Pollinating insects: what do they mean to people and why does it matter? FULL REPORT

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Key findings

- People value pollinating insects, and especially bees, in a wide range of different ways: as beautiful or fascinating creatures; as providers of goods; as objects of stewardship; as participants in a greater, interconnected whole – in which humans also participate; and as creatures with lives and characters.
- 2. An understanding of pollinators as *creative connectors*, sustaining and creating life by moving from plant to plant, is particularly powerful. Pollinators prompt people to think about nature as an interconnected whole, in which they too participate; and can unlock feelings of wonder, awe, groundedness, concern, responsibility, and nostalgia.
- 3. Social and cultural values provide a powerful resource for effective communications, a store of pre-existing meanings and associations that can be used to frame messages. Communications about pollinators would resonate more powerfully if they framed pollinators as creative connecters, emblematic of the interconnected and interdependent nature of ecosystems. By contrast, communications which focus on what pollinators do for us (e.g. pollination framed as an 'ecosystem service') are rational but unemotional.
- 4. Communications drawing on these insights should:
 - Highlight first and foremost the critical role played by pollinators as creative connectors in a greater, interconnected whole
 - Acknowledge our dependency on that greater interconnected whole, but also our responsibilities as participants in it
 - Be willing to embrace and use non-scientific language, ideas and tonalities in talking about both pollinators and the interconnected whole of which they are part, for example:
 - spiritual/religious language in evoking feelings of awe and wonder at the greater interconnected whole
 - evocations of an idealised, traditional way of life, and the possibilities of reconnecting in some small way
 - o metaphorical characterisations of pollinators as spreading life and love
 - Recognise that we face choices about the environment not just as individuals, but as a society; that people see evidence of our society as a whole making the wrong choices; and that the actions of any body seeking to campaign about pollinators will speak as loudly, if not louder, than the messages it promotes
 - Emphasise in messages, but also in developing the *case* for a campaign the link between the holistic perspective, subjective wellbeing, and reconnection:
 - reconnection with nature: the consolation of knowing that one has a place in an enduring, greater whole, and a responsibility to play a positive role in that whole
 - reconnection with self: the experience of a moment of self-aware contemplation in contrast to the day-to-day stresses of life
 - $\circ\;$ reconnection with history: a sense of contact with an idealised traditional way of life
- 5. If developed effectively, such campaigns will contribute to many of the key actions in the National Pollinator Strategy, and in particular actions relating to "supporting pollinators

across towns, cities and the countryside" (including encouraging the public to take action) and to "raising awareness of what pollinators need to survive and thrive".

- 6. Because they prompt people to think about and respond emotionally to the interconnectedness of nature, pollinators framed as *creative connectors* could play an important role in communications seeking to increase awareness and change behaviour in relation to a much wider range of policies and approaches which relate to the *connectedness* of nature: for example, maintaining wider natural connectivity, protecting biodiversity, and ensuring environmental resilience through approaches such as those relating to the concept of landscape level conservation. As such, pollinators could play an important role in delivery of the 25-year plan for the environment, and in particular in efforts to increase public engagement.
- 7. Compared to other pollinating insects, bees occupy a central position in our culture. The 'popular bee' is not a *real* insect, but a product of a blurring of species, idealisation of the past, ignorance of the diversity of pollinators and, often, a shaky grasp on what pollination actually means. It is, however, a very *meaningful* and *valued* insect, and as such can serve as a flagship for communications in all of the above areas.
- 8. In terms of wider policy and decision-making, this research offers a potential model of how to create an evidence-based catalogue of social and cultural values. The development of such an evidence-based catalogue, using a mix of interpretative and participatory methods to explore how, and in what capacities, people can and do value objects of interest, should be an essential pre-requisite for robust valuation across a wide range of natural environment policy areas, but in practice is rarely undertaken.
- 9. Some types of social and cultural value can be captured through economic valuation: either through monetisation or through the inclusion of non-monetised criteria in multi-criteria analysis approaches. To do this, however, it is essential that data-gathering tools assess the right things: e.g. that willingness-to-pay questions frame the object of value in the right capacity and from the right perspective.
- 10. It may be more practical and/or appropriate to take account of some types of social and cultural value in policy and decision-making through other mechanisms, such as public consultation, political representation, or open policy-making. It may not be possible to monetise some kinds of value. In other cases, the effort involved in economic valuation may be disproportionate. If alternative mechanisms are not used, there is a risk that certain kinds of social and cultural value, or certain objects of value, are systematically overlooked.
- II. Key levers to ensure that these alternative mechanisms are used effectively include:
 - Align policy frameworks for example, set priorities and requirements in overarching national policies which ensure key social and cultural values or objects of value are taken into account.
 - Provide contexts for example, create public consultation contexts in which certain kinds of value will be surfaced, or objects of value considered.
 - Improve processes e.g. ensure consultation questions frame objects of value in ways that invite the articulate of key values.
- 12. An evidence-based catalogue of social and cultural values also provides a basis on which to anticipate risks and opportunities arising from changes in public opinion. Social and cultural values may be widely *available* within a society or culture but not, at any given moment, widely *used*. It is not always possible to predict how patterns of use *will* change in response to policies (e.g. forest privatisation, neonicotinoid pesticide policy); but an evidence-based

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understanding of underlying social and cultural values makes it possible to develop and explore scenarios of how they *could* change and develop responses accordingly.

Summary

The National Pollinator Strategy set out eleven evidence actions which Defra committed to take forward, including three actions focused on understanding of the economic and social value of pollinators. The current project takes forward the third of these evidence actions, and addresses the question of social and cultural values.

Specifically, the project aimed to enhance understanding of the social and cultural values of pollinators, and to improve the way in which these values are taken into account in policy development, decision-making and evaluation at a variety of spatial scales.

At a more general level, the project set out to contribute to Defra's wider work on valuing natural capital, and to the development of approaches and methods to help take the social and cultural value of other aspects of the natural environment into account more effectively in policy- and decision-making.

The project also aimed to inform communication with public and other audiences, and to help to ensure that future policy interventions and engagement activities are as targeted and effective (and cost effective) as they can be, and thus have greatest impact.

The project was structured around two parallel strands:

- The research strand aimed to enhance understanding of the social and cultural values of pollinators. A programme of in-depth qualitative, interpretative, creative and participatory research was undertaken, using a mix of methods: interviews, discourse analysis, art ethnography, participatory workshops, and workshops with children.
- The application strand aimed to explore in more detail how the values identified might be taken into account in policy development and other decision-making at a variety of spatial scales. Interviews were carried out with key informants involved at national and local level in policy- and decision-making with a bearing on pollinating insects. A review of existing frameworks for taking into account social and cultural values was also undertaken.

The social and cultural values of pollinating insects

How we value any object depends on the perspective we take on it. Consider, for instance, the different perspectives from which the participants quoted below understand and value bees.

I love hearing bees. [...] I love that sound, that buzzy, busy sound, I find that very relaxing, other people working, or other things working, so that's nice.

I'd never kill a bee, because we get quite a few in the conservatory, I always catch them and put them out because I'm aware, in fact bees you see, I depend an awful lot, I know you... if all the bees went... we, I'm not quite sure what, but I know that we'd be in trouble.

He was struggling out there, and I put a little bit of sugar in the water, put it in the syringe, put two droplets out there, and within two minutes he's flown off. [...] It's just natural. It just came natural.

I do like seeing bumblebees on flowers because I just think it's the contrast of sometimes the colours.

I'm not bothered by them really. They just... you can't get rid of them, can you? [...] as long as they don't land on me, then I'm quite... I'm more than happy.

You're annoyed by the bees. [...] You're always scared to be stung. [...] Wasps and bees. Anything flying can sting you is annoying. [...] My partner, she's allergic to bee stings.

The bumblebee is certainly in my psyche and I think typically is, sort of, considered to be a, kind of, affable, sort of, pleasant insect, even though it stings. [...] A wasp is typically likely to be a bit more aggressive, you're more likely to get stung by a wasp.

Each participant understands 'the bee' from a different perspective and in a different capacity. The value they attach to 'the bee' varies accordingly, as does the behaviour that follows.

Perspectives such as these can be *shared* across a community or society, and available for individual members to use on specific occasions. In this report, we use the term 'social and

Pollinating inse	cts understood	and valued in their capacity as
	as they present themselves to direct experience	Beautiful objects Fascinating creatures Objects of a different kind of experience
	as providers of goods to humans	Useful (or harmful) things
	as objects of human stewardship	Signifiers of achievement
	as participants in a greater, interconnected whole	Manifestations of the greater whole Creatures with a purpose Creative connectors
	as participants in a greater, interconnected whole in which humans also participate	Reminders of our own place in nature Signifiers of damage or recovery Focal points of responsibility and action Focal points of nostalgia for an idealised past
	as analogous to human beings	Creatures with lives Creatures with characters Partners in relationships

cultural value' to describe the way in which an object is valued when understood from one of these shared perspectives.¹

The table on the previous page summarises the shared perspectives we have found being used to understand and value pollinating insects, and the associated capacities in which pollinating insects are understood and valued. A brief overview of the associated types of social and cultural value follows:

Beautiful objects. Living things can be objects of aesthetic appreciation, and pollinating insects are no different in this respect. It is not just the colours of pollinating insects which are appreciated aesthetically, but also their characteristic movement and sound.

Fascinating creatures. Living things can be inherently fascinating to watch. Evidence of this perspective was strongest among children.

Objects of a different kind of experience. When adults do find time to indulge in the experience of watching with fascination an insect or other living thing, the focus of their attention can shift to the act of observation itself, and the pleasant *contrast* between this contemplative frame of mind and the day-to-day stresses of adult life.

Useful (or harmful) things. There is a long history of human beings valuing living creatures in their capacity as useful providers of goods and services. The honeybee has been prized since antiquity for its provision of honey and wax. Recent campaigns to raise awareness of the importance of pollinators, such as Bees' Needs, have tended to position pollinators in this way, highlighting their provision of services/goods to human beings.

Signifiers of achievement. Stewardship of living things brings pleasures of its own. As such, living things can become detached from the usefulness that originally made them objects of stewardship, and instead understood and valued as signifiers of achievement. For those who take action to provide habitats for insects (pollinating or otherwise), similar feelings of personal satisfaction may be associated with seeing the insects they have created a home for.

Manifestations of the greater, interconnected whole. There is also a long history of valuing living creatures as manifestations of a greater, interconnected whole in which they participate. This manifestation of an enduring greater whole in a detail can acquire an explicitly religious significance. Even when it does not, it may evoke a sense of awe and wonder at the operation of natural processes.

Creatures with a purpose. Understood as participants in a greater, interconnected whole, living things may also be valued for the *job* they do in keeping that greater whole functioning.

Creative connectors. Pollinating insects play a very particular kind of role in the greater, interconnected whole: as creative connectors. Indeed, 'pollinator' and 'creative connector' are so closely linked from a social and cultural perspective that at times they are effectively synonymous. This is a role which, *by its nature*, *draws attention to the greater whole* – and therefore prompts a more holistic perspective.

Reminders of our own place in nature. Seeing living things as participants in a greater, interconnected whole can raise a question for a human observer: what is my place, our place, in this whole? The sense that one also has a place is associated with positive emotions of groundedness and calm.

¹ Note that, in this report, we do not attempt to distinguish *social* and *cultural* values from each other, but use 'social and cultural' as a single modifier.

Signifiers of damage or recovery. Thinking about humanity's place in the greater, interconnected whole can also prompt reflections on the ways in which we are destabilising the natural processes which sustain it. In the context of these concerns, living things can become powerful signifiers of damage to the environment. The positioning of the decline of bees as an early warning of greater problems is now widespread. However, observations of living things can also provide positive reminders that those natural processes endure, and that the larger whole persists despite the damage caused by human beings.

Focal points for responsibility and action. Our place in the greater, interconnected whole implies not just dependency but also responsibility. Living things such as pollinating insects can become the focal point for actions to attempt to reverse at least a little of the damage done by humans. Seeing things from this perspective may also highlight the fact that, sometimes, our responsibility is to do *less* rather than *more* – to leave space for wildlife, allow natural processes to take their course, find a better balance between the needs of humans and the needs of nature.

Focal points of nostalgia for an idealised past. The decision to play a more responsible role as part of nature can be framed as an individual or a *collective* one. The view that our society has made, or is making, the wrong decisions is widespread. A contrast is often made between modernity and an idealised past when human beings lived in harmony with nature: this contrast cuts across a number of the social and cultural values already identified, and has roots in Romanticism. Honeybees have become a powerful focal point for a discourse of cultural nostalgia for an idealised, traditional way of life.

Creatures with lives. Seen as analogous to human beings, individual living creatures – including insects – can be objects of empathy and compassion. Collectively, living creatures can be considered to have *rights* – to food, to space, or simply to exist

Creatures with characters. As well as empathising with other living things, human beings also have a tendency to project onto them human characteristics. Three broad classes of insects were identified: cuddly bugs, workers, and scary beasts. Bees have long been seen as workers: however, there is plentiful evidence of them now being seen as cuddly bugs – especially bumblebees, on account of their being fat and fluffy.

Partners in relationships. While pollinating insects do not make good candidates for pets, it was striking that there were *any* occasions when participants spoke about them in terms that suggested "friendship" or "companionship".

NOTE: the above are ways of understanding and valuing pollinating insects which are socially and culturally *available* for individuals to use. While this means that they are used at least sometimes and by some people, it does not necessarily mean that they are currently widely used, or used by many people.

Perspectives on pollinators: atomism and holism

To see pollinating insects *as* pollinators is already to understand them in a particular capacity, and from a particular social and cultural perspective. To avoid confusion, we adopt the following convention:

- We use 'pollinating insects' to refer to insects which, as a matter of fact, pollinate, irrespective of the capacity in which they are being understood and valued.
- We use 'pollinators' only in cases where those insects are being understood and valued specifically *in their capacity as pollinators*.

Human beings have been experiencing, reacting to, keeping and in various ways valuing at least some pollinating insects, and in particular the honeybee, for millennia. For most of this time, however, this has *not* been in their capacity as pollinators. As such, it is not surprising that many of the social and cultural values identified relate to pollinating insects in capacities other than *as pollinators*.

Two, however, apply specifically to pollinating insects in their capacity as pollinators:

- First, pollinators may be understood and valued as useful things providers of a vital service to human beings. We describe this as an *atomistic perspective* on pollinators, as it isolates pollinators from the wider natural systems of which they are part, and focuses on services/goods provided to humans. This perspective has been promoted by recent campaigns.
- Secondly, pollinators may be understood and valued as creative connectors participants in a greater, interconnected whole, alongside many other participants, but with a role which, by its nature, draws attention to that greater whole. We describe this as a *holistic perspective* on pollinators, as it shifts attention to the greater whole in which pollinators participate.

As a matter of *logic*, these two perspectives appear to be consistent with each other. While the holistic perspective highlights the role played by pollinators in a greater whole, rather than services/goods provided to humans, it can still be linked to human needs by noting our dependence on that greater whole. Indeed, it could be argued that, while the atomistic perspective aligns closely with the concept of ecosystem *services*, the holistic perspective offers an understanding of these services which is more in tune with the broader ecosystems approach.

Logic aside, however, there are clear patterns of difference in the ways in which these two perspectives are used in practice. While participants were aware of the atomistic perspective, they tended not to adopt it and state with commitment that they valued pollinators as useful things, but instead to quote it and observe without commitment that they had heard they ought to value pollinators as useful things. This is in contrast to the holistic perspective, which participants adopted confidently and with commitment.

Indeed, participants tended to *default* to the holistic perspective, even in response to questions specifically focusing on pollinators and pollination. This is because the relationship of pollinators to the whole is less like the relationship of a cog to a machine – the cog alone provides no clues as to the nature of the machine from which it has been isolated – than like the relationship of a detail to a larger part of a fractal – the detail recapitulates at a smaller scale the characteristics of the whole, in this case its connectedness and creativity. The unique role that pollinators play as creative connectors draws attention, *by its nature*, to the greater whole in which they are participants (the holistic perspective). By contrast, the role of pollinators does *not* draw attention in the same way to services to human beings (the atomistic perspective). Hence, when asked to look at or think about pollinators, what participants *saw* was creative connectedness – and *not* services provided to humans.

Adopting the holistic perspective also opens up the powerful meanings and sources of value associated with holism. Seen from this perspective, pollinators and other living things are manifestations of the greater, interconnected whole; creatures with purpose; reminders of our own place in nature; signifiers of damage and recovery; focal points for responsibility and action; and focal points for nostalgia for an idealised past. By contrast, the atomistic perspective can seem cold and sterile, implying little beyond a bald statement that pollinators provide an important service.

The tension between the holistic and atomistic perspectives has deep historical roots. In particular there are strong points of connection between the holistic perspective and Romanticism, and the Romantic critique of analytical and atomistic Enlightenment thinking. Key figures in Romantic science include Alexander von Humboldt, often considered one of the fathers of modern ecology. It is not Enlightenment science that is rejected by the Romantics, but the pretensions of that science to completeness, and its refusal to countenance the possibility of other ways of understanding and valuing nature. In a similar way, it is not logical inconsistency that brings the atomistic and holistic perspective on nature into conflict, but a perception that all other perspectives, including the holistic perspective, can and must be reduced without loss to an atomistic focus on usefulness to human beings.

In The Master and his Emissary: the Divided Brain and the Making of the Western World, lain McGilchrist (2009) advances an argument which suggests the tension between holistic and atomistic perspectives may be underpinned by human anatomy: specifically the separation of the brain into two hemispheres. On the basis of extensive evidence, McGilchrist argues that the two hemispheres can be thought of as having different *perspectives*, with strong parallels to the holistic (right hemisphere) and atomistic (left hemisphere) perspectives.

The 'popular bee'

Compared to other pollinating insects, bees occupy a central position in our participants' responses, in the materials reviewed in the discourse analysis strand, and in our culture more widely. The social and cultural category of bees, however, does not coincide neatly with taxonomic boundaries. In particular, popular ideas of the bee may confuse honeybees and bumblebees, while overlooking the existence of other kinds of bee entirely.

The 'popular bee' is not a *real* insect, being as it is a product of a blurring of species, idealisation of the past, ignorance of the diversity of pollinators and, frequently, a shaky grasp on what pollination actually means. It is, however, a very *meaningful* insect:

- a creative connector, fulfilling a role which, by its nature, draws attention to the greater, interconnected whole of which it is part
- a creature which signifies, through its decline, the damage caused to nature by human activity; and through its presence, the endurance of nature despite human damage
- a symbol of an idealised past in which we lived more in tune with nature
- an object of stewardship and care for nature actions through which we can reconnect to nature, and to our collective and personal pasts and an indicator of the good we achieve by such acts of stewardship
- a focal point for experiences of groundedness, calm and wellbeing linking feelings of being in the moment to a sense of our place in nature and in the narrative of humanity
- the provider of one of nature's sweetest gifts honey
- a fluffy, fat, friendly creature which is both cuddly and hard-working

Implications for communications

Social and cultural values provide a powerful resource for effective communications, a store of pre-existing meanings and associations that can be used to frame messages. Communications should work *with* the social and cultural grain, activating perspectives that are already out

there, if latent – rather than trying to work *against* the grain and foster entirely new ways of understanding and valuing the world.

Pollinator campaigns

National campaigns to promote awareness of pollinators, both by Defra and by other organisations, currently tend to emphasise the atomistic perspective and highlight pollinators in their capacity as useful things, providing services/goods to humans. As such, campaigns are missing out on an opportunity to tap into the holistic perspective – a perspective that is more readily prompted by pollinators, more emotionally resonant, and more deeply rooted in our society and culture. Making greater use of the holistic perspective would suggest the following principles for the development of campaigns:

- Highlight first and foremost the critical role played by pollinators as creative connectors in a greater, interconnected role
- Acknowledge our dependency on that greater interconnected whole, but also our responsibilities as participants in it
- Be willing to embrace and use non-scientific language, ideas and tonalities in talking about both pollinators and the interconnected whole of which they are part, for example:
 - spiritual/religious language in evoking feelings of awe and wonder at the greater interconnected whole
 - evocations of an idealised, traditional way of life, and the possibilities of reconnecting in some small way
 - o metaphorical characterisations of pollinators as spreading life and love
- Recognise that we face choices about the environment not just as individuals, but as a society; that people see evidence of our society as a whole making the wrong choices; and that the actions of any body seeking to campaign about pollinators will speak as loudly, if not louder, than the messages it promotes
- Emphasise in messages, but also in developing the *case* for a campaign the link between the holistic perspective, subjective wellbeing, and reconnection:
 - reconnection with nature: the consolation of knowing that one has a place in an enduring, greater whole, and a responsibility to play a positive role in that whole
 - reconnection with self: the experience of a moment of self-aware contemplation in contrast to the day-to-day stresses of life
 - o reconnection with history: a sense of contact with an idealised traditional way of life

The 'popular bee' provides a perfect flagship species for pollinator awareness. On the other hand, the use of the bee as a flagship species carries a clear risk of crowding out other pollinating insects from consideration.

