of an expert than someone else that predicts the future?"

An exchange between two participants in a 2010 group further illustrates the means by which consensus in climate science can be both affirmed and contested through different perspectives on expertise:

> P44-2010: I'm prepared to trust the scientists, I'm prepared to trust the experts, and therefore if it's like 92% of the experts say it's going to happen-
> P40-2010: But they also said the Earth goes round the centre of the universe.
> P44-2010: … [but] you've got to believe something haven't you… I don't know there's electrons in an atom, but I'm prepared to believe there's intelligent people out there.

Interestingly, the notion of flawed historical cosmological assumptions, is again used to challenge reliance on expertise in a separate 2010 group exchange:

> P4-2010: [Climate change] is something I've always been quite interested in… if you know where to look and… keep your head on when you're reading it, it's there if you want to look for it.
> P2-2010: But what about when everyone was told the world was flat? And that's what people thought, and how would we know any better?

Climate science expertise is also challenged in one 2000 group, with reference to potential bias arising from non-scientific influences upon expertise ('vested interests'). Whilst asserting that there is a need for neutrality in drawing conclusions about climate science, P3-2000 nevertheless argues that "it's very very difficult to have an international body that can be neutral because it's got to be funded by somebody… and that organisation that funds them often has a vested interest…"

The notion of oil industry-funded 'science' as biased and unduly influenced, emerges in three separate groups in 2010 discussions: however in contrast to the 2000 excerpt, it is the credibility of those refuting (mainstream) climate science – in the name of 'science' – which is challenged here:

> The so-called scientists who've disagreed with [climate change] are paid by the oil industry, and that's been proved. (P25-2010)
>
> As far as I'm aware the scientists who are doing the actual science all agree. The scientists who are being funded by oil companies and things, not so much. (P4-2010)
>
> I tell you what I'm not prepared to believe, and that's the scientists who are paid by the oil companies. (P44-2010)

v. The University of East Anglia controversy

In addition to such defences of the consensus climate science position, the 2010 groups also refer to the controversies which arose around the leaking/hacking of emails from the University of East Anglia

(UEA) in late 2009/ early 2010, and associated allegations of academic impropriety. It is only in the 2010 groups, and uniquely in the context of the UEA controversy, that any aspect of climate science is portrayed as dishonest and/or discredited. Whilst not featuring to any large extent, this was referred to in three of five of the 2010 Bristol groups – and in all cases as contributing to uncertainty about climate science.

In the following excerpts, the following terms and phrases are indicative of this: "adds an element of doubt"; "adds to the confusion"; "chips away at… the arguments"; "undermined the science". There is nevertheless an important distinction to be made here: there is no evidence that the UEA controversy was seen as fundamentally disproving climate science, although participant remarks do point to an effect in terms of heightened uncertainty.

In respect of the UEA controversy, P19-2010 states that "we had the academic information recently discredited which didn't help, whether the case is true or not that adds an element of doubt": importantly, the suggestion here is not that the academic practices were necessarily dishonest, nonetheless that they *may* have been is enough to heighten uncertainty. In the same group, P15-2010 recalls questions she herself had considered:

> Somebody told me that the UEA was the hub of information and that it was a glitch, that they'd deleted [data]… I thought: 'well, how much of the data was deleted?... Was it important data?'... So I thought that just added to the confusion.

In a separate group, P26-2010 argues "well it [the UEA controversy] chips away at the very bedrock of the arguments of global warming, CO2 emissions… I need to rely on something which I would consider to be a very strong fact… how relevant is it to the big picture? I don't know". In the third group in which the matter was mentioned, P31-2010 states that the story "undermined some of the science didn't it. They were skewing some of the results to get the answer they wanted". This final sentence is the clearest indication of a perspective that research work was deliberately and dishonestly adjusted, and that this was deleterious in terms of the consensus science case.

Change in the discourse over time (1): Inconclusive science to position-dependent science

One manner in which there has been identifiable change over time within the discourse, is in a shift in how uncertainty and consensus in climate science is explained and portrayed.

There is a move from explaining uncertainty about climate science in terms of its being *inconclusive* (earlier groups) towards uncertainty construed as the presence of multiple (possibly valid) positions: this is termed here a trend towards *position-dependence*. Position-dependence is explained in more detail below

with reference to later datasets: its main characteristic however is that climate science is characterised by opposing 'sides', each with their own *version* of the truth – rather than that 'truth' is a singular entity to be attained.

The trend from inconclusive/ undecided to position-dependent science is revealed by a relative decrease in emphasis of the earlier (inconclusive) version of uncertainty over time, and a relative increase in emphasis of the latter (position-dependent) version of uncertainty.

In the 1997 and 2000 datasets, there are numerous instances of participants asserting that the realities of climate change are not yet established, which are used to explain underlying positions of uncertainty. Phrases which indicate this (some of these are more fully quoted above) are those such as "nobody knows" (P10-1997); "they can't prove [a human cause]" (P1-1997); "we don't really seem to know" (P3-2000); "at the moment we don't seem to have [a consensus]" (P1-2000); "there is no definitive scientific argument" (P11-2000). Although it is argued in places that there are 'conflicting views', where appearing this is indicative of disagreement as part of 'normal' science. For example, P3-2002 compares disagreement among experts in "virtually any" sphere to the "different views" among climate scientists:

> you [used to be] told don't have butter it's bad for you… now butter's good for you… virtually any experts you speak to doubtless will contradict each other… one doctor… will give you cream… another… will give you antibiotics… so all these experts quite often have different views.

Inspection of the 2002 dataset, specifically for an examination of this trend, is complicated by the deliberate use of two opposing expert quotations as a focus group material to elicit discussion of perspectives on climate science. In addition the moderator of the groups appears (intentionally or otherwise) to frame the climate science as inherently oppositional: for example, the moderator draws attention on a number of occasions to the quote which is counter-consensus, stating in one group "measuring is all very well but the whole argument about global warming is it's about the future… you can't measure it now…"; in a second group "how about the arguments… that there's no sound science, it's all computer models, it's all unreliable data?"; and in the third (of three) groups "I mean there have been some… sceptical scientists that have said that the models… and the data the models are based on is flawed… they're very simplistic… there have been some arguments which are quite critical of the way climate change has been modelled".

Despite such framings in 2002, however, participant perspectives are characterised by views of uncertainty which continue to emphasise the science as inconclusive, as well as acknowledging position-dependence. For example, in direct response to the quotations presented to them, P7-2002 states "they're quite opposing. One's very factual… but I'd love somebody to prove it you know… get some

data… and once you've got that data… it's pretty conclusive isn't it". In a separate group, the notion that research is inconclusive but may yet become more definite, emerges in a suggestion by P9-2002. This participant asserts that what is required for acceptance of the reality of climate change is that "they [experts] do more research… and you start to think yes this is definitely happening"; however it is implied that the science has not yet arrived "at that stage". This participant adds in response to a further moderator prompt (as quoted above concerning "sceptical scientists" who are "critical" of modelling), that "people on both sides can produce totally convincing arguments". Another participant in this group also makes reference to "two sides" and connects climate scepticism to the idea of natural climate variation – again though this may be partly influenced by the moderator:

> Moderator: I mean how do you feel that there are a few scientists out there that are quite sceptical…?
> P16-2002: … if you've got a sceptical scientist then he's just saying well look at the development of the world… you've gone through the ice age, it's warmed up and all the way through… so that's why they're going to be sceptical aren't they, because there's always two sides of the coin isn't there.

In respect of the 2003 interviews, there is evidence of uncertainty around climate science explained both in terms of inconclusive science, and of position-dependence. Again the notion of a "stage" not yet reached is asserted, where P14-2003 suggests "I'm not sure whether we're at that stage where we can wholeheartedly say: 'yes, there is…. global warming'". This participant however also relates the problem of ascertaining truth to "the post-modern condition" in which there are multiple truths: "It's the post-modern condition… what is truth? Well there are many truths, which one do you want, which one suits your prejudice best?"

Elsewhere across the 2003 interviews, there is evidence of portrayals of both versions of uncertainty. For example, in respect of climate science as 'inconclusive', P19-2003 asserts that arguments made by scientists that particular environmental changes constitute "proof that global warming is happening" are "a very premature conclusion"; P14-2003 also suggests "it's still too early to know" and "too soon to judge". The use of the word 'until' by P18-2003 furthermore suggests a perspective that the science is as-yet-undecided, where she states "I think until scientists are actually sort of- well I- I don't think there's a consensus" and that "I think the scientific message isn't… clear". In respect of climate science construed as position-dependent, by contrast, P21-2003 argues that "both sides are going to exaggerate their arguments"; P15-2003 argues that "there are contradictory views… depending on what country you're living in" and elsewhere refers to "the doubters" as a group of sceptics who reject a human cause of climate change.

By the 2007 datasets, position-dependence has become noticeably prominent, with a view of uncertainty in terms of inconclusiveness having become less salient.

As with P15-2003's emphasis on views dependent upon "what country you're living in" quoted above, P17-2007 argues that "a lot of American scientists will not acknowledge the fact that we're damaging this Earth we live on, and there's a lot of thought in America that this is just scaremongering… there's two different stories out there". In a separate group, the idea of two 'sides' is also emphasised, where P7-2007 asserts in respect of a television programme about the subject: "they had a debate going on and you had certain scientists saying 'this is caused by us and our emissions' and the other scientists saying 'well no, actually… this has happened before'". In a third group reference is made to 'sides' in the debate, where P24-2007 argues "one side just says… 'climate change has got nothing to do with what the human race is doing' and another says 'yeah, it's all to do with it'"; in a fourth group still P42-2007 alludes to sidedness where he states "I've seen so many reports in the papers about global warming and it's due to this- and then the next guy comes along and says it's a load of rubbish"; and in a fifth group P77-2007 also makes reference to "two scientists" in terms of opposing sides.

In the 2007 groups, whilst references are made to the desirability of scientists achieving consensus (e.g. as quoted above from P15-2007: "it should be… research hardened facts and… everybody come to a consensus") the notion that there is a 'truth' or truths about climate change which are yet to be established, appears largely absent. By this time period, there is the sense that 'sides' and oppositional perspectives dominate explanations of uncertainty.

By the 2010 focus groups, the notion that uncertainty in climate science relates to position-dependence is now prevalent. These most recent perspectives characteristically emphasise a primacy of position over evidence. A clear illustration of this is where (in a discussion between participants about whether climate change is natural or anthropogenic) P32-2010 argues "it is all opinion isn't it, and it depends what you want to believe". Similarly, in a separate group P15-2010 argues that climate change "is the same as any social issue that you can read as many different articles written by desperately educated and important people, and you can find as many as you want to back up your opinion whatever your opinion is".

As with the 2007 groups, the notion of 'sides' in the climate debate emerges on a number of occasions: for example P11-2010 states that "I've seen both sides" and P27-2010 that:

> There's the Al Gore film [An Inconvenient Truth] and there's people who will take that apart frame by frame, and **there just seems to be no sort of right or wrong**, it's a very debatable point, and there's people have got their views on whether it's very very serious or whether it's not as bad. (emphasis added)

The role for 'opinion' in the portrayal of climate change – in direct contrast to the more positivist notion of "hard evidence" – is affirmed by P12-2010, who states: "we're not told from the point of view of hard evidence, we're told from the point of view of opinions of Joe Bloggs, and it's the opinions that conflict and make us feel fear". The effective labelling of positions points to further evidence of a salience of position-dependence, in the assertion by P31-2010 that "people that say 'I'm not convinced' are suddenly climate change deniers… the issues are very polarised, i.e. **you're a believer or a non-believer**" (emphasis added).

Using the analogy of research on cigarettes, P30-2010 herself appears to characterise change over time in respect of climate science, in terms of a move from an inconclusive matter, to a situation where an evidence base has been established but yet where an identifiable 'group' still elects not to 'believe':

> To me it seems a bit like the old argument about whether cigarette smoking causes cancer. For years no one believed it… and then gradually over time there was a shift and a shift and a shift, and finally it's got to the point where *most* people believe, or whatever word you want to use, but there are still a group of people, possibly **those who are tied in for some reasons of their own, to not believe** (emphasis added).

Change in the discourse over time (2): perspectives on information excess

A second means by which there appears to have been a change in emphasis on uncertainty, is in an increase over time in emphasis upon *information excess* as underlying uncertainty about climate change. Such information excess may relate to large volumes of evidence, and/or an extensive range of opinion, which tends to be portrayed as impinging upon an inability to discern the 'truth' – either in general terms, or contextualised in terms of participants' own perspectives.

In the 1997/8 focus groups, no reference is made to an excess of information. In the 2000 groups, two separate references are made, where P1-2000 suggests that "I think… we're getting hit with so much of it now that it's almost overload… how do you pick out what's true?" – this excerpt refers specifically to the perspective that the consequences of climate change appear unclear; also P13-2000 asserts "you get so many different opinions from all these learned people".

In the 2002 focus groups, no reference is made to information excess, however two interviewees (of 21) do so in 2003. The first of these – already quoted above – asserts that "it's not a problem that there is no information available, the problem is that there is too much information". The second interviewee making reference to information excess (though less explicitly so) states that "there is so much

discussion and debate" and elsewhere that "there are so many uncertainties… that it is difficult to be absolutely- it's clearly not certain".

By 2007, a number of references to information excess have appeared – in four of nine focus groups and on a number of occasions. P73-2007 makes a direct link between information excess and personal uncertainty, where explaining "to me there is so much contradictive <sic> evidence, so I'm really no sure what... who to believe or who to accept". In the same focus group, P66-2007 states that they agree with this perspective, reflecting that "[I am] with [P73-2007] on that. You're getting so many different conflicts, opinions coming through, who's got the right opinion? I mean technically we're all entitled to an opinion, but at the end of the day, who's correct?"

In the third group in which information excess is referred to, P79-2007 states that "there's so many conflicting views", this subsequently affirmed by P77-2007 who states there are "two completely conflicting views". In the fourth group in which information excess is referred to, P42-2007 (as quoted above) states "I've seen so many reports in the papers about global warming and it's due to this- and then the next guy comes along and says it's a load of rubbish".

By the 2010 groups, the notion that information excess underlies uncertainty about climate change appears in four of five of the participant groups, and by a larger proportion of participants. In the first of these, P19-2010's first response to a moderator prompt asking participants what "first comes to mind" about climate change is: "a lot of conflicting information". Where asked to explain further, this participant notes: "there is just so much information… there's no definitive answer"; following these remarks, P15-2010 asserts that "there's such a lot of information" (see above for full excerpt). Later on in this group – during a discussion about whether it remains possible to address climate change (i.e. not directly related to information excess), the following exchange occurs:

> P11-2010: I've seen far too much and read far too much to be able to make an informed decision about it really, we just have to do what we can.
> Moderator: So you feel you've read too much information?
> P11-2010: Yeah I've really confused myself… I think there is too much out there and it comes back to what P19-2010 said about conflicting information, there isn't anybody saying 'this is what's right' and I suspect that's because nobody knows.

In the second group in which reference to information excess is made, P6-2010 states in the course of a discussion about whether climate change has natural or human causation, that "there's just so many vast differences in opinion, you just don't know what to believe". In the third group, P27-2010 clarifies his position as "confused" rather than "sceptic" by means of reference to information excess: "I wouldn't say sceptic, I'm perhaps more confused, because there's a lot of very very different theories out there". In the fourth group, P31-2010 refers to the quantity of information available on the internet

about climate change, and the contradictory nature of this: "there's loads of it… there's lots there… there's lots of facts and figures from eminent scientists, but… also lots of other… quite credible arguments".

The phrasing used in the excerpts above – such as "too much information", "so many different conflicts" and "so many conflicting views" – and the direct links made with perspectives on uncertainty, point to a role for the idea of information excess in explaining uncertainty. The increase in prevalence over time suggests an important means by which uncertainty about climate science has come to be sustained, even at the same time as views on scientific consensus are consolidated.

Continuity in the discourse over time: uncertainty around human causation

Inspection of the datasets across years, suggests that portrayals of uncertainty, specifically with regard to human causation, have persisted over time – and perhaps even increased in salience. In the earlier datasets and in the most recent, there are numerous instances of participants asserting that there is a lack of scientific consensus that climate change is anthropogenic (as well as affirming there is a consensus).

Notably, whilst participants in the 2010 groups do on many occasions affirm that there is a scientific consensus that there is a human component to climate change, in all five groups there were also statements to the contrary: that the matter remains uncertain. Examples of these portrayals of uncertainty include the following remarks (the four quotes are taken from separate groups; some excerpts are more fully quoted above):

> [some] people say it's… natural… others [say] it's man-made… trying to weigh up the thing is difficult (P19-2010)
>
> I think… that we are part of it, but there's a natural cycle as well… there's just so many vast differences in opinion (P6-2010)
>
> some people say that we add so little it makes no difference, some people say… it's the humans doing it (P35-2010)
>
> scientists never said climate change is definitely happening… if it's man-related or not, they're not certain (P40-2010)

Comparison of these characteristic excerpts with expressions of uncertainty about anthropogenic climate change from 1997-8/2000 indicates persistence in these portrayals. In the earliest dataset, for example, P1-1997 asserts that "temperature has gone up… but they can't prove that it's because of human intervention". In the 2000 groups, P5-2000 for example asserts that "you can't decry the

evidence… there must be a warming globally… but whether it's caused by what we're doing or whether it's… natural… I have a hard job to decide".

Whilst it is unclear whether the scientific position on human causation is portrayed as more uncertain in later than in earlier groups, it is noteworthy in any event that there is no evidence for a *decline* in the view that it is uncertain, as might be expected.

Functions and consequences of the discourse

The discourse presents climate change as a formally knowable and impersonal phenomenon. Its status is subject to rational appraisal and the application of evidence. Whether one accepts the reality of climate change or not, this is based on the knowledge claims of others and of evidence obtained by others. Where consensus is asserted, this tends to be based on the view that experts 'agree' or that their evidence is convincing; where lack of consensus is asserted, this tends to be based on the view that experts do not (or can not) agree, or that expert claims may be flawed.

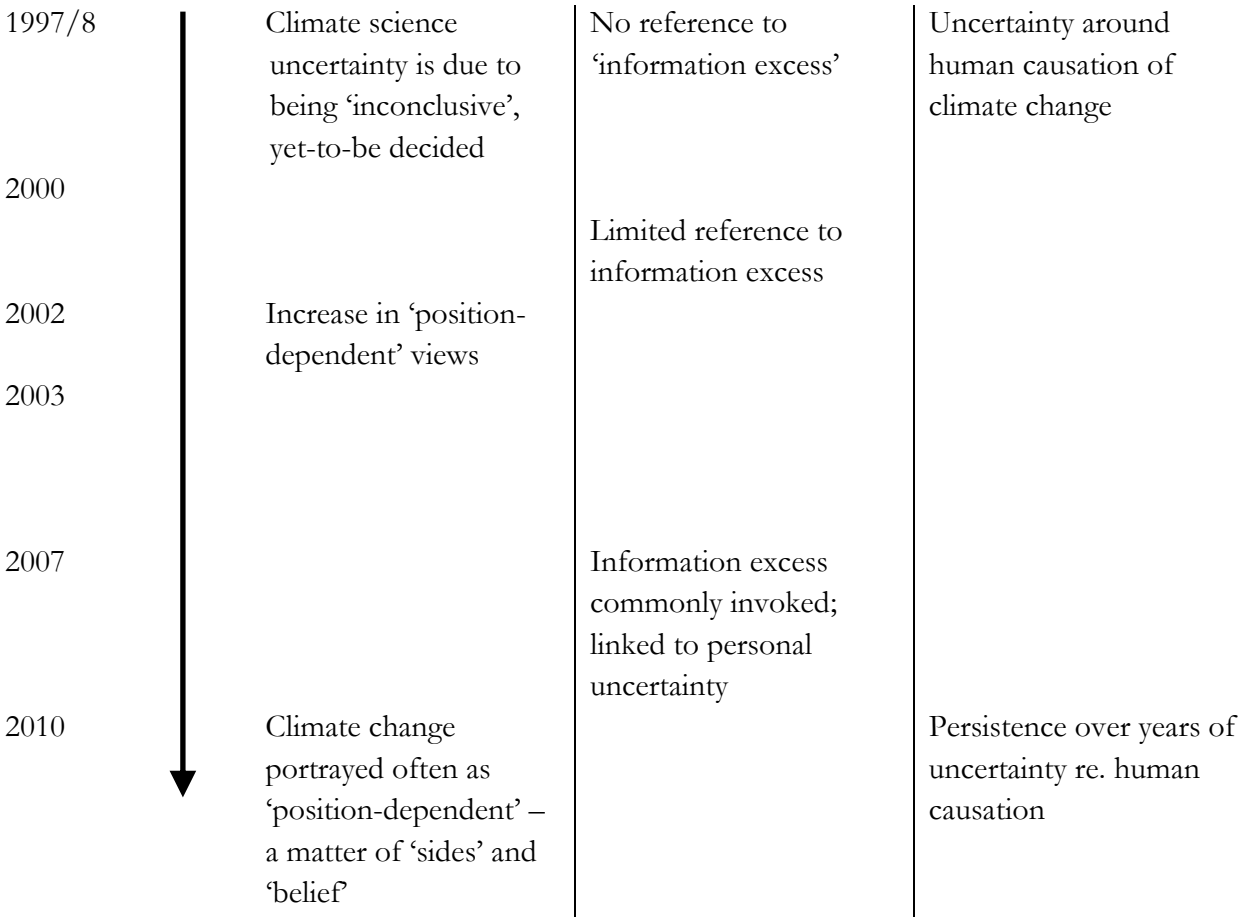
One possible consequence of the discourse is that, where the realities about climate change are seen as being determined by an external and exclusive expert domain, this separates climate change from the concerns of individuals themselves: it is perceived from 'outside' and as at some distance from the abilities and knowledge of ordinary people. Whether referring to consensus or confusion, these are seen to occur as part of the contentions and competing claims of 'expert' others.

This said, the arguments made by participants as outlined above do readily incorporate common-sense appraisals of received wisdom and the assertions of experts – people apply their own judgments to scientific judgments. Appropriately or not, the discourse therefore permits the insights and common-sense ideas of individuals themselves to be applied to this otherwise scientific and technical domain.

SLQ summary: changes and continuity of the discourse

Figure A5.1 illustrates changes in the discourse, as considered above.

Figure A5.1: Change in *status of science* discourse across datasets



5.2 Informal empiricism

Overview: main characteristics and ontology of the discourse

Climate change is understood as a physical phenomenon, able to be directly and immediately perceived by the senses and through one's own sense-making processes. The discourse is termed 'informal empiricism' to reflect that it entails the application of informal 'evidence', to draw conclusions about the realities, causation and importance of climate change. The foremost type of evidence which appears in the discourse, is that relating to the weather and seasons. In addition, an eclectic range of indirect and vicarious evidence may be applied.

The discourse does not logically presume a position about the realities of climate change because by its nature a variety of conclusions can be drawn. Nevertheless, for the most part, it tends to lead to the perspective that climate change is a reality through its being directly perceptible.

Metaphors, rhetorical devices, recurrent motifs

- Weather and seasonal events, especially of an unusual/ abnormal sort (e.g. seasonal 'merging')
- Direct evidence of the senses (e.g. climate change you can 'see'); 'everyday' occurrences
- Indirect and vicarious/ anecdotal evidence (e.g. obtained from acquaintances)
- Comparative reference to personal memories (e.g. of weather in childhood)
- Common-sense reasoning about climate change using these evidence types

Characteristics of the discourse

i. Evaluating climate through informal evidence

It should be noted before proceeding, that at times it is unclear how informal evidence is used: as 'small talk' (especially in the case of talk about the weather); as illustration or *confirmation* of that which participants already assume to be the case (e.g. that climate is or is not changing); or as a form of informal evidence, used to *rationally evaluate* the realities of climate change (e.g. it has been much hotter in recent years, *therefore* climate is changing). It is the last two of these which are of interest where considering the 'informal empiricism' discourse.

On a number of occasions, and across multiple datasets, participants make explicit reference to the sense-making processes used – and indeed the utility of these – which are revealing for the credence ascribed the use of 'informal empiricism'. For example, in 2002 P4-2002 asserts that "I think you've just got to try and make your own judgment yourself, muddle through" before going on to illustrate her position with reference to personally having noticed changes in insect life. Similarly, in 2003 P4-2003 explicitly states that he 'knows' from his own judgment that changes in the weather have occurred: "All I know is from clear observation, the pattern of weather has changed". The assertion that it is to a process of reasoned judgment that one must resort (rather than relying on e.g. the media), is made by P16-2010 in 2010, who asserts that "I think we've all got to try and cut through the crap and see what the realistic situation is"; and by P1-2000 who also proposes that "I think what we need is… people to look through the spin and try to get to reality". As P70-2007 puts it, "I look at the weather and that tells me that the atmosphere is changing".

Numerous other uses of language across the datasets point to such processes – commonly, where evidence is presented, which is then used to draw a conclusion. These appear across the examples considered below.

ii. Weather and seasons as informal evidence

The most common means by which climate change is evaluated – its veracity, implications, and attribution to human/natural causes – is through reference to the weather and seasons.

Attention may be drawn for example to the character of recent weather, such as in a 2007 group where P45-2007 refers to the perceived peculiarity ('bonkers' and 'crazy') of the weather of late:

> I think the weather is bonkers, I think the weather is absolutely bonkers… I can see going to the shop and it's raining… Coming out the shop it's like that [points to sunlight outside]. I mean and this is happening… I think the weather has just been absolutely crazy.

Other examples of the use of recent, direct experience of the weather to draw conclusions concerning climate change (or at least – a view that changes are occurring in respect of the weather) recur repeatedly across the years of data collection.

The use by participants of terms that relate to the direct experience of the senses (to notice, to see, to detect, etc.) and use of the present tense (i.e. that the weather 'is' a certain way) point to this. Examples using such terms include: P3-2002's comment that "I've noticed very different seasons, seasonal weather changes"; P1-2000 stating that "the main thing I notice which seems to me to be detectable is… the winters are warmer"; P70-2007's argument that "you've got to look at the weather… I look at the weather and that tells me that the atmosphere is changing"; and participants in 1997 suggesting that the weather has 'gone haywire':

> P3-1997: It's [the weather] just gone haywire really, quite changeable.
> P6-1997: You don't know what's going to happen one day to the next.

The types of changes to temperatures, weather and seasons which are treated as informal evidence vary, but generally encompass a view of *change or abnormality*. These include: "changing weather patterns" (P14-2003), increased rain or hail, rain "at the wrong time" (P4-1997), less snow or snow at "the wrong time" (P22-2007) or even snow of a changed type, such that one participant notes: "I did notice last winter when we did have snow, I was trying to build a snowman… you used to roll a snowball into a big snowball, you couldn't do that because it was so powdery… you couldn't get it to solidify to make a decent snowman" (P2-2002).

Other examples of change and abnormality include stronger sun, greater changeability or unpredictability of weather, more dry spells (or drought), more flooding, more extremes of weather or "freak conditions" (P9-2002), winters which are shorter or wetter or warmer or which finish later, shorter or colder springs, warmer or dryer or longer summers, etc.

Conclusions are drawn by contrasting direct experience of the weather with what is considered 'normal' – with terms such as "wrong" (P22-2007), "haywire" (P3-1997), "all to cock" (P5-1997), and "unnatural" (P18-2003) used to emphasise this. For example, P18-2003 (following the reference above to March heat) argues that this "seems totally unnatural… the seasons aren't behaving as they should do".

Despite the overall variety of weather and seasonal evidence applied, there are commonplace types which emerge repeatedly across the datasets. In terms of the weather, warmer or hotter temperatures are referred to in all years (even 2010, where research groups directly followed a very cold winter). Weather which has become less predictable, with more extremes or shifted patterns, is commonly affirmed. In seasonal terms, reference to 'merging' or seasons becoming less distinct consistently emerges across all years. The following participant quotes from across the years bear this out:

> Merging into one… they're just not distinctive like hot in the summer, cold in the winter. (P7-1997)
>
> [an acquaintance says] we don't have seasons any more, they just roll into each other in mixtures. (P13-2000)
>
> We don't seem to have, I don't think, definite seasons… It seems to drift one to the other. Whereas we used to have very cold winters and warm summers it seems to drift… there's no definite line. (P3-2002)
>
> I think you can see differences in seasonality. (P13-2003)
>
> We used to have spring, summer, autumn, winter and we don't get those any more. (P59-2007)
>
> I definitely think that the seasons have changed, it's shifted, we don't get summer in the same way as we used to. (P24-2010).

Conclusions may be drawn about changes to the weather and seasons through comparative *reference to memory*. P18-2003 for example suggests that "I don't remember a week as hot as this in March before". Elsewhere, comparisons may be made with childhood memories, such that "when I was younger, I always remember everybody knew when they could plan their holidays: flaming June, April showers, you know… it's all different now" (P21-2007).

The following recollections made in two separate 2002 groups as to remembered differences with childhood also bear this out: P2-2002 notes that "I remember at Easter my mum making me little tiny dresses… because it was roasting, and that was [in] March. March now is really bad isn't it, it's like winter" (P2-2002); and P15-2002 that "when I was a little boy summers were short and winters were long, it seems the other way round [now]".

iii. Indirect and vicarious informal evidence

As well as reference to one's own experiences of weather and seasons, participants also refer to a variety of other indicators – both from their own experience, from the experience of others (vicarious experience or evidence) and from other indirect sources (e.g. the internet).

P64-2007 for example refers to a nearby farmer having a substantial strawberry crop "because of all this rain, which is obviously something to do with climate change". P4-2002 similarly talks of changed weather in the context of food crops, as relayed to her by an acquaintance: "maybe we'll start growing rice because I know someone who goes to the farm in <place name> and they said 'oh, we've been laid off because we've lost a field of turnips with the wet." The notion that seasonal change has occurred may derive from others' reports, for example where P16-2003 explains "I know from talking to people who've been skiing at the same place for thirty years that the pattern of winters is not as… regular".

Other evidence from the natural world may be incorporated in evaluations of climate change. Thus, directly following the remark that "you've got to try and make your own judgement" in drawing conclusions about climate change, P4-2002 mentions that "something I did notice this summer… we're getting an awful lot of butterflies back" to which another participant (P5-2002) replies: "That's to do with warmer winter… the winters are not cold enough to kill off some of the eggs… there's more slugs… insects are surviving the winter". Similarly, P7-2010 suggests that "things are more noticeable now, anybody who's got a garden will notice that there are very strange bugs around now, that were just not here before… funny bugs that's turned up now it's warmer"; and P1-2000 refers to the perception that "trees have grown much more… the size of trees, established trees, seem to have got bigger".

In drawing conclusions about climate change, the discourse also incorporates informal evidence beyond the everyday and vicarious, such as is described above. People's perspectives may also take into account what is considered to be received wisdom about climate change, or to apply quasi-scientific notions.

The type of informal evidence of this sort used to appraise climate change varies: indeed, knowledge may be applied in a rather *ad hoc* fashion. An example occurs in a 2000 group where P14-2000 argues that "we've lost 11 species of bumble bee this year" to illustrate the evident harm caused by climate change; elsewhere, P79-2007 refers to "a really stupid statistic, I heard about a cow giving out more CO2 than a car… or something ridiculous like that" to argue against the importance of fossil fuel emissions influencing climate change. Arguing in a similar vein, P40-2010 suggests that whilst carbon emissions from flying may be harmful, this is countered by "all the dust particles [from airplane engines] when the light hits them it just reflects back up".

In an early instance of mediated evidence used to appraise climate change, a participant in a 1997 focus group remarks upon their having "messed about" on the internet and obtained information revealing that "they reckon that 1995 was the warmest year we've had on record… they reckon temperatures have gone up one degree" (P1-1997). From a television programme, P1-2000 in 2000 refers to a "picture of a world greatly affected by climate change". In three separate 2007 groups, participants refer to information obtained from television: in each of these cases, the information obtained is taken to

argue that climate change is non-anthropogenic – this type and application of evidence is considered in more detail below.

iv. Change in character of the discourse: trends in informal evidence types over time

Across the datasets, there is a move within the discourse from an almost exclusive consideration of weather-related and/or season-related evidence (whether attributed directly to experience or vicariously) towards less personal, more abstracted or mediated forms of evidence.

The 1997/8 instances of the discourse are characterised almost entirely through reference to the weather/seasons. Participants refer to their own recent experience, contrast this with their memories, report anecdotes, conversations and opinions of others – but almost always with reference to this evidence type. (An exception is P1-1997's reference to internet use).

Extensive reference is still made in the 2000 transcripts to weather-related evidence. This is used both to confirm the presence of climate change – e.g. P13-2000 notes "it's affecting the climate, the springs are quite different from what they were" – and to disconfirm it – as where P5-2000 argues "not that many years ago… we all said 'oh dear, climate change is going to mean desert everywhere' [and] of course we have this summer roll up and… there's lakes all over the place". There are also a small number of instances of less direct evidence, for example in one case where P15-2000 refers to a television programme that points to evidence of "a world greatly affected by climate change".

Within the 2002 and also 2003 datasets, the dominant means of interrogating climate change, is however again with reference to weather-related and seasonal evidence – albeit with occasional reference to other more technical evidence (e.g. P1-2003's reference to thickening ice caps in the Arctic as evidence against climate change).

Across the 2007 transcripts, reference to weather and seasonal evidence again recurs. It is in 2007, however, that a separation of informal empiricism from the more direct and experiential types of evidence becomes more pronounced. The main way in which this occurs, is through participants' application of indirect and technical-seeming evidence obtained via media sources: this features in four of nine 2007 groups. Thus P1-2007 refers to the role of sun spots in the causation of climate change as follows:

> I recently saw a programme on [TV]… and they were talking about… when you trace the sun's activity over the years you can… see with some satellites, some sun spots. Basically the more sun spots you've got the hotter the temperature will be with the sun and the more heat is going

> to radiate to the planet… So at the moment I think the sun, they were saying is experiencing additional spots so that's why we're getting the whole climate sort of problems we're getting.

In a separate 2007 group, P11-2007 refers to evidence obtained from the television in drawing similar conclusions (namely, that natural cycles underlie climate change), although via different means. This participant agrees with a previous participant's assertion that climate change can be attributed to natural causes, by relaying that "I [saw] it on a programme, I think it was on the BBC… where they basically went back through the fossils and said… it was an ice age here".

In yet another 2007 group, P7-2007 also refers to a "programme on television… on one of the BBC channels" in which it was argued that climate change was natural, leading her then also to make this assertion.

In the 2010 focus groups, an even greater variety of mediated and technical/abstracted evidence is applied in participants' reasoning about climate change. P22-2010 for example reflects upon *An Inconvenient Truth* and counter-arguments to it:

> I remember when the Al Gore film came out sort of the counter-arguments that came out to that where you can layer over the graphs with the same ups and downs for however many hundreds of years and things, so I find it very difficult to say that the weather's definitely a cause of it.

Ideas about sun spots as underlying climate change, again emerge – although here via indirect evidence obtained from an acquaintance: "he was saying that this is one of the big things that's used to explain climate change" (P22-2010). In a separate 2010 group, P2-2010 similarly refers to information obtained via a work colleague, in respect of data ("readings") pointing to climate change being a natural phenomenon which has occurred in the past:

> A colleague [told] me this at work, that over the last hundred years or so in Wales they've taken climate readings [and] there are loads and loads of freak occurrences… so, yeah, we're getting tsunamis and earthquakes and two sorts of snow and… it's actually happened lie that over the last hundred years… it hasn't really changed.