The development of a full campaign strategy making greater use of the holistic perspective is beyond the scope of this project. Work to develop such a strategy would need to consider the implications of this perspective not only for messaging, building on the principles above, but also for objectives, audiences, channels and activities. For example:

- Objectives might be focused on engagement, rather than awareness, with a focus on prompting/helping people and drawing out their own views on creative connectedness.
- Engaging deliberately diverse audiences might help to stimulate thinking around diversity and connectedness.

 Channels and activities might be selected which brought to life the idea of interconnectedness: for example, approaches that involved capturing stories, poems and pictures would create very different experiences compared to, say, the distribution of information leaflets.

Pollinators as flagships for wider issues

Adopting the holistic perspective has larger consequences for the role that pollinators could play in public communications and engagement. In particular, the synecdochic power of pollinators to stand for the greater, interconnected whole of which they are part, and the range of social and cultural values unlocked by the holistic perspective they therefore prompt, makes them ideal flagships for and ways into a wider range of environmental policies and approaches which relate to the *connectedness* of nature: for example, maintaining wider natural connectivity, protecting biodiversity, and ensuring environmental resilience through approaches such as those relating to the concept of landscape level conservation.

Given this, bees and pollinators could play a critical role in delivery of the 25-year plan for the environment, and in particular in efforts to increase public engagement.

This is a timely point. An upsurge in interest in pollinators has been significantly driven by concern about pollinator declines, and in particular colony collapse in domestic bees colonies and related matters such as the role of neonicotinoid pesticides. The synecdochic power of pollinators suggests that – if issues such as these were framed effectively – this upsurge of interest could be amplified and broadened to other issues. A key part of that framing would be to link communications about pollinators to wider communications efforts around biodiversity, natural resilience, and our place in nature.

Using social and cultural values in practice

Our analysis of social and cultural values suggests a number of general implications for communications. For example, these implications should be born in mind in delivery of the 25-year plan for the environment (whether or not bees and pollinators are deployed as flagships for and ways into a wider range of environmental policies, as suggested above).

- The resources to address so-called 'awareness' issues may in fact already exist not in expert knowledge or science papers, but in latent but potent social and cultural values.
- The aim of a campaign which seeks to draw on these latent social and cultural values is not to *educate* so much as to *activate*: to promote the more frequent use, or use by more people, of social and cultural values which are currently available but underused. Achieving this aim will call on techniques and methods which focus less on imparting new knowledge, and more on prompting the use of available templates in discussion or in action.
- Audience research is often used to measure what people already know, understand and value. But audience research can also play a critical role in exploring how people *could* understand and value a topic, especially during the development of a campaign.
- An understanding of social and cultural values provides a starting point for a consideration of the *risks* to a campaign arising from competing social and cultural values.

Implications for policy- and decision-making

Taking account of social and cultural values through economic valuation

This research offers a potential model of how to create an evidence-based catalogue of social and cultural values. The development of an *evidence-based* catalogue of relevant social and cultural values – in this instance, the ways in which people can and do value pollinators in reality – is an essential pre-requisite for valuation. A descriptive catalogue of this kind would also provide the basis for further important, related, but nevertheless distinct tasks, such as:

- Quantification mapping not just what perspectives and values are *available*, but also how often they are *used*, and by whom.
- Explanation drawing on evidence and theory to develop accounts of i) *why* certain perspectives and values are available and/or ii) *why* these perspectives and values are used in certain instances by certain individuals.

A mix of interpretative and participatory methods can be used to explore how, and in what capacities, people can and do value objects of interest (in this research: pollinating insects). In practice, it appears this step is rarely taken; and *de facto* catalogues of social and cultural value are instead based on anecdotes, thought experiments, and theoretical models of economic valuation.

In the absence of such an *evidence-based* catalogue, entire categories of value may be overlooked. For example, to ask a meaningful willingness-to-pay question, for example, one needs to know how to *frame* the object of value in that question: from what perspective, and in what capacity. An evidence-based catalogue of relevant social and cultural values allows a critical review of the evidence on which valuation is based, and the tools used to gather that evidence.

Having developed catalogue of relevant social and cultural values, decisions may be made about the most appropriate approach to taking those values into account. Within the scope of economic valuation, it may be possible and appropriate to monetise some kinds of social and cultural value. Doing so may require thinking about different kinds of exchange other than simple payment – e.g. giving up time and effort.

The concept of subjective wellbeing may be well-suited to thinking about the ways in which pollinating insects can serve as focal points for experiences of reconnection:

- reconnection with self: the experience of a moment of self-aware contemplation in contrast to the day-to-day stresses of life
- reconnection with nature: the consolation of knowing that one has a place in an enduring, greater whole, and a responsibility to live more in harmony with that whole
- reconnection with history: a sense of contact with an idealised traditional way of life

Monetisation may be deemed inappropriate for certain types of social and cultural value: for instance, values which cannot meaningfully be expressed through behaviours involving exchange. For example, it could be argued that experiences of awe or groundedness should be understood as quasi-religious in character, and that monetisation of these experiences (for example, via a measure of subjective wellbeing) does not respect or reflect their spiritual nature. Such non-monetary measures can be incorporated into an appraisal of options using methods such as multi-criteria analysis.

Alternatively, it may be decided that mechanisms other than economic valuation are more appropriate to take certain kinds of value into account (see below). In particular, this may be the case for some non-use values, or for values for which marginal valuation is problematic.

Using social and cultural values as a basis for risk assessment

An understanding of social and cultural values therefore provides a basis on which to develop and explore scenarios, and assess the risks and opportunities arising from possible changes in 'public opinion'. This is because social and cultural values may be widely *available* within a society or culture but not, at any given moment, widely *used*. These patterns of *use* can change rapidly, including in response to policies.

It is not possible to *predict* how patterns of use *will* change in response to policies (e.g. forest privatisation, neonicotinoid pesticide policy); but an evidence-based understanding of underlying social and cultural values makes it possible to develop and explore scenarios of how they *could* change. For example:

- Campaigns or events which moved beyond the current focus on pollinators as service providers and unlocked the social and cultural values associated with a more holistic perspective could lead to a significant mobilisation of public opinion around issues such as, for example, the use of neonicotinoids.
- Setting aside land for pollinator-rich habitats creates opportunities to engage volunteers in creating and maintaining those habitats. Those volunteers may then experience the satisfaction associated with seeing the insects they have created a home for even if they have not anticipated this sense of satisfaction or cited it as a reason for volunteering. Such a volunteer scheme may therefore create value which can only be anticipated on the basis of an understanding of relevant social and cultural values.

Other mechanisms to take account of social and cultural values

In practice, social and cultural values can and do influence policy- and decision-making through mechanisms other than economic valuation, such as public consultation, political representation, open policy-making, or public lobbying and campaigning.

There is a debate to be had about whether social and cultural values *should* influence policyand decision-making through mechanisms such as these.

- On the one hand, it can be argued that social and cultural values need to be brought into the scope of economic valuation to meet the aspiration set out in *The Green Book* of "ensuring that public funds are spent on activities that provide the greatest benefits to society, and that they are spent in the most efficient way". Such mechanisms also run the risk of policy- and decision-making by who-shouts-loudest.
- On the other hand, there may be pragmatic reasons to take the role of such mechanisms seriously, including the technical feasibility and costs/benefits of including different types of value in an economic valuation. Particular issues may arise for some non-use values, and values for which marginal valuation is problematic. There is also a democratic case to be made for the use of appropriate mechanisms which increase the involvement of members of the public in policy- and decision-making as active citizens.

Currently, a key barrier to the social and cultural values of pollinating insects being taken into account via these alternative mechanisms is the fact that pollinating insects are not on the policy- and decision-making agenda in the first place. Factors that can lead to an issue getting onto the agenda include passionate individuals, existing policy and guidance, and public concern.

Steps that could be taken to ensure that the social and cultural values of pollinators are better taken into account via these mechanisms include:

- Aligning policy frameworks: e.g. set priorities and requirements in overarching national policies which ensure key social and cultural values or objects of value are taken into account
- Providing contexts: e.g. create public consultation contexts in which pollinators, and different kinds of relevant social and cultural value, will be considered
- Improving processes: e.g. ensure consultation questions frame pollinators in ways that invite the articulation of key values

Challenges for objectivity

Consideration of social and cultural values raises two important challenges for the idea of an objective valuation.

The first challenge relates to the idea of objective measurement. In theory, objectivity requires finding methods which create an *opportunity* for social and cultural values to be used without *prompting* the use of those values, and therefore biasing the results. In practice, even if using familiar methods such as willingness-to-pay, it is necessary (as noted above) to specify what a respondent is being asked to pay *for*: the question necessarily frames the object of value *in a particular capacity, from a particular perspective,* and therefore prompts the use of one kind of social and cultural value rather than another. Indeed, just by framing the topic in terms of payment, such questions will exclude some perspectives and prompt others. Even markets are social and cultural phenomena, contexts which require from their participants a particular way of understanding and valuing the world around them. These issues are not insurmountable, but they do require careful thought and judgement. The development of an evidence-based catalogue of social and cultural values could provide a useful starting point for addressing issues such as these.

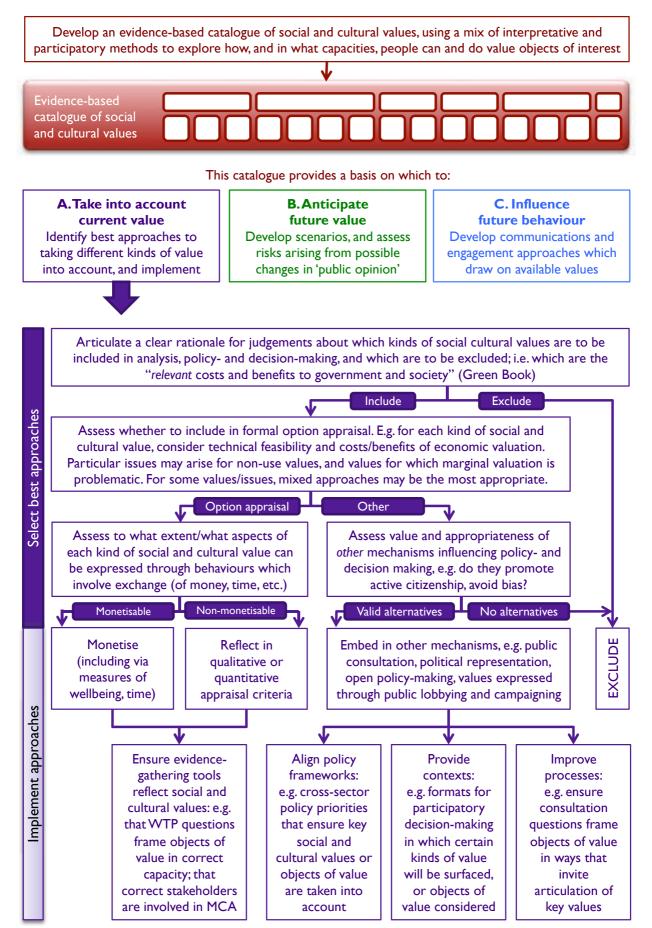
The second challenge relates to the question of whether some social and cultural values should be excluded from policy- and decision-making altogether. For example, should the fact that people like bumble bees because they are "fluffy" really be a consideration in public policy- and decision-making? It is probably impossible, and almost certainly impractical, to take into account every single kind of value in policy- and decision-making. The objective, value-free 'view from nowhere' is not attainable.

As such, it will always be necessary for policy- and decision-makers to make judgements about what kinds of value to exclude which will themselves, unavoidably, be made from a particular perspective, and therefore value-based. These judgements, and the perspective and values which underpin them, should be clearly articulated in a form that allows others to contest them.

Taking social and cultural values into account: an evidence-based approach

Stepping back from the specific topic of pollinating insects, we propose a generalised, evidencebased approach to taking social and cultural values into account. The starting point is the development of an *evidence-based* catalogue of social and cultural values relevant to particular objects of interest. The flowchart on the next page shows how such a catalogue provides the basis to develop a robust, reasoned and contestable approach to assessing current values – as well as a starting point for anticipating future values, and also for influencing future behaviour.

Taking social and cultural values into account: an evidence-based approach



Introduction

Context and aims

Defra published the National Pollinator Strategy (NPS) in November 2014, following a consultation which ran from 6th March to 2nd May 2014. The final Strategy aims to deliver across five key areas:

- Supporting pollinators on farmland
- Supporting pollinators across towns, cities and the countryside
- Enhancing the response to pest and disease risks
- Raising awareness of what pollinators need to survive and thrive
- Improving evidence on the status of pollinators and the service they provide

In relation to supporting pollinators across towns, cities and the countryside, the NPS aims to encourage the public to take action in their gardens, allotments, window boxes and balconies to make them pollinator-friendly or through other opportunities such as community gardening and volunteering on nature reserves.

In relation to raising awareness, the NPS includes the following priority actions for government and others:

- Promote the Bees' Needs advice to all land managers through a wide range of channels
- Develop and promote detailed evidence-based advice for farmers, land managers, gardeners and members of the public on how to support pollinators
- Advise members of the public to consider specific actions to provide nectar and pollen, and other resources such as shelter and nest sites

The NPS states that the core of Defra's approach will be to continue promoting the Strategy's Call to Action for all land managers in towns, cities and the countryside, including gardeners.

In relation to improving evidence, the NPS sets out eleven evidence actions which Defra committed to take forward, including three actions focused on understanding of the economic and social value of pollinators. The current project takes forward the third of these evidence actions, and addresses the question of social and cultural values.

Specifically, the project aimed to enhance understanding of the social and cultural values of pollinators, and to improve the way in which these values are taken into account in policy development, decision-making and evaluation at a variety of spatial scales.

At a more general level, the project set out to contribute to Defra's wider work on valuing natural capital, and to the development of approaches and methods to help take the social and cultural value of other aspects of the natural environment into account more effectively in policy- and decision-making.

The project also aimed to inform communication with public and other audiences, and to help to ensure that future policy interventions and engagement activities are as targeted and effective (and cost effective) as they can be, and thus have greatest impact.

Project structure

The project was structured around two parallel strands:

- The research strand aimed to enhance understanding of the social and cultural values of pollinators.
- The application strand aimed to explore in more detail how the values identified might be taken into account in policy development and other decision-making at a variety of spatial scales

The table on the next page provides a summary overview of the primary research activities undertaken within these two strands. Full details of the methods used are provided in the Appendix. The rationale for recruitment choices *across* the research strand methods is discussed in the next section.

The research strand

A programme of in-depth qualitative, interpretative, creative and participatory research was undertaken, using five different methods: interviews, discourse analysis, art ethnography, participatory workshops, and workshops with children. Full details of each of these methods are provided in detail in the Appendix.

The value of using a mix of methods is highlighted by the synthesis report of the UK National Ecosystem Follow-on project (UK National Ecosystem Assessment, 2014): "A mixed method approach is required to elicit the multiple dimensions of shared values and to translate deeperheld, transcendental values into contextual values and preferences." Two key considerations drove our selection of methods for the research strand:

- The need to explore both individual values and collective values.
- The value of mixing less participatory methods, in which researchers gather and analyse evidence, with more participatory methods, in which research participants are themselves involved in the processes of gathering and making sense of evidence.

Neither of these distinctions should be seen as absolute, and the methods selected cut across them in various ways. The four methods used for the research with adults, however, usefully emphasised one element of each distinction, as represented in the table below:

	Individual focus	Collective focus
Less participatory	Interviews	Discourse analysis
More participatory	Art ethnography	Participatory groups

Over and above this, specific work was undertaken with children. For practical reasons, research with children is rarely carried out alongside work with adults; however, we were keen to incorporate exploratory work on children's values as part of our overall programme, as we believe this audience is critical to the long-term engagement of society with the needs of pollinating insects.

A strategy for recruitment across the three research methods involving qualitative research with adults – interviews, art ethnography and participatory groups – was agreed with Defra. Given that the focus of this strand was on understanding and articulating the social and cultural values of pollinating insects, it was agreed that there was little, if anything, to be gained from

What?	Why?	Who?	How many?	
Research strand				
Participatory groups (whole day workshops)	Designed to explore collective values using more participatory methods.	Individuals with interest and expertise in pollinators Individuals with a connection to the site where the workshop took place Other local community members	18 in each of two locations. Total: 36	
Art ethnography projects (6-8 weeks)	Designed to explore individual values using more participatory methods	Individuals actively involved in the interest of pollinators in some way Also, as co-researchers, artists (composers, sculptor)	3 participants in each of two locations. Total: 6	
Discourse analysis	Designed to explore collective values as expressed in popular cultural forms of many kinds, from advertising to home decor to children's' books and beyond.	Samples drawn from popular sources such as advertisements, magazine features and social media postings, and a smaller number of specialist sources such as academic articles.	Visuals and copy from around 350 items in total	
Interviews (I hour, in- home)	Designed to explore individual values, in context of understanding how interviewees experienced, made sense of and found value in pollinating insects.	Individuals with limited engagement, recruited using the Tiering Study in Christmas et al. (2013); participants were recruited from Tiers I and 3.	Total: 20	
Workshops with children 2 x short workshops	Designed specifically to explore the responses of children.	Children aged 8-11 years (Key Stage 2) at two separate primary schools.	8 children at each school. Total: 16	
Application	Application strand			
Key informant interviews	Designed to explore the realilty of policy- and decision-making in relation to pollinators	Individuals involved in at national and local level in policy- and decision-making with a bearing on pollinating insects.	Total: 9	

Summary overview of primary research methods

talking to individuals who place *no value* on pollinating insects. Screening out those from whom little can be learned is good practice in qualitative recruitment. Building on this insight, our approach to recruitment was based on two distinctions:

- To what do individuals attach value?
 - Pollinating insects or pollinator-rich habitats specifically?
 - 'Nature' more generally?
- To what extent is this reflected in *action*?²
 - o Taking action at a level that requires some effort
 - Appreciating, enjoying, supporting, and low effort action

Clearly, neither of these distinctions is entirely clear-cut; and both represent a spectrum not a simple binary divide. Nevertheless, these distinctions provided a *pragmatic* basis for planning recruitment across the methods, illustrated in the schematic below.

-			
To what extent is this reflected in action?	Action	Individuals taking action on 'nature' more generally, e.g. in relation to biodiversity	Individuals taking action specifically on pollinating insects or pollinator-rich habitats
o what extent is this	Appreciation	Individuals who appreciate, enjoy and care about 'nature'	Individuals with an appreciation specifically of pollinating insects or pollinator-rich habitats
F		Nature	Pollinating insects
		What do people value?	

Using this framework, the following approach to recruitment was adopted:

- Art ethnography work was undertaken with individuals in the *top right-hand quadrant*. A range of different domains and types of action on pollinating insects and pollinator-rich habitats was covered, including gardening, farming, conservation and beekeeping.
- Participatory groups involved a *spread* of individuals across all four quadrants. This allowed the groups to explore the collective values articulated in the interaction between these different types of individual.
- Interviews were undertaken with individuals from the lower half of the schematic, using the Tiering Study developed by Christmas et al. (2013) as the basis for recruitment.

² This distinction was inspired by the Tiering Study undertaken by Christmas et al. (2013).

Recruitment for these three strands was focused in one urban area (Bristol) and one rural area (the Marlborough Downs). These locations were identified as areas in which it would be possible, through existing networks, to identify individuals in the upper quadrants of the schematic. Moreover, locations were selected with a view to the recruitment not only of participants in the research strand, but also locally based key informants for the application strand across a range of key settings for policy- and decision-making important for activity under the National Pollinator Strategy (see below).

The application strand

9 interviews were completed with key informants involved in at national and local level in policy- and decision-making with a bearing on pollinating insects. The roles of these interviewees spanned three key settings for policy- and decision-making identified as important for activity under the National Pollinator Strategy.

- Public spaces, such as parks
- Farmed land
- Roadsides and the verges of other transport networks specifically with a view to enhancing connectivity

Local key informants were recruited in the same urban and rural areas where qualitative research took place (Bristol and the Marlborough Downs). Recruitment for these interviews was challenging, reflecting, we believe, the relatively low priority which pollinating insects currently have in policy- and decision-making beyond the National Pollinator Strategy.

In parallel, a review was undertaken of existing frameworks for taking into account social and cultural values, and in particular the approaches presented in the UK National Ecosystem Assessment (NEA) and National Ecosystem Assessment Follow-on (NEAFO).

Reflexive analysis

The team assembled to develop this project combined experience in the rigorous use of qualitative and interpretative research methods with expertise in communications and in environmental policy.

As a team, we have challenged ourselves to understand and articulate the wide range of social and cultural perspectives apparent in our evidence. However, the rigorous use of qualitative and interpretative methods also requires acknowledgement of the perspectives of the researchers, and the ways in which they may have shaped the understanding of the evidence that those researchers arrive at.

In light of this, it should be acknowledged that we are all university educated, middle class, white European, and broadly pro-environmental in our attitudes – although, with the exception of one expert member, none of us were unusually knowledgeable about pollinators prior to the beginning of the project. Our interpretation of the evidence, and our approach to structuring that interpretation, may have been shaped to some extent by this shared cultural and class perspective.

Simon Christmas Ltd

FINDINGS

I. What are social and cultural values?

In this chapter, we set out our understanding of the term 'social and cultural values', in an effort to avoid the kind of failings identified by Kenter et al. (2014): "a lack of clarity of meaning, a fuzziness of concept and an interchangeability in usage with regard to the terms shared, cultural, social and plural values." We also clarify our use of terms such as 'pollinating insects', 'pollinators' and 'bees'. As such, the chapter provides essential context for the rest of the report.

I.I Valuings and objects of value

At the heart of the construct of value is a connection between value and behaviour.

- On the one hand, *value shapes behaviour*.³ Specifically, the value assigned by an individual to possible objects of value shapes the way in which s/he allocates finite resources, such as time, energy, assets, money, attention, commitment, affiliation, and so forth.
- On the other hand, *behaviour demonstrates value*. Specifically, any behaviour which involves the allocation of finite resources demonstrates the value assigned by that individual to possible objects of value.

Behaviours which demonstrate value assigned to objects include: paying for them; giving up other valued objects for them; making time for them; caring for them; contemplating them; praying for or venerating them; working for them; fighting for them; taking risks for them; or even, in extreme cases, dying for them. For simplicity, we shall refer to all of these different types of behaviour which demonstrate the value an individual assigns to an object as 'valuings'.

It could be argued that *any* behaviour can be understood as a valuing, since any behaviour represents an allocation of time and energy that could have been expended on other behaviour. In some cases, however, the allocation is minimal. For example, this is the case for some valuings which take the form of speech behaviour, such as saying (in the absence of a contract): "I would be willing to pay £100 for this". Resource-light *statements* of value are not always matched by other, more resource-intensive behaviours, an observation which helps to explain the so-called *value-action gap* (which might more accurately be called a stated-value-demonstrated-value gap).

As the wide range of valuings indicates, possible *objects of value* are also extremely diverse (at least in everyday usage), and include: particular objects, people, or places; categories of object, people or place; behaviour – both particular behaviours and consistent patterns of behaviour (such as honesty); experiences; mental and physical states; relationships; abstract qualities; beliefs and ideals; identities; freedoms; and so forth. Among these many possible objects of value we may list pollinating insects.

³ Note that this is not to say that value *determines* behaviour. Many other factors have a bearing on behaviour, including capability and opportunity.

I.2 From valuings to values

Valuings are discrete behaviours which demonstrate the value an agent assigns to an object. However, the value assigned by an agent to an object *on a specific occasion* reflects a range of situational factors, as noted by Mace et al. (2011) in the conceptual framework chapter of the *UK National Ecosystem Assessment* (NEA):

the value of many goods is context specific and varies over time and space. This is true of a great variety of goods (e.g. the value of a bottle of cold freshwater is greater on a hot day) and those derived from ecosystem services are certainly no exception.

Across many such valuings it may be both useful and appropriate to identify consistencies. Such consistencies are typically described using the term "value" as a countable noun – i.e. in ways that allow use of the plural form "values". For example:

- Individual values are consistencies across many distinct valuings of different types of object by the same individual.
- Market values are consistencies across many distinct valuings of the same type of object by different individuals, with the condition that the valuings in question are limited to certain kinds of exchange behaviours.
- Non-market values are consistencies across many distinct valuings of the same type object by different individuals, derived in contexts where relevant exchange behaviours do not occur.

Different kinds of value, that is, reflect consistencies across different ranges. (As such, it should come as no surprise if different types of value cannot simply be *added up*, even though the countable noun "value" is being used in the same sense in each case.)

What kind of consistencies, then, are social and cultural values? To answer this question, it is necessary to look more closely at the situational factors which shape the value assigned to an object on a specific occasion.

I.3 Perspective

One very important situational factor which shapes the value assigned to an object by an individual on a specific occasion is the *perspective* adopted by that individual on that occasion, and the *capacity* in which s/he therefore understands the object.

Consider, for example, a typical exchange on the BBC show *The Antiques Roadshow*. This involves multiple valuings, as the same object is understood from different perspectives and in different capacities. At the end of each exchange, for example, the expert values the object from the perspective of a professional valuer, in its capacity as an item which might be sold at auction. Prior to that, however, the same expert may have valued the object from the perspective of a connoisseur, in its capacity as a link with the history of a particular artist or craft; or from the perspective of the presenter of a programme with a local focus, in its capacity as an item linked to local history. There may be a striking disconnect between the expert's enthusiasm for a piece understood in these capacities and the estimated sale value subsequently assigned to it. In parallel, meanwhile, the owner of the object may also have explained how they value the object from the perspective of a private individual, in its capacity as bearer of personal or family narratives.

An individual may on different occasions assign a different value to the same object (and so behave differently) because s/he understands it from a different perspective and in a different capacity. Moreover, since human beings are capable of exploring and comparing more than one perspective at once, the value assigned to an object on a particular occasion may in fact result from a (more or less conscious) process of weighing, combining and trading-off of multiple perspectives of this kind. For example, the behaviour of owners after their interaction with an expert on *The Antiques Roadshow* – do they sell it, give it to a local museum, keep it? – depends in part on a process of trading-off the different perspectives offered.

People do not assign value to objects: they assign value to objects-understood-from-aperspective, or objects-understood-in-a-capacity. Changing the perspective changes the value assigned to the object.

In exactly the same way, the value a person assigns to a bee s/he encounters on a particular occasion depends on the perspective from which and capacity in which s/he understands that bee. Consider, for instance, the different perspectives from which and capacities in which the participants quoted below are understanding bees, the different value they therefore assign to them, and the different behaviours that ensue.

I love hearing bees. [...] I love that sound, that buzzy, busy sound, I find that very relaxing, other people working, or other things working, so that's nice.

I'd never kill a bee, because we get quite a few in the conservatory, I always catch them and put them out because I'm aware, in fact bees you see, I depend an awful lot, I know you... if all the bees went... we, I'm not quite sure what, but I know that we'd be in trouble.

He was struggling out there, and I put a little bit of sugar in the water, put it in the syringe, put two droplets out there, and within two minutes he's flown off. [...] It's just natural. It just came natural.

I do like seeing bumblebees on flowers because I just think it's the contrast of sometimes the colours.

I'm not bothered by them really. They just... you can't get rid of them, can you? And they don't, kind of... as long as they don't land on me, then I'm quite... I'm more than happy.

You're annoyed by the bees. [...] You're always scared to be stung. [...] Wasps and bees. Anything flying can sting you is annoying. [...] My partner, she's allergic to bee stings.

The bumblebee is certainly in my psyche and I think typically is, sort of, considered to be a, kind of, affable, sort of, pleasant insect, even though it stings. [...] whereas a wasp is typically likely to be a bit more aggressive, you're more likely to get stung by a wasp.

1.4 Defining social and cultural values

Perspective is at the heart of our definition of social and cultural values. Whereas market and non-market values are identified by holding *objects* constant and allowing everything else (individuals, perspectives, situations) to vary; and individual values are identified by holding *individuals* constant, and allowing everything else (objects, perspectives, situations) to vary; social and cultural values are identified by holding *perspectives* constant.

For any of these various types of value (consistencies), it is reasonable to ask: what actually *are* these values, and how do they relate to distinct valuings. For example:

- Individual values might be thought of as psychological factors "in the head" of the individual, exerting a causal influence on valuings (behaviour) although this is not the only possible interpretation.
- Non-market values, by contrast, might be thought of as mathematical abstractions, derived for use in valuation but with no causal influence on valuings although again, this is not the only possible interpretation.

What *are* social and cultural values? We propose that they should be conceptualised as emergent properties of a complex system of interacting individuals (a social or cultural group), and that as such they both *reflect* and *sustain* consistency in valuings across those individuals. It is this relationship to a social or cultural group which explains why they are described as *social and cultural* values.

Our proposal can be illustrated by means of an analogy with the meanings of words in a language such as English. Words are used with shared, stable (if not unchanging: see §10.2.1) meanings, which may be consistent across all English-speakers, or limited to particular subgroups, or to particular settings. On the one hand, these shared, stable meanings clearly *reflect* consistencies in past uses of words. On the other hand, they also act as templates for future uses, and thus help to *sustain* those consistencies. Of course, this does *not* mean that these shared, stable meanings exist as supra-personal entities exerting a causal influence on individual behaviour. Thanks to the operation of interpersonal influence mechanisms such as learning, copying, and correcting, however, it *looks as if* such supra-personal entities existed. The meanings of words, which both reflect and sustain consistency of use, are emergent properties of this complex system of interacting individuals. (Note that the arrival of dictionaries in recent centuries, recording and ordering these emergent properties, has merely supplemented these pre-existing mechanisms of learning, copying and correcting.)

Social and cultural values are the products of analogous dynamics. Like the meanings of words, such values are emergent properties of a complex system of interacting individuals who influence each other through mechanisms such as learning, copying and correcting. On the one hand, they *reflect* consistencies in past valuings. On the other hand, they act as templates for future valuings, and thus help to *sustain* those consistencies. It is *as if* they existed as suprapersonal entities shaping individual behaviour, even though of course they do not. (By extension, our efforts to record and order these emergent properties in the chapters that follow are analogous to the efforts of early lexicographers.)

We therefore offer the following summary definition of social and cultural values:

Social and cultural values are shared, socially and culturally available templates for understanding and valuing objects, which may be used by particular individuals in their valuings of particular objects on particular occasions, and which both reflect and sustain consistency in these individual valuings. They represent consistent, shared perspectives on objects, from which those objects are therefore understood and valued in consistent capacities.

Note that, in this definition, we make no distinction between *social* values and *cultural* values, but treat '*social and cultural*' as a single modifier. Whether and how the complex systems called *societies* and *cultures* behave differently is beyond the scope of this report.

I.5 Social and cultural values and pollinating insects

In the chapters that follow, we catalogue the social and cultural values we have seen being applied to pollinating insects in England. These are templates for understanding and valuing

pollinating insects which are socially and culturally available for individuals to use. Note that, while this means that they are used at least sometimes and by some people, it does *not* necessarily mean that they are currently widely used, or used by many people. For further discussion of the distinction between *availability* and *use* and its practical implications, see Chapters 9 and 10.

We distinguish these social and cultural values by identifying in each case the *capacity* in which pollinating insects are understood and valued. For ease of presentation, these are grouped into six broad clusters, based on underlying patterns in how pollinating insects are being understood in each case. The table below shows the overall structure.

Pollinating insects understood		and valued in their capacity as
	as they present themselves to direct experience	Beautiful objects Fascinating creatures Objects of a different kind of experience
	as providers of goods to humans	Useful (or harmful) things
	as objects of human stewardship	Signifiers of achievement
	as participants in a greater, interconnected whole	Manifestations of the greater whole Creatures with a purpose Creative connectors
	as participants in a greater, interconnected whole in which humans also participate	Reminders of our own place in nature Signifiers of damage or recovery Focal points of responsibility and action Focal points of nostalgia for an idealised past
	as analogous to human beings	Creatures with lives Creatures with characters Partners in relationships

As noted above, the social and cultural values catalogued in this report were identified *in England*. It is possible, even probable, that other social and cultural patterns would be found in other cultures – or indeed among minority groups living in England but not represented in this research (see § 10.1.1 for more on the ways in which the catalogue presented in this report may be incomplete).

A recent review of pollinators for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2016) highlights the importance of this kind of culturally situated knowledge in an understanding of value:

Diverse knowledge systems, including science and indigenous and local knowledge, contribute to understanding pollinators and pollination, their economic, environmental and socio-cultural values and their management globally.

It is all too easy to overlook the fact that developed nations such as England have their own "indigenous and local knowledge", in the form of popular and lay understandings and perspectives – heavily influenced by "science", perhaps, but nonetheless distinct. In the context of the IPBES work, this report may be understood as an exploration of the contribution of "indigenous and local knowledge" *in England* to an understanding of the values of pollinating insects.

1.5.1 "Pollinators" and "pollinating insects"

It is important to emphasise at the outset that to see pollinating insects as pollinators is already to understand them in a particular capacity. The same insects can be understood and valued in other capacities – as we saw in 1.3, for example, in the case of participants' encounters with bees.

In this report, we shall adopt the following convention:

- We will use 'pollinating insects' to refer to insects which, as a matter of fact, pollinate, irrespective of the capacity in which they are being understood and valued.
- We will use 'pollinators' only in cases where those insects are being understood and valued specifically *in their capacity as pollinators*.

This important distinction appears to be widely overlooked. For example, IPBES (2016) use the term "pollinators" in a way that clearly covers both senses distinguished above.

Human beings have been experiencing, reacting to, keeping and in various ways valuing at least some pollinating insects, and in particular the honeybee, for millennia. For most of this time, however, this has *not* been in their capacity as pollinators. For example, Wilson (2004) states that rock paintings in Valencia showing two people taking a bees nest demonstrate that: "Man had begun hunting for honey in palaeolithic times, at least 10,000 years ago, searching for it in hollow trees and rocks"; while "hive beekeeping began, in Egypt, 4,000 – 4,500 years ago".

By contrast, the understanding of the role played by these insects in plant reproduction is comparatively recent, with the first recorded description of pollination not until the mid 18th Century⁴. It would be extremely surprising if the socially and culturally available templates for valuing these insects understood them only *in their capacity as pollinators* – especially in the case of honeybees, to which great significance has been attached for many centuries.

⁴ One of the earliest known references to insects transporting pollen is in Kölreuter, J.G. (1761-1766) Vorläufige Nachricht von einigen das Geschlecht der Pflanzen betreffenden Versuchen und Beobactungen, Leipzig. However pollination was only discussed in earnest, even in scientific circles, with the work of Charles Darwin in the latter half of the 19th Century.

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Indeed, in *The Hive: the story of the honeybee and* us (Wilson, 2004) – a popular book published only 13 years ago which sets out to tell "the strange and wonderful story of man's relationship with the honeybees, his attempts to master them, his attempts to understand them, his attempts to copy them" – there is only one reference to the role of bees in pollination in 271 pages, as part of a short description of American "agribusiness":

The bee-rental business began in a New Jersey apple orchard in 1909. Now, truckloads of honeybee colonies are heaved all over the United States.

Similar books written about bees today would surely give the topic of pollination more prominence. As the remaining 270 pages of *The Hive* make clear, however, there is plenty to be said about social and cultural values in respect of honeybees, if of no other pollinating insect, without considering them *in their capacity as pollinators*.

Many of the social and cultural values identified in the chapters that follow, therefore, relate to pollinating insects in capacities other than that *as pollinators*. As such, they can also be used to understand and value living things *other than* pollinating insects. In presenting and explaining each of these values, we will therefore draw on examples of their use by participants in respect of other animals and plants, while also indicating how they were applied specifically to pollinating insects.

Two of the social and cultural values listed above are used specifically in relation to *pollinators*: those which understand them as 'useful things' (§3.1) and as 'creative connectors' (§5.3). The relationship between these two perspectives is discussed in more detail in Chapter 8.

Given the diversity of pollinating insects, there may be other capacities in which some such insects *could* be understood and valued. For example, some beetles play a role in pollination, and beetles as a group might be understood and valued in different ways:

I love beetles, I find them interesting because they seem so Jurassic, you know, they seem so ancient, you know, they're throwbacks. [...] They're this, kind of, you know, sort of, armour-plated, slow-moving, you know, creatures that, I don't know, sort of, somehow to me relate more to, yes, an age gone by. [...] You know, stag beetle, kind of thing. Like a very ancient animal to me. I don't know if they are.

With this in mind, we cannot claim to have identified every single capacity in which every single species of pollinating insect may be understood and valued.

1.5.2 Bees

Bees are mentioned often in the chapters that follow, reflecting the important position they occupy in our participants' responses, in the materials reviewed in the discourse analysis strand, and in our culture more widely. Researchers working on the ESRC-funded *Beelines* project describe "our entanglement with the world of the bee", and remark that: "It is unusual for insects to provoke such feelings in us."⁵ In deference to the prominence of the bee relative to other pollinating insects, even Defra's campaign to raise awareness of pollinators is called *Bees' Needs*.

In fact, some of the social and cultural values identified above were used only in relation to bees. For example, bees specifically are understood and valued as focal points of nostalgia for an idealised past (see §6.4.3).

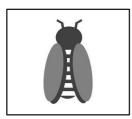
⁵ <u>http://www.beelines.org/about-the-project/</u>, accessed 28/5/2016

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To be more accurate, we should say that it is *honeybees* that are so understood and valued, since the social and cultural value in this case is strongly linked to traditions of beekeeping and the use of honey and other bee products. However, throughout the responses of our participants and the materials reviewed, we see considerable blurring – and often ignorance – of taxonomic boundaries.

Our own loose use of the term 'bee' in what follows therefore reflects sensitivity to the evidence we are reporting, rather than entomological naiveté. Where appropriate, we flag key distinctions – e.g. where a social and cultural value *should* strictly be used only in respect of honeybees, or bumblebees, even if in practice it is used in respect of bees more broadly.

2. ...as they present themselves to direct observation



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as they present themselves to direct observation.

Three key social and cultural values are identified, which understand and value pollinating insects in their capacities as: beautiful objects; fascinating creatures; and objects of a different kind of experience. The third of these

involves a reflexive shift of attention from the object being observed to the act of observation itself, and as such can easily blur with other social and cultural perspectives discussed in later chapters.

2.1 Beautiful objects

Living things can be objects of aesthetic appreciation, and pollinating insects are no different in this respect. As part of the interviews, for example, participants were shown and asked what was going on in a set of pictures of insects on flowers. A number commented on the colours in the pictures – in this case, clearly, what presents itself to direct observation is not an insect in isolation but an insect-on-a-flower.

I do like seeing bumble bees on flowers because I just think it's the contrast of sometimes the colours. I think I'm obsessed with colours to be fair. It's really nice.

I love the colours, I think they're pretty,

The other thing that really comes across is, you know, is the different colours, is the vibrancy. And I think that, as I say, that's one of the best things about the height of summer. You've got all the different colours going on. And you know, all the different activities. The hoverflies, those are lovely. I don't really know what they do.

As the last quotation above indicates in the phrase "all the different activities", it is not just the colours of pollinating insects which may be appreciated aesthetically. Both the characteristic movement and sound of such insects were also identified as pleasant.

Bees and butterflies in particular have long been valued for their aesthetic qualities. The aesthetic value of the butterfly is reflected in their wide used as decorative images used e.g. in jewellery and homeware, as in the extract from a commercial website shown in Figure 1.

The bee has similar aesthetic value, again widely used as a decorative item in jewellery, homeware and particularly kitchenware (see Figure 2).

For the most part, decorative motifs reproduce detailed physical attributes of the bee's anatomy. For example, Royal Mail recently issued a set of highly decorative stamps to celebrate the bee in the UK (see Figure 3). The 2nd Class stamps featured different bee species depicted, with considerable anatomical detail, alongside flowers. It is interesting to contrast the realist aesthetic quality of these stamps with the more sketch-like, almost diagrammatic representations on the 1st Class stamps. The latter move from living things as they present themselves to direct observation to consideration of their functions and relations (see subsequent chapters).