In another 2010 group, a participant refers to having researched climate change on the internet and having encountered "quite credible arguments countering what the experts were saying" (P31-2010). In another 2010 group still, a participant alludes to a quasi-experimental phenomenon demonstrating that climate change is not attributable to human causation, by way of the lack of (even contrary) effect of aeroplanes having been grounded following 9/11:

> People think [flying] contributes to… climate change, but I think the evidence says it doesn't. After 9-11 the whole of American Airlines grounded all their planes [and] temperatures actually went up one degree, that's a massive change. (P40-2010)

In parallel with an increased emphasis upon these sorts of evidence, it is notable that on a number of occasions where weather and seasonality is discussed in 2010, it is to discount the relevance of this as evidence for or against climate change. This emerged particularly in places where the recent anomalously cold winter (some two or three months previously) had occurred. Thus for example, P47-2010 asserts that "I think [the cold weather] was just a natural occurrence"; in this same group P45-2010 similarly states that "I didn't equate the snow to climate change" and P41-2010 that "it was just a proper winter". In a separate 2010 group, P1-2010 expresses a similar view, noting that "the fact that it snowed twice in one year is unusual [but] it is an interesting comment on weather, rather than climate".

v. Functions of the 'informal empiricism' discourse: changes over time

As can be seen from the 2007 and 2010 excerpts quoted above, informal evidence at participants' disposal is frequently applied in the evaluation of whether climate change is 'natural' or human-caused. This reflects a relatively recent emphasis on concerns of causal attribution within the discourse.

In the earlier datasets, the discourse is used/ applied rather to demonstrate that climate change is occurring – often presenting informal evidence as self-evidently showing this to be the case. This application of informal evidence is particularly prevalent in the earliest 1997/8 group discussions: here, long sequences of discussion about the weather/seasons (e.g. as experienced recently, or in comparison to past events) are used to emphasise a view of change which is considered to be extant[4]. The concern here is whether climate change (or its proxies in the weather) is or is not a reality.

Similarly, in 2002 P8-2002 alludes to the idea that changes in weather are self-evident, where he states that "I suppose everyone will agree" that the weather is changing. Elsewhere in 2002, participants refer to the weather or related ideas to argue that climate change is real or express doubts about it occurring – but the primary distinction is between if it is or is not 'really happening'. Thus for example whilst P14-2002 and P16-2002 disagree about the conclusion that can be drawn from such evidence, the mode of reasoning is the same:

> P14-2002: This extra rainfall we've been having… I mean we've never had as much rain as this that I can remember [from] reading the history.
> P16-2002: But then the land is very dry. You say we have a lot of rain but the land is very dry. When I play golf… the grass is dead… I mean are we having more sun or…?

[4] It should be noted also that a feature of the 1997/8 protocol was to ask participants for their views on the weather – a technique not repeated in other projects.

Other examples drawing different conclusions but equally via weather-related evidence are P22-2002 noting that "there's not the snows like there used to be so it has altered hasn't it?" and P23-2002 who asks "you're saying it's getting hotter because of… climate change [but] how come in this country it's always so cold? It's so cold here and yet the planet's meant to be getting hotter".

In the 2003 transcripts, the application of the discourse is likewise for the most part in terms of distinguishing between reality or otherwise of climate change. In the 2007 and 2010 transcripts, there is a marked shift however in informal empiricism used in the context of causal attribution – distinguishing not about the reality of climate change, but as to whether it has a natural or human causation. A number of examples of this are given above. Other cases in the 2007 transcripts include the use of anecdotal evidence by P79-2007 to argue against an important role for human behaviour: "I heard about a cow giving out more CO_2 than a car… they have more effect than cars, cars, cars". In 2007, the use of weather evidence is also aligned with reasoning in respect of human causation of climate change, as where P60-2007 argues that "you've only got to look at the weather… to see that something drastically is happening… and it does make you think that something's got to be causing it and there's no one else here that's changed apart from us and what we're doing to it". Conversely, a lack of human contribution is also able to be concluded, on the basis that (supposedly) anthropogenic behaviours have been taking place for some time:

> We've had gas and coal for so many years now, and this has only just now come really in the past, what- five years… we've started hearing about climate change… so if that was… changing the climate then that would [be] happening a long while ago. (P63-2007)

Alongside the relative prominence of these types of reasoning in 2007, instances of the discourse in the 2010 transcripts reflect a preoccupation with a natural/anthropogenic distinction (as opposed to a real/not real distinction). As P21-2010 notes "sometimes when you see really bad storms, really bad winds and floods, then that's when I start to worry and think that maybe we're having a part of it". In a separate 2010 group the logic of human carbon emissions leading to climate change is expressed as a common-sense, cause-and-effect notion, where P44-2010 proposes that:

> If the planet's spent three hundred million years locking carbon away so that we can have some sort of life on this planet… if you then spend two hundred years what the world took three hundred million years to sort out, something's got to happen hasn't it. Cause and effect.

Nevertheless, the reverse conclusion can be drawn, also with reference to the convergences of weather and human history. Thus P28-2010 expresses his doubts about human causation, by noting that some thousand years previously "there used to be much warmer weather in Greenland, quite large communities who grew vegetables, so what was the- what happened then?"

In the context of the UEA controversy, this is related to what might otherwise have been taken to be a convincing signal from weather events suggesting human causation ("we're doing bad things"), where P19-2010 explains:

> You get flooding, you begin to get some momentum thinking yeah we're doing bad things and here's all the data to prove it, then suddenly: oh yeah the data may not be right. Which means you think: well you know, great <sarcastic tone>

These various means of reasoning about causal attribution do not mean that the earlier modes of reasoning are entirely absent in 2010, however their prominence – along with those instances from 2007 – appears to point to an increasing concern over time with using 'informal empiricism' to consider a 'causation' rather than 'reality' proposition.

A final example which recurs across several datasets, and is illustrative of a continuity in modes of informal empiricism, is in the use of a piece of anecdotal evidence in a manner similar to the 'Greenland' case study quoted above. In four of the six datasets (2000, 2002, 2007 and 2010) there are instances of participants referring to Thames having frozen over at some unspecified (but historical) point, provided as evidence *either* that extremes of temperature are not new (i.e. an 'anti' climate change argument) *or* that the weather was colder in the past (i.e. making the point that the climate has changed). Two examples illustrating, respectively, these two applications of evidence about a frozen Thames are as follows:

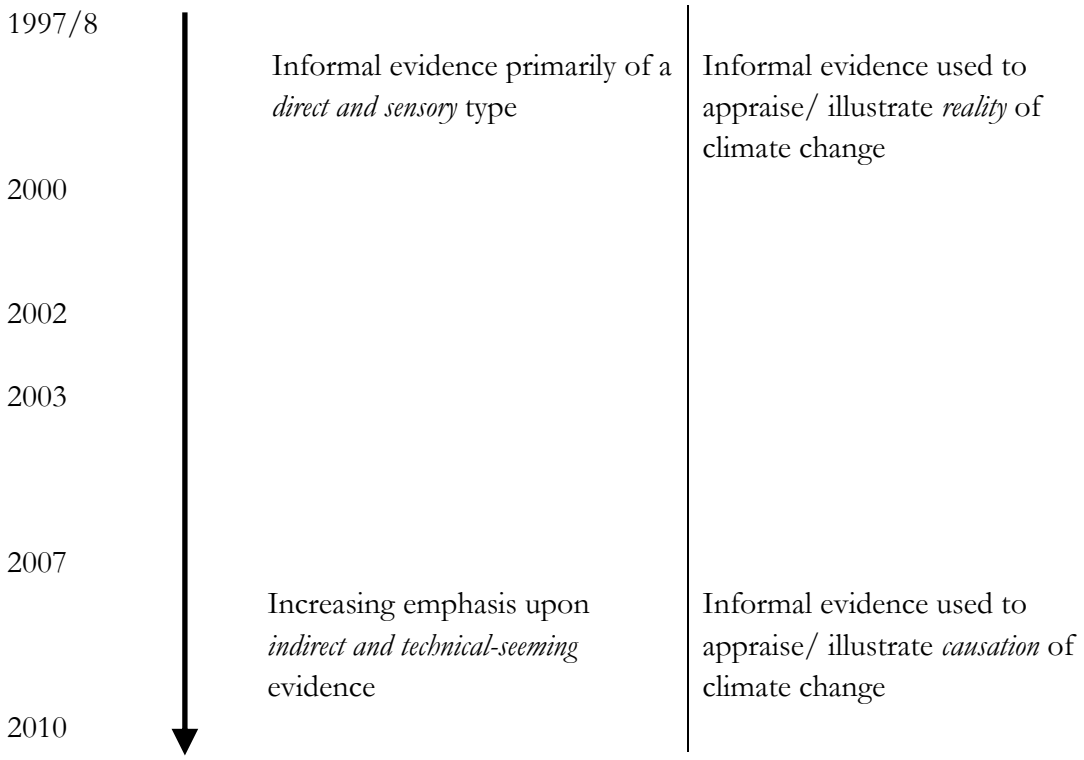
> A few hundred years ago people used to skate on the Thames… I wouldn't have thought there was much pollution… so… I do wonder whether there's a little bit of alarmist talk. (P3-2000)

> The Thames froze didn't it, they used to ice skate on it at the turn of the century. I mean, it's never like that in our lifetime is it? (P18-2002)

SLQ summary: changes and continuity of the discourse

Figure A5.2 illustrates changes in the discourse, as considered above.

Figure A5.2: Change in *informal empiricism* discourse across datasets



5.3 Climate as part of nature

Overview

Climate change is interpreted in the context of certain fundamental features of the natural world. Specifically, these are that the Earth, its climate and natural historical and geological features are characterised by mutability. This mutability is a fundamental, inherent part of natural systems, in that this is how the world 'is' and is meant to be. Over very long timeframes, the Earth is understood to be ever-changing: this is evidenced and illustrated by events such as ice ages and continental drift. In this context, climate change as a contemporary concern constitutes an often unremarkable and expected episode. Anthropogenic influence is not necessarily dismissed, but is seen as contributory or additive, and may be discounted in relative terms.

Metaphors, rhetorical devices, recurrent motifs

- Change as inherent to natural systems, including climate
- Change as perpetual and inevitable, analogous to a planetary 'evolution'
- Long and very long timescales, such as 'ages', 'epochs', 'eras', 'millions of years'
- Cyclicality of change, especially as between ice ages and warm periods
- Relative influence of humanity, usually seen as diminutive or at least partial

Characteristics of the discourse

Central to the 'nature mutable' discourse is the notion that change, or mutability, is a fundamental characteristic of the Earth, and as such of climate.

In the most explicit terms, this is often asserted in statements seeming to affirm an ontological truth: that is, statements of *how things are*, or *are meant to be*. There are numerous instances of this across the datasets. In 2007, P7-2007 for example states that "it's a natural way of the Earth… so it can't be good and it can't be bad, because if it's the way it's meant to be then it's the way it's meant to be". In 2002, P13-2002 equates climate change to human famine, referencing both as phenomena which are "meant to happen". In 2010, P37-2010 argues that "by the nature of climate change, climate will always

change". In a manner alluding to a 'whatever will be' proposition, P42-2007 suggests that "if it's going to happen, it's going to happen", and in separate 2007 groups P51-2007 states "I just think this is the way it is" and P2-2007 (in an almost anthropomorphising sense) that "the Earth is just going through something it wants to go through".

The notion of *perpetual or eternal change*, contextualised to the Earth as a whole and climate in particular, is commonplace across the datasets. Thus in a 2000 discussion P1-2000 suggests that "things are changing and they always will", P31-2007 that "the climate does change itself anyway", and in 2010 P23-2010 states that climate/weather "has been changing all the time as far as records began". As in this latter quote, the climate is often portrayed by participants as ever-changing: "climate change is not a new thing in the world" (P16-2003). P42-2010 uses the metaphor of human ageing to characterise this progression, where she suggests "climate change I guess is happening… but… it just happens, because I suppose it's like us as a person, we change as we get older, so I guess the Earth is changing as it gets older".

A metaphor for change often invoked, is that of *planetary evolution*. P4-2002 refers to "a certain type of evolution", P15-2003 suggests that "change happens all the time, there's a lot of evolution" and P51-2007 that "the world has got to evolve and this is just happening". Appearing to counter other participants' views that climate change is a contemporary phenomenon, P17-2002 asks "but hasn't life and evolution over thousands of years developed that way?" Using similar ideas, climate change may be characterised as a "natural progression" (participants P16-2002 and P8-2002 in separate groups both use this term).

In keeping with these ideas, the *timescales* used to discuss and describe climate change are frequently of the order of thousands or millions of years, or otherwise indefinitely long periods of time. These timescales may be so long as even to extend to the beginning of (the Earth's) time. In 2000, P5-2000 suggests that "I have a feeling that a lot of this climatic change could well be climate changes that we've had going back to the year dot" and elsewhere that it is something that has "gone on since the world started its career". Similarly, in 2002 P19-2002 suggests "the climate has changed since the beginning of time, up and down, things are always changing" and in 2010 P5-2010 argues "everything we've done hasn't helped it [i.e. anthropogenic causes] but climate changes. It has done since the planet began".

These long timescales of (climatic) change are said to present a different *temporal perspective* on the matter of climate change, where P15-2003 argues "we see change happening in our lifetime scale, but if nature works on a much longer timescale, we don't always have things in perspective". This notion of perspective is also raised by P9-2002, who argues that – in effect – a human perspective has been erroneously applied to what is in fact a geological-timescale phenomenon:

> We're all so terribly important <ironic statement>, you don't see it on a huge timescale as to what's happened to the Earth, it's always this is a disaster happening now. But sometimes you can't do anything about things and you have to accept that you've got to look at the earth over millions of years, not just the 60 years that you're going to be around.

Similarly, P5-2003 adapts the metaphor of 'a drop in the ocean' to suggest that in respect of weather patterns changing "our lifetimes" are "a miniscule little drop in the evolution of time and the whole world".

It is common for change of climate over time (and associated aspects of the Earth) to be portrayed as *cyclical*. The term 'cycle' and/or similar notions are used in all datasets. For example, in a 1998 discussion, P4-1997 asks "is it something that just happens from time to time… does it happen every hundred years?" and in 2010 P30-2010 remarks "there are these hundred-year cycles of climate". Although these two quotes suggest centennial cycles, elsewhere participants talk of "a ten, fifteen million year cycle" (P11-2007) and P49-2007 suggests (also with reference to perpetual change) that "it's always going to happen, it's happened, millions of years ago, it's going to happen, millions of years to come. The world is always going to change. The world has changed since the start". Elsewhere, participants suggest that "the climate… has to be seen as part of the larger Earth cycle" (P3-2010), "obviously there have been cycles of ice ages et cetera" (P3-2000), "I think we're in some form of cycle" (P4-2003) or that "these cycles have been happening before" (P14-2002). P7-2007 also proposes that "every so many years, so many hundreds of thousands of years… this comes around anyway, this change in climate".

Certain *key events* in the history of the Earth recur as illustrations of the long-term mutability and/or cyclicality of the planet. Floods for example "come round, they come and go" (P19-2000), or climate change may be seen to be associated with sun spot cycles, such that "we do have an eleven-year sun spot, eleven-year cycles, we've always had eleven year cycles, it's been there forever" (P14-2002). P29-2007 also refers to sun spot cycles, though over a far longer timeframe:

> Every seven million years the sun's got more spots, so it's sort of burning and then getting more [inaudible] and then the temperature rises and eventually it's going to die out. So at the moment… the sun… is experiencing additional spots so that's why we're getting the whole climate… problems.

In four of six of the datasets, the example is used of past sea level rise or continental movement, to portray long-term changes in the planet; as P40-2010 suggests, "it's happened in the past, it'll happen again, that land is lost to the sea, land is regained by the sea". The specific notion of Britain having been joined to France arises several times. P3-2000 argues that "you do get these natural phenomena anyway… ten-thousand-odd years ago, man could walk from France to Britain". Following a remark

about the Earth changing over time, quoted above, P49-2007 emphasises the point by pointing out that "I mean we were joined to France at one point… the waters came and split it up". P16-2002 argues "the Earth has changed completely, I mean we were joined all over the place"; and P18-2010 equates changes in sea levels similarly to (effects of) climate change, arguing:

> We tend to go round in circles, we all know that from history, all of the countries were in different states, obviously England was part of France and now it's not joined… that is natural as such, that's not an impact from climate change, so perhaps this [present consequences] is just another form of natural history.

A further event used to emphasise the precedence of major change upon Earth (usually as part of an argument against an anthropogenic component to climate change – see below) is that of the extinction of the dinosaurs. However, the most common geological event seen to be associated with climatic cycles or presented as an important precedent, is that of *ice ages* – this receives mention in all datasets but those from the 1997/8 groups. The argument is presented, that ice ages have occurred before, and/or recur through time. As P7-2000 argues, "I think [climate change] is natural. If you look back to geological periods and things like the quaternary period, you do get recurrent ice ages". In a separate 2000 group, P19-2000 also suggests:

> Over the last… however many million years, we've had ice ages, we've had hot periods and when the next ice age is due or when the next hot period is due… we don't know. We live for an average of 70 years and an ice age can last … several thousand years.

In 2002, P13-2002 similarly argues "I think it's just another era in the world isn't it. It's just something else that's happening, we've had the Ice Age, we've had all the different ages and it's just another one that's happening". Again, in 2007 P39-2007 draws on the cyclical nature of ice ages to support an argument for natural rather than anthropogenic climate change:

> I think it's natural climate change… there was a Stone Age, there was an Ice Age, the ice is retreating, that's natural, it's going in retreat and then there's going to be another age that'll come on after that, not in our lifetime… but something else will come along.

In the same group discussion as P39-2007, P47-2007 affirms this point subsequently, where asserting "I don't think we're responsible, I think it's inevitable, like there was an ice age before and we got back out of it, so I think it'll happen again". The idea of recurrent ice ages is again applied in the 2010 group, for example where a participant argues that whilst climate change is not necessarily "good" it is nevertheless part of a larger pattern – a mutability across "the great grand scheme of things":

> [The] thirteenth, fourteenth century had a mini ice age, and so that was a natural sort of change… I'm not saying it was an easy or a good thing, but it happens… so you could say in the great grand scheme of things that things move forward.

In these accounts of past events in the Earth's history, can be detected a *natural precedence logic*: the idea that given climatic change (and related phenomena) have occurred before – indeed are constantly recurring – then there is an inevitability and natural order to them. The sense is conveyed that the Earth changes over long timescales and this is at some fundamental level 'meant' to happen *irrespective of human actions*.

The use of a natural precedence logic can be detected in a number of the excerpts above, and further striking instances of its use can also be found across the datasets. P19-2002 for example refers to changes in coastline since Neolithic times – despite a lack of industry (i.e. human-derived carbon emissions) at this time:

> Every piece of sand you can see here <coastal location> was all hunting planes in Neolithic times… I've seen the fossils myself… it's all Neolithic and there's elk bones, all kinds of things. And so the whole place was completely different… without any environmental, industrial or any kind of impact the whole place just 100% changed.

A similar argument is made by P21-2007 who again draws attention to the lack of industrial technology during previous ice age(s) to draw the conclusion that present climate change ("global warming now") is likewise not anthropogenic:

> If you read back… they reckon the Earth was covered in ice, right? But you didn't have global warming then, you didn't have cars and aeroplanes and fridges and freezers causing it, you had nothing, nature [did] it, and I think if there's a global warming now at the moment my opinion[is] it's nature doing this, it's not us. You know, because we didn't destroy the Ice Age in the beginning did we?

In a separate 2007 group (as well as drawing on the idea of 'natural evolution') P42-2007 adopts this same line of reasoning – here in respect of biblical floods and dinosaur extinction:

> There's times I think a natural evolution in the way things go… through history, if you take… the floods in the Bible, now there wasn't any rockets or fuel… there wasn't anything the human race were doing to create that, but that happened… the meteor hit the Earth and killed all the… dinosaurs… that was just a fluke of nature… it's nothing to do with… smoke or <inaudible> any damn thing, if it's going to happen, it's going to happen.

Functions and consequences of the discourse

It is my proposition that the 'nature mutable' discourse functions to situate climate change in the context of wider universal truths than those limited to the contemporary concerns of science, politics, the media – even the human race.

Understanding climate change in these terms however leads to a diminution of its importance and seriousness, and of the role of human actions in causing and addressing it. This diminution may be in part a function (i.e. in some sense the discourse is used purposively to downplay the 'threat' from climate change) or a consequence (an outcome or emergent property of the discourse).

Whether function or consequence, there is an associated *acceptance* of climate change in these ways of understanding: for example P1-2000 states "we just have to accept that… things will change", and P13-2002 argues (quoted previously above): "I think it's **just** another era in the world isn't it. It's **just** something else that's happening, we've had the ice age… it's **just** another one that's happening" (emphasis added).

The use by P13-2002 of the word 'just' (almost certainly as synonymous with 'merely') asserts the normality and hence lack of warrant for concern of this variety of (non-anthropogenic) climate change. This is made more explicit still elsewhere. As P3-2002 (in a separate 2002 group) puts it, "if it was a natural thing I think we'd all go 'it's great'". Other examples already quoted above also use this term (e.g. "the Earth is **just** going through something it wants to go through", P2-2007).

In two places, there is the suggestion that cycles of natural change are even a form of terrestrial renewal: P14-2007 suggests that "the Earth changes its climate automatically… the Earth goes in a cycle to renew itself". Even where climate change has human causation of a catastrophic (for humanity) sort, a changing and responsive Earth might be seen to respond; P5-2010 argues that the Earth could indeed "heal" following the end of humanity:

> If it does get really bad and wipes out most of the human race then… it would give the planet time to heal. The human race will have learnt their lesson, if there's any of us left. If not then the planet will heal and life will go on, as it's intended.

The use of long timeframe perspectives that frame human existence (either personally or as a species) as relatively inconsequential; of an inevitability of change that is inherent to the very workings of nature; aligned with examples from history that emphasise the inexorability of planetary change, and the irrelevance of human action – all serve to frame climate change as something which both is – and can only be – outside of our sphere of influence. They suggest that an acceptance of climate change is the only reasonable response. As a participant from 2007 puts it, "when the world began we had that huge flood that lasted 40 days and 40 nights. So why worry?" (P73-2007).

Climate change as an inherent feature of how nature 'works' does not necessarily mean that human actions are irrelevant, however there is the strong sense that either human actions of causation, or mitigation, are of *limited* relevance: we are, as P5-2003 argues, merely "a miniscule little drop in the evolution of time".

Change in the discourse across the datasets

The ways in which climate change is contextualised in terms of the nature mutable discourse, is remarkably consistent across the datasets. In all or most years of research for which data has been analysed, each of the characteristic component parts described above are present.

One trend that is identified, however, is a functional change in how the discourse is used/ applied. This is in the emergence of ideas about the mutability of nature being applied as a specific *counter-position* to the notion that climate change is human-caused. Over the time period of the datasets, there is a notable increase in prominence of the discourse being used in an *oppositional* manner to the argument that there is anthropogenic climate change.

An indicative example of this oppositional use of the discourse from 2010, is participant P5-2010's assertion that:

> I agree we've got something to do with it **but** then I also think that global warming is natural, and yeah we've speeded it up and everything we've done hasn't helped it, **but** climate changes. It has done since the planet began. (emphasis added)

The function to which the discourse appears to be put here, is in the reconciliation or explanation of two competing possibilities – that climate change is *both* natural *and* has a human component.

A particular feature of the language used in this excerpt, and in other excerpts which point towards this oppositional usage of the discourse, is the use of the word 'but' in portraying two contrasting possibilities or ideas. The participant above does this twice in succession: she states that, on the one hand, human activity is relevant ("we've got something to do with it") *but* on the other that "global warming is natural"; subsequently she states again that human activity has been deleterious ("hasn't helped") *but* that change is a long-term, inherent feature of the planet.

The use of the term 'but' to conjoin these two opposing explanations is not the only way in which this language function can be achieved, however it is notable that the 'human but natural' pairing appears with increasing prominence over the time period. Table A5.1 shows all cases of this pairing which have been identified across the datasets. For the most part, the function of the phrasing appears to be to downplay the human component to climate change; in several instances however the reverse appears to be the intention (e.g. P30-2010 in table A5.1).

Arguably, the increasing prevalence of these pairings, points also towards a dialectic revealing of the way in which climate change has come to be debated: that there are two 'versions' of causes of climate change, which one is expected to choose between or otherwise reconcile.

Alternatively, the pairings may reveal the development of a nuanced view of climate change: that rather than it being considered *either* natural *or* human-caused, the conclusion may be drawn that both are incorporated – and that by extension it is a matter of interpretation which is the more salient.

It should be emphasised that, in respect of the highest prevalence of the pairings in the 2007 groups, this may be partly connected with the particular way in which the matter was approached in these discussions. The method used entailed asking participants to indicate on a form whether they thought climate change was human-caused/natural/part-both and then to discuss this subsequently.

Table A5.1: Participant excerpts contrasting natural with human causation

Year	Excerpt
1997/8	"Pollution… must be… accelerating the process. But would it happen anyway, if there was zero pollution." (P1-1997)
	"There seems to be something but… is it something that just happens from time to time." (P4-1997)
2000	"It does seem to be…natural… but… we're speeding it up." (P7-2000)
2002	"We've always had cycles… but now I… realise there's something more… it must be the greenhouse effect." (P14-2002)
	"We're talking about natural progression… now we're speeding it up… but it's happened for a long time." (P16-2002)
2003	"Yeah, global warming, but what causes global warming is another debate… I think we're in some sort of cycle." (P6-2003)
	"We might be aggravating it, but even if we stop… creating the pollution, we wouldn't necessarily stop the process." (P17-2003)
2007	"Humans aren't helping and they're speeding things up… but… I do feel that it's… we've had ice ages before." (P4-2007)
	"We can stop it… we can do things… but I do believe that there is a natural way the Earth goes." (P4-2007)
	"We do contribute in some ways but… I believe the climate is changing totally naturally, but I don't know how do humans contribute." (P5-2007)
	"They reckon the Earth was covered with ice… But you didn't have no cars and aeroplanes and fridges." (P21-2007)
	"Climate change… has been happening for centuries… they say 'oh it's the worst [floods] since the [18th century]' but did they have the industry?"(P45-2007)
	"The cycle… the whatever age is going to come next, but I think… what we're doing at the moment is bound to… impact" (P46-2007)
	"There is a natural evolution… the floods in the Bible… there was nothing the human race were doing… but that happened." (P42-2007)
	"It's just… happening… the world has got to evolve… but maybe I'm wrong… but I don't think it's our fault." (P51-2007)
2010	"I agree we've got something to do with it, but then I also think [it's] natural." (P5-2010)
	"Obviously we are part of it but there's a natural cycle as well." (P6-2010)
	"[Climate change is] because of us… there's been climate change before on a number of occasions… ice ages… but… never at this speed." (P25-2010)
	"There are… cycles of climate… but also we seem to be hell-bent on… making everything worse." (P30-2010)
	"I think man does contribute… but… [it's] very slight… it's a dynamic climate we have." (P40-2010)
	"The climate does go in cycles… but I think we may be hastening some of the cycles." (P47-2010)

'Missing' discourses of nature

It may have been anticipated that together with a high prevalence of views portraying nature/ climate in the 'mutable' terms outlined above, that many instances would also be obtained of participants speaking of nature/ climate in terms which portrayed it as 'ephemeral' (i.e. vulnerable to human perturbation). This could be predicted from the cultural theory 'myths of nature', as outlined in section 3.5 of the literature review (e.g. Hulme, 2008). In fact, few instances of this kind of portrayal emerge in any of the datasets[5].

One example is the assertion by P80-2007 that human actions are highly damaging ("I think we have a huge impact on everything"), and that "if you take one thing from one you're mucking around with the balance constantly". P9-2002 also notes that even a small temperature rise may lead to large effects: "it's amazing to think that that small rise in temperature can result in icecaps melting that much and having that much effect".

Interestingly, in a direct parallel with the diagrammatic way in which cultural theory myths of nature have been characterised (i.e. with nature as a 'ball' on various surfaces) P17-2003 remarks that:

> I see it as a sort of ball rolling down the middle of the road; you've only got to hit one small stone and it's deflected, and it just keeps on that deflected course, and I'm pretty sure we can have triggered changes like that.

The remaining instance of nature seen as 'ephemeral'/ vulnerable, is the assertion of P25-2010, who states that:

> I think [climate change] is a very real threat… it may or may not be the end of life on this planet. That's if certain tipping points are reached where it's irreversible, that once you get past a certain point of change, that the Earth can't go back on itself.

[5] A particular point was made of revisiting transcripts at this stage with a view to detecting any omitted cases.

Appendix 6 Social discourses of climate change: extended interpretation and participant quotes

This Appendix is an extended version of the material given in chapter 6. Additional participant quotes and commentary are included here.

6.1 Climate change as a social dilemma

Overview: main characteristics and ontology of the discourse

A social dilemma discourse emphasises the problems of conflicts between collective versus individual/singular interests in the context of climate change. This may be conceptualised at various scales, from the individual to the international: for example, the value of individual action on climate change may be disputed where others do not act; international solutions may be considered to be obstructed by multiple conflicting national interests.

Particular characteristics of social dilemmas as portrayed in the context of climate change include: an emphasis upon self-interest, whereby social actors (from individuals to nations) place precedence upon their own interests over collective interests; the notion that inaction or free-riding by some single actors (nations, individuals) underlies the overall collective problem of climate change; and dilemmas of conflicting intentions, where efforts to address climate change may have unintended harmful consequences, or where such efforts contradict other objectives.

Metaphors, rhetorical devices, recurrent motifs

- Conflicts between the interests of single actors and collective interests
- Social dilemmas at an individual and/or international level
- The intrinsic nature of social systems (e.g. use of Darwinian metaphor)
- Global 'villians' (e.g. the USA, China) and 'minnows' (e.g. England)
- Reciprocity (and its absence)

Characteristics of the discourse

The notion of social dilemmas permeates much talk concerning the roles, interests and motives of social actors themselves. As such, it is problematic to precisely isolate each instance of a social dilemma discourse in use. Nevertheless, the approach taken has been to code participant talk where the overriding idea being emphasised is that of a social dilemma, as described above. With a substantial number (193) of these cases having been coded across the datasets, general characteristics and patterns of longitudinal change are able to be explored.

i. Dilemmas of self-interest

Many instances of social dilemmas are referred to in largely generic terms – as self-evidently valid, fundamental truths about human society. For example, P24-2002 in a 2002 group uses a Darwinian metaphor to argue that unequal wealth gives rise to a generalised social dilemma (this exchange follows a remark by another participant that those with money would be able to cope better with climate change):

> P19-2002: Self-interest rules, that's what they're saying.
> P24-2002: Yeah exactly… I suppose actually it's like survival of the fittest isn't it. The survival of the richest.

Equally, in a 2000 group P5-2000 refers to being "pessimistic" about the capacity of "mankind" to take collective rather than self-interested decisions, and in a 2010 group P20-2010 similarly refers not being optimistic due to "human beings" being self-interested:

> I tend to get a bit of a pessimistic outlook on mankind… as far as being able to get together and make independent decisions for the benefit of everybody without self-interest coming into it… this is the big problem and probably one of the biggest problems for mankind. (P5-2000)

> It's going to come down in the end to ordinary human beings either helping things, climate change… to all get working together… but I don't know whether that's possible. I'm not very optimistic really, because I think self-interest will take the place of a great many people, in their thoughts. You ask people: 'would you be prepared to do all this sort of- for somebody else?' And the answer… is probably 'no', in their minds. (P20-2010)

At a more macro-level, where a country is not affected, this gives rise to what may be termed a 'dilemma of privilege' – if one actor is secure, then they will have limited motivation to act in the interests of others; for example, in 1997 P5-1997 asserts:

> If you're asking every country in the world, all the big powers to do something about it, if some countries or [regions] are not as badly affected, they're not going to be as forthcoming are they [in contrast to] if everybody's in the same boat.

Equally, in 2002 an exchange between participants asserts the view that those with 'power' and 'money' are bound not to be concerned with 'everyone else'[6]:

> P24-2002: Those that are in power and have got the money and all the rest of it will find a way of being above everybody else and they won't bother too much about those that are getting drowned.
> P23-2002: If it got flooded they'd probably build a house on stilts or something, and it's tough for the person down there who's got nothing, they've still got their nice big house and everything… and sod everyone else basically.

This idea of individual security (which manifests in terms of 'self-centredness') versus collective vulnerability is again emphasised in 2010 in an exchange between participants:

> P26-2010: That's why I tend to think that until the global warming, sea levels rise and it laps up to people's doors, that I think people are going to be indifferent towards it. …
> P25-2010: But the problem is, it's too late then. Once it starts doing that you can't turn the clock back.
> P26-2010: Yeah. Yeah. I understand what you're saying, and I agree with you. But it is that sort of self-centred mentality isn't it.

On many occasions, the self-interested nation seen as central to the international social dilemma of addressing climate change, is the United States of America (China also is frequently referred to). Thus in a group discussion in early 1998, P4-1997 argues that flaws in the Kyoto Protocol (it is presumed this is what is being referred to as the recent "big meeting") originated due to "America sticking their heels

[6] Note that this exchange follows shortly before the remarks by P19-2002 and P24-2002 above about 'survival of the richest'.

in". P7-2002 similarly refers to the USA as both disproportionately destructive and obstructive, where he asserts "I don't think there's the will politically within the world to do much… the biggest polluter being America, they're just not prepared to do anything".

In a separate 2002 group, two participants together concur that the USA is driven by self-interest, and P14-2002 concludes furthermore that the consequences of this are collective failure – an international social dilemma the upshot of which is "we're doomed":

> P16-2002: They make their own rules… at the end of the day, they'll go on their own… They don't care what anyone else is doing, as long as they're alright.
> P14-2002: If you can't get the whole world to cooperate in it you're wasting your time. So I think we're doomed to be quite honest with you.

Again, America is referred to – alongside other nations – in a 2007 group, in terms that imply the placing of responsibility upon individuals and/or the UK is unreasonable:

> The size of your country compared to America, compared to Japan or China… we don't pollute anywhere near what these other countries pollute, yet we're the ones who have been… made to feel… guilt-tripped about how bad we are, but we're nowhere near… America or China. (P49-2007)

Whilst the USA is cited with particular frequency, national vested interests worldwide are seen as components of an international social dilemma where climate change is concerned. Thus for example, "the Russian countries… don't seem to have restrictions on how much… fossil [fuels] they use" (P7-2002); "China, they're just pushing out more… India is doing its best as well [to pollute]… Argentia, Brazil, they're cutting the forests down…" (P66-2007); "developing countries… like India and China and places like that… say 'well, why should we give a shit?'" (P21-2003). Indeed, the idea that individual nations' self-interests give rise to an inability globally to come to agreement in addressing climate change, is present across all datasets.

The view that climate change constitutes a large-scale social dilemma has important consequences for views about national response. On the one hand, P1-2000 argues that, as a direct consequence of international lack of consensus, a unilateral response is necessary: "trying to get a disparate group like Europe… to do something about climate change is going to be very difficult… so I think we've got to revert back to what is achievable within our own compass". By contrast, P7-2002 appears to suggest that (British) national response is in fact negligible where not in the context of global action:

> It's a world problem… and, you know, the top countries that are polluting the world can't agree to actually do very much about it. So irrespective of what we might do on a very small island called Britain we're not going to make a lot of difference.

ii. Commons dilemmas and free-riding

This latter perspective appears the more commonplace response to the view of climate change as international social dilemma. That single-nation action is pointless or irrelevant in the context of wider inaction emerges often, and is related to problems of free-riding. Separate excerpts of participant talk from 2000, 2002, 2007 and 2010 illustrate the continuity of this view:

> I… read somewhere that China don't do any recycling and then we're all going round turning our plugs off and everything, and we're just a tiny little island compared to China and they've got all their cars going, all the electricity going… so I just think well, are we wasting our time, when that country is much, much bigger than ours and they do nothing? (P61-2007)

> I'm conscious there are many countries in the world who are probably larger contributors to the sources of global warming that… do nothing… to save resources or do anything… it's by and large the Western world… that do recycling, and it makes me wonder, given the balance of population between the Western world and the wider world, whether in fact it's just a drop in the ocean. (P16-2010)

> What's the good of a little country like England… doing something to help the environment and then the whole of Europe or Russia or China… does something completely the opposite?... it's almost a waste of time. (P5-2000)

> If England went green tomorrow… it wouldn't mean anything because America is still pumping it into the system, no matter how hard… we try to… rectify it we can never compete… (P5-2002)

> If we do something and other countries don't it's pointless. Pointless. (P66-2007)

That the phrases 'waste of time', 'pointless', 'it wouldn't mean anything' and 'drop in the ocean' are used here, draws attention to the potentially fatalistic consequences of a social dilemma perspective of climate change.