Hand block printed fabric, butterflies,... HelenDarlington £20.00 GBP



Hanging Fabric Butterflies, Door/Wal... BUBobbinsUp £9.00 GBP



Butterflies Cushion Cover Turquoise... CoralHomeAccessories £25.99 GBP



Handmade Fabric Butterlies Set of th... thelovelyletterco £6.00 GBP



Fabric Butterfly Mobile Choose Your ... SugarOwlDesign £32.42 GBP



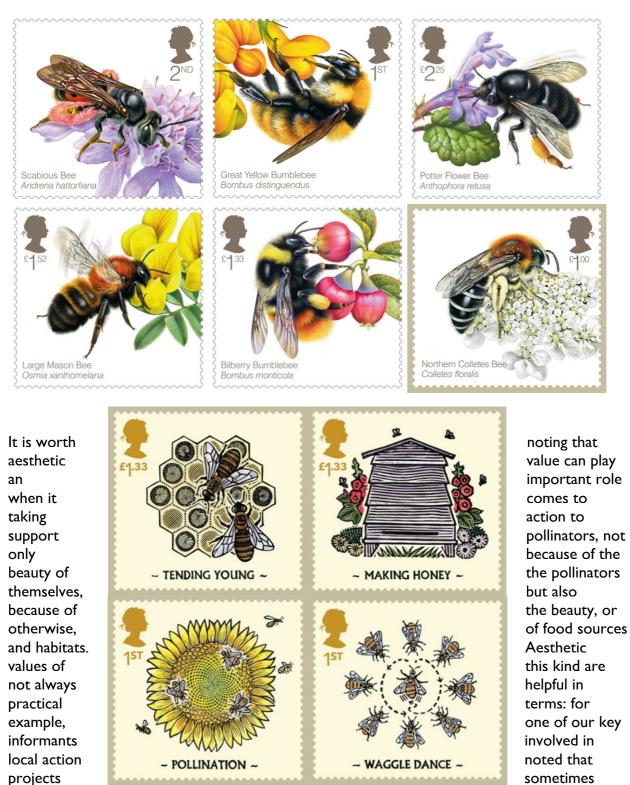


2015 Hot New Products 100 Pieces ... FeltDecorHome £5.40 GBP



Figure 2: Bee motif on kitchenware (photograph by team member)

Figure 3: Royal Mail bee stamps (http://www.royalmail.com/bees)



removed (ugly) brambles to make way for (beautiful) meadows, even though brambles were in fact better for pollinators.

2.2 Fascinating creatures

Living things are not just beautiful to look at: they can also be inherently fascinating to watch. The clearest evidence of this kind of fascination was in children – either noted directly, in our workshops with children (see Figure 4), or via the observations of adult participants regarding their own children.



Figure 4: Drawing from workshop with children

One participant described how having young children had made him far more aware of insects and other 'minibeasts', and contrasted the observational focus of a carefree child with the distraction of a preoccupied adult (see §2.3 for further discussion of this contrast):

I'll suddenly get a tap on the leg and it's a... you know: Daddy, I've found a spider or a woodlouse. Or a beetle. Or any other. [...] I guess I've always been conscious of them [insects etc.], but you just... You see more with children. Because they're seeing it. And you know, they love collecting worms and you know, sticking them in buckets. [...] I think our [adult] brains just get cluttered with all the other stuff that, you know, we need to... we need to process. We've got more memories to put in. Obviously we've got bigger brains, but we've got more memories to process. You know, life gets in the way. I think you lose some of your enthusiasm for learning. Some of our enthusiasm for being inquisitive. Yeah, we don't spend time in the moment. [...] You know, if I'm five minutes later than I would be on the school run, that will be the day that they'll be going, look, there's a snail on the wall. Look, there's a baby snail. And look, there's a wood... a wood-a-louse! A wood-a-louse down there. And you're thinking, okay, great. We need to get to school. But it's that... They just totally live in the moment.

Among our adult participants, the few examples of individuals displaying the kind of simple fascination exhibited by children were among those participants most engaged in taking action for living things in general or pollinating insects specifically – such as the participants in the art ethnography strand. The gardeners who participated in this strand, for example, were excited to observe a new creature or new behavior, and saw living things, including pollinators, as cherished and fascinating exhibits in an outdoor museum that they helped take care of. (In a similar vein, two interviewees with small children talked about their gardens as being a bit like 'private zoos'.) Dedicating time to a garden also created time to appreciate the living things in that garden.

Last week I saw a crab spider in the garden for the first time and I took a photograph to show the office. It's amazing because it changes colour and it doesn't spin webs, it jumps instead.

As this last quotation indicates, however, for those with some expertise the experience of watching a living thing can involve a response not just to the fascinating creature that presents itself to direct observation, but also to what is *known* about that creature. Participants expressed their fascination both for pollinators as they presented themselves to direct observation, anatomically and behaviourally, but also for the role they play in the context of broader biological processes.

Wow, aren't they beautiful, magnificent little insignificant things but they are part of what makes everything tick and I love the way it all fits in. It is endlessly fascinating.

At this point, the object of fascination is no longer a living thing considered as it presents itself to direct observation, but a creature considered as part of a greater, interconnected whole (see §5.1).

2.3 Objects of a different kind of experience

When adults do find time to indulge in the experience of watching with fascination an insect or other living thing, the experience is likely to be in stark contrast to the day-to-day stresses of adult life.⁶ As such, the focus of attention can shift from the living thing being observed to the act of observation itself, and the *contrast* between this more contemplative frame of mind and one's usual, less focussed states of consciousness. The un-self-aware fascination of a child can in this way become, in an adult, a state of self-aware contemplation.

You've got, you know, lots of living things around you, but they're actually not bothering you. You know, as in... and you can see them, hear them and yes, it's probably, for me it's that silent thing that I can sit there and watch something, even if it's a ladybird doing her thing, and... that's what I really enjoy. And we don't do enough of it, but... I do enjoy it. [...] Because in everyday life you're sort of, you know, sort of can be hassled by people in your work, and there's... you get home and then your family are on the phone.

Especially in Britain, we've got this thing where everyone's working all the time, everyone's pushing, pushing for this perfect life, for this perfect job, for this perfect amount of money and for these material things, and you need that time to be able to walk out into nowhere and have that time. I mean, it's, for me, it's verging on meditation, is being in, being in green space and being in, just on your own, being able to, it's verging on meditation in, sort of, quite a hectic world.

I say to farmers, pour yourself a gin and tonic or something, wonder down and go and sit in the flower bit you have created. And they love it. [...] This is what we need to do more of. Have a little bumble. It doesn't matter where. We have all got to do that. We have all got to just slow down, open our eyes and listen. Get out and look.

Or as W. H. Davies put it in his poem Leisure:

What is this life if, full of care, We have no time to stand and stare.

⁶ Compare the "strong escapist framing of the natural environment" noted by Fish and Saratsi (2015) in their public dialogue work.

The use of a bee with motion dots in the sign shown in Figure 5 is evidence both of how widely recognisable this experience of contrast is, and of the important role played by the characteristic movement of pollinating insects in helping people to "just slow down, open our eyes and listen". Thanks to these connections, the bee here becomes a signifier of "lazy days", notwithstanding centuries of association of the bee with industry and hard work (see §7.2).



Figure 5: The movement of pollinators and 'lazy days' (photograph by team member)

Both the movement and the sound of bees feature in the next quotation, in which a participant imagines the contemplative calm of a summer day.

I do love a bee. Well, I mean, because I think... I think it's the sound of them, I think it is a sign of summer or spring when you hear... when you hear the, sort of, buzzing around. [...] You can lie there in the garden and just hear the bumblebee or see the bumblebee, sort of, like, you know, plopping from flower to flower.

In William Butler Yeats' poem *The Lake Isle of Innisfree* the sound of bees in "the bee-loud glade" is, alongside linnet's wings and lake water lapping, the sound of peace – contrasted with the "pavements grey" of day-to-day reality:

I will arise and go now, and go to Innisfree, And a small cabin build there, of clay and wattles made; Nine bean-rows will I have there, a hive for the honey-bee, And live alone in the bee-loud glade.

And I shall have some peace there, for peace comes dropping slow, Dropping from the veils of the morning to where the cricket sings; There midnight's all a glimmer, and noon a purple glow, And evening full of the linnet's wings.

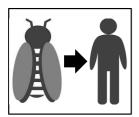
I will arise and go now, for always night and day I hear lake water lapping with low sounds by the shore; While I stand on the roadway, or on the pavements grey, I hear it in the deep heart's core. Far away from "pavements grey", Walt Whitman describes, in a piece entitled 'Bumble-bees' from his Specimen Days, how:

I sit long and long, envelop'd in the deep musical drone of these bees, flitting, balancing, darting to and fro about me by hundreds – big fellows with light yellow jackets, great glistening swelling bodies, stumpy heads and gauzy wings – humming their perpetual rich mellow boom. (Is there not a hint in it for a musical composition, of which it should be the back-ground? some bumble-bee symphony?) How it all nourishes, lulls me, in the way most needed; the open air, the rye-fields, the apple orchards.

For James Gow and Spencer Martin, the musicians who worked alongside us in Bristol, the contrast of the "bumble-bee symphony" and the sounds of traffic on "pavements grey" was a striking feature when they listened to the field recordings they had made: not only was the buzz of pollinators picked up by the recordings, but also the constant background noise of urban life and the whirl of activity on an industrial estate. The impossibility of true silence and stillness in the modern world is reflected in the stream of white noise with which James and Spencer underpinned the composition. See §6.4.1 for further discussion of this piece.

The sense of calm associated with, amongst other things, the sound and movement of pollinating insects such as bees can be reinforced if the perspective of the observer broadens to consider not just the living thing but also the greater, interconnected whole in which both it and the observer participate: see §6.1. Moreover, the contrast just described, between contemplative calm and day-to-day preoccupations, can itself take on a deeper meaning as a contrast between an idealised past and uneasy present: see §6.4.

3. ...as providers of goods to humans



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as providers of goods to humans.

A single key social and cultural value is identified, which understands and values pollinating insects in their capacity as useful (or harmful) things.

Pollinating insects in their capacity as pollinators can be understood and valued as useful things – and indeed, this way of seeing and valuing

pollinators has been actively promoted.

3.1 Useful (or harmful) things

The idea of ecosystem services and its application to pollination are both relatively recent innovations: but there is a long history of human beings valuing living creatures in their capacity as useful providers of goods – and valuing them negatively as harmful things.

Setting aside their role in pollination (for which see §3.1.1), however, it seems that almost no pollinating insects have been or are understood and valued in the capacity of useful things. The one glaringly obvious exception is the honeybee, prized since antiquity for its provision of honey and wax. Wilson (2004) opens her review of "the story of the honeybee and us" with reflections on the importance of the these products in times gone by:

Imagine a world in which the lights went off until daybreak as soon as the sun went down; a world in which, year in and year out, you could never taste anything sweeter than a piece of fruit; a world in which there was no satisfactory way of getting drunk. Imagine huddling in the dark on a cold winter's night with neither sweets nor alcohol for comfort. If you got wounded in this world, your wound might well fester, untreated. If you got a sore throat, there would be no syrup to soothe it. It would not be unlivable, this life, but it would not contain much of the sweetness that helps us to swallow the bitter pill of existence.

This is what life would have been like for our distant ancestors had it not been for the presence of honeybees, those marvellous insects the Apis mellifera, which supplied them, if they could afford it, with artificial light from wax, with intoxication from mead, and, above all, with energy from golden, dripping honey, a medicine as well as a food, whose sweetness in a culture without sugar must have seemed simply wondrous.

Alongside honey, the importance of beeswax is easy to forget. In pre-industrial, prepetrochemical England, for example, the production of beeswax was a significant industry, and beeswax was used not just for making candles, but also for cosmetics, medicines, lubrication, waterproofing leather, furniture polishing, preventing silver and bronze from corroding, the preparation of horse hair bows for string instruments, sealing letters, and so forth.

Given the importance of honey and beeswax, it is not surprising that honeybees have long been understood and valued in their capacity as useful things. For example, a quarter (one of four books) of Virgil's poem on agriculture, the *Georgics*, believed to have been published in 29BC, is dedicated to the bee:

when the golden sun has driven winter under the earth, and unlocked the heavens with summer light, from the first they wander through glades and forests, grazing the bright flowers, and sipping the surface of the streams. With this, with a delightful sweetness, they cherish their hive and young: with it, with art, they form fresh wax and produce their sticky honey.⁷

Beeswax is no longer as important a commodity as it once was; but honeybees are still widely valued for their provision of honey.

While the honeybee is unusual in being seen as *useful* for reasons other than its role in pollination, a number of pollinating insects – including bees – can be understood and (dis)valued, rightly or wrongly, in the opposite capacity: as *harmful* things. When Maria in *The Sound of Music* sings about her favourite things, it is not to include bees in their number but to invoke their consolation "when the bee stings". A number of participants expressed a dislike of things that fly, buzz or sting.

I am a bit phobic about flying things which is why I don't really like moths. I'm not a big fan of them. I mean, I like to look at birds but I don't like them in close proximity. [...] I mean, butterflies, I'm not, again, not a huge fan of butterflies. [BR01]

I don't like bees. Even though I like colour and stuff like that, that's why I probably wouldn't have a garden that has got tonnes and tonnes and tonnes of flowers because I can't be doing with bees and stuff like that. I'm not very good with insects. [...] They just hurt if they, you know... no I just worry, I've been stung by a wasp years ago and I just put them in the same category. I know they are different but I just see them and I just think: oh go away! [...] I know they're there for the pollen and, you know, and everything like that but, I don't know, they just scare me.

3.1.1 Pollinators as useful things

The capacity of 'useful things' is one of two of those reviewed in which pollinating insects may be valued specifically in their capacity *as pollinators*. (For the second, pollinators as 'creative connectors', see §5.3.)

Recent campaigns to raise awareness of the importance of pollinators, such as Bees' Needs, have tended to position pollinators in this way, placing considerable emphasis on their provision of services/goods to human beings.

Insect pollinators matter. Through pollinating wild and garden plants they contribute to biodiversity. By pollinating crops they provide variety in our diets. They are valued by YOU, the public.⁸

Our bees are in crisis.

Without them, our environment and economy – including our food – are in trouble too. We need them to pollinate our fruit and vegetables – it would cost farmers $\pounds 1.8$ billion a year to hand pollinate crops.⁹

⁷ Publius Vergilius Maro, *The Georgics*, Book IV lines 51-57, translated by A. S. Kline; full translation available at <u>http://www.poetryintranslation.com/PITBR/Latin/VirgilGeorgicsIV.htm</u>, accessed on 28/5/2016

⁸ http://www.wildlifetrusts.org/bees-needs, accessed on 28/5/16

⁹ https://www.foe.co.uk/page/bee-cause, accessed on 28/5/16

One out of every three mouthfuls of our food depends on pollination taking place. It is almost impossible to over-emphasise the importance of the service pollinators perform for us.

Many plants rely on insects to pollinate their flowers and so complete their reproductive cycle – most plants cannot set seed without being pollinated (receiving the pollen, usually from another flower). Without bees, hoverflies and other insects visiting flowers, there would be no strawberries, apples, avocados, chocolate, cherries, olives, blueberries, carrots, grapes, pumpkins, pears, cotton, plums or peanuts.... And very few flowers in our gardens and countryside.

It is estimated that 84% of EU crops (valued at $\pounds 12.6$ billion) and 80% of wildflowers rely on insect pollination.¹⁰

There was clear evidence that messages of this kind had been heard by some of our participants.

It's really, really important, though, isn't it, because without bees and other pollinating insects then our agricultural supply chain is going to disappear. It seems really crucial, yes. I mean, I did the 38 Degrees bee thing and I get quite a lot of emails about that and, yes, it's something that I feel quite passionate about. I mean, I am aware that, like I say, without bees, not just in this country, but generally, then crops just won't... well, they'll just fail and, you know, we could be facing a massive food crisis, so you can't underestimate the importance of it.

The recent promotion of this way of thinking about pollinators was reflected in an interesting pattern in interview responses, which saw interviewees regularly acknowledging a *source*. For example, in the quotation above, the participant explicitly mentions that: "I did the 38 Degrees bee thing and I get quite a lot of emails about that". Other sources were also identified:

If the bee is destroyed, then basically, you know, mankind will almost cease to be, kind of thing. [...] It's almost a, kind of... it's quite a kind of... and I'm sure it was in something like... it probably was in The Guardian, it probably was in, like, you know, the Daily Express or something, you know? It sounds a bit sensational, but it did sound quite alarming, that basically if bees were... that would be the ultimate outcome, basically, yes.

I don't watch animation films, but I sat down one... it was a couple of years ago, I sat down and watched it [the film Bee Movie]. I thought: what a great story! Because it was all about how the world would not survive without pollination, and it, sort of, without going into too much depth and confusing people and all the rest of it, gave the, you know, kids, a good message about bees, and how it works.

Even where no specific source was named, the existence of such a source was emphasised by phrases such as "I've heard" or "I've been told":

I've heard, but I don't know whether it's true or not, that if all the bees died then humans would not survive very long because of the amount of pollination they do. I can't remember any more than that, I'm sure there's some statistics about how many species of plants bees pollinate, or whatever, but, yes, look after the bees and then they'll look after us.

¹⁰ https://www.buglife.org.uk/bugs-and-habitats/pollination, accessed on 28/5/16

I've been told bees are almost the most important part of the ecosystem because they do so much, and without them, apparently, we're going to be in trouble if they all die out.

This pattern of referring back to sources is consistent with the hypothesis that the promotion of this way of understanding and valuing pollinators in recent campaigns has made it more widely available to members of the public. As such, the pattern could be interpreted as qualitative evidence of the *success* of campaigns to raise awareness of the importance of pollinators.

At the same time, however, the pattern of referring back to sources can also be interpreted in ways that *raise questions* for recent campaigns. These references do not just acknowledge the existence of a source: they also create a critical distance between the speaker and the view they are expressing, a distance which is repeatedly reinforced by phrases such as "I don't know whether it's true or not", "it sounds a bit sensational" or "apparently". These participants are not *adopting* the perspective promoted by campaigns, and stating with commitment that they value pollinators as useful things: they are *quoting* the perspective, and observing without commitment that they have heard they *ought* to value pollinators as useful things.

What lies behind the hesitation in adopting this perspective, and the tendency instead merely to quote it? A plausible answer to that question appeals to a lack of knowledge of the science which underpins the perspective: people do not commit to claims about the importance of pollinators because they know that, if questioned further by the interviewer, they would not be able to back these claims up with further details.

In this respect, it is interesting to contrast the first participant quoted above, stating that: "It's really, really important". This participant's level of knowledge appeared high compared to other participants in interviews: for example, she talks with some confidence about the role played by "bees and other pollinating insects" in "our agricultural supply chain"; and the unprompted recognition of the importance of "other pollinating insects" is itself unusual. In line with this, she is also more willing to adopt this perspective rather than just quote it, describing herself as "quite passionate" – although even in this case there is a moment of hesitation: "It seems really crucial, yes."

Other participants lacked this level of detailed knowledge. For example, even when participants knew that pollination was what made bees important, this did not mean they had a clear understanding of what pollination actually was or why it mattered. For some, there was little more than the *form* of an understanding of pollinators as useful things – bees provide some kind of vital service to human beings – with little in the way of *content*:

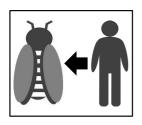
I know you... if all the bees went... we, I'm not quite sure what, but I know that we'd be in trouble.

I know bees are important, so there, that's something we messed up. [...] I suppose because without bees... I don't know, they supply something, I'm not really educated in that. But, there's something about bees that we need them, because they do something. They... I can't remember what it is. But, yes, without bees would we not live? Or they do something. I can't remember what bees do, I know they are important.

Lack of knowledge of the science which underpins an understanding (and therefore valuing) of pollinators as useful things is a plausible explanation of hesitation in adopting that perspective, and a tendency to quote it instead. On this basis, it could be argued that continued promotion of this perspective, and communication of the science which underpins it, will steadily address these gaps, leading to committed *adoption* of the perspective by more and more people.

However, while this is a plausible explanation, we do not believe it is a *complete* explanation. We shall return to this point in §5.3.3, where we contrast this perspective on pollinators with a second perspective which understands and values them in their capacity as creative connectors, which participants adopted confidently even in the absence of any knowledge of the underpinning science.

4. ...as objects of human stewardship



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as objects of human stewardship.

A single key social and cultural value is identified, which understands and values pollinating insects in their capacity as signifiers of achievement.

4.1 Signifiers of achievement

Human beings have entered into reciprocal relationships, focused on stewardship and husbandry, with many of the living things they have found useful. Beekeeping practices, for example, can be traced back to the ancient Egyptians some 4,000 or more years ago (Wilson, 2004). The stated topic of Virgil's *Georgics* is not in fact the living things that provide goods and services but the *stewardship* of those living things.¹¹

I'll begin to sing of what keeps the wheat fields happy, under what stars to plough the earth, and fasten vines to elms, what care the oxen need, what tending cattle require, Maecenas, and how much skill's required for the thrifty bees.

Stewardship is in part about maximising sustainable yields of desired goods and services: but, as a number of our participants pointed out, it is also intrinsically pleasurable in itself. For example, growing vegetables in contemporary Britain may have little to do with a need for vegetables, and a lot to do with the satisfaction of achieving something through one's own labour and care.

I think it's just the satisfaction, knowing that you've nurtured something and that's your work. Obviously the plant is doing the work really, but the fact that you've put a seed in and then suddenly you've got an abundance of a crop, or a nice flower or a nice plant that makes it look like a little better than it was before. So I think that's probably my driver.

I think, you know, if you nurture something yourself you get more satisfaction from it. [...] It's nurturing it. You start something off from a seed. You treat it. You look after it. You watch it flourish. It's... I think it's human nature.

The children who participated in our research reported similar satisfaction from nurturing a living thing and seeing it flourish:

Feeling proud. When something's growing you can see just a tiny little seed growing into a massive thing.

Seen in this capacity, living things can become detached from the usefulness that originally made them objects of stewardship, and instead understood and valued as signifiers of achievement. The achievement, along with the satisfaction it causes, is entirely independent of whether the living thing is actually useful. Indeed, one could argue that the human need which

¹¹ Publius Vergilius Maro, *The Georgics*, Book I lines 1-4, translated by A. S. Kline; full translation available at <u>http://www.poetryintranslation.com/PITBR/Latin/VirgilGeorgicsl.htm</u>, accessed on 28/5/2016

living things are meeting in this capacity is *our* need to be and feel useful. For some people, achievements in nurturing living things can become the basis for cherished identities – as a beekeeper, as a gardener, and so forth.

As the quotations above indicate, a primary focus of this value is on plants, including vegetables. For those who take action to provide habitats for insects (pollinating or otherwise), however, the same feelings of personal satisfaction may be associated with seeing the insects they have created a home for: and in this way, pollinating insects too may be understood and valued as signifiers of achievement.

It's lovely, it's all there happening in our garden, it's a part of our little world and it's... yes, it's a lovely thing.

Bees come back and say thank you. They don't have to come, you create a space and nature comes.

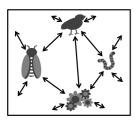
It's [the sound of bees] just a lovely sound, isn't it? You know, they're busy going about their business. [...] The thought of, you know, all the things that bees do for the environment, to hear that and to know that you've made a space in your garden to enable them to do what they need to do to keep everything going. And if you're really thinking about it -1 don't think that if I'm sitting there drinking my glass of chilled Sauvignon Blanc or whatever I'm really thinking about the planet – but, yes, it's good to know that you've created an environment where the bees are busy working, they're busy pollinating.

This sense of achievement may take on further significance in the context of wider concerns about environmental damage, and reflection on the role played by pollinating insects as participants in a wider whole: see §6.2



Figure 6: A pollinating insect saying 'thank you' (photograph by team member)

5. ...as participants in a greater, interconnected whole



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as participants in a greater, interconnected whole.

Three key social and cultural values are identified, which understand and value pollinating insects in their capacities as: manifestations of the greater, interconnected whole; creatures with a purpose; and creative connectors.

Pollinating insects in their capacity as pollinators can be understood and valued as creative connectors. Indeed, while it is possible that other living things might be understood and valued in this way, 'pollinator' and 'creative connector' are so closely linked from a social and cultural perspective that at times they are effectively synonymous. As a result, thinking about pollinators can prompt the kind of holistic perspective which underpins the social and cultural values in this and the next chapter – a perspective that shifts attention from a living thing to the greater, interconnected whole of which it is part.

5.1 Manifestations of the greater, interconnected whole

In §3.1, we noted that there is a long history of human beings valuing living creatures in their capacity as useful providers of goods and services. The same is true of our valuing them as manifestations of a greater, interconnected whole in which they participate. Writing in 1803, for example, William Blake offered a memorable expression of this perspective in the opening lines of *Auguries of Innocence*:

To see a World in a Grain of Sand And a Heaven in a Wild Flower Hold Infinity in the palm of your hand And Eternity in an hour.

Often, this manifestation of an enduring greater whole in a detail can acquire an explicitly religious significance. Indeed, reflections on the value of goods or services provided by particular living things (as discussed in §3.1) are often framed by this kind of holistic, religious perspective. For example, festivals of thanksgiving such as Harvest Festival link specific moments of bounty to the enduring and benign presence of a deity. Virgil's *Georgics* also begins with a section offering thanks, not to bees and other living things, but to the immortal deities credited with the ongoing and enduring maintenance of these vital services.

O you brightest lights of the universe that lead the passing year through the skies, Bacchus and kindly Ceres, since by your gifts fat wheat ears replaced Chaonian acorns, and mixed Achelous's water with newly-discovered wine, and you, Fauns, the farmer's local gods, (come dance, together, Fauns and Dryad girls!) your gifts I sing.¹²

A similar framing is apparent in the response of the participant below to pictures of pollinators on flowers: note how the word "beautiful", which might easily be dismissed as an *aesthetic* response, holds for this participant a deeper, more spiritual meaning.

That's [pollination is] really important to flowers. They need each other. And it's really beautiful.

Interviewer Talk to me a bit more about the beautiful aspect of it. Well this is nature, and when you see that kind of thing it's like they're getting along with their everyday business, but they're interacting with nature, and it's really pretty and it's nice. [...] They just know what they're doing. This tiny little thing, and they're pollinating and they're just doing their everyday things. I don't know, it's just... it is just... it's beautiful. [...] It's nature, it's God's will. And I just think it's beautiful. [...] I do think that all creatures are made for a reason, and they are beautiful, whatever, from a flower to an insect, and there is a purpose of them being here. And that is to do with nature, but without nature we wouldn't have that, and we wouldn't have it without God. So I think that sums it up.

Even in the absence of a religious interpretation, some responses were characterised by a similar sense of awe and wonder at the operation of natural processes.

That's just, you know, the whole thing is amazing. [...] Just that it seems like the bees... it's like evolution is... the bee, the bee uses the plant to survive, the plant uses the bee to survive, so then it seems as if the bees evolve to create its own pollen sac to help the plant as much to help the bee, and it's this give and take between... if that's the reason of its evolution that's unbelievable.

I suppose it is quite a spiritual thing, I'm not religious, but a spiritual thing, in that I think we are so personally amazing and so nature... it's perfectly amazing, and how everything is in perfect synchronicity and perfect harmony.

It is worth noting that, while responses such as these are clearly *occasioned* by living things, including pollinating insects, it is not entirely clear that they should be seen as valuings of those living things. It may be more accurate to see them as valuings of the greater whole – "God", "evolution", "perfect synchronicity and perfect harmony" – albeit that greater whole is manifested in the living thing. Futerra (2010) make a similar point when they draw attention to the widespread sense of "awe and wonder" people feel in respect of "nature". In the same vein, Christmas et al. (2013) argue that the object of these feelings of awe and wonder is "nature's capacity to grow, adapt and recover", and that living things should be positioned as "products and agents of this process".

Once again, we may turn to a poem – *Pied Beauty* by Gerard Manley Hopkins – for a more eloquent expression of both the relationship between diverse living things and an enduring whole, and the feelings of awe and wonder that the manifestation of the whole in detail can inspire:

GLORY be to God for dappled things – For skies of couple-colour as a brinded cow; For rose-moles all in stipple upon trout that swim;

¹² Publius Vergilius Maro, *The Georgics*, Book I lines 5-12, translated by A. S. Kline; full translation available at <u>http://www.poetryintranslation.com/PITBR/Latin/VirgilGeorgicsl.htm</u>, accessed on 28/5/2016

Fresh-firecoal chestnut-falls; finches' wings; Landscape plotted and pieced – fold, fallow, and plough; And áll trádes, their gear and tackle and trim.

All things counter, original, spare, strange; Whatever is fickle, freckled (who knows how?) With swift, slow; sweet, sour; adazzle, dim; He fathers-forth whose beauty is past change: Praise him.

Or we may turn to a scientist, Charles Darwin, who in the closing paragraphs of *On the Origin* of Species by Means of Natural Selection sees the operation of the laws he has described encapsulated in "a tangled bank", and reflects on the "grandeur in this view of life":

It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us. [...] Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.¹³

5.2 Creatures with a purpose

Understood as participants in a greater, interconnected whole, living things may also be valued for the *job* they do in keeping that greater whole functioning. For example, Christmas et al. (2013) found that participants "articulated a clear picture in which different living things have different roles to play in the functioning of an interconnected system", and that they "were also clear that this idea of everything having a function extended to living things which they personally disliked". The idea of living things having a job, role or purpose was equally apparent in our current research – including among the children we spoke to.

Doing their jobs. They help... worms help compost turn into soil. Maggots get rid of waste. [Conversation between children]

Bees help the flowers – they collect the pollen, to help them grow.

This perspective on living things involves an interesting double shift in the focus of attention: first, from the living thing to the greater whole in which it is a participant; secondly, from the greater whole back to the living thing and its purpose in that greater whole. One participant acknowledged that, seen from this perspective, even wasps – an archetypally 'pointless' animal (see §7.2) – must have a purpose, even if he did not know what it was.

¹³ This version of the text is taken from the 1st edition, dated 24th November 1859. In response to criticism of the 1st edition, Darwin added the phrase "by the Creator" after the word "breathed" in the last sentence for the 2nd edition in January 1860.

Generally speaking, you know if you lose a species of bumblebee or a species of butterfly, it can't be good. Because they're there for a reason. Sometimes I'm a bit confused of what the point of a lot of things are. Wasps, for example. No idea what the point of a wasp is. But I'm sure if you removed the wasps, we would, we would discover what they do.

These findings support the argument of Christmas et al. (2013) that, to engage people in the issue of biodiversity, living things should be positioned as "agents and products" of natural processes. Thinking about the purpose of living things in the whole prompts a more holistic perspective – a perspective that shifts attention from the pollinator to the greater, interconnected whole of which it is part, and from which concepts like 'biodiversity' become more meaningful.

Positioning pollinating insects in their capacity as pollinators is a way of doing just this (with a focus on their role as agents of natural processes). There are, however, good reasons to believe that pollinators may be particularly effective in prompting a more holistic perspective, owing to the unique nature of the role they play as *creative connectors* in the greater, interconnected whole. This way of understanding and valuing pollinators is a special case of the broader understanding of living things as creatures with a purpose, and is discussed in the next section.

5.3 Creative connectors

Like all living things, pollinators are participants in a greater, interconnected whole, with a particular job to do in keeping that greater whole functioning.

There is one critical respect, however, in which pollinators are *not* like all other living things: the distinctive nature of the role they play in the whole as *creative connectors*. This distinctive role opens up unique ways of understanding and valuing pollinating insects *in their capacity as pollinators*. Indeed, 'pollinator' and 'creative connector' are so closely linked from a social and cultural perspective that at times they are effectively synonymous.

The role played by pollinators as creative connectors was highlighted by a number of the participants in the art ethnography strand in particular. Pollinators make a connection from one plant to another plant, one garden to another garden, one county to another county, one country to another country. The word "beeline" was used to describe these connections..

Everything is linked [...] bees are the link. Beelines are the motorway.

Small gardens, but together we can make a beeline that lasts all through the season, so there is always something for the bees.

The understanding of pollinators as creative connectors is also apparent in near mystical descriptions of pollination in terms of spreading life and love:

That's how they spread and create more life, the bees are helping with the pollination through moving from plant to plant.

They're all pollinating insects, aren't they? So they're all drinking the nectar and spreading the... spreading the love.

Evidence of this pattern of thinking can be found more widely in our culture – for example, in materials reviewed in the discourse analysis strand of work. Consider, for example, the summary sentence of the following 'Meet the Bees' passage taken from the Burt's Bees website. (Note the contrast between the dispassionate nature of the statement regarding fruits

and vegetables, which positions bees as useful things, and the emotive language of the rest of the passage, written from a more holistic perspective. Note also the phrase "buzzing alarm system", which anticipates another value attached to pollinating insects from that holistic perspective, discussed in §6.2.)

It turns out bees do more than most people realise—for such small, short-lived creatures, they do a lot of heavy lifting to keep life on Earth in balance. They make **1/3** of our nutritious fruits and vegetables possible, and they function as a buzzing alarm system for our planet's ecosystem.

Basically, bees are magical fuzzy little flower-hopping life-bringers.¹⁴

The close relationship between 'pollinator' and 'creative connector' is also apparent in the *metaphoric* application of the concept of pollination to the domain of creativity. The term 'cross-pollination' in particular is now much used to refer to the exchange of ideas between people. There are signs that the word 'pollinator' too may be breaking free of its biological bounds and acquiring a more general sense of 'creative connector'. For example, according to the publisher's description, a recent book by Michael Shuman, entitled *The local economy* solution: how innovative, self-financing "pollinator" enterprises can grow jobs and prosperity, presents case studies of "pollinator businesses" that are:

creatively facilitating business and neighborhood improvements, entrepreneurship, local purchasing, local investing, and profitable business partnerships. Examples include Main Street Genome (which provides invaluable data to improve local business performance), Supportland (which is developing a powerful loyalty card for local businesses), and Fledge (a business accelerator that finances itself through royalty payments).¹⁵

5.3.1 Defaulting to a holistic perspective

The fact that pollinators act as creative connectors means that they do not just play a role in a greater whole, like every other living creature: they play a role which, by its nature, draws attention to that greater whole.

This fact may help to explain the strong tendency of participants across our research to *default* to a holistic perspective when talking about pollination, and to understand and value pollinators, not as useful things in relation to human needs (see §3.1.1), but as participants, alongside other living things, in a greater, interconnected whole.

For example, this pattern of defaulting to a holistic perspective was very apparent in the participatory groups. Participants in these groups responded in different ways (including discussion, drawing and movement) to an opportunity to observe and experience pollinating insects in their natural environments. Three patterns in their responses are of particular note in the current context:

• Perspective. Participants reflected, both in drawings and in discussion, that very early in the process of observing pollinators they had begun to adopt a more holistic visual perspective, scanning from the close foreground to the distant horizon and everything in between, rather than focusing exclusively on close-up examination of pollinating insects. Some participants expressed surprise at this natural tendency to look further afield as well as close up: knowing that the task was about pollinating insects, they had expected to feel

¹⁴ http://www.burtsbees.co.uk/w/wild-for-bees/meet-the-bees.html, accessed 28/5/2016; emphasis as in source

¹⁵ <u>http://www.chelseagreen.com/the-local-economy-solution</u>, accessed 28/5/2016

themselves confined to close inspection. (Note that this tendency for participants to *look at* the big picture, rather than *look for* details and answers, also differs from patterns we have observed in similar workshops on other topics, where participants have tended to abstract the object under consideration from its environment.)

- Connection. Participants noticed that their awareness of the wider natural environment was one that automatically highlighted the *interconnectedness* of its elements. When asked to look at pollinating insects, what participants *saw* was interconnectedness: between the small and the large, between plants and animals, between the moment and the long-term. This interconnectedness was strongly linked by participants to the concept of balance, both in discussion and, for example, in phases in the movement texts in which groups actively re-balanced and re-formed after periods of individual action and group chaos.
- Diversity. In becoming aware of this interconnected, balanced whole, participants also became sensitive to the diversity of living things other than pollinators – especially plants – within it. In drawings, for example, the level of detail and variation was striking. There were also strong signifiers within the movement texts of groups making space for individuality (simultaneous solos) while maintaining sections of trust and shared meaning (circles, eye contact, taking weight).

The participatory groups created a context in which participants could reflect on, explore and creatively develop these patterns, and do so working together. It is striking, however, that the same basic pattern of defaulting to holism was also apparent in individual responses in other strands of work. Consider for example the responses of the following interview participant. Asked to say what is going on in a set of photographs of pollinators on flowers, the participant responded with the single word: "Pollination". Asked by the interviewer to "Talk to me about pollination", the participant – after a brief digression into a story he read about a beekeeper developing a bee resistant to mites – pulls back to a broader perspective, in which the focus is on the roles played by diverse living things (including some that are not pollinators) in a greater, interconnected whole.

I mean, you know, butterflies, bees, insects... They all have a place. There's a good rotation of them that you see in Wiltshire. You know, from the maybugs... You know, it's all seasonal stuff. You see different beetles at different times. I mean, even cluster flies, you know. They're a bloody nuisance. [...] But still, you know, they still have a purpose, you know. Kind of a disgusting purpose, but they still have a purpose. Well, to us, anyway. I'm sure to, you know, anyone who's a botanist, everything has a purpose, which is, you know, insects, wasps, flies, whatever they are... All in the right place.

When asked by the interviewer again to "give me your understanding of pollination", the participant finally provides an account of the process:

Well, they're collecting pollen from one plant and by naturally going to the next one, they're delivering it on to the next stage, whoever they are. Bees, wasps... I imagine any winged insect has that ability to do that. I imagine that the plant encourages it itself, and I would think it's a lot more efficient than wind and a lot more focused. Because I suppose, naturally, the natural instinctive thing would be that different creatures, different insects, will move around different types of flowers, I'm assuming.

This participant was capable of responding to the request to "Talk to me about pollination" with an account of the mechanics of pollination. His default response, however, is to understand pollinators as participants in a greater, interconnected whole.

The same pattern of defaulting to a holistic perspective was also in evidence in the art ethnography strand of work. While participants used different metaphors (a mosaic, a fabric, a machine, a web of connections, a chain, a jigsaw), all approached discussion of pollinators with the same understanding of the natural world as an interconnected whole.

5.3.2 Pollinators as parts standing for a whole (synecdoche)

This relationship – between pollinators understood as creative connectors and the greater, interconnected whole of which they are part – may be thought of as an example of synecdoche: a rhetorical term for a part being used to stand for a whole (as when the expression "I need a hand with this project" is used to express a need for the help of a whole person). The relationship of pollinators to the whole is less like the relationship of a cog to a machine – the cog alone provides no clues as to the nature of the machine from which it has been isolated – than like the relationship of a detail to a larger part of a fractal – the detail recapitulates at a smaller scale the characteristics of the whole, in this case its connectedness and creativity. Understood as creative connectors, pollinators have a synecdochic power to stand for the greater, interconnected whole of which they are part.

This synecdochic power was clearly apparent in the creative responses of the artists who worked alongside us in the art ethnography strand of work. In different ways, their pieces explore the holistic perspective, and articulate the diverse social and cultural values associated with it (and reviewed in this chapter and in Chapter 6).

Responding to participants' reflections on the meanings they attached to pollinators, Charlotte Moreton, the sculptor who worked alongside us in the Marlborough Downs area, became interested in the idea of pollinators as traders of the landscape, exchanging valuable commodities between flowers and stockpiling golden honey in hives and nests. In response to the values expressed by participants, she developed the idea of producing a set of 'coins' depicting different pollinating insects: coins, like pollinators, are made precious by the role they play in a larger system of exchange. (It is striking that, completely independently, a child in a workshop in Norwich hit upon the same powerful metaphor, describing the bees gathering nectar and spreading pollen as: "A trade thing – it's like a market".)

Speaking to participants also prompted Charlotte to look more closely at flowers, and the ways in which they have evolved to attract and suit specific pollinators. This tidy fitting together of plants and pollinators mirrors participants' understanding of nature as a jigsaw of individual components that fit together perfectly. In the final piece created by Charlotte (see Figure 7), the pollinator 'coins' are mounted in a framework of green glazed hexagonal tiles featuring familiar field and garden plants, most of which we use for food or medical/traditional purposes, and which depend upon insect pollinators for their survival.