Just as climate change is seen as constituting a nation-scale social dilemma, so it is seen in smaller-scale, personal terms. Indeed, the parallels are not lost on participants; P8-2010 suggests that acting according to others' responses creates an impasse both at personal and nation scale:

> You have… the individuals who are like 'well I'm not going to bother if they're not going to bother'. And then you have the same thing at a country level, 'I'm only going to do as much as everyone else'.

Such contingency of response upon others' actions (an 'I won't unless you do' attitude) is indeed expressed by P23-2010 in the context of the Copenhagen conference, and again at a separate point by this participant at the household level:

> There's a lot of- you know, because we know not everybody is doing it, the hypocrisy that comes with Copenhagen: … the 'unless you're doing it I'm not' attitude… So there's some countries just not prepared to face it.
>
> The fact that, you know, I do my bit, Joe next door's not doing his, so I won't.

Even at a very small-scale, participants are often at pains to point out inequalities in contribution by others. A particularly visible example of individual-scale inequalities in contribution, is the case of recycling and dealing with waste. Thus in 2007 refers to "watch[ing] the bin man out today… and the people across the road, their bins were absolutely overflowing… because they have decided for their own reasons that they don't want to be part of it". This remark echoes an assertion from 1997, emphasising unevenness in contributions at the individual scale:

> What I've observed… I mean our wheely bin very rarely gets full, but some people with families… have more than a bin-full at the end of the week. Now one family have got two wheely bins… another family would put black bags at the side… (P4-1997)

At the individual level, the problem of 'free-riding' is construed in terms of a social dilemma, whereby non-action by some individuals is seen to limit the value of action by others (note also the use again of the phrase 'waste of time' from a separate dataset to that cited above):

> I sometimes feel we're wasting our time, because so many other people don't do things… I sometimes wonder if it's worth it. (P7-2003)
>
> The hardest part about it… you'll always get a certain amount of people that just won't be bothered at all like everything else… (P21-2002)
>
> P28-2010:If you and I change what we do… it doesn't really make any difference whatsoever.
> P25-2010: If I don't eat cows, it doesn't make a big difference.
> P28-2010: That's right, that's it. Unless half the population stopped eating cows.

P42-2010 also portrays the contrast between the negligibility of individual action and the importance of collective action, in terms of a social dilemma, where she states:

> Me recycling one wine bottle, am I going to save the world? I'm not… If I don't put my photocopying paper in the recycling is it going to make a huge amount of difference? But then if I don't do that and nobody else does – do you see what I mean?

This perspective is echoed in a separate 2010 group, where P7-2010 refers to individual action as 'tokenism' rather than having any actual consequence:

> I can't help thinking whether I sort my glass from my cardboard doesn't really have very much effect on the melting of the ice caps. I know if everyone did it it would, but it is tokenism at the moment. It's more about making us feel better than actually doing anything about the problem.

As well as portraying one's own action in these terms, a social dilemma view even extends to asserting the irrelevance of other's pro-environmental behaviour; this is explained quite forcefully in one 2007 group:

> P23-2007: I read it last week, there was a family and they decided they were going to go completely green, they weren't go to have a car, they weren't going to do this, they were going to do that… and **I thought, more fool you**. Because everyone else is- you know, what, what are you doing, you're making your life harder, what are you achieving? I know you're doing your little bit, but what are you really... what difference are you making?
> P21-2007: Exactly. (emphasis added)

Taken together, nation-scale inaction may be presented as the context for individual-scale fatalism; given that "the developed world is producing all this… filth and the developing world, China… is going to be producing the most in the future", P4-2000 asks rhetorically "what can individuals do in terms of trying to influence it? I find that difficult". P17-2007 also uses a rhetorical question to make a similar argument, asking: "If this country became the best country in the world for reducing its carbon footprint, what upsets me is… what about the rest of the world? What about China?"

Negligibility of individual action is again contextualised in international terms, and with fatalistic consequences, where P12-2007 asserts in the same 2007 group:

> Our country is only responsible for about 2% of the world's carbon emissions. So we could switch all the lights off… and conserve what energy we can, but it's going to make little difference to the rest of the world.

Conversely, it may be a minority which is portrayed to be the obstacle to an effective response to climate change – especially should this minority be seen as having disproportionate power – as in the following exchange between participants in a 2010 group:

> P1-2010: There are too many- you can have 900,000 people doing their best to do something and 99- what, 990 people sort of indifferent about it. You only need ten working against them and that million people are going to be-
> Moderator: Do you think that applies to climate change, that there are a few baddies and most people have-?
> P4-2010: If the few baddies are in charge of a large multi-national corporation that has a huge amount of clout that's a problem.
> P1-2010: Well this is it.

iii. Dilemmas of conflicting interests

As well as the prototypical commons dilemmas described above, dilemmas posed by *conflicting interests* between individuals or nations are referred to.

Whilst it is not explicitly clear whether reference is being made to 'ordinary' people or those with political power, an assertion by P18-2002 in a 2002 group is revealing for a view of multiple actors with competing interests, resulting in a collective dilemma in the context of climate change:

> There's just too many people and its too much of a mess to sort out… I think you just can't bring everybody together, there's just too many people, too many people.

In the context of the financial crisis in 2010, P2-2010 refers more specifically to economic objectives contrasting with climate mitigation: "we're supposed to be spending money to get out of recession, but we're not supposed to be spending money to keep us out of climate change. It's lots and lots of different messages". Equally, in 2000 P7-2000 asserts "the government is hypocritical in a way because they want us to buy all these cars but at the same time they say we should be using cars less". P37-2010 echoes this sentiment arguing: "it's bad for the environment, you shouldn't do it, you shouldn't drive as much, but we're still going to sell you these petrol cars and carry on".

At the international level, the globalisation of markets is ascribed properties of a social dilemma, wherein one party's responsibilities are transferred to another: thus, P2-2003 argues "it's all very well we in the West tidying up our act, but we take advantage of the Third World countries" and (following discussion in respect of China's contribution to climate change) P74-2007 "but [we] talk about the Chinese economy, it's Western Europe and America that's given them money to go ahead… to make various products for us… we're talking about how bad it is and we're giving them the money".

The general sense that different nations' competing interests pose a dilemma for responding to climate change is asserted in 1997 by P1-1997 who argues: "one country couldn't do anything about it really, unless they all pull in the same direction. It's a global problem so you need a global solution. That's what you've got to aim for, if you're actually going to change it".

P1-1997's remark here seems almost prescient, given the social dilemma interpretation of lack of success at COP15 in 2009, as portrayed in a 2010 group: "you've got fifteen thousand people go to Copenhagen and they can't agree on anything" (P31-2010). In another 2010 group, the remark from 1997 is echoed again via the idea of 'pulling in the same direction', where P30-2010 argues that "there needs to be some kind of international- America, China, India, us, whoever else, all kind of pulling towards the same direction." The notion of competing political interests leading to collective failure at

COP15 emerges on other occasions in 2010 too, such as where P2-2010 characterises the conference as 'divisive', and P33-2010 talks of the vested interests at play:

> There was an awful lot of hue and cry about it, and then it was over and there was very little action that seemed to come out of it. And I think there was kind of discord in that lots of countries won't sign anything because there were some money things, and it was, again, political and- there was no kind of cohesive answer and there was no kind of 'this is what we're going to do' as a planet. So it was- there was lots- yeah, it was divisive, and not particularly- I don't think they came up with anything. (P2-2010)

> It [COP15] was never going to go anywhere… [there] were too many people talking about money and corporate interests and countries and 'me and mine' and I was just totally depressed by it. (P33-2010)

The failure of COP15, whilst seen in social dilemma terms, is however perhaps simply a concrete example of a wider characteristic of human relations. Where asked about the international dimensions of climate change[7], P18-2010 portrays the problem as a manifestation of an enduring – even fundamental – human problem:

> I think we'll always come up against obstacles, because… there'll always be both sides of the coin, and it's very easy for one nation to express their opinion, their opinion will always be one-sided and there will always be conflict to that opinion, so trying to reach an agreement, you know, hundreds of years, thousands of years, there's been battles over various disagreements… The fact remains… countries are going… to be very strongly opinionated… so it's difficult to see internationally how that will pan out.

Contradictions at the personal level also emerge. Thus P6-2000 refers to the "trap" of needing to use cars specifically because others do:

> Everyone… I know [drives their children to school]. Their argument is that… it's not safe… to take the kid walking because cars are dangerous… we trap ourselves in a way because it means that **we will need to use our cars because everyone else does**. (emphasis added)

iv. 'Anti-dilemma' perspectives

As evidenced by many of the excerpts above, social dilemma perspectives tend to be associated with a sense of resignation, fatalism and lack of agency.

[7] The moderator asked: "What do other people think about this international side of climate change? Whether it's – because a few countries have been mentioned in passing here. Do you think this is an international problem that we can do anything about?"

There are nevertheless across the datasets also notions that serve the function of rejoinders, or responses, to the argument that climate change constitutes an (often seemingly intractable) social dilemma. Whilst less commonplace, they are of note for their consistency in portraying an 'answer' to the problem.

One characteristic notable in these responses, is in the notion of 'doing your bit'. This notion is used both to argue for a social obligation to positively contribute according to one's own capacity, and also as seen as part of a cumulative effort. Thus for example, P17-2003 directly rebuffs the idea that there is 'no point' in individual action where the state does not itself act by drawing on the idea of one's own obligation ('I can help') and as part of a wider effort:

> Moderator: So… the fact that the government isn't taking more action… does that make you feel there's no point in individuals, yourself, making an effort to cut down, or-?
> P17-2003: No, I would still do my part if I could, because that's the only way I feel I can help… I suppose I'm thinking, yeah, it's only a very small part, but if other people do it as well, it should make a difference. It certainly should. And if you can get people to do that worldwide, it would make a big difference.

Equally, across several of the 2007 focus groups participants speak of 'doing your bit': P6-2007 suggests that "we can all try and do our bit", P23-2007 that "we should all do our bit", P67-2007 that "you should… just… try and, you know, do your bit as it were", and P84-2007 argues that there is a purpose (the term 'can' is used in this respect) in individual action: "humans can do something… you can do your own little thing".

Again, across the 2010 focus groups the idea of 'doing your bit' recurs. The purpose of this in cumulative and normative terms is emphasised on several occasions. Thus both P14-2010 and P23-2010 suggests that individual parts have a cumulative impact; and P25-2010 asserts an obligation to act given the UK has a high relative ('per capita') impact:

> I think if everybody did their bit… it could make the world a better place… if everyone did their own little bit towards helping the environment. (P14-2010)

> P20-2010: We can't do very much as individuals.
> P23-2010: Well, a voice is what we are and we can think with our own private lives and I do feel that if everybody does a bit, it's a lot.

> All we can do is do our bit and as we are one of the nations that per capita consumes an awful lot, it's very necessary for us to do that. (P25-2010)

P27-2010 also argues for individual action on the basis of both a normative ('a responsibility') and cumulative ('collectively') argument: "if everybody does something, then collectively it should be more powerful than anything else. And I [think] everyone's got a responsibility to do something".

As in many of these examples, the cumulative/collective aspect of multiple individual actions is affirmed in many places across the transcripts. This is often revealed through the use of the term 'everyone' or 'everybody', as in P27-2010's argument. Elsewhere, P4-2002 suggests that "if we all stood together… there is the wherewithal to change things", P12-2002 that "if everybody did one small thing… that's going to help", P24-2007 that "everybody should be involved" and P4-2010 that individual action would be meaningful "if everyone did it".

The idea that individual action is cumulatively meaningful is asserted by two participants (P11-2007 and P13-2007) in direct response to another participant's repeated suggestions that this is *not* the case, in the following 2007 exchange:

> P17-2007: Do you think we honestly make any difference ourselves by burning low energy lamps and switching...?
> P13-2007: If everyone did it, yeah.
> P17-2007: And don't leave your television set on standby at night?
> P13-2007: Yeah, if everyone did it.
> P17-2007: Do you think we make a difference to that?...When you see what… the United States and China are doing?
> P13-2007: It'd still make a difference wouldn't it.
> P17-2007: We're just fiddling about we are.
> P11-2007: Yeah, but if 60 million people in the UK start it, maybe it'll become a trend. You know, somebody's got to start it somewhere. If we can be the world leaders in energy efficiency, we can set an example, maybe other countries will say 'Well, it works in the UK, maybe we can follow their lead'.
> P13-2007: Better than 60 million people not doing it.

This exchange is revealing both for the function of such an 'anti-dilemma' argument in responding to a proposition of fatalism/resignation, and also for the means by which the nature of the argument is extended from a small-scale individual to large-scale international level.

Changes in social dilemma perspectives

It is striking the extent to which the view of climate change as a social dilemma, is persistent across the datasets. At different scales (individual, community, national, international) and in respect of different emphases (e.g. free-riding, collective versus individual interests) a social dilemma discourse recurs in similar forms across the years and appears readily applicable to the problem of climate change. For the most part, it would appear that a view of climate change as a social dilemma is therefore a consistent and durable discourse.

This said, it is notable that one means by which a subtle shift in character of the discourse has emerged, is in terms of an increasing politicisation at the national level, of a social dilemma perspective.

In the earliest data (1997/8), the only (slight) allusion to a national political dimension, is a participant's reference to possibly deleterious economic consequences of climate mitigation, whereby "if we have to reduce our output… it means we've got to cut back on use of cars… if the knock-on effect of that means producing less cars it's putting people out of work" (P5-1997). In the 2000 data, the two references made are similarly general, though do refer to government/political contradictions; thus for example P3-2000 refers to the "£10 million announced this week to the coal industry… which is going to pollute the atmosphere. So there are lots of contradictions that politicians have… they want to say the right thing… but when you read the small print…"[8]

By 2002, participant talk includes references to specific competing local/national priorities and political considerations. As P5-2002 argues, "whilst the local authority might want to put money into… environmental issues, you will always get somebody who will push the priority of [for example] health". In more general terms, P3-2002 considers problems arising were government to act to restrict economic activity: "[if] the government come on and say OK we're responsible for this and industry has to take a very, very huge step back and we have to scale everything down… but there's probably going to be five million people lose their jobs".

In the 2007 groups, reference is made in more specific terms, to the conflict between individual interests (taxation costs) and government/collective action. Thus P15-2007 argues, in the context of how reduced flying may impact tourism, "you've got to think of tourism, what that brings in for the country… so… that's less money coming in, that's more taxes on us" (P15-2007). At the household level, P14-2007 refers to the (supposed) consequences of personal energy conservation upon his tax payments: "I'd love to have double glazing throughout but … if I did that would put my community tax up, because the government thinks if I've got double glazing my house is worth more, so I should be paying more."

By 2010, discussion contextualising climate change to national politics, and the relevance to individuals of political considerations regarding climate change, has become more prevalent still. P2-2010, as quoted above, talks of the dilemmas of conflicting imperatives both to spend and not spend money in the face of a recession and climate change (this of course is contemporarily relevant in the context of the post-2008 financial crisis). In a separate group discussion, a similar point is made where P22-2010

[8] The other 2000 reference is that referred to above by P7-2000 of 'hypocritical' government.

talks of the UK's response to recession as conflicting (a 'massive battle') with the longer-term considerations of climate change:

> If there are issues that you feel the government should be addressing in terms of say the recession… and making sure that the UK comes out of it as a strong player in the global economy, then consumerism needs to continue… There's a massive battle there between what we're saying every day in terms of our economy needs to improve… that needs to come from spending, [but] then we're saying but we don't want to buy the goods that are made from palm oil and we should be recycling instead.

Elsewhere, P1-2010 talks of the political difficulties of addressing car use: "you put up the price of petrol and make it more difficult to travel, the car lobby is going to go <sentence unfinished>". P31-2010 presents political decisions in respect of climate change as a stark (and electorally unattractive) choice for politicians:

> Can you imagine politicians saying: 'we're going to close a school this week, because we've got no money, and the NHS haven't got any money, but we're giving two hundred billion to Argentina or something to- for the Amazon or something'. That's the reality of it, you know, short-term political problems against the bigger picture.

Climate change may also be characterised as a national political dilemma in the context of the electoral cycle, whereby a motivation by politicians to ensure "people are happy" conflicts with longer-term needs:

> I think that there's a real issue with climate and the government, on the basis that… they are only in power for so long… and the problem that has arisen… is that they will always look for short-term solutions to make sure people are happy with the decisions they make, therefore they're unable to make a long-term solution (P18-2010)

It is suggested that the accounts referred to above, point towards recurrent notions of collective versus singular interests, which over time have increasingly having come to apply to the domain of politics and civic participation.

Functions and consequences

The social dilemma discourse presents climate change as a collective problem, in the context of the (often fundamental) characteristics of human society and social systems. In this, it functions as a mode of understanding that accounts for inaction and lack of response to climate change, at all levels.

As noted in several places above, the consequences of the social dilemma discourse are often fatalistic and point to lack of individual and national efficacy (e.g. that action in this dilemma context is

"pointless"). Negative affective associations are noted explicitly in a number of places: a sense of being 'doomed', 'totally depressed' and pessimism recur.

This said, what I have termed 'anti-dilemma' perspectives are also presented as a means of resolving or responding to the social dilemma of climate change. These are often asserted in terms of 'doing your bit' and, importantly, emphasise a more agentic – even hopeful – view of responding to climate change even in light of its otherwise intractable character.

6.2 Relational responsibility

Overview: main characteristics and ontology of the discourse

The relational responsibility discourse is concerned with the interacting responsibilities of two or more social actors, in the context of responding to climate change. Most usually, this is expressed in terms of a state actor (usually government; often a presumed third person 'they') acting in a manner that will lead to individuals responding in a desired manner. A straightforward, and frequently cited, case is of governments providing financial incentives (or applying sanctions) to bring about pro-environmental behaviour. The discourse also applies to relationships between other social actors: for example, government and industry.

The relational responsibility discourse is mostly expressed in normative terms: as those circumstances which 'should' be in place to bring about required changes; occasionally though, existing circumstances are described.

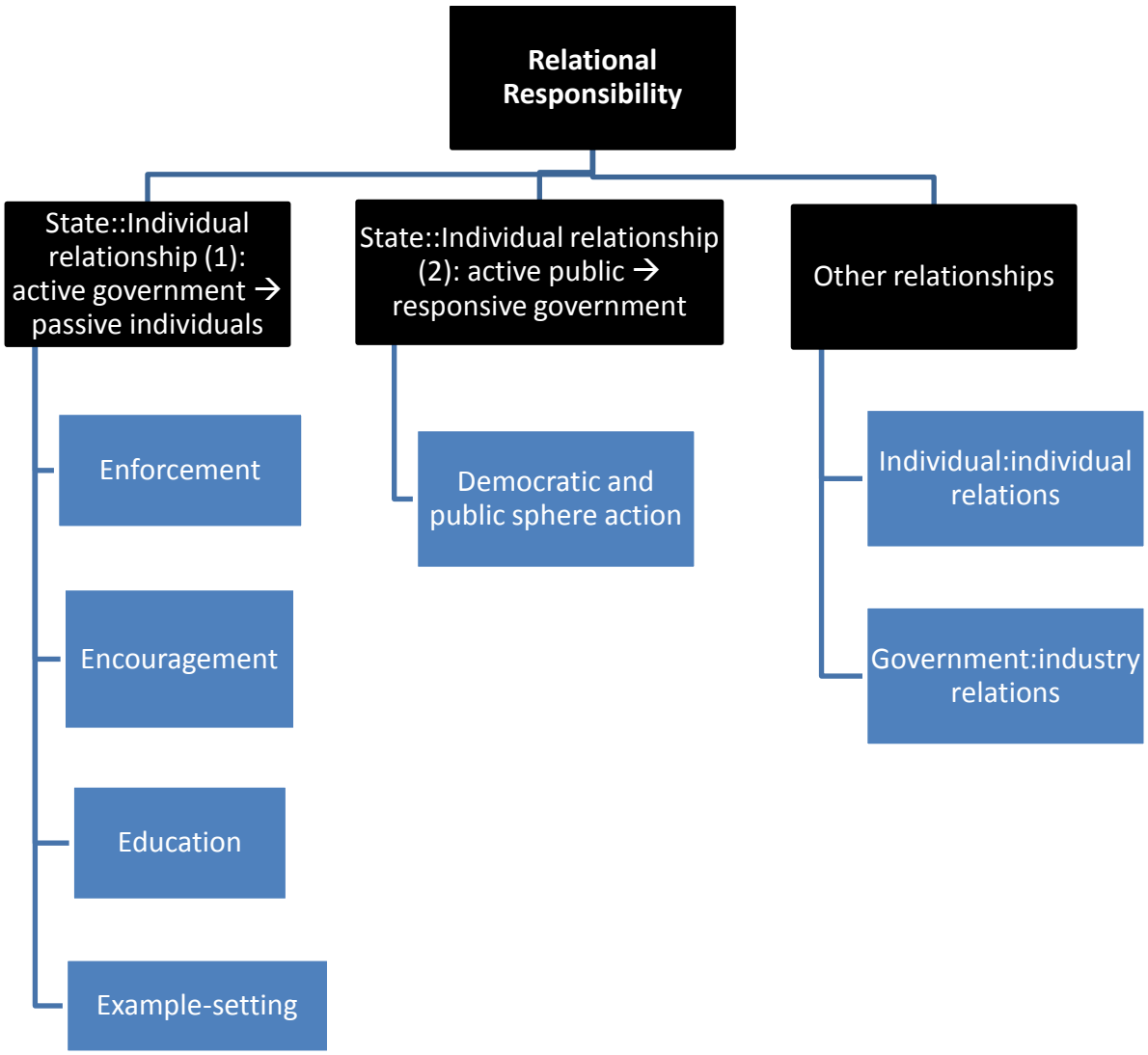
Metaphors, rhetorical devices, recurrent motifs

- Mechanistic view of society as a whole: social actors causing responses in other social actors, and mechanistic metaphors (e.g. 'cogs', 'pawns');
- Metaphors for state enforcement (e.g. 'force', 'ban', 'limit', 'control'), encouragement (e.g. 'help', 'assistance', 'enabling', 'rewards') and education (e.g. 'inform', 'awareness-raising');
- Assumptions about power structures and dependencies between social actors: predominantly portrayed in terms of an active, agentic and powerful state and reactive, passive individuals;
- Normative and descriptive portrayals of relations of responsibility

Characteristics of the discourse

It is useful to preface here a detailed discussion with an overview of sub-types. As illustrated in figure A6.1, relational responsibility is mostly conceptualised in terms of a relationship whereby individuals are seen as responding to circumstances and (dis)incentives provided by the state/government. This generally presumes a rather passive role on the part of individuals. Less often, individuals are seen as active and influencing government; or as actively influencing other individuals.

Figure A6.1: Structure of relational responsibility discourse



Relational responsibility between individuals and the state (1): active government, passive individuals

A series of assumptions underlie perspectives on modes of interaction between individuals and the state, in the context of a societal dimension to climate change.

In many cases, the discourse presumes a mechanistic view of society: social actors constitute interacting parts of a whole, each with different functions and influences. By this perspective, government is commonly portrayed as having the power to set systemic conditions, with individuals responding to these. In this way, government is frequently seen as have agency and being active; individuals as more passive and reactive.

At times, participant accounts allude to this in strikingly deterministic and hierarchical terms, for example in the following where the exercise of 'control' results in 'falling into line':

> They're the ones that control the laws of the land, so they should say: 'right, do this, do that' and then everybody would fall in line and if they don't, carry out their threats, big fines (P21-2007)

Assumptions about power relations are important here: individuals are construed as lacking agency whereby "we as people can't do anything because they've got the last say. The government and the council they've got the last say" (P3-1997).

Such a view of the relationship between government and individuals is again made explicit where P13-2003 argues that "changes in behaviour need to be stimulated I think, and that's the relationship between sort of public sphere and the private sphere. Individually you can't do anything, or you can do very little".

It is in keeping with these notions of society, that active/passive distinctions may be made, thus for example "government are supposed to lead us, and pull us in a direction" (P35-2010); "I think that people need to be led and I think that that's what the government's there for" (P2-2007); and "it's up to the government to tell us what to do" (P38-2007).

More explicit still, are participants' use of the metaphors of cogs (as in a machine) and pawns in a game of chess, to convey the notion of the relations of responsibility between individuals and the state:

> …effectively we are all cogs which could be put into motion to make sure that something happened (P18-2010)

> P57-2007: …it all comes down to government. If you want to do something it all depends what they what to do.
> P49-2007: We're just the pawns in their big chess game.

State:Individual relations – Enforcement

The enforcement by government upon individuals to act in an appropriate pro-environmental manner is frequently characterised as necessary and desirable. A variety of verbs are used to describe versions of enforcement, for example: to stop, force, ban, deter, sanction, make (people) pay, impose, control, limit, penalise, and to restrict.

An illustration of the commonality of language used can be seen in the following excerpts, where the term (en)force is used across all datasets from 1997 to 2010 (emphases added):

> They've got to try and **force** people… by putting prices up to stop people, you know **force** them to use other forms of transport. (P8-1997)
>
> In the long term they [politicians] are the ones who will have to pass legislation to **enforce** certain new regulations on industry, commerce and even on us the consumer (P9-2000)
>
> I guess because people are basically lazy as a whole and won't do anything unless they're **forced** to do it or have a financial incentive, that's probably how things are going to change (P10-2000)
>
> Hopefully the governments will you know introduce measures to encourage people, even you know **force** people, to behave more environmentally responsibly (P18-2003)
>
> [In respect of domestic energy use] Only politics could **enforce** it though… if you introduce fines and stuff like that, it's got to be done from a political level (P13-2007)
>
> High-energy light bulbs were taken off the market… they're no longer something you can use. There are certain things that you want to stop… you don't always have to use a mallet, but I still think you need to **enforce** things on occasion. (P33-2010)

In the excerpts above, an assertion of the necessity of enforcement, and of its normative component can be detected, where the state it is argued 'should' carry out enforcement: they "have got to", "will have to", "hopefully will", and "need to" make use of force to bring about individual change. Individual action may indeed be portrayed as entirely contingent upon force ("people won't [act] unless forced"); elsewhere P8-2010 argues that "you can't just rely on people… willingly doing the right thing… it does come down to having to control the way people behave".

Enforcement may come in different forms, though most commonly entails regulatory or financial penalties. In the case of restricting car travel, for example, P10-1997 discusses "making it more difficult to have a car, or more expensive"; equally P6-1997 proposes "making it difficult for people to drive"; P16-2003 cites the example of the London congestion charge in reducing traffic, and P18-2003 suggests that "we have to think of coercive measures… make cars so horrendously expensive to run or

something". Legislation is also discussed in normative terms; for example "we've got to be disciplined to do these sorts of things… it's got to come from government." (P14-2002).

Whilst enforcement is portrayed often as reasonable and desirable, a recognition of the limits to individual acceptance of this are raised also. For example, following a participant's suggestion that restrictions on flying may be desirable and reasonable, a second participant questions how practicable this may be:

> P29-2007: Stuff like flying, I mean if they restrict it maybe to one holiday a year, I think that's reasonable…
> P23-2007: People aren't going to do that though… People are just not going to want a state [where] you're completely controlled and governed.

Other excerpts also draw attention to the caveat that enforcement, whilst desirable in the abstract, may be practically unachievable; thus P22-2010 draws attention to the difficulty arising from an espousal of enforcement on the one hand, and a likely reaction against it on the other:

> We live in a nation whereby the government says something and everyone goes: 'nanny state, you can't tell me not to do that'. So I think it's a really hard balance between saying the government has to legislate to make people agree with it, countered then by- I can think of my own parents who would say we need to do something, the government needs to tell people to do stuff. The moment that they were told to do it: 'nanny state, you can't tell me what to do'.

Similarly, a 2002 participant, having suggested that enforcement is desirable, subsequently (and almost immediately) then remarks that there is actually 'no way' this could happen:

> P23-2002: Do you think we should be made to recycle? … I think we should be made to re-cycle.
> P19-2002: But how do you enforce that?
> P23-2002: I don't know, there's no way you can enforce it.

In other words, the exercise of 'force' by government to bring about change in and by the public, is presented as desirable and reasonable on the one hand, and at the same time recognised as societally problematic.

Changes in responsibility-as-enforcement

Changes in the character of relational responsibility specifically in the context of state:individual enforcement, are difficult to detect across the datasets. It is notable however that earlier instances are characterised entirely by hypothetical, normative assertions, whereas later instances *also* entail reflections

upon concrete, descriptive accounts – including the appraising of actual instances of enforcement. In other words, this part of the discourse has shifted some way from abstract to concrete.

In the earliest accounts (1997 and 2000), participants for example suggest that "you've got to… ban cars" (P1-1997), that "there should be a limit" to household waste permitted (P1-2000), or that "they probably do have to put in some form of sanction" (P18-2000).

Later accounts do still incorporate these forms of normative assertions (e.g. "what's got to be done… [is] make us, compel us"; P44-2010), however recycling behaviour in particular has come to be considered in terms of an extant (present tense) and directly experienced enforced behaviour. Thus in 2007, P15-2007 remarks that "there is… a step going on and there's a fine imposed if you don't put your cardboard and things like that in the right bags".

Similarly, P12-2010 reflects upon the present and likely future context of this enforcement:

> If I can't get the lid down on my bin then I'm going to get fined, so I make every effort to recycle as much as I can… I think it can be enforced, I don't know if it should be enforced but I think… it will happen, I think it will be enforced.

A participant in another 2010 group, makes a similar claim to the one above, extending its implications by analogy to restriction of car use:

> If somebody told you that you couldn't get in your car then you wouldn't do it. It's like with the recycling… [in the] North [of England], if [recycling] wasn't in the particular sections of the box … you'd get fined. So if they turned round and said: 'well actually you're not allowed to drive a mile' <i.e. a short distance>… you wouldn't do it, but I think it would have to be enforced, for a lot of people. (P45-2010)

State:Individual relations – Encouragement

In contrast to an emphasis upon enforcement, relational responsibility between the state and individuals is often conceptualised in terms of an onus upon government to proffer incentives and assistance for pro-environmental behaviour. Terms used to portray encouragement include incentives, rewards, subsidy, payment and lowered prices, help, assistance, enabling, and the 'making easy' of pro-environmental behaviour.

An example from an early group incorporating three of these terms within a single assertion, is that of P1-1997 who proposes the means by which government may encourage use of electric vehicles:

> The governments can **make it easy** like if you've got an electric car **you don't pay tax**, your insurance is less or whatever. They can **make it an incentive** that way. (emphases added)

As in the case of enforcement, assertions of encouragement tend often to be normative. For example, P8-2003 states that "there's probably got to be some sort of incentive to [deal with climate change]… individuals tend to be very apathetic, so unless they're given some kind of incentive… they're probably not going to do it". Equally, P13-2003 argues that "people will change given the right incentives" and P7-2002 that "potentially a bit of payback to encourage people" is required.

Encouragement is referred to as a "helping hand" by a participant in a 2010 group, with respect to lowering domestic energy consumption: "one of the things that could make most difference in this country is insulation in houses. So if you were given say 70% of the cost of fitting cavity wall insulation, then maybe people would do it" (P1-2010).

Given the state has control over systems of taxation, this is often proposed as a mechanism for enabling behaviour change. P17-2003 for example argues:

> A lot of people would do more if there were a financial incentive. … I think if I had an incentive for example, the tax on smaller cars, or the tax on less polluting cars being lowered, that I think is very good.

Also in reference to taxation, P53-2007 suggests that "the government could help cut down the emissions and things, maybe give people a tax break or something if they <sentence unfinished>"; in terms of encouraging smaller car engines, P4-2002 argues from experience that "it's working with the government giving us our car tax for half price, because my son's just bought a car deliberately with a smaller engine… so if they give us more incentives I should imagine we'd… do it".

A view of the state offering financial rewards and incentives persists into the most recent 2010 group discussions. For example, P18-2010 and (in a separate group) P6-2010 assert the value of encouragement, as being a necessary and reasonable part of the social contract between individuals and government:

> You should be given the right decisions to make and then be rewarded for that, because you are contributing, you are helping (P18-2010)

> …encouraging you to use your car less: incentives. At the moment… there's an incentive to fit solar panels on your roof, and… things like that I think will slowly creep up and more and more people will take that on board. (P6-2010)

More generally, pricing of products and services may be used to influence behaviour: "Make the prices of things of things… ecologically sound products, they shouldn't be more expensive than things that aren't because that discourages anyone from buying them" (P7-1997). More explicitly, people may

receive a 'reward' for lowering domestic energy consumption, as proposed by P9-2002: "the other way [to lower emissions] is [by] rewarding [people] in some way for doing it. If your electricity bill went down by 10% over a year you got it 10% cheaper or something".

In addition, the notion of government facilitating appropriate action by individuals may entail adjustment of structural conditions, particularly in respect of travel behaviours. The assumption here is that given favourable changes to, say, public transport infrastructure, individuals will respond accordingly. A typical means of asserting this view of relational responsibility is given by P7-2000 who suggests that "a good public transport system" would "encourage people to get rid of their cars"; similarly P39-2010 argues that "if the powers-that-be really wanted you not to use your car… you'd have options, you'd have good public transport".

Changes in responsibility-as-encouragement

A trend is evident in an increase in the variety of pro-environmental behaviours considered appropriate for encouragement, as well as a move (as per the enforcement aspect considered above) from hypothetical, normative assertions to more concrete, descriptive accounts.

In the first two datasets (1997/8 and 2000) there are no references made by participants to encouragement in descriptive/concrete terms – though numerous references are made suggesting its desirability in normative terms. Across these two time periods, it is notable that any reference to home energy use (in the context of relational responsibility) is also absent (coded references refer mainly to travel behaviours, or are non-specific).

By 2007 and 2010, however, there are several references to domestic energy consumption, specifically contextualised in terms of a system of state:individual encouragement.

By 2010, there is also a greater proportion of references to encouragement in descriptive terms, including in respect of domestic energy use. Thus P34-2010 argues for encouragement of pro-environmental behaviour with reference to that which is already in place: "B&Q <a hardware store> is doing discounted, subsidised insulation, and the government is doing insulating, so there can be encouragement". Likewise, P31-2010 reports the outcomes of a bike-to-work scheme at his place of work, including in terms of the appeal of such programmes:

> The government has a scheme where you can get a tax incentive for buying a bike… in my firm thirty people bought bikes… and that incentive changed their behaviour… [so] things like that do make a big difference… and so more like that would be really useful.

State:Individual relations – Education

A third means by which the state may be understood to exert influence over individuals is through provision of education. A number of notions are used in this regard: educating, informing, awareness-raising, being told or given information or guidelines, and campaigning by government.

Education may be construed as awareness-raising for its own sake: "maybe they should educate you more to let you know what's going on" (P8-1997); "the government should do more to educate" (P8-2002); "the government needs to educate the citizens" (P16-2007); "providing people with the information they need, because otherwise you're in ignorance" (P37-2010).

Education may also be advocated with the specific intention of making people more aware or 'conscious'; for example participants from 2002 and 2010 separately argue:

> Obviously, the Government do see it as a problem but they don't make it a major problem to us, they don't make us aware... if we had it on the news and we had a prompt every day then perhaps we would be more aware and be a bit more conscious. (P16-2002)

> They need to sort of bring it into our consciousness I think, sort of mainstream. (P36-2010)

Awareness-raising may be seen in instrumental terms, to 'push' people to 'realise' climate change is occurring – "it should be pushed enough so that people realise that it is happening" (P14-2000) – or to 'point out' the consequences of one's actions: "It's up to the government or the media to bring it home to them. It's got to be pointed out to people their actions will affect the world" (P19-2000). Similarly, the idea that there is 'confusion' is seen to be able to be remedied through education: "there is a big element of environmental education around climate change [for children] but… the amount of confusion [in] our age brackets, is something that needs to be addressed" (P34-2010).