Reflecting on her own work, Charlotte notes that:

The pattern of the whole is evocative of a honeycomb or, if you focus on the spaces between the tiles, a net or web. It evokes the mosaic of interlocking countryside patterns in a rich rural ecosystem with fields, grassland, scrub, woodland and hedges. The patchwork quilt of an idealised countryside. Patterns of an insect's wing.

In this final comment, Charlotte evokes the self-similarity of the fractal, and the spontaneous way in which pollinators, understood as creative connectors, prompt reflection across what might be described, from a more technical policy perspective, as "a variety of spatial scales".



Figure 7: Sculpture created by Charlotte Moreton (http://www.charlottemoreton.co.uk)

5.3.3 Knowing and feeling

In §3.1.1 we described a tendency to *quote* rather than *adopt* a perspective which understands and values pollinators as useful things. One plausible explanation of this tendency, we noted, is that participants lacked knowledge of the science which underpins this perspective. We also claimed, however, that this is not a *complete* explanation – a claim on which we can now expand.

If it were a complete explanation, we would expect to see similar kinds of hesitation in adopting a more holistic perspective in participants lacking knowledge of the science underpinning that way of thinking. In fact, however, we see the opposite: even when explicitly admitting a lack of knowledge of the science underpinning an understanding of pollinators as creative connectors, participants who adopted this perspective did so fully and without hesitation, and without any evidence of the kind of distancing apparent when they talked about pollinators as useful things.

To underline the point we are making here, it will help to look in some detail at a single example, taken from one of the interviews. As in other interviews, the participant was shown a set of photographs of pollinators on flowers and asked what was going on in the pictures. Her first reaction was to comment on the beauty of the colours, after which she swiftly moved on to a formal, content-free version of the view that pollinators are useful things, highlighting the services provided by bees, and insects more generally, to humanity:

And then I was reminded of the wonderful things that the insects do for us. [...] And how amazing they are, the way that they help us.

When asked by the interviewer to say a little more about "the way that they help us", the familiar patterns of quotation and distancing immediately become apparent. As before, it is quite plausible to read these as a response to the participant's acknowledged lack of understanding of the underpinning science.

I know, I know – and why I am quite influenced about this – but I know I've heard it said that if we... if the bees... if we don't have the bees any more then we... our food chain will be completely destroyed. I can't remember the technical term of the sort of what it is the bee does.

When asked again by the interviewer what she thinks the insects are doing, she continues in a similar hesitant vein until, towards the end of the passage that follows, she finds her way at last to a description of pollinators as creative connectors:

Okay, I think that they're... have you got any other word, like the nectar of the plant? The essence – and I'm sorry because I don't know the word – of the plant. And then I believe that they take... we'll put nectar, even if it's the wrong word for now, of the plant, and then they move on to deposit it around... I could be wrong about all this... so that it keeps the chain going. It helps keep everything growing and producing and moving, so they're kind of carriers, in a way, of life existing.

Almost as an aside, she rounds off her response with a mention of useful creatures – but now applied to bees in a more familiar and ancient capacity:

And of course we get our wonderful honey from our wonderful bees.

The transition to a holistic perspective on pollination is accompanied by a marked change in the tone of the participant's responses, from one of hesitant quotation (of an understanding of pollinators as useful creatures) to one of committed adoption (of an understanding of pollinators as creative connectors). This cannot be explained by the participant having a better

understanding of the science underpinning this alternative perspective: having made the transition to the holistic perspective, she responds to the next question from the interviewer by saying: "I wish I knew more actually, you've got me fascinated now". When asked why she wants to know more, she responds:

I know why I want to know more, because I support the... I believe that we as humans don't understand much of the natural environment that there is. [...] I think we human beings don't understand properly the harmonious and... I can't even find the words, because it's so incredible, the natural world and nature. You know and the fact that in the world there's... I would say it's like a natural intelligence, and probably there's something on the feeling level as well that we just don't understand.

Note how the apologies and professions of ignorance have suddenly disappeared, and how the participant's language is now characterised by confident and committed first person statements: "I know", "I think", "the fact", "I would say". Indeed, her lack of words, which was only moments before cited by the participant as evidence of a lack of knowledge on her part ("I'm sorry because I don't know the word"), is now repositioned confidently as evidence of a deficiency in language itself. She cannot find the words not because *she* lacks knowledge, but precisely because *it*, the natural world and nature, is "so incredible".

This single example illustrates a wider pattern: even when explicitly admitting a lack of understanding of the science underpinning an understanding of pollinators as creative connectors, participants who adopted this perspective did so with commitment, and without any evidence of the kind of distancing apparent in their quotations of an understanding of pollinators as useful creatures.

This difference cannot be explained by levels of understanding of the science underpinning the two perspectives, since the level of understanding is the same (minimal) in each case. It may, however, be explained by the synecdochic power of pollinators to stand as signifiers of the greater whole in which they are participants. Pollinators play a role which, *by its nature*, draws attention to the greater whole in which they are participants. That role does *not* draw attention in the same way to the benefits for human beings, or prompt a perspective which understands pollinators as 'useful things'.

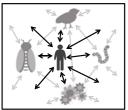
Our hypothesis is that participants showed no hesitation in adopting a holistic perspective in understanding and valuing pollinators not because they *knew* it was right, but because it *felt* right. As the participant quoted above puts it: "there's something on the feeling level as well". When asked to look at or think about pollinators, what participants *saw* was creative connectedness – and *not* services provided to humans.

Moreover, adopting this perspective opened up to them powerful meanings and sources of value: not just the sense of purpose in nature and the emotions of awe and wonder already discussed in this chapter, but also a range of further, powerful responses which follow if one considers one's own place in that whole (see Chapter 6). By contrast, an understanding of pollinators as useful things seems cold and sterile, implying little beyond a bald statement that they provide an important service:

No bee, no flower; no flower, no vegetables; no food basically.

In the absence of any feeling of rightness, confident adoption of this perspective instead turns on *knowing* it is right. Hence, in the absence of such knowledge, the patterns of hesitation described in §3.1.1.

6. ...as participants in a greater, interconnected whole in which humans also participate



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as participants in a greater, interconnected whole *in which humans also participate*: a broadening of the perspective discussed in Chapter 5 which makes room for the human observer as well.

Four key social and cultural values are identified, which understand and value pollinating insects in their capacities as: reminders of our own place in nature; signifiers of damage or recovery; focal points of responsibility and action; and focal points of nostalgia for an idealised past.

Because pollinating insects in their capacity as pollinators can be understood as creative connectors (§5.3), thinking about pollinators can prompt the kind of holistic perspective which underpins the social and cultural values in this chapter – a perspective that shifts attention from a living thing to the greater, interconnected whole of which it is part, and which includes us.

6.1 Reminders of our own place in nature

Seeing living things as participants in a greater, interconnected whole (as in Chapter 5) shifts attention from the details one is observing or discussing – pollinators on flowers, for example – to the greater whole which is manifested in those details, and of which those details are just one part. However, the existence of this larger whole in which not only pollinators but all other living things participate can raise a question for a human observer: what is my place, our place, in this whole?

Well, bees are fairly critical to most of life. [...] But also you know, butterflies and... You know, butterflies pollinate things as well. And I mean it's partly, you know, we should all... We should all... And I don't think I necessarily do this myself, I've got to say. But we should all try to live in, you know, in harmony. You know, does it...? You know the slugs drive me mad in my garden. But I try and tolerate them a little bit.

For a number of participants, the sense that they too were another detail in this greater whole was associated with positive and profound emotional responses.

You just sort of feel connected with nature when you hear these animal sounds. [...] I suppose I feel I am part of nature, so it feels also as if I'm being connected to part of myself. Why's that? I mean, in a sense, you know, you get human beings also are in a way part animals, they're not animals exactly, but you know we're not completely divorced from the animal kingdom, we're just evolved. But it's more than that, it's just... it's very hard to describe, it's just a, sort of, really a kind of feeling in relation to something that is real, and not an illusion, and not manufactured, and not trying to get money out of me, or manipulate me you know. Something that is real, that is genuine, and is... that I am part of as well, in a sort of... we all are, all are part of.

This has become really odd, but I... before, I would have never have thought about it properly, but thinking about walking on, you know, blades of grass, and them coming up between your feet, your bare feet, is a really nice thought, and that's what it would be, it would just be taking in the sun and watching the butterflies fly around and things like that. [...] It's just that having a connection with the world around you, not having some piece of rubber between you and the world. [...] I think, for me, it is as much about nutrients and things like that, isn't it, so, you know, you go out into the sun and you take in the rays of the sun and you're revitalised with various nutrients and various, you know, your body starts to take in different vitamins. That's the connection as much as anything. It's like a plant, isn't it? If you put it out in an airing cupboard for all its life it's not going to do very well, but I think that's the connection. As much as it's about feeling and sensing and having the wildlife around you and having insects land on you and things like that, and being part of, sort of, an ecosystem. It's as much about you as an individual, as a human being, taking in all the, all the nutrients and all the, and being able to grow your own things and eat your own things, and take in the sunlight, is all about... that's the connection. Taking that away is madness.

The same patterns are noted by Fish and Saratsi (2015) in their public dialogue work:

Many [participants] spoke of humans as being small parts of a much larger natural world and viewed the environment as a life-giving and life-affirming force in their lives; an essential part of what it means to be human. Some spoke of the natural environment as being 'invaluable' and 'priceless' to convey this feeling of dependency upon and wonder in the natural world, and of the importance of staying/being 'in tune' with nature in order to feel satisfied and fulfilled as individuals.

Seeing pollinators engaging in their role as creative connectors (§5.3) is one of many routes to this sense of having a place in nature, and the associated feelings of pleasure. For example, in the following quotation an interview participant explains why he has described photographs of pollinators on flowers as "a very enjoyable thing to witness":

What's enjoyable is nature thriving, you know, nature blossoming. You know, that's... it's... I think it speaks to a, kind of, fairly primal connection with the natural world, and that we're part of that and that we want it to do well. And we want to continue existing. It's a feeling of life doing well and we're part of that.

In interviews, from which the above quotations are taken, responses such as these were prompted by participants merely *imagining* being in natural places or looking at photographs. In the participatory groups, there were opportunities to *experience* pollinators in their environments: and in the paired and full group conversations that followed, a sense of groundedness and calm was the most frequently expressed outcome of the experience.

The way in which participants approached subsequent drawing and movement tasks was also striking. From previous experiences of using these methods, we know that many people are unsure of their ability to create, visually or in movement, something that is "worthwhile". As such, we typically find that the visual stage of the process yields annotated diagrams, while the somatic (movement) stage prompts linear forms (more like a line dance than a ballet). In these groups, however, drawings were figurative, representing what they had seen rather than what they had thought, and movement texts were energetic and flowing rather than linear. Participants displayed neither the need nor the inclination to *justify* intellectually what they were doing – and, by extension, justify themselves. That justification, we hypothesise, had already been provided by the experience of feeling grounded as a part of a larger whole.

There are strong resonances between experiences of this kind and the contemplative calm noted in §2.3. The two are likely to overlap in practice, even though logically they remain distinct: the sense of groundedness is a response to the manifestation a whole in a detail; the contemplative calm a response to a contrast between one kind of experience and another.

Being up on the downs, you can think clearly. Nothing between you and the sky and your creator. There is a feelgood factor, it's an intrinsic pleasure.

Understanding and valuing living things as reminders of our place in a greater whole pre-dates a modern scientific understanding of our dependence on ecosystem services. In the Gospel, for example, Jesus offers birds and lilies as reminders of our place, alongside them, in God's creation (and therefore of God's love for us).

Behold the fowls of the air: for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they? [...] And why take ye thought for raiment? Consider the lilies of the field, how they grow; they toil not, neither do they spin: and yet I say unto you, that even Solomon in all his glory was not arrayed like one of these.¹⁶

That this perspective on living things does not require an underpinning from contemporary science is also suggested by its presence in the responses of children. The quotations below are from a section of the workshop in which the children were asked to close their eyes, imagine themselves in a place with plants and flowers, and think about what they could see, hear, smell, touch and taste. Finally, they were asked how it made them feel:

One with the wind.

One with the environment.

Calm, one with nature.

Like a leaf that's swaying far, far away.

The text written on the tree trunk in the children's picture shown in Figure 8 reads:

Bees and other pollinators are here for a reason. They make us feel happy, calm and a million other amazing feelings. Bees and butterflies are beautiful creatures with there buzzing and humming. They make me feel wonderful like I'm in my own world of love and peacefulness.

Figure 8: Drawing from workshop with children Matthew 6: 26, 28-29



6.2 Signifiers of damage or recovery

The sense that one has a place in and is connected with a larger whole is an overwhelmingly positive one, associated with positive emotions. But those positive emotions can easily be disrupted by reflections on the place of humanity as a species in that whole, and the ways in which we are destabilising the natural processes which sustain it.

Without all this, without this ecosystem, the sustained ecosystem, there's nothing, is there? There's no light, there's no point in us. [...] I think the world is being slowly ruined, and we are overpopulating, and it's just greed, it's just where the humans feel that they're the most important thing on the earth, and they're quite happy to ruin the ecology, everything else, but as long as they're all right. And I think that's why it's so important, because I think people don't understand that [...] we could potentially die out because we've ruined it for everything else.

On a bad day, when I think 'shit', you know, regardless of what we are trying to do, is it all just actually just all going down the pan? And it is worrying when you see decline after decline after decline of stuff.

In the context of these concerns, living things can become powerful signifiers of damage to the environment.

My take on it, is that, if you're losing something as, and I mean, you know, sort of, simple as a honey bee, then what's happening to everything else? [...] If the poor little honey bee is suffering, then, what else is going to be vanishing, and how's, and how's that going to impact us? It's almost like a, sort of, a little warning.

In particular, the positioning of the decline of bees as an early warning of greater problems is now widespread, at least in ecologically minded contexts. For example, in §5.3 we quoted a passage from the Burt's Bees website which describes how bees "function as a buzzing alarm system for our planet's ecosystem". Bees have become the environmental analogues of the caged canaries once taken into coalmines (see Figure 9). The symbolic significance of the bee's decline is also reflected in efforts to debunk it, as a way of challenging what the article shown in Figure 10 describes as "the green blob".

they feel threatened.'

Turnbull says the decline in bee numbers must be taken seriously.

'Bees are the early warning canary in the cage, if you like,' he says. 'If there's something wrong with the bees now, there's going to be something seriously wrong [with the ecosystem] later on.'

In the UK, we rely on bumblebees, honeybees and at least 1,500 other species of insects – including hoverflies, wasps, butterflies and moths – to pollinate our plants and crops so they produce fruits and seeds.

It is estimated that up to 40% of food production requires pollination but, as a result of changes to the landscape over the past 50 years, many pollinators are struggling to adapt – with potentially dramatic consequences for the food chain

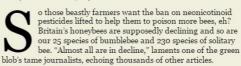
Figure 9: Extract from Waitrose Weekend, 16 July 2015



Don't weep for the sad decline of bees. They're thriving

The fear over neonicotinoids is baseless

Matt Ridley Last updated at 12:01AM, May 15 2015



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But it's bunk. There is no continuing decline in honeybee or wild bee numbers. There was in the 1980s when the varroa mite hit bee

Figure 10: Extract from The Times, 15 May 2015

The evidence suggests that pollinators, and bees in particular, are emerging as powerful signifiers of environmental damage, much as the giant panda once became a powerful signifier of species loss. It would be easy to assume that it is the frequency of headlines about declines in bee numbers that is driving this association. It is equally possible, however, that it is the synecdochic power of pollinators to stand as signifiers of the greater whole in which they are participants that is driving the frequency of headlines: decline in bee numbers has caught the 'public imagination' precisely because it *feels right* (see §5.3.3.) as a signifier of damage to the greater whole.

To the extent that individuals are concerned about environmental damage, observations of living things in the wild can also provide positive reminders that those natural processes endure, and that the larger whole persists despite the damage caused by human beings. Like the dove returning to the Ark with an olive branch, wildlife can become from this perspective something to be celebrated.

When they're wild and they're around you, as in the countryside, or even in the town, you know, your birds flying about, it just shows that we, as a human race, haven't totally taken over and there is still species out there that are surviving and are free and uninfluenced by us as people. Because to see something truly wild and beautiful, living its life out there and surviving, is, well, the ultimate thing for me.

When our parents were growing up, there wasn't a tremendous concern that the planet might destroy itself within a short period of time. I mean, I don't think it will but it's now so apparent, the impact that we're having on the planet that, it's a, kind of, celebration every time we see nature kind of existing despite the concrete in the car park.

In line with this, the presence of pollinators can serve as a potent sign of the endurance of the greater, interconnected whole of which they are a part and which they signify. For participants in the art ethnography work, for example, pollinating insects were a primary indicator of the health of a natural area. An audible buzz was a sign that life processes were taking place and that the natural world was happily ticking. As such, they were hugely reassured by the presence of pollinating insects.

For some participants – especially in the more reflective contexts afforded by the participatory groups and art ethnography strand – reflections on the survival of nature in the face of damage caused by humans prompted a longer term view of nature as a resilient, almost magical force that will ultimately outlast human beings. This interplay of a longer term sense of nature's resilience with shorter term concerns about the negative impact of human beings is an example of the what Christmas *et al.* (2013) describe as an interplay between 'Nature finds a way' and 'Nature can't keep up' stories. Ideas such as these may appear philosophical and abstract, but they can be prompted by something as mundane as a pot plant:

They're so resilient, plants. I mean see behind you on sort of the fridge is a lily. And you know, that's sort of 15 years old. And it's... You know, we forget to water it and it goes like that. And you think that must be the end of it. Chuck some water in, up it goes again. You know it... It's you know, they can be incredibly resilient, but fragile at the same time. Which I guess is a little bit like the human body. I'm being very deep tonight. Don't know where that's come from.

It is striking that, in contrast to most of the other social and cultural values described, an understanding of pollinators as signifiers of damage or recovery appeared to be limited to adult participants and contexts. This may reflect the fact that the children who participated had relatively simplistic views of the main dangers faced by bees – they get run over, trodden on,

drowned, and squashed. There was some awareness that they might suffer from loss of suitable habitat – mainly understood as not enough flowers – but more complex threats such as the harm caused by chemical sprays or the impact of monoculture were beyond their experience.¹⁷ The children also had a very hazy grasp of why the loss of pollinators might have an impact on humans, with a number thinking that the role of plants in providing oxygen might be the connection.

If the bees die, they won't have anything to make another seed, it won't make another flower.

The plants would die, then the animals won't have anything to eat.

Do they help the flowers? They get pollen so that it can help them grow. Is it because the oxygen that they breathe?

Is it because the flowers release that thing we take in to breathe, the oxygen. If all the flowers died out, if every plant died out, we'd have no oxygen.

Note that this lack of understanding of the exact way in which humans rely on ecosystem services seemed to have very little bearing on their experiences of being part of nature (§6.1).

6.3 Focal points for responsibility and action

The fact that we humans are also part of a greater, interconnected whole means that damage to that whole has implications for us. As the synthesis report of the NEA (NEA, 2011) notes:

In fact, we humans are an integral part of the natural world, ultimately dependent on a functioning biosphere and its constituent ecosystems for our survival.

Similar observations are to be found across participant responses and other materials reviewed. What is striking, however, is that being "an integral part of the natural world" is typically positioned as more than our merely being "dependent on a functioning biosphere". The relationship is instead positioned as a *reciprocal* one, as much about responsibility as dependency.

It's that whole, we're part of the environment, we need to look after our environment.

You feel a sense of duty, there's a responsibility to make sure that we don't take it all for granted, that it's not just something that needs to be worried about another day. We need to do our little bit, and if that means growing wild flowers in our garden that's going to attract the smallest of insects, that's what we will do.

Some participants with young children also discussed the importance they attached to bringing their own children up with an appropriate sense of responsibility towards nature.

I think it does matter, and I feel it's really important that we show our children that it matters, and so that's why we do that, that's why we grow vegetables. [...] It's just fun and it's teaching them something, it's teaching them a responsibility and teaching them that you sow that seed and carrots grow, which is just amazing, you know.

For me I, I think you need to appreciate the world you're in. [...] I think you need to know where things come from, where they go, and how they get from A to B. [...] It's being able to go for a country walk and know that someone is working to keep that

¹⁷ One boy knew about disease risk – he had watched a documentary on National Geographic Kids about "when they get a mini flea, and get a deformed wing" [Child]

lifestyle going, to keep the fields, to keep the crops growing in the right manner, to be looking after our well-being, to be educating us. So, appreciating how that happens and why it happens, and how it impacts on all of us, wherever we choose to live.