The assumption – implicit or stated – often seems to be that were the state to execute its responsibility to citizens of provision of information and other awareness-raising, then individuals in turn would be able and/or motivated to carry out their own responsibilities. This instrumental view may indeed be clearly framed in 'if-then' terms, for example: "we should all be made aware... if we do know what's causing it and, you know, we should all do our bit" (P23-2007). Similarly, P21-2010 suggests that "If [climate change] is a hot topic… and it's something that's around all the time then you're more aware of it and you're more aware <sic> to put that into your day-to-day life".

Education it is suggested will lead to ('so that') more pro-environmental behaviour in young people, as illustrated by the following remark: "there should be more public awareness in regards to climate change for young people... so that they can treat the world, treat everything, with respect" (P14-2010). The converse of this argument is that where individuals are *not* informed, then they will be unable to understand or act appropriately; as P40-2007 suggests: "too much leaving the kettle on and all that and leaving your telly on standby, things like that. You've <sic> got to educate people haven't we?"

Change in responsibility-as-education

There is a distinct change in the character of these ideas over time. The idea of education as generic awareness-raising dominates in earlier transcripts. An emphasis upon education as a mechanism for influencing behaviour, emerges in the later transcripts.

Early instances (1997) are almost entirely concerned with awareness-raising for its own sake: to 'educate' and 'make aware'. There is just one instance of education proposed for a specific purpose, but even here the assumption is of generic awareness-raising where there is seen to be a lack of knowledge.

There are few references to 'education' ideas altogether in 2000, though of the two instances coded, these refer again to lifting levels of knowledge in relatively generic terms: one participant does though make reference to heightening understanding of the links between 'actions' and their consequences (as per P19-2000's quote above[9]).

It is only in 2002, that the first references are made to education used for the specific function of *influencing behaviour*, with awareness-raising talked of in terms of something in existence rather than asserted in solely normative terms. For example, a participant refers to the fact that "we are now told to switch lighting off… and make sure things are switched off at weekends" (P7-2002); another that "they [are] doing it like educating children into being more aware of climate change" (P5-2002). Nevertheless, for the most part references allude to education for its own sake.

In the 2003 interviews, there is an instance of education in existence ("there are some government initiatives… lots of awareness groups and… education and things that go on", P12-2003) but just a single coded instance of education aimed at influencing behaviour: "if governments can't be bothered to… produce information… then people are not going to be aware and not take appropriate action, i.e. perhaps not use their cars so much" (P18-2003).

[9] "It's got to be pointed out to people their actions will affect the world".

By the time of the 2007 focus groups, a dominant focus has emerged upon education contextualised towards influencing behaviour; P22-2007 asserts for example that to "help you not to pollute the environment… give us the information that we need to do it"; and P80-2007 argues that it is necessary for there to be "more information out there for people, because there is a big confusion over what you're allowed to recycle or not". P60-2007 makes a direct reference to change over time, where referring to education in functional and descriptive (extant) terms:

> I just think [education] helps because I've got kids at school and they learn a lot more about these things, so they often come home saying we've got to do this, and we've got to do that.

Finally, within the 2010 group discussions, the majority of references to education are contextualised in terms of influencing behaviour. Ideas about education and awareness-raising have taken the form of providing information or 'guidelines' specifically to enable or promote pro-environmental behaviour:

> It should be taken to a much lower level of these are the things that you can do to ease pollution and use of resources and food miles and all this sort of thing, and really clear guidelines, and people can choose to do it or not. (P11-2010)

In a separate group, P36-2010 argues that "it's just about information… knowing what we can do… it's education and making sure our children are responsible for turning lights off and things like that". P1-2010 asserts that "the government has taken adverts to try and encourage us to use our cars less… I think that's wonderful"; in a separate evening's discussion (with the same group of people) P6-2010 refers to "those campaigns that tell you to drive five miles less a week" and P7-2010 in response asserts the value of such a top-down approach to behaviour change, using the analogy of campaigns against drinking and driving: "Think of how… campaigns against things like drinking and driving have been very successful over recent years".

Whilst not governmental in origin, television programmes by which children are taught pro-environmental behaviour are also referred to; P14-2010 notes the deliberate inclusion of material to encourage children from a young age:

> All the things like recycling and respecting the Earth… they do actually put them into children's programmes… they'll dance around in the flowers and… oh you put the recycling in this, and Peppa Pig tells you to do this… from a toddler age they are taught to do that.

State:Individual relations – State as exemplar

A final (though less common) case of 'active government/ passive individuals' entails government setting an example through its own actions.

The earliest coded instance is that by P7-1997 who criticises the lack (in 1997) of recycling facilities, arguing that "maybe that means that the government doesn't care… so it they don't think that's high priority, why should we?"

Equally in 2002, in discussing the means by which government could signal the importance of climate change, P2-2002 suggests:

> If the government went on television and said… we are going to do this on a big scale… [we] have this plan… you would feel that the government is doing something and if they're doing it and they're getting into action then we should but <sentence unfinished>

Two further instances are presented whereby the actions of one particular government minister was seen to be setting a bad example – which emerged in two separate research projects four years apart:

> When you read about [John] Prescott and all these Jags [Jaguar cars] that guzzle the fuel very rapidly and spew out all the emissions… everybody says 'well, if he does, why shouldn't we?' which is understandable. Yeah, so example as well as leadership. Definitely leading by example is a way forward for many people anyway I would think. (P17-2003)

> P24-2007: …you see our politicians getting in a helicopter to go 500 miles.
> P21-2007: Prescott.
> P24-2007: What incentive is that? 'Oh he can do it, so can I then'. You know.

Relational responsibility between individuals and the state (2): active individuals, responsive government

Far less prominent than an 'active government/ passive individuals' understanding, but nevertheless appearing across datasets, are instances portraying individuals as active participants, with (potential) influence over government.

The most straightforward means by which this is considered to occur, is through voting. Thus in 2000 P5-2000 argues in respect of recycling "whose problem is this?... although we say it's a politician's problem we mustn't forget that the ordinary people put [them] there in the first place". In this same group P1-2000 similarly argues "we need to… inculcate into political masters that it <re. discussion of pollution and use of fossil fuels> is important to voters, that we want them to take considered action… presumably by voting is one way".

Further references to the vote emerge in 2010, e.g. where P33-2010 places an onus on citizen participation:

> We vote for them… so we deserve the government that we get, and everybody who says: 'I'm not going to vote for so-and-so because they're going to put my taxes up'… that's really sad.

Beyond the exercise of influence at the ballot box, wider public sphere behaviour is also referred to. As with P33-2010's argument for need for voter support for enforcement measures, P18-2000 asserts that "what the public can do is support the politicians in order to be able to make those difficult decisions". It is also argued that car fuel consumption "could be much better, but will only start getting better when people demand it" (P8-2000).

A forthright assertion of the necessity and potency of public weight of opinion, serving to influence government decision-making in the national context, is given by P47-2010, who argues:

> If there is a mass of people, you can go forward with an idea, and if we were all saying: 'yes, we want green power, we want wind turbines… and… to hell with it being in my back garden, this is going to be the norm'.

Excerpts such as the one above are of a far rarer sort, however, than the portrayal of relational responsibility in terms where it is government which is active, and the citizenry which is passive/reactive.

Other instances of relational responsibility

As stated previously, the discourse is characterised by the interacting responsibilities of two or more social actors, in responding to climate change. In the majority of cases, instances entail a perspective concerning the interacting responsibilities of individuals and government. Nevertheless, there are also perspectives in participant talk concerning responsibilities between other pairs (or more) of social actors.

Relational responsibility between individuals

Across the datasets, perspectives are given concerning the responsibilities of individuals to other individuals.

For the most part, the assumption behind this version of the discourse is that individuals are responsible for influencing (and able to influence) the actions of others. An early instance of this occurs where one participant responds to the assertion of another that it is difficult to know what one can do as an individual to respond to climate change. P4-1997 responds:

> If you're really going to become serious about it you should consider what you can do as an individual to try and encourage others. If I'm only going to go to the shops round the corner I won't jump in the car, I'll walk.

It is of note here, that at least a part of P4-1997's own actions are seen as potentially influential ('to encourage') over others. Also with respect to individual-to-individual responsibility in the context of influencing others' travel behaviours, P13-2000 recounts personally challenging people who 'leave their engines running':

> The thing that irritates me… is people leaving their engines running when they're stationary, and occasionally I'll pluck up courage and I'll say to them, 'do you really need your engine running now?' …I said, you know, you are just adding to the pollution unnecessarily, or you're just burning up your own money.

This reporting of 'citizen activism' is rare however (probably the only other instance is P45-2010 reporting that "if my boyfriend leaves his phone charger plugged in, I'm like 'what are you doing, turn it off'").

More common is the notion that people's influence upon one another is of a less direct kind. This may be understood in terms of influencing family and friends, as P11-2007 notes: "If we all started being energy conscious, that'll pass on to your family and it'll pass on to their friends… you start talking about things and it spreads that way". Similarly, P7-2010 suggests that "it's going to be a mixture of people making individual decisions about their conscience and influencing their friends". Influencing others is also conceptualised in terms of the education of children, as where P5-2002 proposes "if we all said tonight: 'right, we've got to start going green as much as we can, how long would it be before our children's children thought green every day?", and P17-2002 suggests "it's up to me and my generation to say to you: 'come on, let's get these kids sorted'".

In the same discussion as this previous remark, an exchange between two participants also illustrates a view of people influencing each other in terms of 'role modelling'[10]:

> P18-2002: Someone has to make a stand and someone has to be a role model, someone has to… be a good influence on people.
> P23-2002: People will follow other people though won't they. If someone stands up then people will say, 'all right well they're doing it so we will'.

Relational responsibility between governments and industry

Across the datasets, there are a number of instances of relational responsibility conceived of in terms of government influences over industry. For the most part this follows an 'enforcement' perspective, in a

[10] Note however that this exchange directly followed a moderator prompt including the following: "You said the way they're living you said polluting the planet for everybody else and all the rest of it, right. To what extent do we have to be responsible for the effects that we have on other people?"

similar way to the government:individual view of relational responsibility, for example where P9-2000 suggests "they [the state/government] are the ones who will have to pass legislation to enforce certain new regulations on industry, commerce and even on us the consumer".

Within a conversation about whether and how society could lower carbon dioxide emissions, in a 1997 group P3-1997 similarly asserts that: "government and politicians have the last [inaudible] so for them to say 'well, companies have got to stop doing such and such' and until they put a law saying there's a ban on such and such' it will never stop".

The state is again portrayed as having power to enforce appropriate standards in industry by a participant in a 2003 interview, in this case regarding housing:

> they're building houses the same way they've built them for the last 150 years… that's the kind of thing where the government can make a difference, because the government could turn round and say: 'right, OK, the only housing you're allowed to build is energy-efficient housing… draw up some ground rules. (P21-2003).

A similar perspective is offered by P21-2010 who explicitly refers to the necessity of 'top-down' enforcement: "I think the government needs to put restrictions on big companies, from all the pollutants that they do as well, so I think it has to come from the top down".

Relations between nations

On a number of occasions participants offer perspectives on the relations between different countries and governments – particularly in terms where climate change is seen as an international collective problem. This may be framed in terms of reciprocity obligations, for example in 1997 P7-1997 notes "if we were doing something then we'd expect other countries to do the same". Equally, in 2010 the argument is made that expectations of other countries are unreasonable, where this is not acted on closer to home[11]:

> If we want to set an example to these other countries it's no use saying well we'll just carry on as we are and give you some money to squander on whatever you want. It's only if we change our lifestyles that other countries like India and China or wherever are going to pay any attention. (P28-2010)

The notion that action is required to be international and multilateral, is affirmed again in 2003 interviews, for example where P2-2003 argues: "we've got to take… more responsibility and not just

[11] This argument was made in the context of international carbon trading, hence the reference to 'give you some money'.

sweep it off to another part of the world… The Western world has a responsibility for the rest of the world… because we can't just do it in isolation". P20-2003 also notes "it's got to do with governments and… world agreements, really. It's got to be at the macro-level that changes are made about emissions and deforestation".

The notion that incentives require to be offered from Western to developing nations is made in a 2010 group, where P2-2010 argues: "We can't prevent Africa and Asia and all of these less-developed countries becoming more and more technology-focussed. We need to offer them something that's not burning fossil fuels".

Other relations of responsibility

Other social actors are referred to in the context of interacting responsibilities, however more rarely so.

Examples include a role for environmentalists to engender concern among the public, such that "they make a big song and dance about it and people will… start to listen" (P1-1997) and for environmental NGOs to 'pressure' government, whereby "I think the pressure would come from the environmental groups to the government to do something about it" (P59-2007).

Elsewhere, a role for scientists to influence government is asserted, such that "the message has to come across more strongly from scientists to governments and [then] hopefully governments will introduce measures" (P18-2003). Occasionally a role for individuals in influencing industry is proposed, as where P34-2010 suggests: "within companies… quite often the momentum for behavioural change is actually coming from the workforce".

Multiple and 'circuitous' relations of responsibility

Often, the dualistic relations considered above are combined to portray more complex patterns of responsibility among social actors. These often take the form that 'x' exerts influence upon 'y' which in turn exerts influence upon 'z'.

An example of relations between individuals, governments and industry, is given in a 2000 group by P8-2000 who notes that:

> [cars] are getting much better miles per gallon than they were ten years ago. And they could be much better still, but they will only start getting better when people demand it… It becomes a question of partly getting our policy enforcers to say things like we really do want every car to

> have 50 miles per gallon or better, and people to only choose those cars rather than go for the BMW.

The relationships here are multiple: individuals are ascribed the function of 'choosing' better cars and influencing policy makers; the policy makers themselves are ascribed the role of 'enforcement' of technical specifications in cars; and car-makers themselves of responding to the demands of the public and the requirements of the state.

A complex relationship is also portrayed between government, industry and individuals in a 2010 group by P18-2010 who attempts to articulate a means by which the contrasting motivations of industry can be reconciled with the wider aim of encouraging their staff to change travel modes:

> The responsibility is on companies who are only out to make money anyway, to contribute towards their staff and encourage them to [travel sustainably]. There's not really an interest for them, so I think if the government could get the interest of companies to want to invest the money for individuals to do those kind of things then there's an incentive for them, but the incentive for everyone is obviously the climate change would be highly affected if people were to cycle to work or to car-share to work, but… companies [aren't] going to do it for nothing.

The notion that responsibility returns 'full circle' is also articulated by participants across the datasets. To reflect this idea I term this *circuitous responsibility*.

A case in point is the portrayal of the responsibility between individuals and the state by a participant in 2003, who explicitly advocates the government placing restrictions back upon people themselves, to encourage pro-environmental behaviour:

> I wouldn't have a problem… if you got to the stage where you made people pay for their pollution… I could understand it and see a reason behind it, and so… I think I want to be better but I want someone to tell me to. (P21-2003)

The key phrase in this excerpt is 'I want to be better but I want someone to tell me to'. This reflects, I suggest, both a central assumption about societal dynamics in the context of climate change (that the state holds the power to create appropriate conditions) and a sense of 'circuitous responsibility': the participant places responsibility upon the government, to re-place responsibility back upon himself. This is also reflected in P16-2002's remark that he would support fines for not recycling because "at the moment, I don't get fined so I put everything into one bin".

This portrayal of responsibility moving between actors, is again reflected in a remark by P65-2007 who talks of "connected thinking" in the context of relations of responsibility. This participant suggests that the responsibility of individuals is to influence ('pressure') government to place restrictions on fuel-inefficient cars:

> We're talking about a connected thinking and I think you just have to think about our responsibility as individuals, our pressure we put on governments, and what we use and how we use it. I mean I find these gas-guzzling 4X4 [vehicles] obscene to be honest.

Functions and consequences of the relational responsibility discourse

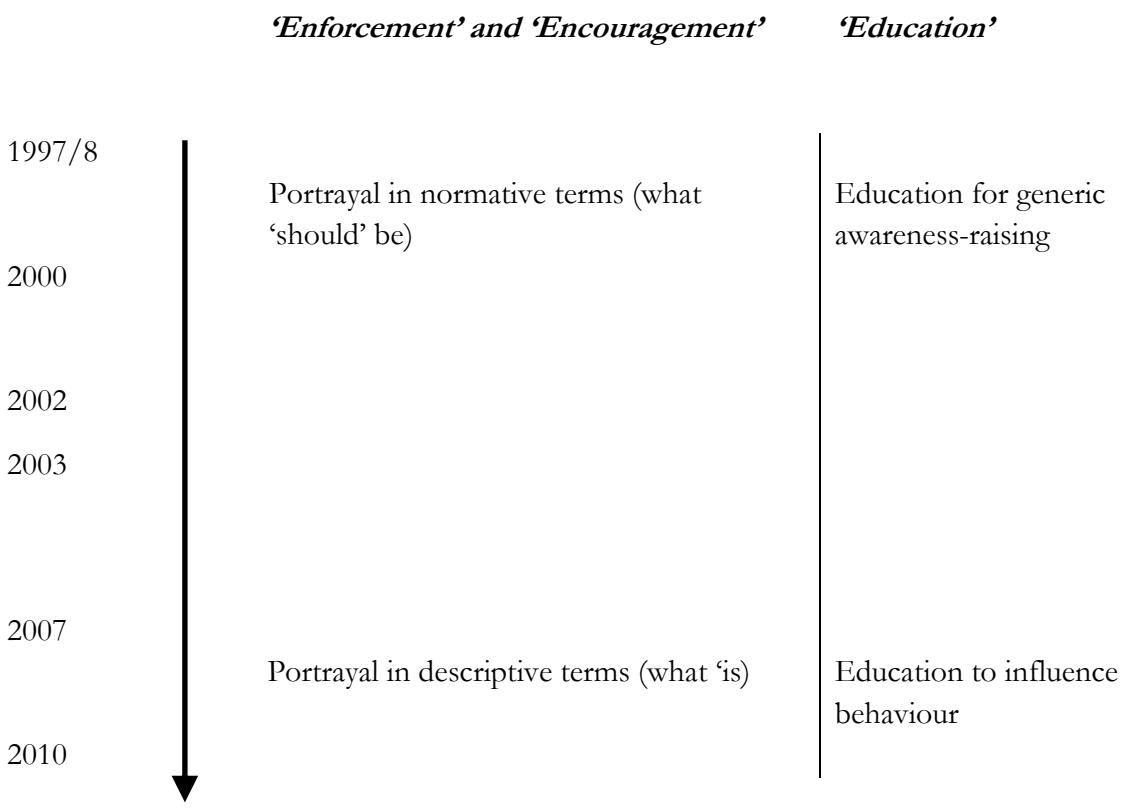
With regards particularly to individual:government relationships, this discourse is used to put forward practical and reasonable means by which climate change is considered able to be addressed. Questions of scale, power and the relative inefficacy of single individuals are (implicitly) recognised in the discourse. By proposing the many reward/punishment scenarios, participant accounts are used as a means of resolving these, with individuals and government *both* characterised as playing a role (albeit more usually with the former a passive one). As I argued in the previous chapter, the social dilemma character of climate change is important in public perceptions, and this also has consequences for understanding responsibility within the present discourse.

It would be possible to argue, that 'passive individual' versions of the discourse in fact act to direct responsibility away from people themselves: that (in the Potter and Wetherell, 1987, sense) this discourse is being *used* to deny or deflect personal obligations. I do not wish to make this argument here, however. It is more important, I suggest, to recognise that the means by which climate change is contextualised to society, here results in a rather more candid attempt by individuals to find a way through what is otherwise a highly problematic set of circumstances for people themselves. Personal responsibility cannot be considered in isolation from the structural (including state-prescribed) conditions in which people find themselves: the relational responsibility discourse therefore serves to address this in as realistic a manner as possible, arguing that reciprocity and assistance are necessary to meet the demands of individual responsibility.

SLQ summary: changes and continuity of the discourse

Figure A6.2 illustrates changes in the discourse, as considered above.

Figure A6.2: Change in *relational responsibility* discourse across datasets



6.3 Lifestyles and social practice

Overview: main characteristics and ontology of the discourse

The lifestyles and social practice discourse emphasises features of modern life which are considered to underlie climate change. Climate change is understood primarily as a cultural phenomenon – it has arisen from, and is perpetuated by, culturally-situated ways of living – a case in point frequently cited is consumerism. The cultural antecedents of climate-relevant behaviour are not seen as fixed, however. It is argued both that culture has become harmful (e.g. increasing materialism) and more responsive to environmental concerns (e.g. normalisation of pro-environmental behaviours).

Metaphors, rhetorical devices, recurrent motifs

- Climate change causes contextualised in terms of 'consumerism', 'capitalism', 'materialism' and 'Western' and 'modern' society
- A metaphor of 'pressure' in terms of time, finance and work
- Lifestyles and ways of living that are problematic
- Cultural change over a generational time period (both positive and negative)

Characteristics of the discourse

i. Western lifestyles and 'pressured' living

Western lifestyles are frequently referred to as driving forces of climate change. This may be characterised in very general terms, for example, where in 2002 P7-2002 notes that "in terms of climate change the thing that strikes me is… I think it's very much a thing that's associated with the West"; and in 2000 where P18-2000 argues that "the Western world… has contributed to climate change through… the lifestyles that we have". Similarly in a 2007 group, P31-2007 remarks that "it is the way that we live that is causing climate change", and in 2003 P19-2003 refers to "this way of living" which is "linked in with the way economies work and the way societies work".

At times lifestyles are portrayed as matters of choice – for example, P6-2000 refers to "us choosing to live in a certain way", and P9-2010 to "the lifestyles that some of us choose to live". However, the more usual sense given is of lives structured and directed by social and cultural circumstances.

The pressure of time in the context of modern living is a recurring theme in the discourse. Thus P62-2007 suggests that she does not attend to energy conservation in the home "because life is too fast… trying to do ten things at once", and P41-2010 explains that "with the pressures of our lifestyles and our time and money and our resources… I could walk to [the supermarket] but I don't because I don't have the time". In the earliest of the datasets, P4-1997 suggests that "things are going at a faster pace for some reason. The time seems to run out on you"; in the most recent dataset P40-2010 argues "the world we live in, people don't get a moment's rest to do things, people work long working days".

The pressures of working life, are often referred to as underlying the inability to engage with climate change. As P16-2002 explains, "if you've got a job where you're working a lot of hours… and you're working a fast life, well you just can't do it [recycling]"; in a separate 2002 group, P2-2002 notes that "we haven't got a lot of time. A lot of us work full time and run homes… you don't want to recycle… you just get it in the bin". In respect of travel mode, P18-2000 makes the point that with work pressures, relinquishing one's car is difficult: "the working world has got incredibly tough in this country… climate change takes time. If you're going to cycle sometimes that takes longer than if you drive".

In parallel to the idea of people subjected to time pressures, reference is also made to a growing sense of immediacy and even urgency in the way social activity is conducted. P22-2002 for example argues that "we want everything right now just as quick as you can… we've gone crazy, absolutely crazy. And because of that… we've sped up this effect [climate change] haven't we on our planet". It is suggested also that this immediacy of living is 'part of culture' that distracts from attending to responsibilities connected with climate change:

> I think sometimes we live in the moment too much, and we don't think about what's going to happen in the future. That's part of the culture these days to be like that, so we don't, we just think about now. (P24-2010)

ii. Consumerism

One of the dominant means used to explain the cultural context of climate change-causing lifestyles, is consumerism. This is referred to repeatedly across the datasets, and ideas connected with consumerism are invoked to explain the societal determinants of climate change. 'Consumerism' is so directly implicated, that it may be used simply as a shorthand for the causes of climate change. Thus for example in 2010 P43-2010 argues that in respect of climate change "that's the fundamental basis of it, it is getting worse because of the drive for profit and over-consumerism", and in 2000 P9-2000 refers to "Western society, Western consumerism" as being to blame for climate change.

The means by which climate change is seen to derive from consumerism may vary. P4-2000 for example argues that harm is caused directly by demand for resources, and indirectly through its leading to a social isolation that negates acceptance of personal responsibility:

> If you look at society as a whole, this gross commercialisation that we live in, where everybody is after 'the mobile phone', first of all [that] has implications in terms of resources but also … if you take that as a view on your own life… [if] you just see yourself as an individual, then you … become self-centred and selfish and therefore you absolve your responsibility if you like.

Often people's demands (also construed as 'want', 'need', 'desire') for the products and services provided through consumer society are emphasised. As P55-2007 portrays the matter, "we are partly to blame… people want everything"; P15-2003 remarks that "we all consume… we all have needs and desires which affect the environment"; P6-2000 talks of a "more more more society", and of "this whole world we have which is always dissatisfied and always wanting more".

Situating consumer demands in the context of economic development, P1-2010 suggests that whilst climate change could potentially be addressed "if we made very few demands on this world" nevertheless:

> As soon as people get rich, well relatively rich, what do they want? They want a car, and as soon as they've got a car they want to travel, and they all want refrigerators, and they all want steaks, and they all want fancy clothes.

As well as demands deriving from people themselves, the cultural context of consumerism is explicitly emphasised by participants. Thus P5-1997 argues that "we're in a culture where having a car is a status thing"; P9-2000 refers to "collective consumerism"; P33-2010 argues "we're born into these- into the West, we're born into this life, so you can't exactly change it", and P34-2010 suggests "we've been trained to be consumerist, and actually that's the big issue, is trying to move away from that consumerist approach in everything we do". The idea that Western lifestyles are part of cultural

structures, rather than freely chosen, is alluded to in the term 'locked into' by an interviewee in 2003: "we're very much locked into convenience, clean simplified lifestyles" (P13-2003).

As (perhaps unwitting) participants in this culture, it is argued nevertheless that these ways of living have become internalised, or part of *how we expect to live*: that "you just take it for granted that's the way we live" (P32-2007). P8-2010 explicitly emphasises the cultural aspects as climate change, as being important in addition to climate science, where she asserts "it's not just about science, it's about human behaviour and people's expectations and the way they're used to living… and lifestyle, and all of those sort of human factors which… there's no mathematical formula for it".

The notion that we have grown 'used to' such lifestyles emerges elsewhere, as where in a separate 2010 group P45-2010 asserts that society has become accustomed to energy-intensive lifestyles, which in turn renders people resistant to change. The participant excerpt is useful to quote in full, as it refers to historical context ('over time'), development of cultural mores ('got used to a way of life'), resultant resistance (not able to be changed), fatalistic future prognosis ('too late'), and consequentially ascription of responsibility beyond the individual ('somewhere else'):

> Over time humans have created and invented new technologies and got used to a way of life, and we pretty much do what we want, when we want. And even though we probably know that it's having some effect, you particularly probably don't really care. Or at least not care enough to actually physically change our behaviour. And I don't think that that's anything that anyone can change, because it's what we're used to. You can't give someone a car for twenty-five years and then tell them: actually you're not allowed to drive it any more. You can't give someone five TV's in their house… you can't do that and then tell them actually you're not allowed to watch it. I just think it's probably a bit too late for the individual to do anything about it, it's got to come from somewhere else now.

As well as people's own cultural expectations, the expectations *upon* people are also emphasised: thus it is argued that "people are expected to travel" (P18-2000, as quoted above), and that it is problematic *not* to fly, because "people automatically assume that you will fly anywhere, that it's OK to… there's no consideration that you'd actually not *want* to fly, and it's very difficult, especially for my business" (P33-2010).

Often it is the *excessiveness of demands* that are made by people in a consumer society, which are seen to be associated with environmental harm. P19-2007 suggests that in people's homes there are "videos and TVs and stereos and goodness knows what else, computers, that's got to have some sort of effect… [the] electricity just one person uses in their home". This sense of excess is referred to also in a separate 2007 group where P23-2007 argues that "we're responsible" because "we've all got three, four cars per family… we have become very wasteful and greedy". *Money-orientedness* of people as part of a

consumer/capitalist society, is also seen as driving climate change through disregarding the consequences of one's actions, as in P37-2010's argument that "everyone steps on everyone to make money, and the consequences aren't really called into question because it's all about making the buck… without any realisation of consequences".

The notion of the 'throwaway society' is used on a number of occasions across the datasets, to draw attention to the cultural contexts of wastefulness. P15-2000 for examples asserts that "we are a throwaway society… every day I have a pile of leaflets… and it's been manufactured, it's caused carbon dioxide". P19-2003 suggests that "it's easier for us as a society to just throw things away… but it's not good for the planet". P65-2007 similarly argues "I think it's a wider thing, I think it's… excess and waste. It's endemic in this throwaway society and… I don't think it's good for the planet". P28-2010 also refers to the "throwaway society", and in a separate 2010 group P31-2010 suggests that "stuff you would fix years ago, we just don't now. You just throw them away, buy a new one".

A very specific example which emerges in three of the five datasets (2000, 2002 and 2010) is the notion that in the past, glass lemonade bottles ('Corona' is a brand name) would be recycled. That this no longer occurs is portrayed as characteristic and illustrative of wastefulness in society (and the possibility for a preferable approach):

> P12-2000: People used to get paid to collect waste. I can remember collecting bottles and newspapers…
> P14-2002: Tuppence back on the lemonade bottles.
> P12-2000: -but we don't do that any more. Yeah, you used to collect Corona bottles.
>
> P4-2002: When I was little you didn't throw a lemonade bottle out, you went and got the thruppence back… everything got taken back.
>
> P44-2010: When I was a kid we used to recycle Corona bottles, you used to get 10p for that. So there's always been these ideas, there's always been this conflict between these ideas, a bit of recycling, a bit of throwaway society.

iii. Temporal perspectives on culture

As in the P46-2010 comment quoted at length above, *temporal perspective* on consumerism and related developments in Western society, are often applied to explain why problems have emerged over time. For example, P26-2010 suggests that "[in] the last twenty or thirty years… consumerism has gone through the roof"; in a separate 2010 group, P12-2010 refers to "consumerism becoming more and more extreme in the last hundred years… causing climate change to become more and more extreme".

Changes over time to culture and society, regarded as relating to climate change, are often seen in a *generational or historical context*. In terms of increased vulnerability to a consequence of climate change (flooding), P1-2000 talks of the "madness" of building on flood plains being driven ultimately by cultural change: "the days when we all moved in with granny… we get this social break-up of families whereby we get more single parents who need premises on their own, this is all pressure". In terms of reliance on car travel, this is also positioned also in terms of cultural shifts, across the datasets:

> Society has changed hasn't it, because in my father's time you lived fairly close to where you worked, to where you had all the entertainment, but now our lives are arranged around the car (P16-2000)
>
> One of the major changes in urban life within the past… twenty-five years… when I was growing up… there weren't out of town shopping centres… you went to shops where you were and you bought things. Nowadays it's a pretty automatic reaction for lots of people, jump in the car and go to the out of town shopping centre. (P13-2003)
>
> People used to work where they could walk to their work. Now they drive 50 miles across the country and back… a car wasn't a necessity 50 years ago. (P52-2007)

Other illustrations of negative change over time emerge across the datasets. For example, P5-1997 notes that "years ago we had milkmen… you put your bottles out and you got rid of your bottles. Now I buy my milk in the two litre cartons… those have to go in the bin"; P6-2002 notes that "when I was little… if I was going to bed… you turn the TV off, you pull the plug out… Now... we've all got TV's on, they're all left on standby".

Domestic energy use is elsewhere portrayed as being bound up with cultural change, and in turn leading to detrimental effects in the environmental domain: "Electricity… has it made us more lazy? … I can remember my mother, doing the washing in the kitchen with a copper stick… now you have all these plastics, chemicals… is that doing any good to the world?" (P13-2002). P73-2007 also refers to a change in expectations and behaviour over time, in respect of domestic energy consumption for heating: "30, 40 years ago… everybody started to put their electric fire up, turn their heating up".

Change across datasets: perspectives emphasising positive cultural change

As well these ideas about historical cultural shifts which characterise the present in unfavourable terms, a temporal perspective may also point towards *positive cultural changes*. This may be seen as something happening at the present time – as change in motion: for example, P34-2010 argues "I think society is changing its behaviours, we had the discussion last week [previous focus group session] to the amount that we are recycling now more than we were five years ago". In this same group discussion, P33-2010

portrays cultural change in past and future contexts: "people can change their lifestyles, we went from 1940's, 50's, 60's ways of living… and then 70's, 80's, Maggie Thatcher and that sort of consumerism and stuff, and now it's changing… our society changes over time".

These comments reflect the sole – though important – means by which the *lifestyles and social practices* discourse is identified as changing across datasets: namely, in terms of an emergent emphasis upon contemporary and positive cultural change. This emphasis shifts from reference (in 2000/2002) to ideas about *increasing awareness and acceptance* of climate change/ environmentalism in society, to (in 2007 and especially 2010) reference to *normalisation and acceptance of pro-environmental lifestyles.*

Table A6.1 illustrates this identified trend, through the use of transcript excerpts which (i) refer to temporal change as part of the discourse and (ii) characterise this as moving in a pro-environmental direction.

As well as comparing participants' views on cultural change between years, within individual participants' own retrospective accounts of change, can also be detected similar ideas. Thus in table A6.1 P22-2010 argues that whereas previously environmentalism used to 'stand apart' from one's life, it is now part of everyday life; and P4-2010 argues that environmentalism has moved from being the preserve of 'tree-huggers' to being "accepted" by "everyone".

Table A6.1: Trends in pro-environmental practice across datasets

Year	Excerpt	Meaning conveyed
2000	"I'm more aware than ever... You are implying that it was a better situation when you were younger but… in those times we certainly didn't know so much about the problems we were causing" (P1-2000)	Awareness of environmental problems has increased
	"It's a fairly recent… phenomenon. Mid-80's there was some lonely voices in the desert saying 'the climate's changing'. The greenhouse effect was a word looked at with some disdain and now it's accepted." (P9-2000)	Awareness/ acceptance has increased
2002	"The next generation, my grandchildren… will be more aware and it'll be like second nature to them." (P9-2002)	Awareness is increasing/ will increase (next generation)
	"In the [West]… there is a greater awareness now… businesses will make more money if they're environmentally aware." (P7-2002)	Awareness has increased (industry)
2003	"Perhaps some of the younger generation will think about it a bit more because the awareness campaigns have hit them at the right age."	Awareness is increasing/ will increase (next generation)
2007	"[Environmental issues are] drummed into them at school, whereas it wasn't with us… it's climate change… and we've got to preserve things for the future and things like that." (P62-2007)	Awareness is increasing (next generation)
	"It's good because fifty years ago nobody was doing anything… people weren't recycling" (P77-2007)	Pro-environmental behaviour has increased
2010	"I've got kids, it's great for them because they learn it at school, everybody recycles… it's going on to the next generation" (P26-2010)	Awareness re. pro-environmental behaviour is increasing/ will increase
	"[When I] came back to the UK, [it] was a different place, like a little snowball had gathered… momentum, there was a huge political agenda that didn't exist before, corporations were thinking… Leaving the country… made it really noticeable when I came back" (P8-2010)	Relevance/ awareness of climate change in politics and industry has increased
	"I think a lot of people do *think* now, as they go through their daily life, what they can do." (P20-2010)	Awareness increased re. pro-environmental behaviour
	P34-2010: We… have changed so much, in the last ten years or so. P33-2010: Absolutely. I mean having this conversation now, five years ago, would we have had it?... P32-2010: [P31-2010]'s example is a good one actually, because that's exactly what happened in our office [reference to office recycling schemes]… no one bats an eyelid… that's just what we do.	Awareness has increased; acceptance of pro-environmental behaviour has increased
	"[My] nieces and nephews who are between the ages of four to five to teenagers… pester their parents to recycle… that's just how it is because that's just [how] they've been brought up" (P4-2010)	Pro-environmental behaviour has become normal/everyday
	"Things like lighting… all these energy-saving bulbs that ten years ago you couldn't get hold of" (P36-2010)	Energy-saving practices have become commonplace
	"[Previously] it was an issue that stood apart from your life… you made certain changes to be green, rather than that they were what you did in your everyday life which is the way that I think people approach it now." (P22-2010)	Pro-environmental behaviour has become normal/everyday
	"It used to be the preserve of people who did the lifestyle thing… 'tree-huggers'… but it's getting more and more accepted that we need to do something and everyone has to do something."(P4-2010)	Pro-environmental behaviour has become normal/accepted

Functions and consequences of the discourse

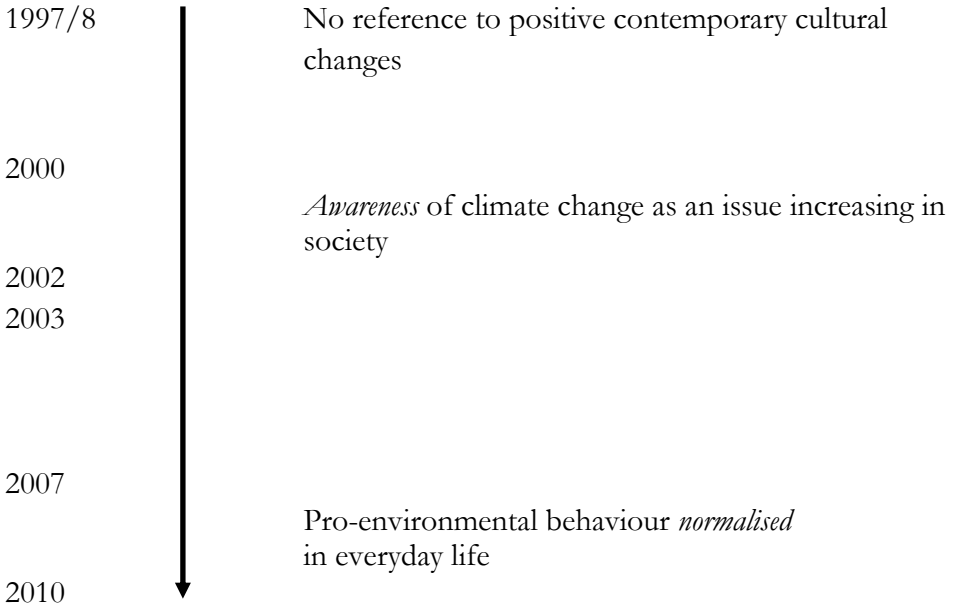
As with the social dilemma and relational responsibility discourses, the present discourse has the function of situating the individual in their wider social context. Here, this is presented in cultural terms: that our actions must be seen in the context of the ways that we live at this point in time and in the West. Such ways of living are presented as constraining or directing people's actions.

A consequence of the discourse is that climate change is seen in terms that extend far beyond ideas of individual responsibility at particular points in time or space. However, given the often critical view of social practices and lifestyles asserted, it may be argued that the discourse also acts as a form of 'cultural critique'. In the context of climate change, aspects of consumerism, for example, are portrayed as damaging – whilst other cultural shifts are portrayed in a more positive light.

SLQ summary: changes and continuity of the discourse

Figure A6.3 illustrates changes in the discourse, as considered above.

Figure A6.3: Change in *lifestyles and social practices* across datasets



Appendix 7 Personal and folk-psychological discourses of climate change: extended interpretation and participant quotes

This Appendix is an extended version of the material given in chapter 7. Additional participant quotes and commentary are included here.

7.1 Folk Psychology of climate change

Overview: main characteristics and ontology of the discourse

Responding to climate change is understood as contingent upon people's psychology and motivations. Whether and how climate change is addressed is related to folk psychological concepts, such as attention to one's immediate interests, levels of awareness and education, personally-held values (or lack thereof), and willingness or resistance to change.

Metaphors, rhetorical devices, recurrent motifs

- Behaviourist notions: e.g. tendency to respond to reward and punishment; to take the path of least resistance (to do that which is 'easy')
- Cognitive notions: e.g. 'awareness', 'consciousness', 'education', (not) 'thinking'
- Value-oriented notions: e.g. willingness to help, 'concern', 'selfishness', 'laziness'
- Humans as 'creatures of habit'
- Folk-psychological notions of 'denial'

Characteristics of the discourse

i. Acting upon that which affects us: continuity across the datasets

Whether and how climate change affects us on a day-to-day basis, is portrayed as an important determinant of people's responses. Where climate change is seen to be relevant to people, this is usually in terms of indirect effects, such as are contrived by social structures (e.g. cost of fuel). The idea of direct effects of climate change are referred to exclusively for their absence, i.e. that because *climate change does not directly affect people*, they will not act in a climate-relevant manner (e.g. by reducing carbon emissions). As P26-2010 argues: "I tend to think that until the global warming, sea levels rise and it laps up to people's doors… people are going to be indifferent towards it".

The language used to convey ideas about the personal relevance of climate change, is often strikingly similar across the datasets – particularly the conditional construction and use of the verb '*to affect'* – as the following examples illustrate:

> It's human nature… you don't really act on something unless it's affecting you (P7-1997)[12]
>
> P7-2000: When it affects people we'll see a change
> P6-2000: Until it affects you, you don't think it matters
>
> It doesn't affect us so we don't bother about it (P5-2002)
>
> If it does not affect you directly then you don't bother with it (P49-2007)
>
> I don't think that anyone's going to do anything unless they feel it affects them (P37-2010)

Across the datasets, the idea recurs that people act according to their own interests, and what is important personally to them. For example, P10-2000 refers to the hypothetical situation of travelling in the rain to suggest "we don't really do anything unless it's in our interest to do it… if it's raining and you want to go into the city… can you say you've never ever driven?"

An important motivation in people's (lack of) response to climate change, frequently cited, is 'cost' – whether literally in financial terms, or with respect to time or convenience costs. In a 2002 group, P9-2002 for example portrays such costs as taking precedence over other concerns, with this seen as part of a universal 'human nature': "we're all very good at lip service, [but] when it comes to hurting us in the pocket then we don't want to know. That's human nature". Similarly, P12-2003 notes that whilst "there are a lot of initiatives in place" nevertheless "unfortunately a lot of people won't bother because there's the whole cost". A corollary of this argument is that avoidance of cost could lead to lower energy consumption, as P28-2010 argues:

[12] This remark was not strictly concerned with climate change, but with environmental issues in general.

> Generally speaking things do happen when it's time to put your hand in your pocket. Finance does make people curb their extravagances and curb their behaviour, if they've got to pay more for it. And that's what'll happen with energy I'm sure.

A related argument, is that if an activity is affordable (as well as desirable) – even though it may be environmentally-detrimental – then people will act accordingly. Thus for example P7-2010 argues with respect to flying: "it's affordable isn't it, and… most people can afford to fly. So if it's affordable and it's quick, it's just almost logical to do it".

Analogous to ideas about financial costs and incentives, are those concerning time costs and convenience. For example, in terms of a discussion regarding sustainable consumption, P1-1997 suggests supermarkets are used by most people "because we always look for the easier options", and P7-1997 that "people will do something that's easy rather than go out of their way".

With respect to travel mode, P16-2002 also talks of people taking 'the easy option': "Even if… you lived [and worked] in the middle of [town] it's an easy walk, but you… hop in a car every morning. It's easy isn't it. And everybody takes the easy option unfortunately". Similarly, P13-2003 remarks that "I entirely understand why people don't [use public transport] because it's so much easier to just walk out of the house, get into the car, and it's a door-to-door service".

ii. Acting upon knowledge and awareness: continuity and change

Knowledge and awareness about climate change, are also portrayed as important determinants of action. In 2003, P14-2003 for example suggests that "things like turning off lights… maybe there needs to be more public awareness about these things"; and P18-2003 that "information is what people need to make a proper position about their own behaviour… if you don't know there's a problem, [you're] not going to change your behaviour are you".

The idea that behaviour is contingent upon 'information' is also asserted by P15-2000 where he states that "for individuals it's down to the information they get. If they're given information… they see that's something they do can make a change". A 2007 participant similarly suggests with respect to her own and others' actions, that people would cut down their energy use if they were more 'aware' and had the relevant 'information'[13]:

[13] This quote relates to a longer section where the participant refers to having become aware of energy and water consumption through watching a television programme.

> People aren't aware of what they should be or shouldn't be [doing]… I thought, well, if I had that information, if somebody said to me: 'right, you need to cut it by 60%, so therefore only boil your kettle so many times and only do that, and that's how you could save', then I would do it. But, you know, the information isn't really out there. (P4-2007)

A related and commonplace idea, is that 'education' of various sorts is required, and will be efficacious – the logic (implicitly or explicitly) being that where people are aware/educated then they will respond accordingly.

Ideas of being 'conscious', or actively giving thought to climate change, recur in a number of places – and are emphasised both in terms of awareness leading to action, and an absence of awareness leading to inaction. In the former case, participants do assert that there has been a general increase in awareness – though this is contextualised in earlier groups to 'the environment' in general. For example, P1-2000 suggests "people are more and more aware of it [the environment] and at some stage maybe being aware of it has helped change things"; and P4-2002 that "I think we're all very well educated on the environment, myself, and if we're not we must be walking round with our eyes and ears closed". In this, the folk psychology discourse overlaps to a degree with the lifestyles and social practice discourse.

It is particularly in the most recent groups (2010) that the idea emerges that there is an awareness about climate change which has taken hold. A case in point is P23-2010's reflection on how this has developed over the years:

> I think it's ignorance in the past from the person on the street... We are now more aware and able to perhaps in our small way help… but in the past, in my life nobody ever thought about it… it's something that you didn't grow up thinking 'global warming' did you. You just got on with doing what you were doing… And then suddenly people started to say 'global warming', 'climate change' and all of these things, and scientific evidence and everything else, and we're all going 'whoah' don't use your tumble dryers and that, don't do this, don't do that.

In a separate 2010 group, P8-2010 also notes that her own awareness of the links between climate change and her own behaviour (and that of 'a growing number of people') has increased over recent years:

> Going shopping, deciding what journey to take, going on holiday, whatever you do you can do it with an ethical mindset and I think that certainly for me the way I thought about things ten years ago and the way I think about things now are completely different. It's a consideration that is just getting stronger and stronger and I think is shared by a growing number of people.

This said, the suggestion that awareness is widespread and acted upon is rare overall. More commonplace is the idea that there is a *lack* of awareness and/or day-to-day consciousness about climate change. Thus for example P36-2010 notes "it is quite confusing, you don't know whether to recycle or not… information for the lay person isn't as accessible as it could be"; and P34-2010

suggests that "just from the discussion here, the amount of confusion... is something that needs to be addressed".

Interestingly, P32-2010 suggests that contemporary awareness is in fact linked to a *lack* of engagement: "because everyone's aware of [climate change] now it is a background issue, that everyone kind of knows about, but it comes to the forefront at particular times and then it'll kind of retreat back".

A more general reference to a lack of active awareness of climate change is referred to elsewhere across the datasets. As P10-2002 puts it, "as individuals, one minute you feel responsible, then it's easy to not <sic> when you get in your car… I think we all do that, we don't think about walking" and subsequently "when we're reminded of it we're aware, but you forget about it with everyday things". In a 2007 group, P55-2007 similarly talks of such concerns as being 'in the back of your mind':

> You're still going to go, I suppose, and buy the bigger car or whatever it is… I still think we should all be trying but again, if it doesn't affect you really there and then, it'll be in the back of your mind and you'll think about it sometimes, but you'll still do it.

iii. Action in the context of values: continuity across the datasets

A folk psychology which is characterised by value-oriented language is commonplace across the datasets. More often, this is in negative terms – the proposal being that people do not act to address climate change because of a lack of ethics or negative characteristics (e.g. selfishness, laziness).

A common example of an absence of values, leading to inaction on climate change, is that of 'laziness'. This term is used repeatedly across the datasets. P10-2000 suggests that individuals do not relinquish their cars because "people are basically lazy"; P22-2002 attributes climate change fundamentally to this value detriment, arguing: "because of… our laziness and our greed and everything we've sped up this effect haven't we on our planet". In 2007, with reference again to car use, P24-2007 remarks: "some people are really lazy. I've seen people get in a car and take their kids two blocks to school" and with reference to recycling, P46-2007 notes: "I recycle loads but [some people] recycle nothing and… I think that's just being lazy".

Other commonplace pejorative terms used to explain people's inaction are 'greed' and 'selfishness', these again recurring across the datasets. In a 2002 group, P7-2002 suggests that "I think we're just selfish and rich and I think there's not enough awareness"; in 2007, P23-2007 suggests "we have become very wasteful and very greedy human beings"; in 2010 P41-2010 states "you get in your car, because human beings are selfish at the end of the day"; in 2003 P14-2003 states that "humans are instinctively selfish"; and in 2000 P4-2000 argues that "we've gone inwards and selfish".

Elsewhere, the characteristics of apathy and complacency are used in a similar way to explain the lack of response to climate change. Thus P1-2000 suggests that "our biggest problem is the apathy of Joe Public"; P20-2010 suggests that "I think there is a great deal of indifference"; and P7-2002 (also quoted in the previous paragraph) argues:

> I do think that there's a lot of apathy. I think all of us in this room, we could all do a lot more individually and personally to try and improve it if we felt passionate enough about it.

The idea that there is inadequate interest is expressed by the idea that people 'can't be bothered' or 'don't care', such as where P4-2002 suggests that "I think we're all aware but I don't think that anyone can be bothered"; and in a separate 2002 group, P12-2002 suggests not being 'bothered' prevents energy conservation: "There's [things] like you can use less electricity by turning lights off when you're not using them… but people just don't seem to be bothered with doing that". Equally, in 2010 P27-2010 talks of people not being 'too bothered', even given – indeed related to – an acceptance that climate change is serious:

> Obviously… [climate change] is happening… but it seems like we've all kind of accepted it… we probably have… a hundred years to save the planet. Well if we have a hundred years to save the planet, no one seems to be too bothered, really. The world has just sort of accepted it and it- there are some deeply committed and caring people, but there's an awful lot of ignorance, and it's- as long as my four by four still goes up my highways and- I'm not saying the whole world's like that but it certainly seems that it's- it rose up as a big issue and now it's bedded in, we're all sort of- we're all kind of living with it.

Despite such pessimistic prognoses, participants do also refer to positive values underpinning pro-environmental responses. The sense that there is a desire to effect change for the better is asserted for example by P11-2007: "we want to improve… the effects on climate change. You know, we want to make things better… people want to make a difference even if it's a small one". Similarly, P2-2010 suggests that: "I don't think anybody likes to think of themselves as nothing but a consumer who just sits there, using everything up".

In responding to other participants' assertions that people are 'selfish', P44-2010 argues that fundamentally ('the essence of humanity') human nature in fact runs counter to this:

> I don't think we are selfish, I don't think we could have six billion people on the planet if we didn't cooperate. I think the essence of humanity is that we can cooperate with each other. And I think all of us trying… to do a bit of recycling, a bit of walking or not driving as much and things like that, I think it's all because we do feel that kind of collective need to want to do the right thing.

iv. Resistance to change and habitual behaviour: continuity across the datasets

In a number of places across the datasets, the assertion is made that resistance to change underlies lack of response to climate change. In explaining people's attachment to car travel, for example, P18-2000 argues that "trying to get people to use their cars less is just impossible in this country. Put up the price of petrol and there's an outcry". Also with respect to car travel, P16-2002 suggests that people tend to revert to habitual behaviour: "we have this discussion now but I can imagine in two weeks time we'll probably go back to the way we were. You'll get in your car and you'll drive to work and you'll think nothing of it".

A participant in a 2010 group was particularly exercised about how entrenched people's behaviours can be, where he recounted attempts by himself to introduce recycling in the workplace:

> I had to fight for three or four months to get this done, because people were saying 'no, you can't do that'. Anyway… I took away everyone's bin, a thousand bins, and I got hate-mail. Seriously, hate-mail from people saying 'what have you done?' as if I'd done something horrendous, because they had to walk and put something in a bin. (P31-2010)

In a separate 2010 group, P1-2010 also notes that people are 'fighting' the requirement placed by local councils to recycle: "people are fighting it, and this is what I find interesting, that people are saying 'no, I will *not* recycle… I will put as much as I like in my bin"'.

Habits are occasionally seen also as an opportunity to establish pro-environmental behaviour, as where P15-2003 suggests "things like recycling, it's just a habit you get into, and then it becomes an everyday thing".

v. Folk psychology of 'denial': a recent view of climate change psychology

It is notable that in the case of the most recent research project (2010), there is found a particular emphasis upon a reactive psychological process best approximated as 'denial'.

The salient feature of this denial, is an intrapersonal process portrayed as diminishing the salience of climate change – at the same time as which its actual importance is 'really' known about. Within three of five 2010 groups, direct or implied reference is made to such denial. Where questioned by the moderator about people's stated lack of concern, it is argued for example that:

> Sometimes it's like a backing away from knowledge. It's not even- they sort of know but they're so not going to go there … it's like a protection, you can just say… 'no, I'm not bothered, you know, it's fine'. (P33-2010)

Similarly, the colloquial phrase 'to bury your head in the sand' is used to convey a perspective redolent of denial. This phrasing is used within a discussion between participants concerning a perceived inertia in responding to climate change:

> P1-2010: We've only just started waking up to doing something about it. Now, why has it taken us so long, I've no idea…
> P8-2010: There's so many reasons why. It's because it's much easier to bury your head in the sand-
> P1-2010: Yes, I suppose, yes.
> P8-2010: -than it is to confront it.

A separate participant in this group elsewhere uses the term 'denial' directly, and alludes to an inherent – and purposive (they don't "want" to listen) – resistance of people to perceive the reality of climate change[14]:

> The capacity of the human race to just block stuff out when they don't want to listen to it, is very very terrifying… so we'll probably be in denial until it's too late. (P32-2010)

These types of accounts do appear to be particularly prominent in 2010, suggesting a relatively recent provenance. Aside from these references in the 2010 dataset, there is one instance of note as early as 2002, however, where P22-2002 argues that:

> I think we put the values up in our own minds a lot of the time… sometimes we just don't want to bring those barriers down we['d] just rather live in this insular world

Also in 2002 – though less definitely aligned with the above quotes – participants suggest "we seem to think it will affect our kids more than it does [us]. So we… just sort of push it away" (P16-2002) and that "we've all got the blinkers on" (P5-2002).

Personalisation as trend and remedy

It may be significant that it is in three of the five the 2010 groups that the view is expressed that a 'personalisation' of climate change is both desirable and seen as an emergent property. Thus P22-2010 asserts that climate change in the past was:

> an issue[15] that stood *apart* from your life, and you made certain changes to be *green*, rather than that they were what you did in your everyday life, which is the way that I think people approach it now.

[14] The notion of 'blocking' information was applied to climate change, but also in the context of an analogous situation with AIDS.

This incorporation into one's own life of climate change as a relevant concern, is echoed by the following two participants (in separate groups) both of whom assert a role for a personalisation of climate change; the former in terms of the potential for 'twinning' people internationally, the latter for heightened personal relevance:

> I think there needs to be some sort of personality put into it. I think if people were kind of effectively twinned with someone in another country, so… you're personally attached … I like the idea, I wouldn't necessarily agree with it, [but] I think it's interesting. (P12-2010)

> I think again it's … what's personal to you… I think it's got to be kind of taken on as something that's important to the person, to do something about it. … If I recycle my cardboard what exactly is that going to mean? … If I don't get on a plane, what exactly is that going to mean? Because I think … we all do what we can and we see it in the priority of what's going on in our lives. (P36-2010)

Functions and consequences of the discourse

The folk psychology discourse is used to make sense of climate change as a personal and behavioural phenomenon. It explains why people in general terms do or do not act on climate change.

A consequence of the discourse, is that responding to climate change becomes associated with ideas of personal morality and capabilities. The prototypical individual that responds to climate change is one who is 'good', mindful of their responsibilities and well-informed; those who do not respond are associated with pejorative or immoral characteristics, or are ignorant. In terms of ideas about 'denial', the suggestion is somewhat more complex: but there is still a sense that this constitutes a psychological impediment or flaw.

[15] The 'issue' in question referred not just to climate change but to environmental issues in general

7.2 Accounting for climate-relevant behaviour

Overview: main characteristics and ontology of the discourse

Climate change is understood in the context of climate-relevant behaviour at the personal/subjective level. Specifically, there is a concern with accounting for one's actions – that is, offering explanations for one's own behaviour with respect to reasons, justifications etc.

Accounts encompass explanations for both the presence and absence of pro-environmental behaviour (e.g. use of public transport, or the continued use of a car). Factors offered as influential in these accounts may be intrinsic/personal or extrinsic/structural (e.g. stated lack of concern, prohibitive cost). A variety of behaviours are subject to participants' accounts, however most prominent are those concerning transport mode, domestic energy use, recycling and consumption activities.

Metaphors, rhetorical devices, recurrent motifs

- Justifications and reasons for behaviour, e.g. using 'cost-benefit' analysis
- Moralised and normative language such as 'guilt' and 'should'
- Self-deprecating terms such as 'lazy', 'uneducated', 'selfish', 'hypocritical'
- 'Agentic' language such as 'conscious' action, 'feeling' responsible
- Compromise and reconciliation of normative pressures with self-interest

Characteristics of the discourse: continuity and change

One of the most common ways in which environmentally-significant behaviour is explained – particularly in the earlier datasets – is through reference to *external or structural factors* motivating or restricting personal choices. These may be characterised in the main as amoral or commonsensical – that is to say, presumed to constitute reasonable explanations for any individual.

A recurrent example is in terms of financial cost, whereby an (implicit) cost-benefit calculation is used: people explain action as being the least expensive or time-consuming. An example of this is P10-2010's

contrasting of 'paying and waiting' with 'efficiency' in respect of travel mode of choice: "I've got three kids and it's just more efficient driving the car rather than paying on buses and waiting".

Participants refer to choices directed by necessity, comfort and convenience. For example, P2-1997 asserts the "need" for a car but also explains that she did not drive the evening of the focus group because it was "easier just to hop on a bus"; P4-1997 also explains not using public transport due to its associated lack of comfort in terms of "stand[ing] on a cold corner" waiting for buses.

In the 2000 data, cost explanations are cited for the ostensibly pro-environmental action of careful electricity use (e.g. "to keep the bills down", P9-2000) as are time costs associated with recycling, where P18-2000 notes "to me there is a sort of cost-benefit. If it costs me so much to recycle, then in terms of my time, I can't do it".

A frequent and straightforward way of explaining behaviour, is through reference to a lack of capacity to act (i.e. perceived behavioural control): this recurs across the datasets, e.g. P21-2003 noting "the heating is always on, we have no control over that"; P75-2007 explaining car travel to work from there being "no other way of getting there"; P18-2010 explaining that for his work "I had to drive because there were no buses at that time".

External/ structural explanations persist into later groups, although, relative to other types of explanation (discussed below) are less prominent. Nevertheless, as with participants in the 2000 groups, recycling behaviour is accounted for in terms of 'costs' where P19-2003 remarks that "we try to recycle things… but the problem is it's not economical to do it". Similarly in a 2010 group, in respect of time costs P14-2010 argues that "when you're working full-time and have a baby, to get down to the recycling bit… there's no possible way of doing it, so it's just put it in the bin and that's it".

Over the time periods there is however an emergence of more *intrinsically-motivated and moralised accounts*. These are revealed by pejorative self-appraisal in the context of inaction (e.g. describing oneself as 'lazy', 'selfish' or 'thoughtless'); reference to normative (that which one 'should' do); and pro-environmental behaviour ascribed to conscious moral intent.

Moralisation in accounts of one's own environmentally-significant behaviour first emerges in 2002; transcripts from 1997/8 and 2000 have been revisited and there is little evidence of environmentally-significant behaviour described in moralising terms at these times.

An example of the use of self-pejorative language is that by P2-2002 to account for lack of pro-environmental behaviour. She describes herself as 'selfish', 'complacent' and not giving thought to her actions: "I'm so selfish and very complacent… I've always left [television] on standby. I don't think of

the sort of emissions from the fridge… I just live in my own little world". In this same group, P6-2002 similarly explains her car use as being due (in part) to her "being lazy".

There is a persistence of this manner of *self-deprecation* and reference to thoughtlessness into the 2003 interviews: P21-2003 describes himself as "hypocritical because I drive my car too much… and I'm not overly concerned about how much power we use in the house"; (in)action is explained elsewhere by 'complacency' (P15-2003), "a guilty point of view" (P18-2003), and whether one is "virtuous" (P13-2003). This is not to say that the type of common-sense reasoning with respect to external factors, as employed in the earlier groups, is not also present: cost and convenience are also cited as motivating behaviour within the 2003 interviews, for example P13-2003 accounts for his use of public transport for its being "cheaper" and "more convenient" whereas P15-2003 refers to not using energy-saving lightbulbs because these "cost more".

By 2007, both intrinsic/personal and extrinsic/structural explanations are offered, but with the former now dominating explanations for (in)action.

In terms of self-deprecatory accounts, in the 2007 transcripts reference is made by a participant to their being "lazy" and not having "had the guts to change" in terms of car use (P73-2007); another participant also refers to being "just too tired" to "fight the cause" (P4-2007). In 2010, similarly, P45-2010 talks of "guilt" and of personal flaws leading to lack of pro-environmental behaviour: "sometimes I will drive a mile down the road because I'm lazy or hungover, to be honest".

By contrast to these self-deprecatory accounts, particularly in the 2007 – and even more so in the 2010 transcripts – are also found accounts of intrinsically-motivated pro-environmental behaviour. Participants talk of being 'conscious' of action, such as where P6-2007 asserts (using the self-referent second person) that "you're conscious about how you feel about doing things… I don't drive anywhere, I'm quite happy to walk and catch a bus". P27-2010 also talks of 'thinking', being 'aware' and 'consciously' acting with respect to food miles (i.e. carbon emissions from food transportation):

> I've become in the last few years more aware than… any physical thing that I buy, it's food miles. It's the concept of looking at things and thinking: 'why do I need to buy something that's been flown from New Zealand?'… and I consciously look for the things that are grown locally… and I look out for where things come from.

P33-2010 also talks of personal change and the relationship between this and conscious, deliberate action:

> I think people *can* change and they *do* change… a couple of years ago I was whizzing about on aeroplanes and going 'oh yeah, bollocks, it'll be fine'… it's just a matter of finding out isn't it,

> and it's a matter of things coming to you and understanding things… we *can* do things differently.

In addition to these very efficacious-seeming accounts, are many accounts in later years (2007 and 2010) which imply a conflict – and often awkward reconciliation – between intrinsic and extrinsic factors.

Accounts from 2007 draw on ideas about personal action that is seen as *reasonable and possible* given one's situation. For example, P4-2007 asserts that "with running <sic> a one and a three year old… I do…what I can do within my home" and that "we're doing just as much as we can… but… I haven't got [the] power"; P2-2007 argues "don't get me wrong, I do everything I'm supposed to do" even though the view is expressed that this may not be efficacious.

The sense is given in these and other 2007 accounts that there is a perceived expectation to act pro-environmentally, but that personal factors (such as one's own limitations) or other external factors (such as time pressures) may impede its fulfilment.

In 2010, this contrast between normative and external pressures is evident in P26-2010's account of supermarket visits: "I don't think about morals when I have to go round the supermarket… it's time versus cost. I get as much in before the kids start playing up and then get to the door".

Self-deprecatory language again appears in 2010, with respect to obligations unfulfilled, such as in the following exchange:

> P41-2010: But then are we all hypocrites? I am.
> P37-2010: We've all got the ability to be hypocrites, haven't we.
> P41-2010: I mean I grow my own vegetables, I make my own compost, but my heater's on at the moment!

The contrast between that which is morally desirable and that which is realistic or actually occurs, emerges in other places also. Thus P31-2010 reports that:

> I do feel guilty, that I don't take enough interest in it. I don't probably do enough… I don't do as much as I should.

Elsewhere, this same participant refers to himself as a hypocrite in respect of his regular flying: having noted that it is "worrying when you can fly somewhere just as easy as you can get a train", he nevertheless states "I can't really say much because I use it all the time, so although I think it's bad I actually use it, so I'm a bit of a hypocrite in that point of view".

P21-2010 similarly refers to "guilt" as a response to climate change "because I know that I should be doing more"; P1-2010 contrasts his own behaviour that evening with an implicit moral standard where

he remarks "you know, I think of myself as pretty green but I drove here [to the focus group] in a car. I could have got the bus but didn't."

One participant's explanation given for acting pro-environmentally seems particularly pertinent in light of the contrasts made in accounts between ideal and realistic behaviour, which are situated in the context of a self-awareness in respect of this tension; P12-2010 reflects that:

> What I do allows me to not feel guilty basically. I drive most places, but I'll recycle, and in my head that's a kind of parallel.

This explanation suggests a *considered compromise* in terms of personal preparedness to act. It would appear that, by this participant's account, a conscious intention to 'not feel guilty' is associated with meeting one's obligations to a reasonable (but not perfect) extent.

Other participants too allude to such compromises, as weighing up relative personal preferences against attempting to meet perceived obligations; for example P36-2010 explains: "I think it's very personal. I mean I could give up my car but I could not live in a cold house".

From the same focus group (though speaking in the previous week) P35-2010 also explains:

> I think a lot of us do things because of convenience. So it's- you know, it makes us feel better. I- we, my wife and I recycle everything that can be, pretty much. But, I drive a three litre diesel [because] it's damn comfortable and that's why I drive it. And you know, as much as I try and do all my bits and be as good as possible, I'm not that great. And I will jump on a plane without thinking about it.

In this account can be detected several indications of external/structural and intrinsic/moral reasons for acting and not acting pro-environmentally. Whilst not mutually exclusive, external influences here are convenience and comfort (of the car); intrinsic motivations being to 'feel better' and 'trying to be good'. Taken as a whole, this account portrays environmentally-significant behaviour as complex and negotiated.

Justifications for the taking – and not taking – of flights (itself a behaviour which is very rarely considered significant for climate change except within 2010 groups) occur at other points in discussions, with respect to a compromise position. Thus a participant, in respect of his climate change concerns, asserts "I don't want to fly… I'm not saying I'll never fly again, but if there's any way of getting somewhere by not flying I'll do that" (P25-2010). Conversely, flying is able to be justified by (P26-2010) in different but still very personal terms, here with respect to paternal concern:

> I want to fly, because I want to take my kids on holiday, and pay for them to have nice things. I have a concern about, obviously the environment but I don't want to stop my kids experiencing different things.

This account is revealing, for portraying what (in the context of a discussion about climate-relevant behaviour) may be seen as morally problematic – but which in the context of a desire to contribute to one's own children's happiness, is entirely justifiable.

Further examples are found of such compromise positions across the 2010 focus groups, hinging on a recognition of what might be considered a social norm of pro-environmentalism – which is nonetheless reconciled with personal preferences.

A detailed reconciliation of these competing pressures, is given by P22-2010. This participant justifies her choices through asserting that her own time is 'precious', and that in a wider context ('compared with China') they are essentially negligible. Normative pressures (her account is anticipated as sounding 'selfish') are recognised, but nevertheless her choices are portrayed in a reasonable and pragmatic manner:

> My time is quite precious to me, you know, I know how selfish that sounds, but I sometimes think to myself: do I want to spend this time running up and down? You know, I live in <place name>, I'm lucky that I have <name of area> to go and buy all this stuff - that's great, but that's my entire Saturday morning, whereas if I could buy it online quite quickly, have that done, and in the back of my mind I'm going: well, what's my impact compared with China? … It's not healthy for one person to think like that, but the build-up, but the picture is that in the back of my mind I can counter it with: yes, my little bit might be impacting towards it, but also it might not be impacting that badly against it.

What these latter accounts reveal, is that whilst moralisation and personalisation of conduct have grown to be commonplace, so too have means by which they may be negotiated, compromised or countered (as well as acted upon). Two striking instances of this occur whereby participants in separate groups justify car use because "I love my car" (P5-2010) and "I love cars, I love driving" (P19-2010). Revealingly also, where the former participant here elsewhere in their group discussion is explaining their use of a four-by-four, the remark is made – with heavy irony – by another participant that "you must be burned!" (P11-2010). Contained within this exchange is a recognition of moralisation – but also the possibility of diffusing (even disparaging) it in the context of one's own choices.

Climate change fatigue: a novel component in personal responses

A final type of personal response, identified exclusively in the 2010 focus groups, is that of 'fatigue'

concerning climate change. This is the sense that, according to some participants' accounts, climate change has come to be seen as tiresome or tedious. One (middle-aged) participant's response to a very early moderator question regarding initial impressions about climate change was "bored bored bored" (P20-2010); another reflected on their spontaneous use of the term 'scepticism' within a written exercise thus:

> I have [written] 'scepticism'. If I hear something, it's not that I don't agree with it… I [just] can't be bothered with it, I've heard it too much now to the point where I'm like, look we'll handle it, it'll be fine… humans have been around for however many years and we've all adapted… so I'm sure we can cope with it again. (P9-2010)

A fatigued reaction against the placing of responsibility onto individuals was also asserted within two groups. One participant was indignant following her experience completing a carbon footprint calculator:

> I did an online exercise which said basically I'm a baby-eating world-dominating killer. So, even if I reduced my lifestyle down to knitting my own socks from locally-sourced nettles then I probably couldn't offset my own carbon footprint… It's just rubbish. (P18-2010)

Within this excerpt can be detected a vexed sarcasm and fatigued reaction towards ascription of individual responsibility. Similarly, a participant refers directly to the wider notion of 'disaster fatigue' in the context of climate change as follows: "you get disaster fatigue as well I think, you know: oh god, not another polar bear, whatever it is" (P3-2010).

Functions and consequences

The primary function of participants' accounts of their own actions, is likely to be connected to self-presentation. It can be assumed that most individuals wish to be seen as 'reasonable' people, and thus there is an onus upon the explanation of one's actions in these terms. Even (perhaps especially) where participants use self-deprecatory language, this may be argued also to serve a self-presentation function: as showing a willingness to acknowledge one's own flaws or to show humility. Where participants express a compromise position in how much they are prepared to personally do, this too presents one's actions in a reasonable light.

In these senses, this discourse in particular has a social and interactive function. This may be particularly salient in the context of a focus group, where a group of strangers are discussing the reasons for their own actions – but is likely to be relevant also for any number of possible social situations where people are motivated to present themselves in a reasonable light.

With respect to 'fatigue', it may be that a new type of response to climate change is coming to be acknowledged; that explains disengagement from climate change in terms related to one's own capacity to remain interested or concerned about the problem.

One possible consequence of the discourse, is that it portrays climate-relevant behaviour as having both a moral and pragmatic dimension. There is a sense given that whilst one's actions should 'ideally' be pro-environmental, nevertheless in the contexts of people's own lives and interests this is not always possible.

Appendix 8 Over-arching discourses – environmental harm and ethics: extended interpretation and participant quotes

This Appendix is an extended version of the material given in chapter 8. Additional participant quotes and commentary are included here.

8.1 Environmental harm

Overview: main characteristics and ontology of the discourse

Climate change is understood as an 'environmental' issue, specifically in terms of human harm to the natural world and changes to the physical world. Climate change is related to other environmental issues that are understood to be connected with it: pollution, stratospheric ozone depletion, and forms of environmental degradation (e.g. deforestation).

Metaphors, rhetorical devices, recurrent motifs

- Ozone depletion (e.g. 'ozone hole') and associated causes (e.g. 'aerosols', 'CFCs')
- 'Pollution', especially related to air pollution (e.g. 'smog', 'fumes') and its consequences (e.g. asthma)
- Harm inflicted upon the natural world, e.g. deforestation, damaging 'the Earth'

Overview: main characteristics and ontology of the discourse

i. Ozone conflation: continuity and change

The associations made between ozone depletion and climate change are considered to be of two main types: a generalised association/conflation characterised by lack of distinction between the two phenomena, which may include association/conflation between causes (e.g. CFCs) and consequences (e.g. warmer temperatures); and a more technical conflation, whereby a conceptual model drawing on both phenomena is integrated (usually, relating to the notion of an ozone 'hole' permitting increased sunlight to permeate and so raise surface temperatures).