You want them to grow up into, you know, good citizens. And you know, we've got a pretty good idea of what destroys the world.

In some instances, reciprocity and responsibility were seen as distinctive features of the place of human beings in the greater whole, consequences of our intelligence and our ability to make choices about the kind of role we play.

I think we need to take responsibility because if we don't take responsibility, eventually, and I'm not saying it'll be, you know, my kids' generation or my grandchildren's generation, but eventually, we will lose native species, native plants, and they will be gone forever. [...] I do believe, just because we, as human race, are supposedly more intelligent, does not... obviously we have got the ability to expand and do things that animals can't. But I don't think that that gives us the right just to destroy. [...] Surely, as a more intelligent race, we need to be, you know, sensible about this.

Most insects are there for a purpose, and they will... well they'll eat other insects. Or do they, I don't know, pollinate? Or do they eat rubbish, like the cockroaches? [...] Interviewer What do people do in nature?

Well we can do things in a sense... fortunately we've got brains, so some of us can serve it and some of us destroy it. You know. So some people will look after and you know want to... I'd say to be at one with nature, but do things that... well like plant flowers, look after your garden, look after the environment, up to a point. I mean some people go all out for it and we others do a bit of recycling you know. Yes, well, humans are creative and humans can destroy as well.

On one commercial website, under the heading "We do as bees do", the bee is held up as a model for the way a responsible participant in the greater whole *ought* to behave, a natural example of corporate social responsibility:

Have you ever seen a bee's footprint? Neither have we. Yet all those little guys do is fly from here to there, getting pollen all over everything as they quest for the perfect building material. But they take only what they need – and they leave their environment better than the way they found it.

At Burt's Bees, we take our cue from nature. In fact, that's our mission: to make people's lives better every day – naturally. We've committed ourselves to making the world a little greener, a little cleaner, by doing what bees do best: working hard on natural products that people love – and leaving only goodness behind.¹⁸

As Preston (2006) puts it: "In the increasingly melancholy history of our own species, whose arts of life are being turned into the arts of death, the bee gravely insists by example that we look beyond ourselves."

6.3.1 Taking action

The idea of reciprocity and, within that, responsibility makes particular sense in the context of practices which can easily be characterised as *stewardship* of nature, such as gardening and

¹⁸ <u>http://www.burtsbees.co.uk/w/about-us/sustainability/operational-footprint.html</u>, accessed 28/5/2016

beekeeping. The Natural Beekeeping Trust, for example, emphasises the need to find a more appropriate balance between what we take and what we give:

Our aim is to be a key contributor to new directions in apiculture by developing beecentred, treatment-free, beekeeping. Featured in many national and foreign media, our approach is one of "giving to the bees" as opposed to "taking from the bees". This is a necessary and appropriate response to the situation in which honey bees, and all pollinators, find themselves today.¹⁹

A similar pattern is apparent in gardening literature, where the interest of the gardener in the success of plants can be taken for granted. Note the focus in the excerpts on providing food for pollinators (see Figure 11) – as opposed to a focus, typical in public campaigns to raise awareness of pollinators (see §3.1.1) on pollinators providing food for us.



Making your garden a bee haven



To attract bees to your garden and give them the nectar and pollen they need, succession and variety is the key, no matter what size of garden you have. Succession is important because bees need a constant source of food from spring right through to the autumn. A wide range of

flower shapes is crucial too because some species of bees have shorter tongues than others. To help you choose what to grow, check out the list below.

Plants for bees (www.rhs.org.uk)

Figure 11: Providing food for pollinators (http://www.gardenersworld.com; BBC Gardener's World Episode 10, 2015, http://www.bbc.co.uk/programmes /b05vrghl)

¹⁹ http://www.naturalbeekeepingtrust.org, accessed 28/5/2016

For some of our participants too, the combination of feelings of concern with a sense of responsibility served as a spur to take action to reverse at least a little of the harm that mankind has done to the planet.

The world is a well-oiled machine but it is broken and I want to do something to put it right.

I wanted to give diversity back to the place. Pollinators complete the world I have made. It won't work without them.

Moreover, reflection on the interconnectedness of the whole in which both humans and pollinators participate can strengthen the very resolve which it occasions, as it implies that even small actions may have large consequences.

Because it's a chain reaction, isn't it, so I mean, we need the bees for pollinating and, you know, keep the trees going and everything. Butterflies do the pollinating as well so then it's just a chain reaction. So if I provide a few wild flowers, keep the bees happy, they keep, you know, other plants happy, as in pollinating, they will keep other animals happy because they're their prey, so it all... it's a bigger picture, sort of. It might just be a little thing but it progresses into more, if that makes sense.

A lot of the time we feel powerless, passive. So if you can do a little thing you get a little bit of power [...] not all doom and gloom.

Seeing things from this perspective may also highlight the fact that, sometimes, our responsibility is to do *less* rather than *more* – to leave space for wildlife, allow natural processes to take their course, find a better balance between the needs of humans and the needs of nature. For a number of participants, for example, it was reflections of this kind that underpinned a preference for a more informal style of garden, including wilder areas.

I think that's what's important, is to be able to have some kind of equilibrium [in a garden]. Between the wildlife and the plants growing and the people that have to be in it.

It's quite nice just to let it go and let nature take its course, I guess, because, you know, humans have taken vast amounts from nature.

[Talking about a very formal garden] It feels wrong somehow, because, you know, like, you think of nature being quite, sort of, free and organic, and to, kind of, rein it in like that doesn't feel quite right.

It is easy to see a fashion for wilder planting as an indication of changing *aesthetic* preferences. In fact, however, as some of our participants made clear, there is a strong *ethical* dimension at play here, an expression of a resolve to play a more responsible role as part of nature.

Would you think it's attractive? I don't know if people do it because it's attractive necessarily. [...] I don't know that they'd see that kind of, you know, overgrown compost heap, essentially, as attractive, but they would see it as important. [...] I think it's important for, you know, the diversity of the wildlife, you know.

I think it's partly aesthetic, but it's also... it's, kind of, almost an ethical thing, as well, I think. It's this idea that, you know, maybe man doesn't have to restrict... you know, it makes me feel a little bit uneasy the way that, sort of, like, you know, that you would... you would actually, you know, corrupt nature into some kind of geometric shape, you know, when it's not really supposed to be like that. So I suppose, yes, I mean, it's a little bit more than just aesthetic, you know, it's quite a... it's quite an ethical thing as well, I think.

6.4 Focal points of nostalgia for an idealised past

The decision to play a more responsible role as part of nature can be framed as an *individual* decision. It can also be framed, however, as a decision made by an entire society: do we, collectively, want to live in harmony with nature? Our evidence suggests a potentially widespread view that our society has made, or is making, the *wrong* decisions.

I don't like this disposable world we're in, where everything just gets chucked out, and you've got to buy another one.

I think we live in a kind of short shelf-life society, don't we, where people, kind of, it's here today and it's gone tomorrow. [...] I think if this [loss of pollinators] can be a problem, or will be a problem, then it's giving the right values about protecting the environment.

But everybody's watching David Attenborough on TV, you know, they quite like that because they're in their nice warm home and they're watching it, but I don't think people have the time, I don't think it even crosses people's minds. [...] Because no one sees the link between environment and... apart from reading the web maybe, but mostly no one sees the link. We've become disenfranchised from the natural world just by modern life.

We are so connected nowadays but so much of what we are connected to is irrelevant.

For the participant quoted above describing contemporary society as "disenfranchised from the natural world", a fundamental decision was whether one looked at matters "as a human being" or "as a logical person".

I'm mentioning it because that's a distinction. As a logical person we see all the... I can understand the need for it [building new homes on greenfield sites] because the modern world is one of gradual destruction to the environment, that's just a fact. But as a person, the thing is, you can see that it's wrong.

In the "real world", this participant went on to argue, it was the view of a "logical person" which would invariably win out.

I mean, it's easy to say that you wouldn't mind about the money but in the real world, unfortunately, the economic factors...every single, every single choice has an economic factor. [...] On a human level, it is probably wrong, because... but it's just progress, isn't it, it's progress.

In a similar vein, the same participant argued later in the interview that declining bee numbers were the result of the use of "a certain type of insecticide" by farmers seeking to "maximise yields". In the participatory workshops, which took place just after the temporary lifting of the ban on neonicotinoid pesticides in July 2015,²⁰ considerable anger was expressed at what was perceived by participants as a decision made on purely economic grounds, without consideration of the very values being explored in the workshop.

Another participant reflected on a difficult choice between economic factors and "instinct" which he imagined farmers faced in respect of set-aside land:

It's probably quite a complex scenario, whereas I don't... you know, don't think I know a lot about it, but the farmers have been hit so much with certain things that

²⁰ See for example <u>http://www.bbc.co.uk/news/science-environment-33641646</u>

they have to, probably, do things against their instinct, to survive. [...] So, you know, I say greed, it might not be, it might be just a question that they have to farm every square inch they can, to recoup some of their losses, maybe.

From the perspective of ecosystem services valuation, it could be argued that the contrast being drawn here is a spurious one: if the "economic factors" fail to take into account of the fact that "you can see that it's wrong", then that is because the "economic factors" have been calculated in a way that omits key sources of value. For a number of our participants and in other materials reviewed, however, the contrast was a real one.

Moreover, the contrast is typically framed in the context of a *historical narrative of change* – as hinted at by the observation in the quotation above that "it's just progress, isn't it, it's progress". Consider, for example, how the participant quoted above discussing the "complex scenario" facing farmers continues his analysis in ways that contrast past and present, old and young.

Things certainly aren't as healthy as they used to be, and that's down to supermarkets, and greed, and all the rest of it. [...] Older generations, certainly, would be more than happy to do that [set aside land] naturally. They'd have an understanding of the land. They'd probably enjoy watching certain areas flourish naturally, instead of everything being manufactured.

In the following quotation, meanwhile, a participant unpacks the feeling of groundedness and calm associated with recognising one's place in nature (§6.1) by contrasting the long history of humanity's evolution "in nature" with humanity's recent separation from nature.

You know, birdsong, seeing nature, seeing a deer or a, you know, a badger or a fox or a hare or, you know, a kite or, you know, all of that. They're the things that seem to inspire that feeling of reconnecting and just joy, absolute joy. I guess my perspective is that, you know, we are... human beings are part of nature, with however many hundred thousands of... whatever the period of time is, we've evolved in nature, surrounded in nature, and now we're living, you know, within a very short period of time, our environment's changed massively. And so, it's, I think there's just a tremendous relief to psyche and the body and every aspect of ourselves to be in nature, opportunities to be in nature.

Note how this contrast also echoes the contrast between moments of contemplation and dayto-day stress noted in §2.3. Indeed, the historical contrast between an idealised past and modernity can be aligned with a number of the contrasts associated with the different social and cultural values we have reviewed, as per the table below.

Idealised past	Modernity	See:
Connected to nature	Disconnected from nature	§6. I
Living in harmony with nature; acting responsibly	Living at odds with nature; acting irresponsibly	§6.2
Moments of contemplation	Day-to-day stresses and distractions	§2.3
Pleasures of nurturing living things	Plastic-wrapped food of unknown origin	§4. I

6.4.1 Romanticism and nostalgia

This alignment has deep cultural roots in Romanticism. For example, in their introduction to a collection of essays on *Romanticism and the sciences*, Cunningham and Jardine (1990a) identify what they describe as:

fundamental Romantic tenets: the original unity of man and nature in a Golden Age; the subsequent separation of man from nature and the fragmentation of the human faculties; the interpretability of the history of the universe in human, spiritual terms; the possibility of salvation through the contemplation of nature.

In The world is too much with us, Wordsworth articulates not the "absolute joy" of reconnection described by the participant quoted above, but the "forlorn" sense of alienation born of "getting and spending".

The world is too much with us; late and soon, Getting and spending, we lay waste our powers;— Little we see in Nature that is ours; We have given our hearts away, a sordid boon! This Sea that bares her bosom to the moon; The winds that will be howling at all hours, And are up-gathered now like sleeping flowers; For this, for everything, we are out of tune; It moves us not. Great God! I'd rather be A Pagan suckled in a creed outworn; So might I, standing on this pleasant lea, Have glimpses that would make me less forlorn; Have sight of Proteus rising from the sea; Or hear old Triton blow his wreathèd horn.

In his Vernal Ode, meanwhile, Wordsworth explores a fleeting reconnection with an idealised past – one of those "glimpses that would make me less forlorn" – through contemplation of the buzzing of a bee. Part IV of the poem describes the experience of the "contented Votary" of the "mild pastoral Muse", who is herself "nursed at happy distance from the cares / Of a too-anxious world":

Him rather suits it, side by side with thee, Wrapped in a fit of pleasing indolence, While thy tired lute hangs on the hawthorn tree, To lie and listen, till o'er-drowsed sense Sinks, hardly conscious of the influence, To the soft murmur of the vagrant Bee. — A slender sound! yet hoary Time Doth to the Soul exalt it with the chime Of all his years; — a company Of ages coming, ages gone; [...]

Prompted by this "slender sound" to an epoch-spanning perspective, the buzzing of the bee becomes "a glimpse and shadow" of a lost Golden age "not undiversified, though smooth and even":

[...] — Humming Bee! Thy sting was needless then, perchance unknown; The seeds of malice were not sown; All creatures met in peace, from fierceness free, And no pride blended with their dignity. — Tears had not broken from their source; Nor anguish strayed from her Tartarian den; The golden years maintained a course Not undiversified, though smooth and even: We were not mocked with glimpse and shadow then: Bright Seraphs mixed familiarly with men; And earth and stars composed a universal heaven!

In the context of this distinctively Romantic perspective, natural spaces and living things can be valued as links not just between humans and nature, but also between a human present and a human past:

They (wildlife) are not for sale, because no one owns them, you know. We should not make the assumption just because no one owns them, we can do what we like with them. They are part of our culture, our land, our history.

For me it's more about the sadness of, you're going to lose your wildlife, you're going to lose all of that kind of sort of stuff where you can have natural surrounds, where you're just going to be a concrete jungle. [...] You're losing part of, like, history aren't you? Just sort of part of the way of how you kind of learned about wildlife, or you've learnt about stuff and you, you know, particularly I love all like the Human Planet stuff and, you know, love watching all that and in their natural habitats, you know. [...] Why not still have an old way of life that, you know, that some people find peaceful and some people find kind of relaxing?

It is this reframing of choices faced by contemporary society as a narrative of *a lost way of life* that explains the associated response: nostalgia. Participants in the participatory groups, for example, expressed a powerful sense of nostalgia for a (real or imagined) time when people lived in balance with nature; and some noted the role played by native English plants in culture, sayings, and verse – one participant recited *Lavender's Blue* – and expressed a desire to maintain a diverse source of traditional, indigenous food crops. In a similar way, participants in the art ethnography strand articulated a clear sense that their ancestors, as hunters and gatherers and later farmers, existed more in harmony with the land. By nurturing wildlife now they felt they were emulating a more direct relationship with the land. On the Marlborough Downs in particular there was a poignant sense of history, due to the presence of Neolithic remains: the longevity of human occupation was felt to lend a degree of mysticism to the site, and participants in the area were respectful of the continuation of wildlife and the little changing landscape. There was a sense that to care for the environment was to take part in an ancient tradition of land stewardship that has lasted thousands of years.

This area has been inhabited for so long. It's a big responsibility looking after it properly.

Whether or not an idealised, traditional way of life ever existed in fact, the idea of it provides a powerful emotional focus. This romantic nostalgia is especially evident in contemporary discourse around bees, its continuing emotional value being evident in the way it is widely harnessed in commercial contexts (see §6.4.3).

Charlotte Moreton, the sculptor who worked alongside us, was also inspired by the reflections of participants on history and change. While not ultimately possible for budgetary reasons, Charlotte's original intention was to forge the coins, and so create something valuable that could endure over many lifetimes. At the same time, minting those coins with the images of pollinators would help to redefine the idea of wealth: while we might believe that the longevity

of our communities rests on material wealth, we would not survive long without the presence of pollinators – a reminder of our place in nature (§6.1).

These themes were foregrounded in the piece created by James Gow and Spencer Martin, the musicians who worked alongside us in Bristol. In a piece which evokes in the listener many of the emotions described in this and the previous chapter, James and Spencer explore both the tensions and accommodations between the natural environment and modernity through the microcosm of the maiden flight of a queen bee, waking in early spring. (Note that this approach, using a part to stand for the whole, is also an excellent example of the synecdochic power of pollinators: see §5.3.2).

The participants in Bristol had told James and Spencer about the ways in which space for pollinators had been and was continuing to be diminished. At the same time, in their meetings with those participants, the composers had seen at first hand successful points of connection between the man-made and natural – hives established in an industrial estate being a good example of mankind and the natural environment co-existing for mutual benefit. They interpreted what they observed participants doing for pollinators as taking action to fix some of the harm humans had done – giving something back to reverse a little of the damage (see §6.3.1). This injected them with a sense of tentative optimism that the future might not be so bleak for pollinators or, indeed, for humans. In their piece, this idea of being distinctive but interlocked in a relationship is developed by the naturally resonating piano being met with an electronically affected echo response. The sounds illustrate multiple entities floating separately but occasionally working in harmony.

James and Spencer also personally connected to the idea of 'progress' sometimes operating in opposition to nature, in the sense that, as musicians, they are constantly managing the musical reality of acoustic instruments coexisting alongside electronic instruments. Throughout their piece they integrate acoustic and electronic sounds as an artistic expression of the new taking place alongside what has come before and is enduring. It is essentially a musical illustration both of pollinators surviving in the contemporary city environment, and of an ancient way of life being preserved in pockets of modern human life.

6.4.2 Nostalgia and childhood

An idealised, traditional past readily became confounded with the real if only half-remembered past of childhood. The sight and sound of bees, or the fluttering of butterflies, elicited memories of idyllic English summers, with windows and kitchen doors opened to the street, or helping dad in the garden, or playing with siblings on the family farm – and with these memories, powerful feelings of nostalgia.

I remember as a child there were always bees.

Both my parents were keen gardeners. They were in tune with the countryside.

Growing up in Nottingham, my only natural spaces were the rec and the allotment. I remember the smell of chamomile growing in the bombsites. My dad was a pollinator man. The allotment was magical to me.

When I was a kid I was used to collecting frogs, I watched frogs in ponds at my auntie's house, and that's, that's gone now, isn't it, it's gone, it's... the habitats have just gone.

It brings me childhood memories. It's quite strange. Climbing trees... I used to climb trees a lot. I used to hang about in a big area, just up the road from me. It's all gone now. It's all... it's a super hospital now, so they destroyed it all, but I used to, you

know, play in the woods [...] I don't know what it is, especially, you know, the British trees, the oak trees, and stuff like that, they've been around for so long, they took so long to grow, but within half an hour they could be gone.

In this context, the importance attached by some participants to bringing up their own children with an appropriate sense of responsibility towards nature (see §6.3) took on an additional significance. This was not just a matter of bring up children to be "good citizens": it was about passing on a way of life, an identity. And in this way, nostalgia for the past could shade over at times into genuine hope for the future.

I feel a sense of duty to do that for my children because there are ways in which my childhood is now being mirrored in their childhood, which is so special. [...] I think you, within your home and your life, you have a sense of duty to each other, and we have a sense of duty to our surroundings, to take care of what we look after, but then, I think that has a knock-on effect. You know, it's a sense of being, a sense of living, the way you choose to live your life, and, hopefully, if you live it in a way by where you are, you give concern to all these things. You know, I know my children will go out into the world having that sense of care and duty, first of all to their being, and then their family. And, to me that would then relate to the whole world eventually, you know. It's a state of mind, it's a way of conducting yourself.

It's really nice the way they [children] connect with the environment around them. [...] I mean I guess it's partly important to me because of the way I grew up. So, you know, my folks had quite a big garden. And we lived in a village in Lincolnshire, so you're surrounded by cauliflower fields, mainly. And, you know, I worked in cauliflower factories packaging stuff up. But it was that real connection of, you know, you'd be sent out. It was really annoying at the time. You'd be sent out to go and dig up the potatoes for dinner, or you'd have to go and pick the redcurrants or the raspberries. But you'd see where food comes from. And I think now when you go in... particularly into some of the bigger supermarkets, you're just overwhelmed with stuff in packaging. And there's no... there's no real sense of, you know, where it's come from or, you know, you look at some of the, you know, runner beans coming from Peru and that type of thing. It's just extraordinary. Whereas, you know, we can grow them out... grow them out here.