From the first groups in 1997, climate change is associated with ozone depletion. This occurs both in terms of a generalised association, and a more technical conflation. For example, a lack of clarity in

terms of linkages is explicitly stated by P7-1997: where she is asked by the moderator "What's global warming then?" she replies "The ozone layer has gone, got a big hole in it because, God knows, whatever". Equally, "the ozone layer" is given as a stated explanation for why global warming is occurring (P6-1997). A clear example of technical conflation - wherein the notion of damage to a protective ozone layer permitting radiation to Earth which leads to the planet "warming up" is given by P1-1997:

> You've got the atmosphere… it protects the Earth from the sun's rays, they bounce off this ozone layer. Now we've got a hole in it, some of this heat, this extra radiation, is getting in. It's not letting any of it out because this reflective thing works both ways… so the planet is slowly warming up… That's what I understand as global warming.

In contrast to later groups, in 1997 the causes of climate change/ ozone depletion are aligned with more authentically ozone-depleting causes. For example, following the reference by P7-1997 to the ozone hole, participants refer subsequently to 'CFCs', 'hairsprays', 'aerosols' and 'fridges' with reference to its causes; elsewhere P4-1997 refers to "deodorants and sprays and stuff like that", and P6-1997 to "aerosols and cans and things" as being harmful to "the atmosphere".

At this time period, less ozone-specific but still environmentally harmful causes are briefly referred to in the context of ozone depletion: P14-1997 states that the ozone layer "has been damaged by pollution" and P3-1997 refers in passing to "fumes"; there is also a single passing reference to "walk[ing] everywhere" as protecting against ozone depletion. In contrast to later groups, such references are minimal, however.

In 2000, the ozone-climate association persists: for example, where asked by the moderator whether (in response to a previous comment) the ozone layer hole is "linked in some way" to climate change, P19-2000 replies "oh yes… it's a big cause, if it gets any bigger it's going to cause a lot of climate change".

The ozone-climate conjunction from 2000 has causation attributed to it in terms more familiar to climate change *per se*. Climate change causes such as 'fossil fuels' and 'emissions' are applied, such as where P9-2000 asserts that "burning fossil fuels has directly contributed to the ozone layer depletion"; P14-2000 suggests that the ozone layer hole "seems to be caused by pollution"; in addition, reference is made to the ozone-specific factor of "too many hairsprays" (P19-2000).

A generalised ozone-climate association persists into 2002. P11-2002 for examples remarks "I don't know much about it [climate change] but I think I tend to interpret it as the hole in the ozone and just rays from the sun and all that kind of thing" (P11-2002); and, following an early moderator prompt about thoughts on climate change, P12-2002 responds: "the ozone layer, the hole in the ozone layer more particularly".

Limited references to ozone and ozone depletion occur across the 2003 interviews, though references are still made in terms of a technical conflation (emphases added):

> The reduction in ozone layer… **allows more of the sun's rays to penetrate**… and to dry up certain parts of the Earth… I suppose it's actually going to cause more evaporation… from the oceans, causing more clouds, causing more rainfall. (P2-2003)
>
> …polluting gases are somehow affecting the ozone layer of which there is meant to be a hole. As far as my understanding is, there will be **more powerful sun rays get through**, and the temperature on Earth is rising gradually and possibly the polar ice cap is melting. (P18-2003)

2007 excerpts reveal that this type of conceptual model continues to endure. One exchange indicates that this is indeed socially shared to the degree that it is able to be developed in conversation:

> P12-2007: The ozone layer…. acts like a blanket protecting the Earth and it's the ozone layer is being depleted so it allows more…
> P12-2007: UV rays.
> P11-2007: UV from the sun.
> P12-2007: Heating the Earth up.
> P18-2007: That's why allegedly it's supposed to be hotter in the summer.

A number of references continue in 2007 to be made to typical ozone-depleting actions, for example: P56-2007 refers to "aerosols and things like that"; P23-2007 to "hairsprays and perfume"; P11-2007 to "cans of deodorant". Nevertheless, there are more and more varied causal attributions made that are considered to affect ozone/climate, including in respect of more typically climate-affecting actions. For example, P31-2007 refers to "jet fuels and our fridges and our aerosols and all that is affecting climate… It's the ozone layer". Similarly, P20-2007 refers to "fossil fuel… throwing the stuff up in the air to break down the ozone layer".

Behaviours and activities more associated with climate change are applied to ozone depletion, in a manner suggesting a conceptual overlap with climate change: for example, car use, aeroplanes, power generation and recycling all feature in one participant's account (the intended purpose of which is to challenge individual efficacy):

> I can't see how doing recycling is going to change anything, when they've got more cars, more aeroplanes, and more stuff adding to it, power stations. So by me recycling and no car, I don't think it's going to make much difference to the ozone layers is it? (P2-2007)

Evidence for a further linkage between climate-relevant behaviour ('4X4 cars') and ozone depletion emerges in a separate 2007 group, where P71-2007 asserts in response to the moderator prompt "what do you think about the climate change idea?": "That's different things like the ozone layer and stuff like

that, isn't it… emissions from these 4x4 cars and stuff like that… deodorants squirting under your arms and stuff'.

A clear dissociation between climate change and ozone depletion only becomes noticeable in 2010. Ozone is rarely mentioned – not appearing at all in two of five groups. In a third group, mention is only made briefly in passing by one participant (it is not clear to what end, and the remark was not pursued by the moderator). In the remaining two instances where ozone is referred to, on both occasions a distinction is made by participants between the two phenomena. In the following exchange, participant P25-2010 responds to another's reflections on historical public enthusiasm for aerosol-based products, by arguing that the now-resolved matter of ozone depletion in fact illustrates that addressing environmental problems is possible:

> P23-2010: …aerosol cans and things like that now, you very rarely see them. But there was a time it was the latest thing, we all used aerosol…
> P25-2010: The aerosol thing is something that shows we can actually change things, because they stopped using aerosols, they stopped putting them in- CFCs in fridges, and the ozone layer has been repaired.

A second passage from a separate 2010 group is also illuminating, and worth quoting at length. It reveals, firstly, a participant's reflection that the matter of ozone depletion appears now to have 'disappeared', leading to them to question outright whether and how this is related to climate change. Secondly – and as in the exchange above – another participant responds in a manner intended to distinguish the two matters:

> P30-2010: I have a further thought… and that's that no one mentions that hole in the ozone layer any more. And I thought it was some kind of precursor to the whole climate change thing… So… what's happened to the hole in the ozone layer? It's disappeared from the news. It's all climate change now, and I thought the hole in the ozone layer was the big thing that was causing global warming and melting the ice caps, and now no one talks about that but we've still got global warming, and what's happened to the hole and is that just irrelevant or was that a red herring, or-?
> P40-2010: It was caused by CFCs.
> P39-2010: Chlouro-flouro-carbons?
> P40-2010: And we took them all out the system and it's closed over really. But it wasn't causing global warming, as such, but it was the radiation that was allowed to go through.

These excerpts, particularly participants' own reflections upon the passing of 'ozone' as an issue, and the lack of spontaneous emergence in the 2010 groups – in contrast to ozone featuring in discussion in the majority of pre-2010 transcripts – suggests that ozone-climate conflation has diminished by the most recent transcripts.

There are only two other instances where an (indirect) indication of ozone-climate association appears in 2010. The first of these is in reference to a "stronger" sun (P42-2010); the second is in a participant's recounting of a conversation at her place of work during the cold winter of 2009/2010. Here the point intended to be made is that of a workplace joke (subsequently described as "black humour") about climate change – alluding to it as desirable were it to bring about warmer weather – though, incidentally, CFCs and hairsprays (i.e. aerosols) are referred to:

> The view of everyone in my office… there was lots of 'bring back CFC hairsprays', you know, that kind of joking about… because we were seeing snow and it was disrupting… it was kind of like: well how do we bring this about quicker. (P22-2010)

Unlike in the groups from 1997-2007, however, no technical conflation nor even more generalised associations emerge; aside from those referred to here, there are otherwise no instances of energy use activities construed as contributing to ozone depletion, nor of ozone depleting activities described as contributing to climate change.

ii. Pollution: continuity and change

An association between climate change and 'pollution' is found across the transcripts. The main way in which this occurs is through connection with ideas concerned with air pollution. There are many instances of climate change being equated with 'fog', 'smog', 'fumes' etc. A revealing early example is from a 1998 group, in which during a short exchange between participants, climate change is apparently characterised as 'air pollution and the weather'[16]:

> P5-1997: Pollution is not only air pollution. I think litter and dirty streets is pollution…
> P6-1997: Are we talking more about air pollution and the weather?
> P3-1997: Pollution is pollution though isn't it.

In this same group discussion another participant makes a connection between pollution in an immediate sense ('choke your chest'), ozone depletion, and more climate-related ideas ('the atmosphere'). The following remark followed a moderator question about action on climate change[17]:

[16] Note that this exchange was in the context of a discussion as to issues to raise with policymakers who were to visit the group: it had occurred in the context of a discussion of a wide range of 'environmental' issues.

[17] The moderator asked: "We've talked about climate change… I've asked you about if you've heard the news, climate change has been on the news… In your own life have you done things which have changed or when you did things and you think about the change for example?"

> I always try and avoid and make sure my children avoid sprays, I think they really pollute the atmosphere… I think they sort of choke your chest so I mean, what on earth must they be doing to the atmosphere if a lot of people are using them. (P6-1997)

In the 2000 groups, connections are again made between 'pollution' in a general sense, pollution specifically in terms of 'air pollution', and climate change.

P3-2000 for example, where expressing doubts about a human contribution to climate change, remarks: "I'm not saying pollution is good, but how much is being affected by pollution and global warming?" In this same group, following a moderator question about whether it is "important to change behaviour to slow down climate change", P1-2000 responds in the context of air pollution ('smog'):

> I think so. I think what is important is – if I can go back historically within my lifetime – the days when we all had coal fires, we had in the early part of the century, cheap coal, it was so cheap but… it wasn't a very clever idea, and I can remember the smogs in London in the 1950s.

In a separate 2000 group, participants P17-2000 and P18-2000 make connections between climate change, and with wider environmental issues including those connected with ozone depletion ('skin cancer') and air pollution ('asthma'):

> P17-2000: People who are off work or sick, illnesses especially at this time of the year. And… you talk about the skin cancer, that is more and more….
>
> P18-2000: The other thing I was thinking of, obviously skin cancer is close to my heart, but what I was thinking of was the sort of asthma and allergies… those sort of health things and how much of that might have to do with you know with the atmosphere and that… I think the other side of it is the environment that we live in…
> Moderator: Do you qualify pollution as part of the climate change?
> P18-2000: I think, yes, I think they're related.

The idea that climate change is connected to more general notions of pollution, is expressed again in a 2002 group. After the moderator's introduction to the topic of climate change, the discussion between participants turned to a variety of matters, concluding with the following exchange:

> P2-2002: I think, sort of a local environment issue regarding… power and waste. You know the canal which runs at the back here, I remember my son, he used to go down to the canal and he used to canoe in it and swim in it and it was clear. And over the last… thirteen years, the pollution, I mean…
> P4-2002: Well I'll tell you what that is because I have a boat and a lot of it is the fisherman with the plastic bags.
> P2-2002: … There was something to do with a factory in Wigan and they were polluting the canal… All of a sudden it went from clear to like disgusting.
> Moderator: So in a way this whole kind of climate change is part of a bigger pollution…?
> P2-2002: Yeah, oh yeah.

There are many other instances across the 2002 groups where air pollution of various sorts is referred to. At times, it is difficult to ascertain to what extent an association or conflation is made with climate change, given that conversations are to some extent free-ranging (i.e. may move from one topic to another). The connection does appear to be clearly made in a number of cases, however. For example, following a moderator question about the consequences of climate change, participants immediately begin talking about 'fumes' and 'asthma'. The conversation then returns to ideas about 'warmer weather':

> Moderator: What do you see as the main problems… or… negative effects [of climate change]… You've mentioned icebergs melting… Is that the main problem, you see this kind of flooding?
> P16-2002: There's a completely different – if you go to London and you stay in London for 2 weeks, it's just a mess. You know, the breathing, the breathing of the fumes… the difference in the countryside to here and there is just ridiculous.
> P11-2002: My brother… suffers from asthma and he was a lot worse down there because of the more pollution there is down in London…
> P16-2002: You can't breathe, you just can't… I just couldn't handle it…
> P13-2002: … I think perhaps it's going to, the warmth is going to make the soil warmer… [frosts] not as severe as they used to be...

Associations between (air) pollution and climate change persist into the 2003 interviews. For example, P21-2003 remarks (possibly making a technical linkage) that "it's all linked, it's the whole air pollution includes greenhouse gases, which promote global warming".

P17-2003 also notes that addressing climate change entails dealing with "forms of pollution, which presumably are a contributory factor". She then notes that: "I don't know precisely what does and what doesn't contribute to the global warming [but] I know that the pollution we create is an aspect of it".

Again, the idea that pollution, including more specific air pollution, is connected with climate change, persists into the 2007 focus groups[18]. As P31-2007 puts it: "I just think it is the way that we live that is causing climate change, all the stuff we're polluting into the atmosphere, I think that's why it's changing".

A connection between 'smog', air pollution and climate change is again made in a 2007 group:

> I'd probably say the biggest cause of, if you want to say that we're to blame, would be coal. Coal has been burned for many years. It used to cause the famous smogs, like the London smog… Years ago there was more pollution than what there is now, I'd say coal was probably the biggest cause of it.

[18] Note that because of the context of parts of the 2007 discussions – which entail comparing different sorts of power generation such as nuclear vs. fossil fuels – at times the relation to climate change is not clear.

In a separate 2007 group, with respect to action which could be taken on climate change, P71-2007 suggests that: "You see some of these taxis driving around, you know, the fumes coming off them, you know, you think that can't be right". Here can be detected a connection between transportation and climate change – but this is nuanced by its relationship with notions of air pollution (i.e. 'fumes').

It is notable that across the 2010 groups, there is far less spontaneous reference to pollution as associated with climate change, than in previous years. When it does emerge, there seems to be a more dissociated or technically-oriented connection. For example, in two separate 2010 groups, pollution of the sea is argued to be a problem for climate change because this will affect ecosystems which absorb carbon dioxide. P32-2010 also notes that: "aircraft are quite a symbol aren't they of pollution and climate change. People see more and more planes in the sky, and… easier and cheaper to get places, then aren't we polluting the planet more for that simple reason?" P31-2010 also remarks in the context of a consideration of whether there is a human contribution to climate change: "it must be doing something, this pollution must be doing something to the world, but I just don't know what it is".

In a separate 2010 focus group, participant P28-2010 asserts that reducing pollution in itself is important for addressing climate change, where he argues that: "We have to reduce pollution… by curbing our lifestyles…. Pollution including waste and landfill… I'd classify that as pollution". Overall, however, these sorts of associations between 'pollution' and climate change are less prevalent in 2010 than previously.

iii. Harm to the natural world: continuity across the datasets

A further means by which climate change is associated with a wider environmental harm discourse, concerns ideas about damage to natural environments and deforestation.

Deforestation is closely connected with climate change in a scientific/technical manner, and indeed this is acknowledged by participants. For example, P16-2010 asserts that the following are to 'blame' for climate change: "I've got three sources. Industry in the developed world, industry in the developing world, and nations that are now large-scale burning rain forests".

Elsewhere, however, associations are made which draw upon more general ideas of what constitutes 'harm' to the natural world. P59-2007 for example asserts that:

> Because they're chopping all the trees down you're losing the animals that were there, and you're changing the whole of the Earth… and to me it's all wrong, they shouldn't be allowed to do the deforestation that they're doing, because I think it's harmful to the planet.

In a separate 2007 group, P68-2007 refers to 'logging' in response to a question about human responsibility for climate change – the associations made are beyond simply 'causes' of climate change, however, with a concern expressed instead about those who live in the rainforests:

> I thought of tree logging and… the environment and the people who suffer for it, like the tribes who [have] lived there for years and years and now they've got to move and go into cities… and they're just not adapted for [that].

Similarly, in 2000 P5-2000 refers to "spoiling all the habitats not only for wildlife but… also for the old [indigenous] Indian families and cultures that exist there".

The idea that 'using up' the Earth's resources is intuitively harmful – to 'the planet' as well as the climate – emerges again in other places. Thus P41-2010 argues that:

> People [are] using up the Earth's resources and creating a huge amount of waste, and using up resources, taking it away from the animals which are then becoming extinct and it makes sense to think that if you're depleting the Earth of its resources and creating a huge amount of waste, that you're going to have an impact on climate.

Similarly in a 2007 group, P80-2007 argues that "we have a huge impact on everything" and then in response to another participant's question ("that's making a mess of the planet, but is it actually changing the climate?") states: "yes, I think it is. Look what we're doing to the rainforests. If you take one thing from one you're mucking around with the balance constantly".

Functions and consequences

With climate change seen as an 'environmental' issue (by the mass media and even indeed within the academic literature) it is not surprising that it has come to be associated with ideas such as ozone depletion, pollution and deforestation in participants' perspectives. The 'environmental harm' discourse seems to be a means by which various salient environmental concerns are integrated in an intuitive and common-sense manner with climate change.

A consequence of the discourse is that climate change is classified as such: it is an 'environmental problem' in a manner similar to other environmental problems. A further set of consequences (well-known in the literature) concern conflation: inaccurate models of what climate change 'is' are influenced by the ozone-depletion understanding. The idea that damage and despoliation inflicted upon the Earth is a characteristic of climate change, is also a consequence of this discourse.

8.2 Ethics and climate change

Overview: main characteristics and ontology of the discourse

Climate change is interpreted as an ethical matter, with the causes, consequences and responses to it seen in terms of value judgements and moral principles. These may be abstract and absolute (e.g. concerning justice and fairness) or more personalised and concrete (e.g. that one has an obligation to act with consideration towards others).

A discourse of ethics permeates many of the other discourses previously discussed – particularly those concerning personal and social dimensions of climate change – and as such is considered an overarching set of ideas. Nevertheless it is useful to consider as a discourse in itself, as the ideas within it are both pervasive and often asserted in explicit ways and in a manner which emphasises their primacy.

Metaphors, rhetorical devices, recurrent motifs

- Universal ethical principles, applied to climate change (e.g. justice, regard for others)
- Ideas about correct living (e.g. sustainable consumption, minimising waste)
- Normative assertions (e.g. 'duty', 'obligation', 'responsibility')
- Ethical failures as causes of climate change

Character, change and continuity in the discourse

i. Custodianship

A theme which is commonplace across all the datasets is termed here *custodianship*. This represents an ethical obligation upon people to protect the planet and its environment, and by extension the climate.

A view of custodianship is often asserted in general and normative terms – as an absolute principle to which people should adhere. As P5-2000 asserts:

> I was brought up to believe that you came into this world and you lived in it for a certain length of time but then you were the custodians of this world… you [have] a great responsibility towards it and how you [leave] it… you're only a custodian of whatever you have in this world.

Similarly P52-2007 argues "we have a duty to protect [the Earth]. We don't have a duty to change it or destroy it, we have a duty to protect it" and P44-2010 that "we should start taking… responsibility for the whole planet". The problem of climate change may indeed be seen to arise from a failure to act on this ethic, whereby "we the human <sic>, the inhabitants of this community… are out of synch with nature, have abused our custodianship" (P4-2003). As P17-2010 portrays the matter, the dominance of 'money' and 'greed' over custodianship ('taking care of nature') is at the root of matters:

> Money and trade are the two main factors of why all this- going back to climate change- I think… a general overall worldly greed for certain things has made [people] not really taking care of nature as such.

The idea that one's moral duty extends beyond one's own lifespan, recurs in many other instances of the discourse. For example, P16-2002 asserts "for my lifetime it probably won't matter, but obviously it's of concern for the future of the planet", and P47-2010 that "when you're dead and buried, [material concerns] mean nothing. You want to be creating something for future generations".

This forward-looking perspective entailing custodianship obligations towards future generations is contextualised (and personalised) in many places to participants' own real or potential family lineage. Thus P5-1997 explains "my concern basically is a very human concern. What about my grandchildren and what about their children, what are we doing to preserve the world for them?"; P14-2000 that "I think [climate change] is very relevant for my grandchildren which I'd like to do something about"; P2-2007 expresses 'worry' "not so much for us, but our kids' kids' kids"; and P34-2010 states that he is "frightfully aware" that "I'm not going to be impacted by [climate change] but I know my kids and their kids potentially will be".

In several places custodianship is connected with versions of a precautionary principle – that action on climate change is preferable because it is "better to be safe than sorry" (P6-1997). A perspective of custodianship as the exercise of precautionary action is illustrated by an exchange in a 2002 group following a moderator prompt about how to respond in the context of uncertain scientific views:

> P22-2002: We should just do something anyway. It's only going to make things better isn't it.
> P24-2002: It's not going to make anything worse.
> P21-2002: If we're not sure then you shouldn't just carry on, should you.

Similarly, in 2007 P58-2007 asserts that "I think [it's] true we don't really know [about the realities of climate change] but… it would be silly no to try at least to avoid more damage occurring… we don't need to keep on creating more problems for the world". A precautionary approach is advocated even where the likelihood of a climate disaster is considered to be low, where P25-2010 argues "even if it was a ten percent chance of the world becoming uninhabitable, then I think it's up to us to do

something about it". In a separate 2010 group, P37-2010 asserts that even were climate science found to be "all totally wrong" nevertheless the range of responses being discussed are "still quite good housekeeping anyway".

ii. Justice and fairness

A second ethical framework through which climate change impacts and responses are commonly understood, is in terms of *justice and fairness*. However, whilst ideas in respect of custodianship are used almost exclusively to make the case that action on climate change is warranted (even obligatory), justice and fairness arguments may at times be presented in terms of a moral dilemma: action on climate change may sometimes be seen to be in direct contrast to questions of justice.

An important case in point, appearing across the datasets, is the argument that addressing climate change at an international level could impinge economic development in less developed countries, and that this is inherently unjust. This is articulated by P15-2003: "You're effectively asking… developing economies not to develop because basically we've caused climate change… it's a double standard argument". Similarly, P65-2007 argues "China and the other developing nations are… saying 'well you've done your development now, you've done your polluting… it's not morally equivalent, we've got to do some catch-up'"; and P7-2002 that "they're growing like billio, these countries… they all want what we've got, and you can't blame them".

A participant in a 2010 group also alludes to the notion of double standards applied internationally, using the analogy of "hippy parents" to emphasise an economic justice argument:

> The attitude of the developing countries seems to be that the developed West, having already polluted the world, is now telling them they can't join in. They're saying: 'oh come on, we've got to catch up, surely. Surely we've got to go through the same stages as you went through?' It's like sort of middle-aged hippy parents telling their children they can't smoke dope. 'We did it but you mustn't!' (P7-2010)

In a separate 2010 group, P34-2010 similarly refers to China and India to suggest that "their argument is: we're only just catching up… why should we pay the price when America has had this for the last fifty years?... So you can understand their position, and… they've got 1.5 billion mouths to feed."

The consequences of climate change are themselves seen as breaching principles of social justice. P5-2002 for example notes in an international context, that those less responsible for climate change are nevertheless those who 'suffer' through being unable to adapt/respond:

> We'll get in our cars and we'll drive somewhere else. They can't do that, they can't up-sticks and move… they haven't got the means to move to another town or sell their houses and move on so I feel that they suffer quite considerably because we don't live that life.

P65-2007 (also quoted above asserting developing countries' right to develop) notes similarly that "the very poorest people… don't consume enough resources and have enough power to be polluters, and they're quite often disproportionately the victims of a lot of this"; and in a 2010 group, P9-2010 proposes that "it doesn't matter what issue you're talking about it affects the poor people most".

Questions of justice and fairness at an international scale are also applied in a number of instances in the particular context of carbon trading schemes, as these emerge spontaneously or where deliberately presented as a policy option to participants. With recourse to similar arguments as those made above, carbon trading and payments are for the most part seen as failing to meet an ethic of justice and fairness. P17-2003 explains this as follows: "when America sells its share of pollution to a country that doesn't create much, and says 'oh we can create more, because that counter-balances what you don't create' – things like that strike me as very unfair". In a separate interview, P16-2003 describes such a system for a rich country as "just passing the buck" and "buying their way out of trouble". Even in the earliest of the datasets, where the idea of carbon trading is introduced to participants this is argued to be analogous to "somebody who's smoking can't smoke at home and they go next door and they say 'can I smoke in your house, here's £5'… that's wrong isn't it" (P5-1997).

A similar argument is made by a 2010 participant who uses the analogy of 'offsetting infidelity' to assert that carbon offsetting is unreasonable:

> If I am faithful to my partner does that mean that you can cheat on your partner because I will still be faithful to mine, so it equals out?… so carbon offsetting means that you're paying to rebuild forests or to put money into projects… but then you're equally crapping all over the environment over here. Can it ever possibly balance? And the answer I think is no. (P15-2010)

In response to this assertion another participant agrees, suggesting "I think [carbon trading] is immoral basically. It's the rich trying to share their guilt and their burden onto the poor. Total nonsense" (P16-2010). In a separate 2010 group, P27-2010 suggests that emissions trading is "completely wrong. It just gives wealthy countries a rubber stamp to continue to over-produce".

In a similar way – though at a national level – the idea of taxing and charging for emitting behaviours is argued against by a 2010 participant because this would leave such behaviours as the preserve of the rich:

> You talk about cars and stuff, and taxing and things like that, to stop people doing it… I think what will end up happening is cars will be the privilege of the rich… I just don't think it's the right way to approach it (P32-2010).

A similar view is also expressed in a separate 2010 group, where P40-2010 argues: "raising carbon tax will affect the majority of working class poor people, whilst people who have money, nothing will change for them".

iii. Correct living

In addition to a consideration of climate change with respect to higher-level and abstract ideals such as justice and custodianship, an ethical discourse is also reflected in more practical terms. These are instances across the datasets of what may be termed *correct living*: assertions in ethical/moral and normative terms about what constitutes proper conduct at the personal and social level.

In general terms, correct living is often construed simply as *taking responsibility*. As the following participants argue: "everybody should take responsibility for themselves and think of the bigger picture" (P38-2010); "everybody's got to take responsibility for their actions" (P19-2000); "we have choices through life, and one of those is responsibility for your actions" (P3-2002); "everyone has an individual and joint responsibility to do something about [climate change] because we all live here" (P11-2010); and "we have to be accountable for our decisions" (P60-2007). The notion that it is incumbent upon people to 'do their bit' aligns with this framing of the taking of responsibility: for example P18-2002's assertion that "we're all responsible, we should all do our own bits".

Interestingly, the moral obligation to 'take responsibility' is used in a number of places across datasets to counter a commons dilemma-type argument (see chapter 6), whereby one's personal contribution to climate change is arguably unimportant in the context of wider (or others') inaction. The following excerpts illustrate this: "But you can't go: 'well why should I do it because they're not doing it', that argument… you should do it because you should do it… you should do it because it's the right thing"[19] (P41-2010); "you can't think 'oh well I won't bother because if they're not doing it'... I think you've got to keep trying" (P6-2002); "it's no good us… keep saying it's someone else's problem… we have to be the change that… we want to see" (P33-2010)

[19] Note here that the doing of 'it' refers to lifestyle change in general terms, and also followed another participant's comment about others not recycling.

Similarly, in the context of the UK portrayed (by a participant) as a relatively small polluter in international terms, the response "I disagree with your assessment… [that] they're bigger than us, they're dirtier than us so we can be as dirty as we like because we don't matter, I don't agree with that" (P52-2007).

There are a number of more concrete (or pragmatic) cases of the exercise of responsibility which recur across the datasets. One of the most commonplace is the obligation to *minimise waste and resource usage*. As P14-2002 argues "we're all going to use electricity… but we've got to use it more efficiently… using less and recycling things more"; P15-2007 similarly suggests that there is a benefit "if we can do more recycling and things like that and sort of waste less electricity and things"; and P17-2010 argues "if people just did their things better, improve waste, make sure they're not wasting energy… it's got to be good".

Avoiding waste may be framed as an explicitly ethical matter, such as where P42-2010 states "I think definitely the idea about switching lights off, it's immoral". Minimising waste may also be portrayed in terms of frugality and a particular 'mentality', as where P23-2010 states that: "it's that mentality of re-use… my natural instinct… is to save things, we don't go out and buy a bag of string, we save it, we've got a bag of it".

As well as waste-avoidance as a general principle situated within the ethical discourse, participants also portray *reduced materialism* as constituting an ethical approach relevant to climate change. P8-2000 suggests that whilst "everything around us is still very oriented towards a more more more society" nevertheless this "is not sustainable… we need to [try] to make people happy, be content with what they've got". P17-2002 draws an explicit contrast between a proper, ethical approach to living and that of materialism, where asserting "this world… is not about money, it's not about material things… big houses or fast cars or yachts and aeroplanes, it's about people".

Pro-environmental living is also emphasised in various guises in the context of a discourse of ethics: as being 'green', 'sustainable', 'ethical' or having 'respect'. For example, P6-1997 asserts "if everybody tried to be more green… it would help", and P8-2000 that "it's only prudent to try to live in a kind of way that… will be as sustainable as possible".

Equally, participants from 2007 and 2010 equate "respect" with ways of living which address climate change: "whether or not [climate change] is a natural progression… or however you want to describe it, I think humans can do something about it. It's looking after yourself, treating each other with respect" (P84-2007); P24-2010 explains that her increased concern about climate change (and other

environmental issues) has arisen from "maturity and education and also possibly morals and having more respect for things".

Being 'green' can of course also be conceived as an umbrella term for pro-environmental behaviours with an ethical dimension, as where in a separate 2010 group P44-2010 suggests:

> If we can have a society where we create less waste, I think if we can have a society where we think more about the consequences of our actions, then that'll do for me, and if they're going to call that green, then I'll be green.

At times, linkages are made between more abstract ethics, and more concrete cases of personal/social obligations. For example, the ethic of custodianship leading to an obligation to minimise resource use is emphasised by P14-2000: "I've recently acquired, if one can, a grandchild, and I find I am even more focused and I try in my own life to use as few resources as possible". Similarly, P14-2003 refers to "not using resources so future generations can use it". In a 2010 group, an obligation to minimise waste is also connected to an ethic of custodianship ("taking care of the things around us"), as well as being contextualised to scientific uncertainty:

> Every action has a consequence, and no matter what we believe we still have a responsibility to live- not as frugally as possible, but just to minimise waste…. whether people think global warming is a five minute fad, and the ice age is going to come and this that and the other, I don't know, but every action has a consequence and we're making the situation worse by not taking care of the things around us. (P26-2010)

In terms of a justice/fairness ethic warranting action, P25-2010 asserts that "as we are one of the nations that per capita consumes an awful lot, it's very necessary for us to [act] compared to [for example] Uganda".

iv. Failures of ethics

Often a failure of ethical principles is referred to as having given rise both to the problem of climate change itself, and of it not having been addressed.

In terms of causation of climate change at a global scale, the United States of America and other Western nations are often portrayed as culpable, not just in technical (i.e. quantity of carbon emissions) terms but moral terms also. P22-2002 argues that "America[n] culture is to be greedy, to be lazy and to destroy the world"; in a separate 2002 group, P16-2002 states "they [USA] don't care what anyone else is doing, as long as they're alright"; in 2010 P20-2010 asserts that "the highly developed economies like ours and the United States are just saying: 'well we're OK, pull up the rope, Jack'". In these remarks is

reflected a failure in an ethical sense both to act as custodians ("destroy the world") and to consider social justice ("as long as they're alright").

Ethical failure also emerges with reference to the actions of politicians, including with reference to the Copenhagen Conference. Importantly, the coded instances of this appear to be less connected with ability to achieve meaningful outcomes, than with respect to *hypocrisy*. Discussing (most likely) an earlier 'Conference of the Parties' (i.e. international climate negotiations), P7-2002 remarks that this constituted "a jolly-up for two weeks in Johannesburg" which was "all at tax payers expense" and in reply P5-2002 complains "you were saying about the global emissions and that, and they all turn up in these big limousines, you know what I mean, and it seems a bit like <unfinished sentence>". Although some eight years later, and in reference to the more publicised COP15 conference, participant remarks from 2010 strongly echo this suggestion that political action on climate change was lacking in ethical terms:

> I mean they have all these conferences in very nice places and these days with video conferencing and things like that, if they're really serious about not putting carbon into the atmosphere they wouldn't go, they'd just do it by video in their own separate countries. So they're not really putting their money where their mouth is are they. (P28-2010)
>
> You've got fifteen thousand delegates… all flying to Copenhagen and they're all in five-star hotels no doubt, talking about climate change, but creating a lot of climate problems just by actually being there. (P31-2010)
>
> I get confused with some of the opinions and some perhaps hypocrisy that goes on where they have these big conferences and people fly into these conferences, creating more global warming, it might seem. (P26-2010)

In a separate 2010 group, P43-2010 responds to a newspaper headline (a focus group material) reporting Prince Charles' view that climate change is a serious and urgent matter, with a response that asserts the 'hypocrisy' of the holding of this view:

> I just think: hypocrisy from the family that flies everywhere, that owns absolutely- you know, the wealthiest family in Britain, that completely over-consume, where they live and the way they live their lives, I just think that is <inaudible>. Has he changed his lifestyle?

v. Cooperation

As discussed also in chapter 6, one means by which an ethical discourse is used to counter the social dilemma of climate change is in the emphasis on *cooperation*, made in a number of places across the datasets. Here, participants draw attention to the social nature of climate change as affording the

potential for action (rather than as a barrier). The following excerpts emphasise both the necessity of cooperation, but also draw upon the notion of an intrinsic capacity for cooperation (e.g. 'standing together'):

> I think, unless we all think of it as a global problem we haven't got a chance. And that's the hope I have, that we will come together on this one issue, and think 'well we live in the same world and we'd better start getting it right'. (P12-2000)

> I think if we all stood together there is the wherewithal to change things. (P4-2002)

> It's a world as a whole, it should work at it as a whole to deal with the issue… we're all responsible for the planet. (P39-2007)

> People need to muscle together in the spirit of the human race. (P9-2010)

The final thought from a member of a 2010 focus group at the end of the second meeting, was also notable for its assertion that 'we're all in this together' and that cooperation provided an opportunity:

> I found it very interesting, meeting everybody and understanding their opinions and realising that we're all sort of in this together. People do have differing views, but also it's good that there are people out there who are caring to show Luddites like me the way, and just so that I can pass that on, I can affect all that I can do around my sort of scenery if you like, but to reinforce the message that's coming through.

Change in the discourse across the datasets

Inspection of the coded instances of the discourse of ethics, reveals very little detectable change across years. In terms of references to custodianship, these are made in a similar fashion from 1997 to 2010: concerns are expressed in terms of future generations and in general terms. In terms of references to justice/fairness also – applied to subjects such as carbon trading/offsetting, and international economic development – there is consistency across years as to how this is portrayed. The means by which correct living is portrayed – as instantiations of more abstract ethical principles, such as wasting less and being 'green' – also appears very similar across years.

Functions and consequences

The discourse enables climate change to be interpreted in terms of certain universal principles, such as justice. By applying these ideas, the rights and wrongs of climate change and of the different means of responding to it, can be evaluated.

One consequence of the use of this discourse, is that some of the commonly-proposed means of addressing climate change – even of addressing climate change at all – may fail ethical consideration. Particularly in terms of approaches which impede the development of developing countries, these may be considered inherently unjust. A further consequence, however, is that in many places action on climate change is argued to be imperative and ethically required: particularly in terms of a universal obligation to future generations and to the world itself.

Appendix 9.1: Online survey items and format

This Appendix details the items in the order used in the online survey. These were displayed via the use of 'Qualtrics' survey software.

The information and consent sheet/page given at the start of the survey, is provided as part of the ethics application for the survey, as detailed at the end of Appendix 9.10.

SECTION 1: BASIC DEMOGRAPHICS

Are you:

Male

Female

Please indicate your age range:

18-24

25-34

35-44

45-54

55-64

75+

SECTION 2: RISK ISSUES

Please tell us how important (or not) the following issues are to you.

Use the number on the scale which applies, where 5 is 'very important' and 1 is 'not at all important'.

(the following are presented in random order)

Terrorism

The economy

Tackling world poverty

Tackling human rights

Climate change

Population growth

Genetically modified food

Radiation from mobile phones

SECTION 3: LEVEL OF CONCERN ABOUT CLIMATE CHANGE

How concerned or not are you about climate change?

Use the number on the scale which applies, where 5 is 'very concerned' and 1 is 'not at all concerned'.

Your level of concern about climate change

SECTION 4: OPEN-ENDED RESPONSES (I)

Which three things, if any, come to mind when you hear the phrase ‘climate change’?

Please type your answers in the boxes below.

The first thing that comes to mind is…

The second thing that comes to mind is…

The third thing that comes to mind is…

SECTION 5: REALITY AND CAUSES OF CLIMATE CHANGE

As far as you know, do you personally think the world's climate is changing, or not?

Yes/ no/ don't know

Thinking about the causes of climate change, which, if any, of the following best describes your opinion?

Climate change is entirely caused by natural processes

Climate change is mainly caused by natural processes

Climate change is partly caused by natural processes, and partly caused by human activity

Climate change is mainly caused by human activity

Climate change is entirely caused by human activity

There is no such thing as climate change

Don't know/ no opinion

SECTION 6: OPEN-ENDED RESPONSES (II)

What impacts, if any, do you think climate change may have?

What, if anything, do you think can be done to tackle climate change?

If you personally take, or have taken, any action out of concern for climate change, what action do you take?

At this stage, six question blocks are presented; the question ordering is randomised within each block, and the ordering of presentation of blocks is randomised. For these question blocks, responses are on a 5-point scale from 'strongly agree' to 'strongly disagree' (with a further don't know/ no opinion option).

SECTION 7: QUESTION BLOCK ONE

More research is needed before scientists can decide for sure whether climate change is a real problem

Environmentalists do their best to emphasise the worst possible effects of climate change

Whether it is important or not, on a day-to-day basis I am bored of hearing about climate change

A lot of people have a 'head-in-the-sand' attitude towards climate change

The effects of climate change are likely to be catastrophic

The cold winter which occurred during late 2010, suggests that climate change may ***not*** be happening

If each of us did our bit to help, we could put an end to the problems of climate change

Climate change has come about because we are part of a society that requires us to consume more than we need

I am well-informed about climate change

SECTION 8: QUESTION BLOCK TWO

There is too much conflicting evidence about climate change to know whether it is actually happening

Scientists have in the past changed their results to make climate change appear worse than it is

The media is often too alarmist about climate change

The actions of a single person don't make any difference in tackling climate change

Most of the arguments against climate change are nothing to do with the science

One of the main causes of climate change has been the reduction (hole) in the ozone layer

I personally have become aware of climate change, through noticing changes to the weather

As members of the public, we need those in power to put in place rewards and penalties to help us act on climate change

Being environmentally friendly is an important part of who I am

SECTION 9: QUESTION BLOCK THREE

We have now moved beyond questions of science in respect of climate change: it is more important now to decide how we will respond to it

The things that people do which are supposed to be about climate change, are often more about trying to look good

Climate change is so complicated, that there is very little politicians can do about it

Rather than spend my time worrying about climate change, I prefer to ignore it and just get on with my life

There is a real possibility that climate change could lead to the collapse of life on Earth

The pattern of cold winters in recent years, suggests that climate change may now be a reality

It is already too late to do anything about climate change

It is morally wrong if you don't take regular action as an individual to help tackle climate change

Climate change has now become a bit of an outdated issue

SECTION 10: QUESTION BLOCK FOUR

Experts are agreed that climate change is a real problem

Climate change means warmer weather

I am annoyed when it is suggested that climate change is somehow my fault

Current climate change is part of a pattern that has been going on for millions of years

Even if we do experience some consequences from climate change, we will be able to cope with them

People are too selfish to do anything about climate change

It is hard to do anything about climate change even if you want to

Climate change is hard to address because there are so many people on the planet pulling in different directions

I consider myself to be a climate change sceptic

SECTION 11: QUESTION BLOCK FIVE

The evidence for climate change is unreliable

Climate change is a scam

We in the UK are prepared to change the way we live our lives to help stop climate change

The pattern of cold winters in recent years, suggests that climate change may ***not*** be happening

In respect of climate change, it's up to the government to make individuals do the right thing

There is no point in me doing anything about climate change because no-one else is

Not much will be done about climate change, because it is not in human nature to respond to problems that won't happen for many years

Those who don't believe in climate change will use any tactic to persuade people it's not a problem

SECTION 12: QUESTION BLOCK SIX

There are a lot of very different theories about climate change, and little agreement about which is right

The seriousness of climate change is exaggerated

Scientists have hidden research that shows climate change is not serious

Climate scientists always seem to be predicting the end of the world: it is hard to take them seriously any more

Climate change is just a natural fluctuation in Earth's temperatures

Climate sceptics take information out of context, so as to cast doubt on the reality of climate change

The cold winter which occurred during late 2010, suggests that climate change may now be a reality

I am not that bothered about climate change

SECTION 13: PERIOD OF AWARENESS

An important part of the research project is to understand how people's views may have changed over time. First, please try to think back over the time period that you personally have been aware of climate change, in any sense.

For what length of time have you been aware of climate change? ……. years

SECTION 14: CHANGES IN VIEWS

For these question questions, responses are on a 5-point scale from 'strongly agree' to 'strongly disagree' (with a further don't know/ no opinion option). The question ordering is randomised.

Now, please indicate how much you agree or disagree with the following statements, across the time period that you personally have been aware of climate change.

I have become *increasingly concerned* about climate change over this time period

I am *more sceptical* about climate change than in the past

I feel *more of a personal responsibility* to do something about climate change than in the past

I am *less interested* in climate change than I was in the past

I am *more convinced* than ever that climate change is a serious problem

**I am *less certain* than before that climate change is a real problem **

I am *less sure* than before that climate change is caused by human actions

I am *more sure* than previously that climate change is directly affecting the weather in the UK

In the past, there was more of a tendency for the importance of climate change to be exaggerated

I am *less trusting* of climate scientists than in the past

SECTION 15: POLICY PREFERENCES

This question is about your level of support for some of the types of action that could be taken to address climate change.

Please answer the following question according to how favourable you are towards these options.

For these question questions, responses are on a 5-point scale from 'highly favourable' to 'highly unfavourable' (with a further don't know/ no opinion option). The question ordering is randomised.

***International agreements by governments*, to set and enforce strict laws to tackle climate change**

***Voluntary action by individuals*, to substantially change their lifestyles so as to reduce their impact on the climate**

***High levels of investment in technological measures* designed to reduce carbon emissions**

***A shift to a focus on adaptation*, which involves adjusting to the effects of climate change rather than attempting to stop it**

So-called *'geo-engineering'*, which entails large-scale projects to extract greenhouse gases from the atmosphere and/or reflect additional sunlight, so as to artificially control the Earth's climate

SECTION 16: POLICY PREFERENCES (SPECIFIC)

The question ordering is randomised.

A significant proportion of the UK's carbon emissions come from air travel (i.e. flying).

This question is about how favourable you are towards different ways of reducing emissions from air travel.

***New laws* introduced to set limits on the number of flights permitted annually in the UK**

***New technologies* researched and developed to reduce emissions from aeroplane engines**

Encouragement of people to *voluntarily fly less* e.g. through educational campaigns

An increase in *taxes and charges* to discourage people from taking flights

***No action* whatsoever should be taken**

SECTION 17: LEVEL OF ACTION NEEDED

Which of the following best sum up your views?

Drag the slider to the appropriate answer.

10-point scale provided. Along the ten-point scale, the following wording was used:

0: There is no need to take any action whatsoever to deal with climate change

3-4: Only minor changes need to be put in place to respond to climate change

6-7: It is necessary to tackle climate change, but this can be done gradually

10: severe and urgent changes are needed to tackle climate change

SECTION 18: CULTURAL THEORY ITEMS

The question ordering is randomised. (5-point strongly agree to strongly disagree scale again used.)

These questions relate to views about society. Please indicate whether you agree or disagree with them.

When I have problems, I try to solve them on my own

People should be allowed to make as much money as they can for themselves, even if others are not able to

If the government spent less time trying to fix everybody's problems, we'd all be a lot better off

The world would be a better place if its wealth were divided equally among nations

Discrimination against minorities is still a very serious problem in our society

In my ideal society, all basic needs (food, housing, education, health care) would be guaranteed by the government for everyone

There is not much point getting involved in politics – the ones in power only do what they like

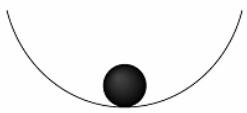
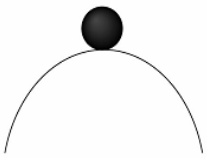
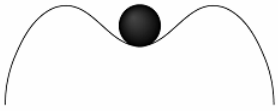
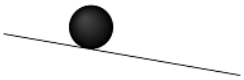
Order, structure and hierarchy is essential for society to operate well

SECTION 19: 'MYTHS OF NATURE' ITEMS

Each of the five pictures here shows the climate system as a ball balanced on a line.

They each represent a different ability of the climate to withstand human-caused climate change.

Please select the picture which you feel best corresponds to your understanding of how the climate works.

Survey item	Diagram
The climate is fairly stable. Climate change will have little or no impact.	
The climate is in a delicate balance. Small amounts of climate change will have sudden and dangerous impacts.	
The climate is stable within certain limits. If climate change is small, things will return to normal. If it is large, there will be dangerous impacts.	
The climate is random and unpredictable. We simply do not know what will happen with it in future.	
The climate is slow to change. Climate change will gradually lead to dangerous impacts.	

SECTION 20: 'CLIMATEGATE'

How much do you recall hearing or reading about news stories during late 2009/ early 2010, where it was *alleged* that climate scientists had acted dishonestly in the course of their research?

A great deal / a lot / a reasonable amount / a little / nothing at all

If you have come across this news story, what did you hear or read about it? (*open-ended item*)

SECTION 21: DEMOGRAPHICS

The survey is almost complete.

This is the last section, which asks you to provide some information about yourself so we can compare views held by different types of people.

Please indicate which, if any, is the highest qualification you have obtained:

No qualifications

GCSE's or equivalent

A-levels of equivalent

Bachelor's degree or equivalent

Postgraduate qualification

What is your working status?

Working full-time (30+ hours)

Working part-time (up to 29 hours)

Looking after children at home

Unemployed

Not working due to disability

Retired

Student

Other

If there were an election tomorrow, how would you vote?

Conservative

Labour

Liberal Democrat

Green Party

Scottish Nationalist Party/ Plaid Cymru

UK Independence Party

British National Party

Other

I don't or won't vote

SECTION 22: FINAL INFORMATION SCREEN

SURVEY COMPLETE

Thank you for completing this survey. Your participation is very much appreciated and all data provided will be held anonymously. Your points will be credited within 30 days by Maximiles.

Information about the study
The study is interested in people's opinions about different aspects of climate change. This includes views about scientific aspects (for example, whether people consider the science to be settled or controversial) and about the social and political implications (for example, what the government should or should not do, and people's views about whether individuals can and should act).

An interest of the main researcher, Stuart Capstick, is to attempt to trace changes in public opinion over time. This is why you were asked about whether your views had changed in various ways. A number of the questions you were asked also corresponded to questions which have been asked before by other researchers – the purpose of this is to be able to compare answers across studies, and over the last decade or so.

A particular research interest at the present time, is to what extent people hold doubts or are uncertain about various aspects of climate change. A number of questions you were asked were designed to find out more about this. You may remember that there was some reporting in the media around a year ago about some specific accusations which some people had made towards climate change scientists: the research you have just helped with is particularly interested to find out what people remember about this, and whether it has affected their opinions.

Finally, some research has suggested that people who hold certain types of views about the world in general will have different views about climate change and climate change policy – for example, when comparing people who believe that society works best if it is highly organised and group-based versus people who believe that society works best if individuals have freedom to act as they wish. Some of the questions in the survey were therefore designed to find out some more about this.

If you have any comments, questions or concerns please contact the researcher. Contact details are listed below. Contact details [given in online version]

Appendix 9.2 Risk issues replicated from 2002 survey

The prefacing question used (in 2002 and 2011) was “How important are the following to you?” with a 5-point Likert scale used to gauge responses, from ‘1’ (not at all important) to ‘3’ (neither important nor unimportant) to ‘5’ (very important).

The following risk/social issues were replicated in the 2011 survey:

- Terrorism
- The economy
- Tackling world poverty
- Population growth
- Tackling human rights
- Climate change
- Radiation from mobile phones
- Genetically-modified food

Appendix 9.3 Items replicated from 2002 survey

Item	Measure
How concerned or not are you about climate change?	'1' (not at all concerned) to '5' (very concerned)
I am well-informed about climate change	'1' (strongly disagree) to '5' (strongly agree)
I am not that bothered about climate change	'1' (strongly disagree) to '5' (strongly agree)

Appendix 9.4 Items replicated from 2003 survey

Survey item	Construct	Reason for inclusion	Predicted change
There is too much conflicting evidence about climate change to know whether it is actually happening	Perception of scientific certainty	Correspondence with 'status and practice of science' discourse; part of Whitmarsh (2011) scepticism scale; potential relationship with contemporary events.	Increase in salience of view of scientific uncertainty: qualitative longitudinal results point to heightened 'position dependence' (see chapter 5).
The evidence for climate change is unreliable			
Experts are agreed that climate change is a real problem			
Climate change is just a natural fluctuation in earth's temperatures	Climate change determined by natural processes and *not* ('just') human activity	Correspondence with 'climate as nature' discourse; part of Whitmarsh (2011) scepticism scale. The word 'just' implies a 'natural change' view in opposition to a 'human causation' view.	Increase in salience: qualitative longitudinal results point to ideas of 'mutable climate' used to counter consensus science position.
The media is often too alarmist about [issues like] climate change	Media exaggeration of severity of climate change	Part of Whitmarsh (2011) scepticism scale; previous work has shown change in salience.	Increase in salience: Whitmarsh (2011) pointed to change in this item from 2003-8.
The effects of climate change are likely to be catastrophic	'Catastrophism': climate change as having severe consequences	Investigation of change in views of climate change severity; correspondence with 'impact scepticism' (Poortinga et al., 2011)	Decrease in salience: related to decline in concern and 'impact scepticism'
It is already too late to do anything about climate change	Fatalism and societal efficacy	Fatalism as a 'barrier' (Lorenzoni et al., 2007); correspondence with cultural theory 'fatalist' item	Increase in salience: related to lack of societal action
People are too selfish to do anything about climate change	Self-interest impeding individual action	Correspondence with 'social dilemma' discourse	No predicted direction

Appendix 9.5: Items replicated from 2010 survey

The following items are replicated from Spence et al. (2010):

- "As far as you know, do you personally think the world's climate is changing, or not?" (yes/no/don't know response)

  This is considered a measure of 'trend scepticism' (Poortinga et al., 2011); an indication as to whether a respondent accepts that climate change is an extant phenomenon, whether natural or human caused.

- "Thinking about the causes of climate change, which, if any, of the following best describes your opinion?"
  Possible responses are: 'climate change is entirely caused by natural processes'; 'climate change is mainly caused by natural processes'; 'climate change is partly caused by natural processes and partly caused by human activity'; 'climate change is mainly caused by human activity'; 'there is no such thing as climate change'; 'don't know/ no opinion'.

  This is considered a measure of 'attribution scepticism' (Poortinga et al., 2011); an indication as to the extent to which climate change is considered natural and/or human-caused.

- "The seriousness of climate change is exaggerated" (strongly disagree to strongly agree response). This is considered a measure of 'impact scepticism' (Poortinga et al., 2011).

  This is an indication of perceptions of the severity of climate change.

- "Being environmentally friendly is an important part of who I am" (strongly disagree to strongly agree response).

  This is a measure of 'environmental identity'; a potentially important determinant of pro-environmental attitudes and behaviour (cf. Stets and Biga, 2003).

Appendix 9.6: Self-reported changes in views items

Participants were asked to indicate "for what length of time have you been aware of climate change?" in years.

They were asked to indicate agreement/disagreement with the following ten statements, "across the time period that you personally have been aware of climate change":

- I have become increasingly concerned about climate change over this time period
- I am less sceptical about climate change than in the past
- I feel more of a personal responsibility to do something about climate change than in the past
- I am less interested in climate change than I was in the past
- I am more convinced than ever that climate change is a serious problem
- I am less certain than before that climate change is a real problem
- I am less sure than I used to be that climate change is caused by human actions
- I am more sure than I used to be that climate change is directly affecting the weather in the UK
- In the past, there was more of a tendency for the importance of climate change to be exaggerated
- I am less trusting of climate scientists than in the past

Following these questions, an open-ended question was given: "If your views have changed, please tell us why this might be".

Appendix 9.7 2011 survey items and discourse correspondence

Table A9.7.1: 2011 survey items and discourse correspondence (physical discourses)

Discourse	Survey item
Status and practice of science	More research is needed before scientists can decide for sure whether climate change is a real problem
	There are a lot of very different theories about climate change, and little agreement about which is right
	One of the main causes of climate change has been the reduction (hole) in the ozone layer[20]
Informal empiricism	I personally have become aware of climate change, through noticing changes to the weather
	(see also section 9.8 concerning weather interpretation)

Table A9.7.2: 2011 items and discourse correspondence (social discourses)

Discourse	Survey item
Social dilemma	The actions of a single person don't make any difference in tackling climate change
	Climate change is so complicated, that there is very little politicians can do about it
	Climate change is hard to address because there are so many people on the planet pulling in different directions
	If each of us did our bit to help, we could put an end to the problems of climate change
	There is no point in me doing anything about climate change because no-one else is
Relational responsibility	In respect of climate change, it's up to the government to make individuals do the right thing
	As members of the public, we need those in power to put in place rewards and penalties to help us act on climate change

[20] Ozone conflation is discussed in the qualitative findings in terms of the 'environmental harm' discourse, however as this also relates to a technical perspective is included here for convenience.

Lifestyles and social practice	Climate change has come about because we are part of a society that requires us to consume more than we need We in the UK are prepared to change the way we live our lives to help stop climate change

Table A9.7.3: 2011 survey items and discourse correspondence (personal/psychological and ethics discourses)

Discourse	Survey item
Folk psychology	Not much will be done about climate change, because it is not in human nature to respond to problems that won't happen for many years A lot of people have a 'head-in-the-sand' attitude towards climate change
Accounting for climate-relevant behaviour	Rather than spend my time worrying about climate change, I prefer to ignore it and just get on with my life Whether it is important or not, on a day-to-day basis I am bored of hearing about climate change
Ethics	It is morally wrong if you don't take regular action as an individual to help tackle climate change

Appendix 9.8 2011 survey items concerning UEA controversy

Participants were asked to indicate level of agreement/disagreement on a 5-point scale with the following items:

- Scientists have in the past changed their results to make climate change appear worse than it is
- Scientists have hidden research that shows climate change is not serious
- Climate change is a scam

Appendix 9.9 Cultural theory measurement

The earliest attempts to measure cultural theory types appear to have been by Dake (1991, 1992) although it has been argued that these measures lacked construct validity (Rippl, 2002, and Marris et al., 1998 provide empirical evidence to this effect).

The use of quantitative measurement of cultural theory types of any sort, indeed, has been criticised by some researchers, who see such an approach as essentially decontextualised and so neglecting to address the patterns of social relations influencing risk perceptions. Understanding social relations in the framework of cultural theory is argued by some critics only to be appropriate through a more ethnographic/anthropological approach: Boholm (1996) for example argues that it is not possible to measure culture using individual-level data.

How cultural theory preferences attach to individuals has also been a point of contention: critics have asked whether these types are supposed to be stable and enduring (as one might expect values or worldviews to be) or whether they may vary according to context. Marris et al. (1998) discuss this in terms of a tension between 'stability' and 'mobility' versions of the theory: the former version entails the presumption the individual will prefer the same sorts of social organisation in all spheres of life (e.g. work, at home) and the latter suggests that cultural biases may adapt over time and place. Other researchers have also urged caution in respect of the utility of cultural theory approaches, in light of the practical problems of obtaining the typologies (e.g. through factor analysis), and weak correlations with risk perception (Breakwell, 2007:75).

Despite these criticisms and conceptual problems, West et al. (2010) have argued in the context of climate change research that "evidence exists of the ability of cultural theory to categorise complex debates into a more coherent form". Researchers have also argued that using individual-level measures is consistent with revealing cultural aspects; as Schwartz and Ros (1995:94, quoted in Rippl, 2002) put it, "individual value priorities [are] a product both of shared culture and of unique individual experiences". Rippl (2002) thus argues that a pragmatic compromise can be reached, where research accepts that an individual level approach does not measure culture directly, but instead measures the products of relational processes.

Whether acknowledging these distinctions and epistemological concerns explicitly or not, many researchers have in any case now used measurements of cultural theory to examine risk perceptions, including in respect of climate change and environmental problems.

Appendix 9.10 Ethics application, information and consent for online survey

This Appendix contains ethics information submitted and approved for the online survey. The information page provided is also given at the end of the Appendix. The survey items included in the ethics application are given separately in Appendix 9.1.

Ethics application – additional information

1. Title of project

Public understanding of climate change – a survey

2. Purpose of project and academic rationale

This is the third phase of the PhD project 'Climate Risk Discourses', and as such is intended to develop ideas arising from earlier stages. The other substantial analytic components involve a major secondary qualitative-longitudinal analysis of pre-existing data sets, and the gathering and analysis of primary focus group data during early 2010.

Survey methods have been used extensively over the past fifteen or so years, to explore a range of psychometric variables considered relevant to climate change. For example, models such as Stern's (2000) 'Value-Belief-Norm' account of environmentally-significant behaviour have been developed and tested using survey methods (Steg et al., 2005); the functions of risk perceptions, knowledge, and environmental concern and beliefs for behavioural intentions have been explored (O'Connor et al., 1999; Whitmarsh, 2009; Tobler, 2010), as have the roles of personal efficacy and perceptions about (climate) science in directing concern and personal responsibility for climate change (Kellstedt et al., 2008). The Understanding Risk group at Cardiff University has also recently carried out a large-scale nationally representative survey in which examination of public understanding of climate change was a central component (Spence et al., 2010). Within this study, attitudinal variables, environmental identity, values, risk perception, as well as a range of other measures, are used to account for levels of concern about climate change and views about energy policy.

In general terms, it is considered to be important to be able to understand public perspectives on climate change as these may have important consequences for support, opposition and engagement with different energy policies, as well as for private-sphere pro-environmental behaviour (Spence & Pidgeon, 2009). Given the concern in many quarters that public concern and engagement may even be declining as time goes on – perhaps, though not necessarily, in light of academic controversies occurring during late 2009 – it is important to continue to understand how public perspectives are formed.

The survey questionnaire proposed within this application is intended to build on prior findings and rationales, as part of the aforementioned PhD. Due in part to an accident of timing, the earlier focus groups carried out by myself took place at a time of heightened awareness not only of climate politics (following the United Nations 'Copenhagen conference') but also directly following widespread attention to the

academic controversies mentioned above. As a consequence of this, qualitative analysis has concentrated on conceptualising public 'scepticism' about climate change in a variety of forms. The use of a nationally representative survey would provide the opportunity to build on this by ascertaining the prevalence, relationship with other key variables, and construct validity of suggested scepticism sub-types.

A further important component of the proposed survey is the inclusion of items intended to add to the longitudinal focus of the thesis as a whole. This is intended to be achieved in three ways: firstly, through the inclusion of retrospective self-report items whereby participants may express how their own views may have changed over time – a complementary and fairly novel way of assessing changes in public views; second, through re-use of open-ended qualitative items originally included within work by Whitmarsh (2005) and the Centre for Environmental Risk at UEA in 2002 (see Lorenzoni et al., 2006); third, through inclusion of items which are proposed to be either less or more salient than previously, as suggested on the basis of earlier secondary qualitative analysis. The survey will also build on an emphasis within the 2010 focus groups upon policy appraisal, through the inclusion of parallel items. Also present within the questionnaire are items relating to individualised measurements of worldview apropos of 'cultural theory' (e.g. see Leiserowitz, 2006) which posits that individuals interpret and evaluate information about the world (including, specifically, environmental matters and questions of policy) according to their position on dimensions relating to identification with different types of social relations and social control. Further items measure pre-validated constructs, such as identity, efficacy, knowledge and concern.

Key research questions are:

- What patterns are there in changes in (self-reported) views on climate change, and do these relate to other key constructs such as concern and scepticism?
- Are there changes in responses to open-ended items, following their original usage in 2003?
- Are there differences between items which are hypothesised to be contemporarily less salient (e.g. conflation of climate change with ozone depletion) and those which are hypothesised to be more current (e.g. climate change 'fatigue') in terms of their prevalence and predictive power?
- Are there distinct factors reflecting sub-types of climate scepticism, especially in terms of scepticism1 (views about the science) and scepticism2 (views about the social and behavioural implications)?
- Do worldview measures (pertaining to cultural theory and myths of mature) predict preference for policy preferences and/or scepticism?

3. Methods and measurement

It is proposed that the survey will be administered using an online survey approach, using SurveyTracker software. Note that the questionnaire will first be piloted using student participants (see section 3 below), and that following piloting where any necessary changes to inclusion of items or to item wording is necessary this will occur prior to administering with a public sample. There may also be some omissions of items prior to use with a full sample, dependent on time taken to complete the survey in the pilot, and whether analyses indicate certain items are not necessary to include. The ethics committee will be informed of any changes seen as necessary in this respect.

Questionnaire outline

The survey questions are presented in detail in the Appendix. Participants will first be presented with a welcome page which provides information about the study in accordance with expectations of informed consent. Information provided to participants relates to the general background to the study, data handling, and what types of questions will be asked, as well as provision of contact details.

The sections containing survey items are described below; note that when administered in actuality this order will be adjusted so as to counterbalance items and so as not to group together related items. The section numbering described below is used to outline the conceptual structure of the survey, however.

Section 1 contains comparative open-ended items, following the usage of these by Whitmarsh (2005) as well as Lorenzoni et al. (2006).

Section 2 contains 'time sensitive' items relating to the evidence base, causes, consequences and responses to climate change. These are grouped together due to inferences drawn from prior research that some are less prevalent than previously, and some more so.

Section 3 contains retrospective self-report items, wherein participants may respond according to changes in their views, for example: "I am less certain than I have been in the past that climate change is real", "I am more trusting of climate scientists than in the past".

Section 4 contains a battery of questions designed to measure a number of sub-types of scepticism. Some of these derive from items used by others, for example Spence et al. (2010), and Leiserowitz (2006); others have been designed for the purpose of this study and derive from earlier focus group analysis.

Section 5 contains questions which relate to secondary qualitative analysis carried out during the early part of the PhD, plus a behavioural intentions item.

Section 6 contains items relating to appraisal of different types of policy responses to climate change. These are differentiated at the poltical, personal, and technological levels and distinguish also between adaptation and mitigation.

Section 7 contains cultural theory items, relating mainly to worldview items of 'egalitarianism' and 'individualism'; an item intended to obtain an approximation of a perception of the character of climate in relation to the 'myths of nature' construct much-identified in the literature is also included.

Section 8 measures a number of other key constructs, namely: environmental identity, self efficacy, fatalism (belief that it is too late to address climate change), objective knowledge, concern, self-informedness, and beliefs concerning an anthropogenic/natural component to climate change.

Section 9 measures demographic characteristics, as these have been found to be important predictor variables in prior research. These include age, gender, education and voting intention.

The final page of the survey thanks participants for completing the survey, reiterates the purpose of the study and provides contact details again.

4. Participants

(i) The survey questionnaire will in the first instance be piloted with students recruited via the EMS system. Piloting will enable the reliability of scales and items to be appraised, and also to obtain face-to-face feedback on any particular items which may not be easily comprehensible. It is anticipated that around 60 students will be recruited for the purposes of piloting.

(ii) Following piloting and any necessary revisions, the finalised questionnaire will be administered to a nationally representative (according to age, gender, social grade) sample of approximately 500 people. Participants will be recruited using a professional recruitment agency that specialises in online panels (e.g. ResearchNow). All participants must be resident in the UK and be 18 years or older; no other exclusion criteria apply.
It is anticipated that participant recruitment will involve participants from panels already retained on confidential databases held by the market research company (as is standard practice) in accordance with the Market Research Society Code of Conduct. Participants will be contacted by the agency and provided with a link to the online survey. They can then themselves decide whether to take part. Participants recruited in this way are paid or remunerated via an arrangement with the company: this may entail cash payments or provision of other rewards such as vouchers for stores.

5. Consent and debriefing

The online survey will have an information page at the beginning which will provide all consent information required (this includes information about the purpose of the study, data handling, types of questions to expect, and contact details). It will be stated that by pressing the 'continue' button, participants consent to participate in the study; this will then proceed to the survey proper. The consent form to be used is shown at the start of the survey, within the Appendix.

The online survey also makes use of an information page/debriefing page at the end of the survey which will thank the participant for taking part and describe the main purpose of the study again, and in a little more detail. It will also display the contact details again. The debrief form used is shown at the end of the survey, within the Appendix.

6. Ethical considerations

Outside recruitment

No ethical issues are foreseen by recruiting participants from outside the department and University. Recruitment agencies make use of their online panels on a regular basis and keep confidential databases. Panel members are fully aware of their right to withdraw or decide not to take part in any survey they are asked to participate in. Nevertheless, these principles are reiterated within the information page in the present study.

It is not anticipated that any of the questions are offensive or distressing as they are concerned with commonplace attitudes towards climate change. Very similar (in many cases, identical) survey questions have been utilised by the Understanding Risk group in studies which have taken place this year.

7. Estimated start data and duration of the project

Following ethics approval, recruitment of student participants for the purposes of piloting will begin fairly promptly. It is intended that this will be complete by the end of 2010, ideally during November 2010.

The survey proper will be administered during a fairly short space of time during early 2011 – it is anticipated that all data collection will be complete by the end of February, 2011.

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INFORMATION ABOUT THE STUDY

Thank you for choosing to take part in this survey. Below is some further information about it.

This study is being carried out by Stuart Capstick, a researcher at Cardiff University who is interested in people's views about climate change, and environmental and social concerns more generally. This research is being supervised by Professor Nick Pidgeon, head of Cardiff University's 'Understanding Risk' research group.

The project has been approved by the Ethics Committee of the School of Psychology at Cardiff University. It is funded by the Economic and Social Research Council.

The questionnaire requires no special knowledge for you to complete it. Your participation is voluntary, you do not have to complete all the questions if you do not want to, and may withdraw from the study at any point. The information provided by you will be held **completely anonymously**, so it will be impossible to trace this information back to you individually. The data will be held indefinitely and may be used in Stuart Capstick's doctoral dissertation, as well as for reports, presentations, conference papers and academic publications.

The current study is interested in your opinions about whether you think climate change is or is not an important issue, your views about the science behind climate change (if you have any), and how your opinions about climate change might have changed over time. You will also be asked about your views concerning how you and others are responding to climate change (if at all), including whether you think that the government should be doing anything about it.

If you have any further questions or concerns please feel free to contact myself, or my supervisor, using the contact details below. Thanks, Stuart.

Researcher

Mr Stuart Capstick
Understanding Risk group
51A Park Place
School of Psychology
Cardiff University
Cardiff
CF10 3AT

029 20870836
capsticksb@cardiff.ac.uk

Supervisor

Professor Nick Pidgeon
Understanding Risk group
School of Psychology
Tower Building
70 Park Place
Cardiff University
CF10 3AT

029 20874567
pidgeonn@cardiff.ac.uk

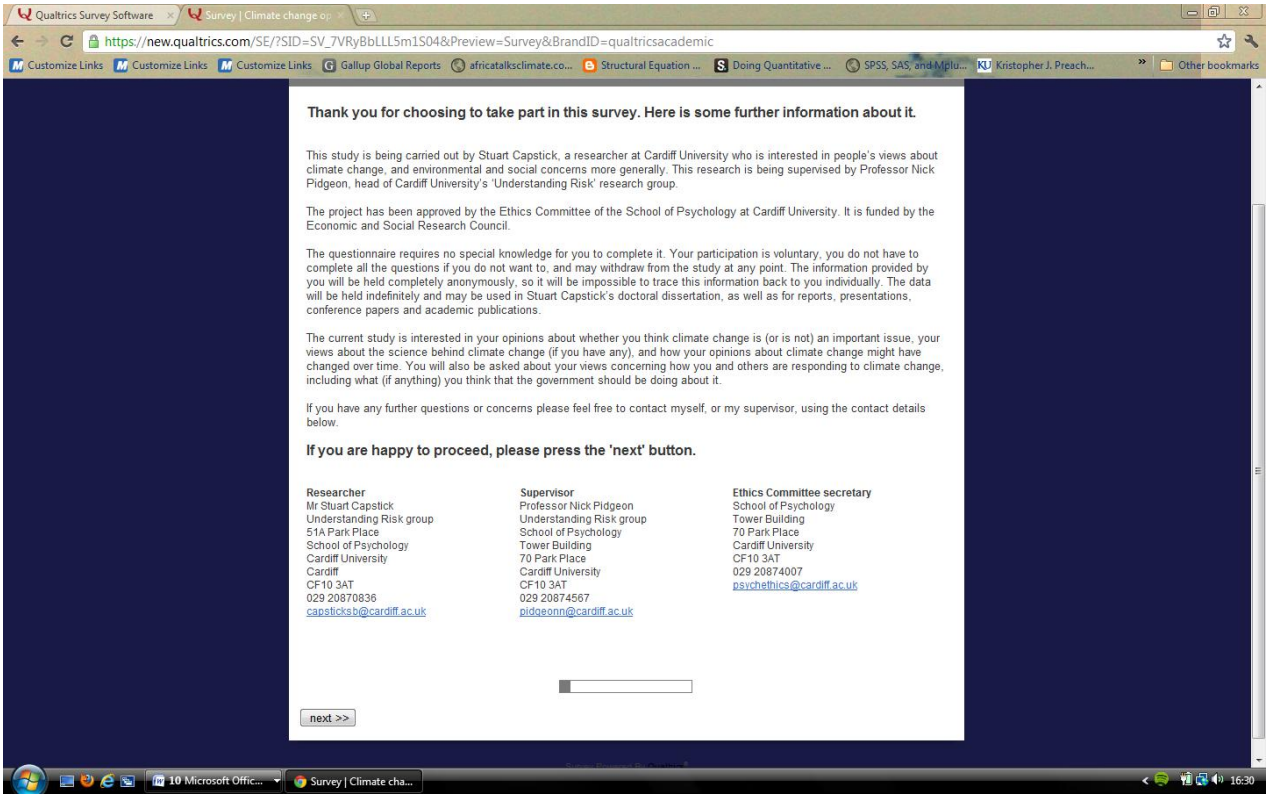
Ethics committee secretary

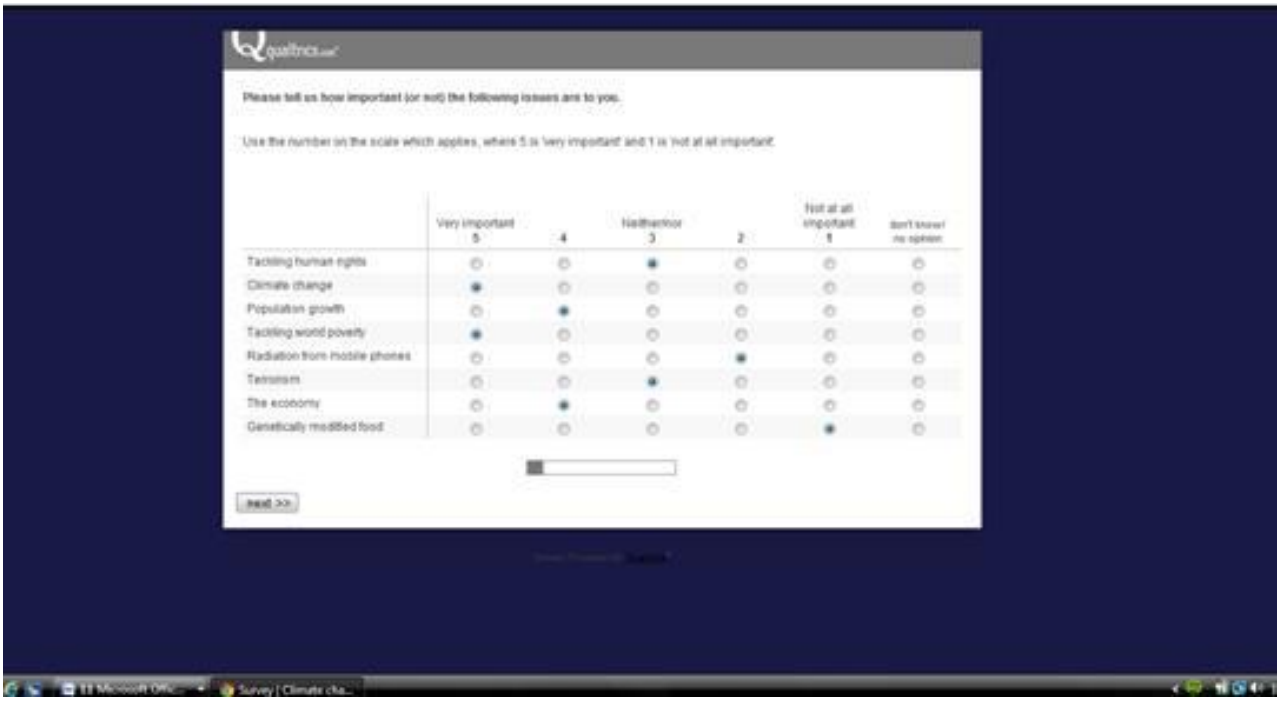
School of Psychology
Tower Building
70 Park Place
Cardiff University
CF10 3AT

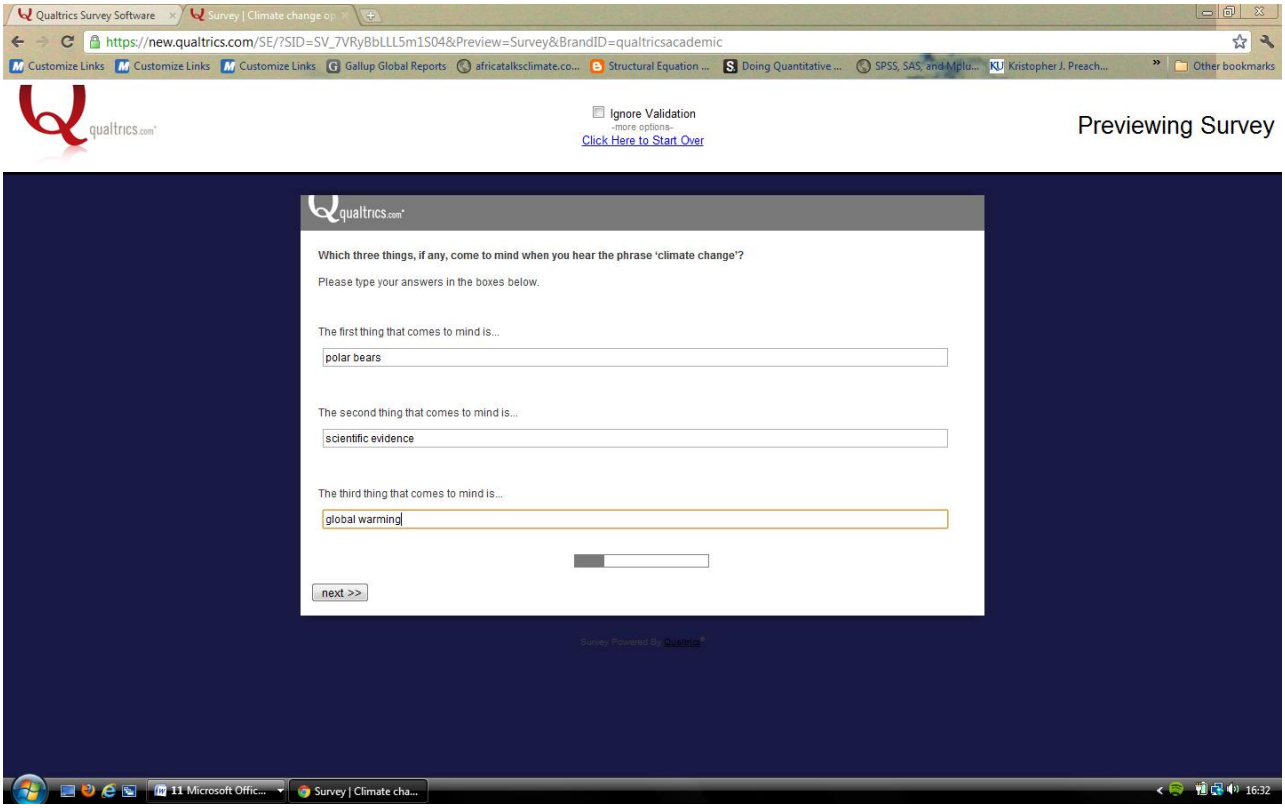
029 20874007
psychethics@cardiff.ac.uk

If you give your consent to participate in the study, please proceed by pressing the 'continue' button below.

Appendix 9.11 Screenshots from online survey



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Gallup Global Reports
africatalksclimate.co...
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SPSS, SAS, and Mplu...
Kristopher J. Preach...
Other bookmarks
qualtrics.com
Ignore Validation
-more options-
Click Here to Start Over
Previewing Survey
qualtrics.com
Which three things, if any, come to mind when you hear the phrase 'climate change'?
Please type your answers in the boxes below.
The first thing that comes to mind is...
polar bears
The second thing that comes to mind is...
scientific evidence
The third thing that comes to mind is...
global warming
next >>
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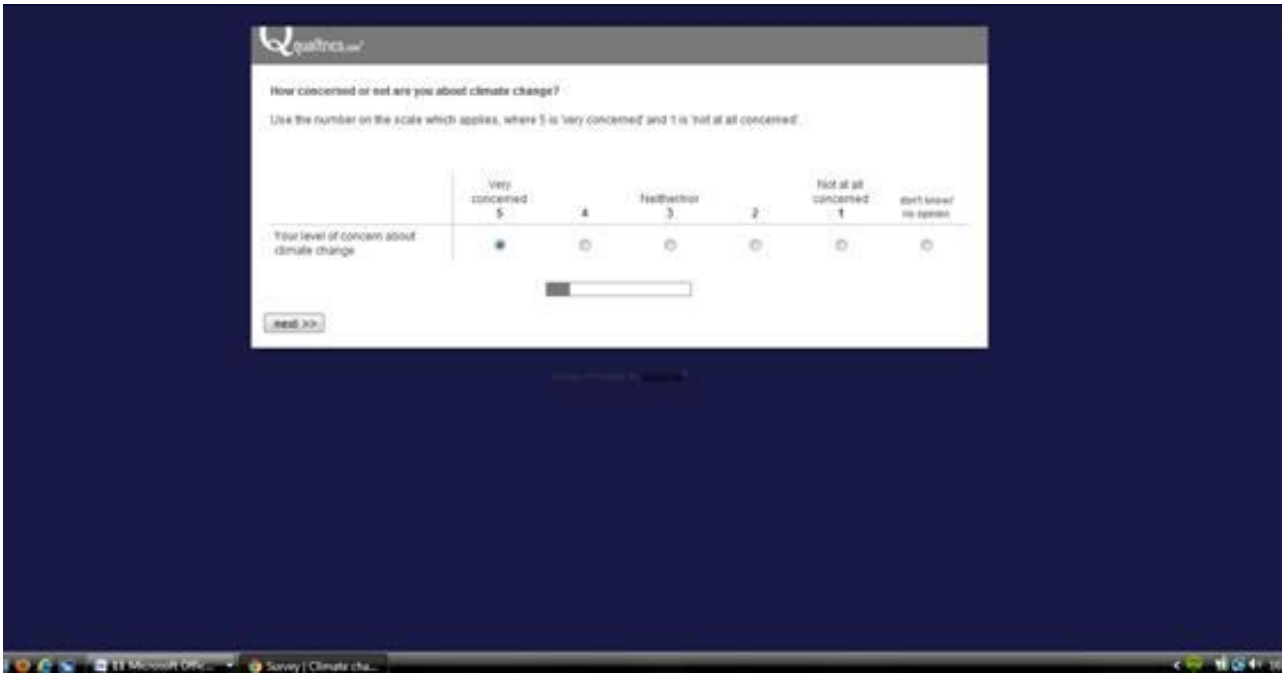
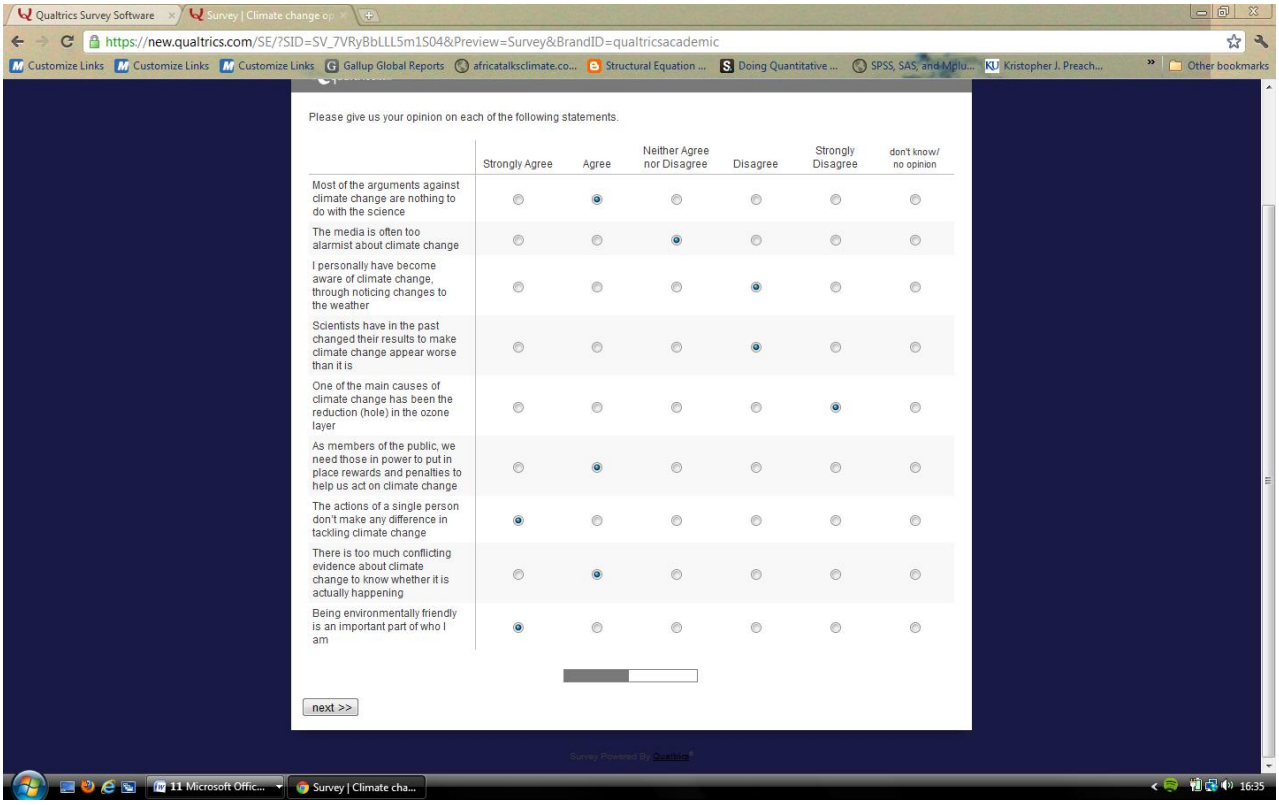

How concerned or not are you about climate change?
Use the number on the scale which applies, where 5 is 'very concerned' and 1 is 'not at all concerned'
Very concerned
5
4
Neither/nor
3
2
Not at all concerned
1
don't know/ no opinion
Your level of concern about climate change
next >>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Structural Equation ...
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SPSS, SAS, and Mplu...
Kristopher J. Preach...
Other bookmarks
Please give us your opinion on each of the following statements.
Strongly Agree
Agree
Neither Agree nor Disagree
Disagree
Strongly Disagree
don't know/ no opinion
Most of the arguments against climate change are nothing to do with the science
The media is often too alarmist about climate change
I personally have become aware of climate change, through noticing changes to the weather
Scientists have in the past changed their results to make climate change appear worse than it is
One of the main causes of climate change has been the reduction (hole) in the ozone layer
As members of the public, we need those in power to put in place rewards and penalties to help us act on climate change
The actions of a single person don't make any difference in tackling climate change
There is too much conflicting evidence about climate change to know whether it is actually happening
Being environmentally friendly is an important part of who I am
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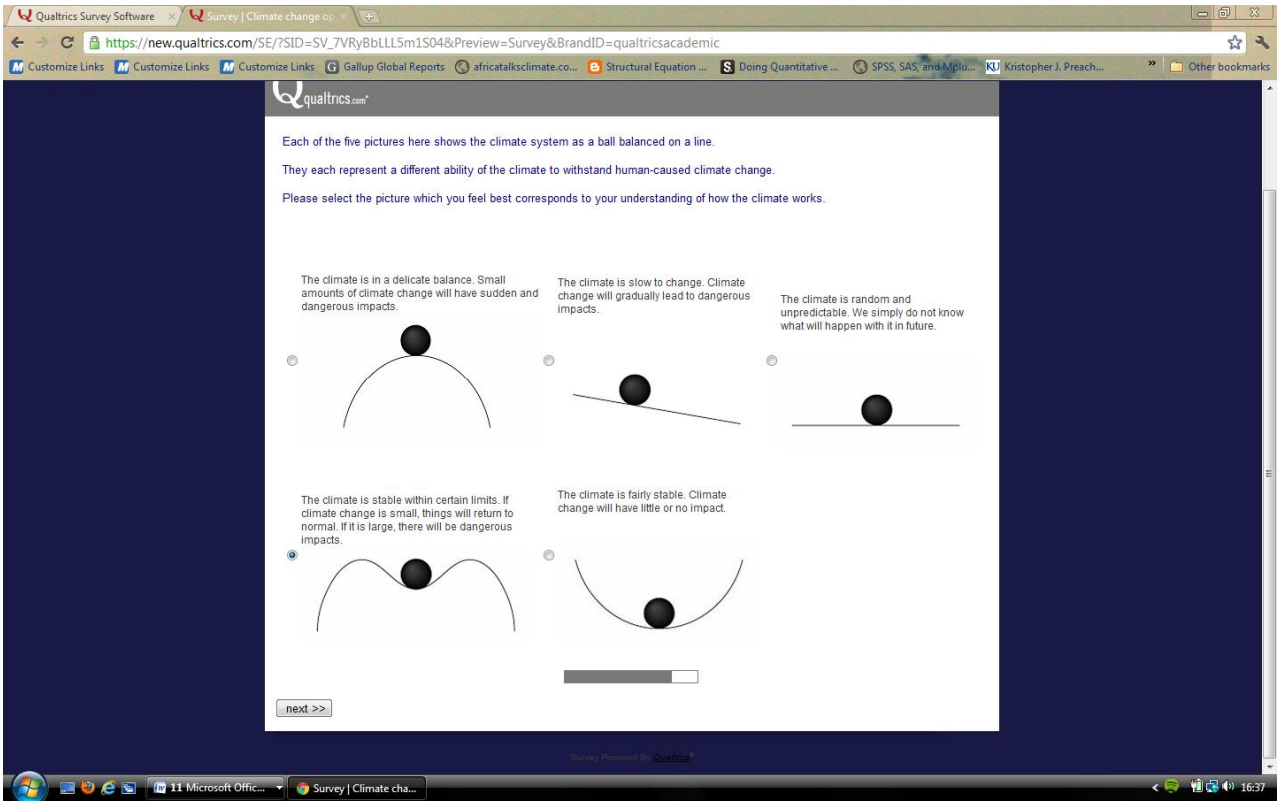
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Gallup Global Reports
africatalksclimate.co...
Structural Equation ...
Doing Quantitative ...
SPSS, SAS, and Mplu...
Kristopher J. Preach...
Other bookmarks
qualtrics.com
Each of the five pictures here shows the climate system as a ball balanced on a line.
They each represent a different ability of the climate to withstand human-caused climate change.
Please select the picture which you feel best corresponds to your understanding of how the climate works.
The climate is in a delicate balance. Small amounts of climate change will have sudden and dangerous impacts.
The climate is slow to change. Climate change will gradually lead to dangerous impacts.
The climate is random and unpredictable. We simply do not know what will happen with it in future.
The climate is stable within certain limits. If climate change is small, things will return to normal. If it is large, there will be dangerous impacts.
The climate is fairly stable. Climate change will have little or no impact.
next >>
Survey Powered By Qualtrics
11 Microsoft Offic...
Survey | Climate cha...
16:37

Appendix 10.1 Survey respondent profiles

Table A10.1.1 gives the target proportions (based on the 2001 UK census) of key demographic criteria, and the actual characteristics of the final sample, obtained from the 2011 online survey.

Table A10.1.1: Target and actual respondent profile

	Target n (%)	**Actual n (%)**
Gender		
Male	243 (48.6%)	246 (49.2%)
Female	257 (51.4%)	254 (50.1%)
		Total (gender): 500
Age		
18-24	61 (12.1%)	57 (11.4%)
25-34	82 (16.4%)	79 (15.8%)
35-44	93 (18.5%)	94 (18.8%)
45-54	86 (17.2%)	88
55-64	75 (15.0%)	77
65-74	54 (10.8%)	55
75+	50 (9.9%)	50
		Total (age): 500

Table A10.1.2 shows the educational and working profile of Spence et al.'s 2010 survey and the 2011 survey, for comparison.

Table A10.1.2: Educational and working profile of survey respondents

	2010 Understanding Risk survey (Spence et al., 2010) (%)	**2011 online survey (%)**
Working status		
Working full-time (30+ hours per week)	36	46.2
Working part-time (up to 29 hours per week)	13	10.2
Looking after children/ the home	7	3.8
Unemployed	8	4.6
Retired	27	25.2
Not working - disabled	3	4.8
Student	7	2.6
Qualifications		
No qualifications	18	12.4
GCSE's or equivalent	30	24.4
A-levels of equivalent	18	23.8
Bachelor's degree of equivalent	19	29.2
Postgraduate qualification	6	9.6

Table 10.3 shows the 2011 survey respondent profile alongside results obtained by two separate polls conducted by Populus/ *The Times* and ICM/ *The Guardian*[21] in the same month. (As can be seen, however, national polling results vary substantially according to the organisation carrying out polling.)

Table A10.1.3: Voting intention of 2011 survey respondents and national polls (all February 2011)

Political party/ other response	2011 survey response rate (%)	Populus/ ICM (%)
Conservative	29	21/35
Labour	26	25/38
Liberal Democrat	12	7/18
SNP/ Plaid Cymru	3	2/ NA
The Green Party	5	3/ NA
UKIP	5	2/ NA
BNP	1	2/ NA
Other	4	1/ 9 (NB ICM collated 'other' responses)
Would not vote	15	14/ NA

[21] Polling company data can be found at http://www.populus.co.uk/uploads/download_pdf-060211-The-Times-The-Times-Poll---February-2011.pdf and https://docs.google.com/spreadsheet/ccc?key=0AonYZs4MzlZbcGhOdG0zTG1EWkVPOEY3OXRmOEIwZmc#gid=0 (last accessed October 2011)

Appendix 10.2: Comparison of issue importance between 2002 and 2011

Percentage responding
(don't know/ no opinion not shown)

	Not at all important 1	2	Neither/ nor 3	4	Very important 5	Mean	SE	SD
Terrorism								
2002	1.4	2.2	11.1	23.5	61.1	4.42	0.02	0.87
2011	2.8	4.2	13.7	36.2	42.7	4.12	0.04	0.99
The economy								
2002	1.9	2.8	14.0	33.0	46.9	4.22	0.02	0.93
2011	0.8	1.0	9.4	40.3	48.5	4.35	0.03	0.76
Tackling world poverty								
2002	2.5	3.9	18.2	34.1	40.6	4.07	0.03	0.99
2011	4.4	8.0	24.4	39.0	23.8	3.70	0.05	1.06
Population growth								
2002	3.7	5.4	31.2	32.0	26.0	3.72	0.03	1.03
2011	2.2	4.6	25.3	36.3	30.7	3.89	0.04	0.97
Tackling human rights								
2002	2.3	3.6	19.2	37.0	36.7	4.04	0.02	0.96
2011	3.6	7.2	29.1	33.9	25.3	3.71	0.05	1.04
Climate change								
2002 (n=321)	4.4	6.2	21.2	35.5	30.8	3.84	0.06	1.08
2011	6.6	8.2	24.0	32.7	28.3	3.68	0.05	1.16
Radiation-mobile phones								
2002 (n=319)	9.1	7.5	36.4	24.5	19.4	3.39	0.07	1.17
2011	19.9	17.5	30.9	21.3	8.2	2.80	0.06	1.23
GM food								
2002 (n= 296)	10.1	12.2	33.4	20.3	20.3	3.29	0.07	1.23
2011	12.7	13.1	33.3	25.9	13.7	3.15	0.05	1.20

Appendix 10.3 Change in concern, level of interest and self-reported informedness between 2002 and 2011

Percentage responding
(don't know/ no opinion not shown)

	Not at all concerned 1	2	Neither/ nor 3	4	Very concerned 5	Mean	SE	SD
2002	6.9	4.7	25.2	33.3	28.3	3.73	0.06	1.14
2011	8.0	7.2	24.5	43.0	16.9	3.54	0.05	1.10

Item wording: 'How concerned or not are you about climate change?'

Percentage responding re. 'I am well informed about climate change'
(don't know/ no opinion not shown)

	Strongly disagree 1	2	Neither/ nor 3	4	Strongly agree 5	Mean	SE	SD
2002	15.6	35.5	19.6	21.5	5.6	2.65	0.07	1.15
2011	3.6	18.7	47.7	23.3	4.6	3.07	0.04	0.87

Item wording: 'I am well informed about climate change'

Percentage responding re. 'I am not that bothered about climate change'
(don't know/ no opinion not shown)

	Strongly disagree 1	2	Neither/ nor 3	4	Strongly agree 5	Mean	SE	SD
2002	24.8	34.4	16.7	17.8	6.4	2.44	0.07	1.22
2011	22.6	31.0	23.2	13.4	7.8	2.52	0.06	1.21

Item wording: 'I am not that bothered about climate change'

Appendix 10.4 Comparison of survey items between 2003 and 2011

	Percentage responding (don't know/ no opinion not shown)					
Survey item	Strongly disagree 1	2	Neither/ nor 3	4	Strongly agree 5	Mean (SD)
There is too much conflicting evidence about climate change to know whether it is actually happening						
2003	0.8	28.0	35.0	31.7	4.5	3.11 (0.89)
2011	6.4	19.1	28.5	31.0	15.0	3.29 (1.13)
The evidence for climate change is unreliable						
2003	6.1	33.5	34.3	23.3	2.9	2.83 (0.95)
2011	9.1	24.5	30.8	22.5	13.1	3.06 (1.17)
Experts are agreed that climate change is a real problem						
2003	2.4	11.7	32.0	47.4	6.5	3.44 (0.87)
2011	5.4	13.2	26.2	42.8	12.4	3.44 (1.04)
Climate change is just a natural fluctuation in earth's temperatures						
2003	5.7	32.4	34.0	19.3	8.6	2.93 (1.04)
2011	4.2	18.6	31.6	26.8	14.4	3.30 (1.08)
The media is often too alarmist about [issues like] climate change						
2003	2.0	20.6	25.1	41.7	10.5	3.38 (0.99)
2011	4.1	14.1	27.6	30.2	24.1	3.56 (1.12)
The effects of climate change are likely to be catastrophic						
2003	2.1	10.7	39.5	35.8	11.9	3.45 (0.91)
2011	5.5	9.1	35.1	36.4	14.0	3.44 (1.02)
It is already too late to do anything about climate change						
2003	18.4	49.8	24.1	6.5	1.2	2.22 (0.87)
2011	13.5	33.6	33.4	13.3	6.1	2.65 (1.07)
People are too selfish to do anything about climate change						
2003	1.2	11.0	17.9	50.0	19.9	3.76 (0.94)
2011	1.6	7.3	26.1	49.7	15.4	3.70 (0.87)

Appendix 10.5 Measures of perceived exaggeration and environmental identity in 2010 and 2011

Item	Strongly agree	(Tend to) agree	Neither agree nor disagree	(Tend to) disagree	Strongly disagree	No opinion/ don't know
The seriousness of climate change is exaggerated						
2010 (n=1822)	12	27	15	29	15	3
2011 (n=500)	11	17	28	28	12	3
Being environmentally friendly is an important part of who I am						
2010 (n=1822)	18	42	20	16	4	1
2011 (n=500)	16	39	27	11	5	1

Appendix 10.6 Changes in views of 2011 respondents

	Percentage responding (don't know/ no opinion not shown)					
	Strongly disagree 1	Disagree 2	Neither/ nor 3	Agree 4	Strongly agree 5	Mean (SE, SD)
I have become increasingly concerned about climate change over this time period	8	18	29	34	9	3.19 (0.05, 1.10)
I am more sceptical about climate change than in the past	13	26	28	22	10	2.92 (0.05, 1.18)
I feel more of a personal responsibility to do something about climate change than in the past	8	15	32	36	9	3.24 (0.05, 1.06)
I am less interested in climate change than I was in the past	13	32	31	17	7	2.74 (0.05, 1.10)
I am more convinced than ever that climate change is a serious problem	8	14	31	32	13	3.29 (0.05, 1.12)
I am less certain than before that climate change is a real problem	14	32	29	18	5	2.68 (0.05, 1.10)
I am less sure than before that climate change is caused by human actions	10	27	31	24	6	2.89 (0.05, 1.09)
I am more sure than previously that climate change is directly affecting the weather in the UK	7	14	31	36	10	3.30 (0.05, 1.06)
In the past, there was more of a tendency for the importance of climate change to be exaggerated	2	16	38	29	11	3.31 (0.04, 0.96)
I am less trusting of climate scientists than in the past	7	22	35	23	10	3.08 (0.05, 1.08)

Appendix 10.7 2011 survey respondent views on social aspects of climate change

	Percentage responding (*don't know/ no opinion not shown*)					
	Strongly disagree 1	**Disagree 2**	**Neither/ nor 3**	**Agree 4**	**Strongly agree 5**	**Mean (SE, SD)**
The actions of a single person don't make any difference in tackling climate change (SD)	12	29	28	20	10	2.87 (0.05, 1.17)
Climate change is so complicated, that there is very little politicians can do about it (SD)	11	25	27	25	9	2.95 (0.05, 1.16)
Climate change is hard to address because there are so many people on the planet pulling in different directions (SD)	1	3	18	51	27	4.01 (0.04, 0.79)
There is no point in me doing anything about climate change because no-one else is (SD)	21	34	30	9	4	2.39 (0.05, 1.05)
If each of us did our bit to help, we could put an end to the problems of climate change (SD, 'anti' dilemma viewpoint)	8	16	33	32	9	3.18 (0.05, 1.07)
In respect of climate change, it's up to the government to make individuals do the right thing (RR)	6	15	40	31	7	3.18 (0.05, 0.99)
As members of the public, we need those in power to put in place rewards and penalties to help us act on climate change (RR)	7	9	27	39	16	3.49 (0.05, 1.10)
Climate change has come about because we are part of a society that requires us to consume more than we need (LS)	3	9	31	35	20	3.60 (0.05, 1.00)
We in the UK are prepared to change the way we live our lives to help stop climate change (LS)	6	22	38	29	4	3.03 (0.04, 0.96)

Appendix 10.8 **2011 survey respondent views on folk-psychological and ethical aspects of climate change**

	Percentage responding *(don't know/ no opinion not shown)*					
	Strongly disagree 1	**Disagree 2**	**Neither/ nor 3**	**Agree 4**	**Strongly agree 5**	**Mean (SE, SD)**
Not much will be done about climate change, because it is not in human nature to respond to problems that won't happen for many years	2	12	32	40	12	3.49 (0.04, 0.94)
A lot of people have a 'head-in-the-sand' attitude towards climate change	3	6	24	43	23	3.79 (0.04, 0.95)
Rather than spend my time worrying about climate change, I prefer to ignore it and just get on with my life	15	27	29	19	9	2.79 (0.05, 1.17)
It is morally wrong if you don't take regular action as an individual to help tackle climate change	9	10	30	37	13	3.35 (0.05, 1.11)

Appendix 10.9 Responses to 'UEA controversy' survey item

Respondents were asked: "How much do you recall hearing or reading about news stories during late 2009/ early 2010, where it was alleged that climate scientists had acted dishonestly in the course of their research?" Response options were from 'a great deal' to 'nothing at all'.

They were then asked an open-ended question: "If you have come across this news story, what did you hear or read about it?" The results of this second item are given here.

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witholding of e-mails that showed evidence that evidence was being witheld
Weren't sure to believe or if they were exaggerated.
was it about scientists in an East Anglian university who had not reported unfavourable data?
Various scientists have withheld information, or presented false information about temperature changes and melting glaciers
Vaguely remember the news story that some scientists had exaggerated some evidence of climate change but think it was taken out of context.
University of East Anglia computers were hacked into and results leaked by climate change deniers who claimed to have evidence that data was doctored to show climate change was worse than it actually was.
University of East Anglia project
Universities in Britain withholding information
UEA scientists, this was conjured up by sceptics who were paid by oil companies to discredit them
uaually for more state funding
TV news reports - saying scientists had exagerated the figures
they thought it was a scam
they held back information that cast doubt about climate change
they gave out false data
they didn't tell lies, but were not clear or open enough about what they said/had found out
they can covered up some info

they altered results to show that climate change is happening rapidly when it is not.
the usual bias, lies and fiddling of statistics that we are bombarded with daily by politicians, multi nationals and lobby groups
the research was made to seem worse than it was
The data does not always support the theory computers are not always right however sophisticated they are and humans operate them.
That they lied in their data
That they had overestimated the melting of the ice caps
that they had fudged their results to fit in with the popular theory of climate change happening and it was all the human races fault
that they had falfsifed results so that they could make a name for themselves
that they faked the results
That there was a cover up of what had really been found
that the things thet were found out were not as serious as reported
That the results of calculations & readings had been misinterpreted or that there were mathematical errors in them
That some data was exagerated to more strongly support climate change
That scientists were "juggling" studies to give a positive slant to what they believed rather than a balanced view
That scientists suppressed information which was contrary to the views they were expressing
That scientists in the US had deliberatly falsified reports to produce what the government wanted to hear.
That scientists in East Anglia had exagerated some of their conclusions so as to present, as a fact , that global warming was inevitable
that scientists fudged the figures
That scientists at the University Of East Anglia falsified data to support the view that climate change is a serious problem.
That respected climate scientists had kept information out of a document
That reports had been falsified
that its all people fault and so we people must pick up the pieces and bear the brunt of the costs not comanies and businesses
That evidence had been changed to make it more sensational, as a matter of fact I know in

the 70s it used to be the opposite, can't trust anyone :(
That data was fabricated
that certain facts were witheld
That a report on climate change was perhaps economical on facts, or biased (or both)
That a group of sciencists have altered data to make climate change look worse that it was
Stories that people had lied about research
something to do with emails between people
Something about teh British Government suppresing teh resutls of a university conducted study
somebody falsifying the results
SOME TAMPERED E-MAIILS REGARDING CLIMATE DATA NOT AS BAD AS THOUGHT
some results were discarded that didn't match results the scientists wanted
some research has been disputed
some of it was covered again in a recent horizon programme about people struggling to trust scientists
some of data had been witheld which would have led people to think that climate change not so serious
Some figures were massaged (just ahead of a climate conference) by researchers at East Anglia University, I think :)
some falsified info
selective publising on information on climate change found out by reading internal emails
sea level rise increase
scientists were fixing the figures
scientists twisted results in favour of climate change
Scientists overstated some research, and hid other results that were against their argument
Scientists in Norfolk hiding evidence that did not support their argument
Scientists at East Anglia University witheld evidence which supported the idea that the climate was not changing as much as they expected it to
Scientists at an English university had skewed the data to reinforce their arguments re climate change.
Scientists at a a university altered way data waspresented to make stronger case for climate change - but didn't actually falisify data

Researchers from a particular university distorted/falsified data in support of change claims, argument become very complicated and difficult to follow, story tended to be over sensationalised
Professors at University of East Anglia accused of hiding/losing/missing emails which brought into doubt some of the research had been adapted to give the "right" result. These were leaked. Important as these statistice are used by the international comunity and the UN.
probably emails have been atken out of context
only that he had fiddled the figures to prove his point/
One or some of the scientists were said to have exagerated claims about climate change. I vaguely think they might have admitted that. I have a poor memory so I could be wrong about that.
One email taken out of context and blown up by the media
norwich/norfolk 'climate emails
It was said that some scientists had made the results of there research appear to support there beliefes more than it actually did to help there own views
It was just another story that reflected the conflicting views that were being offered by various people.
It was about UEA scientists not being fully open about the data underlying their publications
It confirmed my suspicions that some scientist wanted his 15 minutes of fame.
internet and I was not surprised that they did not disclosed all their findings
IN MY NEWSPAPER AND IT SHOWED THEY LIE ALSO RE THE ARTIC BEARS ICE FLOW MELTING SO MUCH TOSH NOT ENOUGH TRUTH ANDONE CAN TURN A STORY AROUND TO MAKE IT BELIVEABLE
I wasn't surprised
I think there was misunderstanding about a certain document that led to climate change sceptics citing this as ruse to mislead the public
i think i read it online, saying that scientists were exxagerating figures or something and they were exxagerating how much change thier was in the world to exxagerate the climate change problem
I think I have read about manipulation of data by certain group
I remember the thrust of the argument was that climate scientists exaggerated their claims
I remember documentaries etc claiming that there were issues with it

I read in a news paper that scientists had not disclosed the true facts about climate change. Thus hiding what they truly found. Why hide what they found?

I only skim read the article, dismissing it as alarmisim

I heard they were dramatising the facts

I heard idiots like Nigel Lawson saying that the leaked emails from a University (I think, I cannot remember which) exaggerated data and that this therefore proved that Climate Change didn't exist. The scientist were subsequently exonerated. The more rigt wing stupid media like the Daily Mail was full of 'Climate-Gate' rubbish which was just intensly annoying.

I disbelieved the media hype because contrary to claims malestream media is not independent or objective. Rather it pumps out propaganda and serves white men who hold political power and show utter contempt for the groups most affected by climate change nd that is women globally.

I did not belive it, the climate scientists hve no intreast in lying

I also came across the results of the investigation, which got nowhere near as much publicity

hysterical claims that scientists had "hidden" data

heard about doctored evidence

false figures and scaremongering to get grants

expert from east anglian uni. sent emails saying figures had been manipulated

exactly what it says,some were dishonest as in said opinions rather than facts etc

Emails leaked, containing details of the suggested 'sexing up' of the adverse effects of climate change

emails between scientists which alluded to the fact that global warming data was being manipulated/rigged

East Anglia university emails were leaked that revealed scientists had artificially altered findings.

doctoring of figures,can't remember specifics

Data was mannipulated, ststistics were miss interprated.

Data changed - east anglia scientists

Climate scientists suppressed results that contradicted their claims on climate change

Claims of falsifying evidence by scientists to produce the desired results. I think that the outcome of the research was not significantly affected by the skewed data

Certain data were exaggerated by scientists to back their claims.

as before - results manipulated to self serve
an academic had emails hacked that suggested things were not as bad as made out
Allegations about UEA's Climatic Research Unit based on leaked emails.
A researcher at the University of East Anglia was dismissed from his post following an enquiry into allegations that he had withheld data following a freedom of information request from a colleague with different views concerning climate change.
2 scientist wrote emails to each other, talking about hiding evidence showing that climate change was(false/true) can't recall which way they said