6.4.3 Honeybees and nostalgia

These narratives of an idealised past and present loss open up an important set of meanings and value, not for pollinating insects in general, but for one type of pollinating insect: the honeybee, which has become a focal point for a discourse of cultural nostalgia for an idealised, traditional way of life, when people lived more in tune with nature.

This cultural nostalgia is readily apparent in a range of materials marketing honey and other bee-related products. As noted in §3.1, honey has a long history of human use, and this history is invoked in materials marketing honey or related products.

Honey contains a treasure chest of hidden nutritional and medicinal value for centuries [sic]. The sweet golden liquid from the beehive is a popular kitchen staple loaded with antibacterial and antifungal properties that has been used since the early

days of Egyptian tombs. Honey's scientific super powers contribute to its vastly touted health benefits for the whole body.²¹

Honey is a sweet nectar that contains approximately 600 compounds. With a long history of uses, Holland & Barrett provide a range of honey products, which includes blended honey, Manuka honey supplements and natural honey.²²

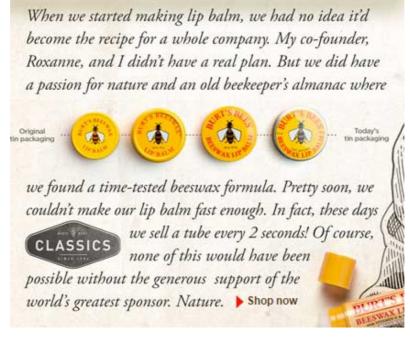


Figure 12: History as a marketing tool (http://www.burtsbees.co.uk/classics/beeswax-lip-balm)

Indeed, so important is the link with history to the positioning of these products as components of a traditional way of life that it can spill over into other aspects of their provenance: for example, notice how the following quotation from a commercial website emphasises the historic nature of the sites visited by the bees providing the products:

Medibee has three bee farms in the beautiful Peak District in Derbyshire with ancient wild flower meadows, woodlands and heather moorlands. Medibee specialises in antibacterial honey which arises not just from the exceptional environment that millions of bees enjoy, but the gums and resins from ancient hedgerows which wind for miles in and around our wonderful valleys.²³

The specificity of "three bee farms in the beautiful Peak District" also highlights another important characteristic of honey (and other bee-products) which can be linked to the idea of a more traditional lifestyle: local provenance. The photos in Figure 13 were taken at the site of one of our participatory groups.

The belief that local honey has specific health value for children, because its constitution reflects the local pollen mix, was mentioned by some participants.

²¹ 'Liquid gold: 7 health benefits of honey that could heal your whole body', <u>http://www.medicaldaily.com/liquid-gold-7-health-benefits-honey-could-heal-your-whole-body-325932, accessed on 28/5/2016</u>

²² <u>http://www.hollandandbarrett.com/shop/food-drink/honey-jams-spreads/honey/</u>, <u>accessed on 28/5/2016</u>

²³ http://www.medibee.co.uk, accessed on 28/5/2016

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They say it's good for the pollen count as well. So you don't... you know your children won't suffer from hay fever if they have the honey that is made in your area. [...] My aunt is a Reiki master and she told me that basically your immune system gets used to something to do with the pollen and how the bees make the honey in the environment, like in your local area. So you should give your children the local honey.



Figure 13: Local honey (photograph by team member)

For Preston (2006), "meaningless appeals to fuzzy notions of cultural and natural symbiosis and 'ecological preservation' are standard elements in the branding of honey". The power of these associations is also apparent in the way that they are invoked by other products: in the logo and accompanying story of Tate and Lyle's Golden Syrup, for example, we see the use of a Biblical story about bees to invoke ideas of tradition and naturalness in respect of what is in fact industrially refined cane sugar (see Figure 14).



The power of the honeybee as a focal point for cultural nostalgia for an idealised, traditional way of life is further amplified by the emergence of beekeeping itself as a symbol of that way of life – whether or not the facts of modern beekeeping support that association or not (see Figure 15). Wilson (2004) discusses how, at the end of the Nineteenth Century:

As factories belched out smoke, and sugar consumption proliferated, the beekeeper began to seem a folksy, reassuring kind of figure, a link with the old ways, rugged and self-sufficient. He might take account of progressive developments, but his real wisdom lay deep in the hive and was as old as time.

Preston (2006) notes a similar line of thought in the writings of Henry Thoreau, phrased in a way that perhaps foreshadows, in its implicit contrast between science and humanity, the distinction noted earlier between "a logical person" and "a human being":

Those country persons learned in bee-lore around Concord, Massachusetts seemed to Henry Thoreau to have garnered a kind of natural wisdom: 'I love best the unscientific man's knowledge; there is so much humanity in it.'

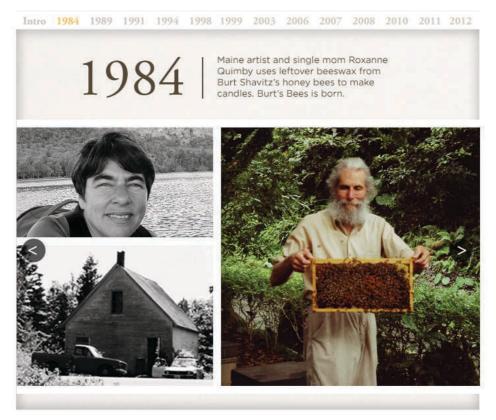


Figure 15: A "folksy, reassuring kind of figure"? (http://www.burtsbees.co.uk)

This image of the beekeeper remains an attractive one: for example, shortly after commenting on its emergence in the Nineteenth Century, Wilson herself opines that: "The best beekeepers... still seem to belong to an older, kindlier world".

The unique importance of honeybees and beekeeping over many centuries have afforded bees rich cultural meanings, of which this cultural nostalgia for an idealised past is but the latest manifestation. Preston (2006) argues that:

From the first Greek poetry to the latest Hollywood horror film, the bee stands as an emblem of man's relation to nature and to himself.

This symbolic power is logically and historically independent of the synecdochic power of pollinators, understood as creative connectors, to stand for the greater, interconnected whole in which they participate. But it is not hard to see how these two ways of understanding and valuing one insect might become entwined in a potent symbol of our precarious relationship with nature: what we have done to it, what we have done to ourselves in the process, what we have lost forever, and what we may yet hope to recover.

It is with a nostalgic flourish of exactly this kind that Preston (2006) concludes her survey of "the natural and cultural world of the bee", reflecting on recent (at the time she was writing) vandalism to one of the bees on the Fontana delle Api in Rome:

The Bernini fountain, stranded in the twenty-first century at what is now a busy urban intersection, surrounded (as real bees almost never are) by the roar of traffic, assaulted by exhaust fumes and mired in litter, has serenely survived intact for four centuries, its stone bees eternally climbing its surface as if making good the precious comb. That one bee is now a broken one is heartbreaking evidence – evidence which would be quite lost on real bees – of our world, our past, our culture, how we got from wherever we began to the here and now.

7. ...as analogous to humans



In this chapter, we review social and cultural values which can be used to understand and value pollinating insects as analogous to humans.

Three key social and cultural values are identified, which understand and value pollinating insects in their capacities as: creatures with lives; creatures with characters; and partners in relationships.

7.1 Creatures with lives

Good stewardship can involve care for the living thing being nurtured (§4.1) and a sense of responsibility for its wellbeing (§6.3.1): but it does not typically involve much in the way of identification. Most people would feel perfectly happy about taking a successful crop of carrots and chopping them up for a stew, for example; while at least some feel the same way about wringing the necks of chickens they have reared.

By contrast, consider the following participant's explanation of why he moves spiders, not out of his house, but *into it* – despite having earlier noted that he was "not really an insect person":

I moved one in not long ago actually, because it was... it kept putting its web on an opening door, so its web was destroyed every time and it wasn't catching anything. So I decided to... I thought I'll move it and decide on a place later, and before I knew it, it had a web up in the house and it was quite comfortable. [...]

Interviewer: If I say, for the sake of argument, why are you wasting your time on a spider...

Because that spider's wasted hours upon hours building its web. Its natural instinct is building its web on a door that continues to open, that continues to destroy its... its home. So why not waste five minutes on a spider that won't have to waste another hundred hours on building itself a home?

Empathy for another living thing was seen by some participants as an instinctive response. In the words of one participant, who had rescued a struggling bee by providing it with droplets of sugar water from a syringe: "It's just natural. It just came natural. [...] I've rescued a few birds, in my time, as well." Others claimed a more conscious process of reflection:

I know this might sound silly, but I'm one of those people, if you see a little insect like hanging somewhere, and a lot of people like to squash it, I'll go and like get it and put it out the window. I think: I could save the little insect, which is quite astonishing in a way. [...] It's because I respect life. Yes, because I respect the fact... I often think about this, it's a bit of a philosophical debate I have with myself, if I see an insect I'll think, at the moment that insect can decide to go right or left, and when I squash it dead then I have... I have taken away from that insect its ability to think. I'm going to walk right or left in effect. I mean obviously they don't use the word 'think', but to make a decision for example. So it is taking away... taking away the life force of something, and as much as possible, I don't want to do that.

A strong sense of empathy with and compassion for living things, including insects, was clearly apparent among the children we spoke to, as is illustrated in the children's picture in Figure 16.



Figure 16: Drawing from workshop with children

This immediate response to a single living creature as a creature with a life, like a human being, can also be generalised to arrive at the conclusion that living things, also like human beings, have *rights* – to food, to space, or simply to exist.

I like animals, generally. I don't see why you should hurt them unnecessarily and get rid of them because, you know, they've got as much right to be here as we have, if not more. They're not going out of their way to hurt us.

The garden isn't just for me, is it? It is there as a resource for insects and little mammals and things like that. [...] We share it, don't we? I mean, you can't hope to have exclusivity over the great outdoors any more than you can, you know, when you're just sat on the beach, you can try and get your own little piece of paradise but there's always going to be some irritating person smoking a cigarette next to you.

People get annoyed because they're [wild animals] going in their gardens or they're running through the bins and you think: they're just trying to survive basically, and you're living on their old home technically, you know?

Everyone keeps going on about diversity in people and, you know, different races. What about all the diversity of wildlife we've got? We need to encourage this and make sure that not only humans or people have the right to live. Everyone's got... every species has got the right to live.

7.2 Creatures with characters

As well as empathising with other living things, human beings also have a marked tendency to project onto them human characteristics. It is a tendency which is apparent across our culture, and especially in a broad range of literature and media aimed at children.

What is true for living things in general is also true for insects and other 'minibeasts'. Based on our workshops with children, we propose a simple classification – which is also reflected in children's literature and other media.

Cuddly bugs	Ladybirds, Dragonflies, Butterflies
Workers	Ants, Caterpillars, Worms, Maggots
Scary beasts	Spiders, Wasps, Horseflies

Bees occupy an interesting position in this categorisation. Potentially they can occupy *any* of the three locations:²⁴ in practice, they are typically positioned as 'cuddly bugs' and/or 'workers'. This dual positioning was apparent not just among children but also among our adult participants and in other materials reviewed. It reflects, moreover, what appears to be a widespread confusion between honeybees (workers) and bumblebees (cuddly bugs), and an equally widespread tendency to overlook the existence of other kinds of bee.

The idea of honeybees as 'workers' has a long history. Wilson (2004) notes that "from the Renaissance onwards [the beehive] almost always means selfless industry", and cites among other evidence a report of the Great Exhibition of 1851 in the *Illustrated London News* as "The Great Gathering of the Industrious Bees". Bees, she notes, "were particularly useful for drumming home the message that social order came from harmonious, uncomplaining labour". Preston (2006), meanwhile, does not so much comment on the association of bees with industry as demonstrate it:

Anyone who has ever watched bees going purposefully about their tasks will have admired the severe beauty of their single-mindedness [...]. The valiant undertakings of these tiny creatures, who seem to house large hearts in their little bodies, are in aid of apparently wholly beneficial ends – the bee carries her own weight in nectar and pollen, and literally works herself to death; her ragged wings, after only a few weeks of life carrying out perhaps 1000 flower-missions a day, show her age and imminent end.

The association between bees and hard work and industry is still in evidence in contemporary usage – as in the phrase "busy bees" – although the 'hard work' in question now includes pollination as well as the production of honey.

At times, the bee can take on an almost heroic quality. Bees and other pollinators are presented quite literally as 'superheroes' in the *The Pollinators in the Case of the Flower Who Couldn't Bloom*, a children's story by Ian Kent described by its publishers as about "a superhero group who are called upon to help Miss Rose."²⁵

It is striking, however, that in our evidence base the association of bees with hard work tended to be confined to those with greater engagement with the topic. Participants in the art ethnography strand, for example, marveled at how hard-working bees are, and at the incredible journeys made by some butterflies and moths.

²⁴ Historically, bees have been attributed a great many other characteristics as well. For example, Wilson (2004) quotes Charles Butler's 1609 work *The Feminine Monarch or the History of Bees*: "The Bee, therefore excelling in many qualities, it is fitly said in the proverb: As Profitable / Laborious / Loyal / Swift / Nimble / Quick of scent / Bold / Cunning / Chaste / Neat / Brown / Chilly as a Bee."

²⁵ <u>https://www.amazon.com/Pollinators-Case-Flower-Couldnt-Bloom-ebook/dp/B00867JGJU</u>, accessed 28/5/2016

The bees are amazingly motivated and they have an incredible sense of purpose. I am in awe of them.

Among less engaged participants, there was more evidence of bees – and in particular bumblebees – being assigned to the category of 'cuddly bugs'. This was also the case among the children. Anatomical considerations played an important role here: specifically that fact that bumblebees are "fat" and "fluffy".

I think particularly bumblebees are quite cute, aren't they?

These are bumblebees, yes, because they're nice and fluffy. [...] They're fluffier bees

[Looking at pictures of pollinators] I mean, you know, there is something more aesthetic, probably, about the little fat, fluffy bumblebee. You know, you can't... you know... you know, they do look a little bit meaner and, sort of, keener when they're, sort of...

Interviewer: The honeybee ones?

Yes, the honeybee ones, you know, so I still think the bumblebee is probably my ultimate favourite, yes: the little fluffy one there. [...] That just softens that whole thing, doesn't it? Makes it seem slightly less aggressive.

As the last of these quotations indicates, this emphasis on fatness and fluffiness can create some problems for the image of a honeybee – mistaken by a number of interview participants for a wasp. One participant noted that: "If you were to ask anyone to draw a picture, they'd draw that and that [points at pictures of bumblebees] for a bee".

The fact that bees die after stinging someone was also cited as evidence that they are friendlier, less aggressive creatures.

I think it's this other thing about bees, that, you know, that they don't seem so aggressive and also the other thing about a bee, that if it stung you, it dies, it's only got one sting or something. I don't know if this is, kind of, like, a wives' tale, whereas a wasp, you know, can just go around, kind of, merrily, kind of, stinging, you know, to its heart's content, kind of thing.

I don't know many people that have got any animosity against bees. [...] Because people know that a bee will sting if under threat, and probably die, I think it will die, so I don't think people worry about bees. I think they have more sympathy to them.

Both cuddliness and friendliness are highlighted in representations of the bee in cartoons, video games, toy insignia, company logos, and a range of other contexts – representations which position the bee as playful and essentially harmless (see Figures 17, 18 and 19). One of our participants spent her entire interview drinking tea from the mug shown in Figure 20: she only noticed what it depicted when this was pointed out by the interviewer.

Highly stylised 'cartoon' bees have also been co-opted as logos by campaigns aiming to boost public awareness of pollinators (see Figure 21). The playful quality of these logos is accentuated by alliteration and word play. Other playful tactics include dressing up as bees: a tactic used, for example, at the University of Sheffield's Discovery Night of 'Precious Pollinators'. Under the heading *Discovering how to bee a pollinator*, this event showcased research relating to an urban biodiversity project and "let some local families buzz around the university, having fun, getting sticky and learning about bees".

Taken together, the combined characteristics attributed to the bee – industriousness, cuddliness, non-aggressiveness, fun – find unified expression in the frequently drawn contrast between bee and wasp (see Figure 22).

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Figure 17: The playful bee (multiple sources)



Figure 18: The playful bee as logo (www.medibee.co.uk)



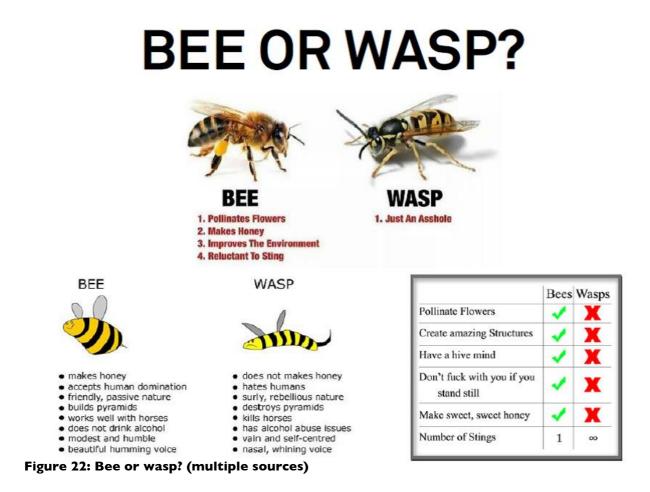
Figure 19: Bee wrapping paper (photograph by team member)



Figure 20: Participant's bee mug (photograph by team member)



Figure 21: Playful bees in campaign logos



With the world of stripy flying insects so divided, pollinating insects such as hoverflies stand little chance of establishing an independent identity. Only one of our interview participants identified the hoverflies in the pictures shown; and he understood them entirely in relation to wasps and bees:

I like hoverflies, they're like a friendly wasp. [...] It's like a wasp or bee without the sting, isn't it?

7.2.1. Projection at the collective level

Historically, human characteristics have also been projected onto bees at a collective level, their elaborate social behaviour making them "favourites of social satirists and political polemicists" (Preston, 2006). To cite just one well known example, in Shakespeare's *Henry V* the Archbishop of Canterbury uses bees to illustrate his thesis that "Therefore doth heaven divide / the state of man in divers functions":

... so work the honey-bees, Creatures that by a rule in nature teach The act of order to a peopled kingdom.²⁶

However, the bee colony as a model of human society long pre-dates Shakespeare. As Nimmo (2013) argues:

At least as far back as ancient Greece, bee colonies were thought of as a kind of political community in nature, an ideal natural polity, and bees symbolised virtuous dedication to the collective good. This notion of the moral bee, wherein the bee is a symbol of civic virtue, as distinct from private interest, runs very deep in the cultural imaginary, having undergone various transformations and reinterpretations without ever quite disappearing. Interestingly it has been inseparable from the perception of bees as industrious, productive and hard-working; the dedication of bees to the colony is seen as manifest in their activity – they work not for themselves but for the good of the hive, and every bee must work.

Uses of the beehive as a model for society continue to this day. For example, Thomas Seeley's 2010 book *Honeybee Democracy* argues that "these incredible insects have much to teach us when it comes to collective wisdom and effective decision making";²⁷ while in Sue Monk Kidd's 2003 novel *The Secret Life of Bees*, Lily recalls August telling her that "the world was really one big bee yard, and the same rules worked fine in both places."

It is not hard to imagine how the idea of bees as providing a model of a better society *might* be drawn into the discourse of cultural nostalgia discussed in §6.4, for example through a contrast between traditional community and contemporary individualism. In light of this, it is striking that this particular way of understanding and valuing bees was *not* apparent in participant responses of other materials reviewed. One reason for this may lie in the fact that other, darker interpretations of the hive exist. As Preston (2006) notes:

The ideologues of power think of bee-keeping as the appropriation of the labour of oppressed bees, and of bee-keeping as a form of enslavement.

The use of the hive as a metaphor for totalitarianism is apparent, for example, in Laline Paull's 2014 novel *The Bees*, as the synopsis makes clear: "Flora 717 is a worker bee born into the lowest caste of her totalitarian hive society."²⁸ Nimmo (2013) describes this parallel vision of the bee colony seen as:

²⁶ Henry V, I.ii. 187-189

²⁷ http://press.princeton.edu/titles/9267.html, accessed on 28/5/16

²⁸ <u>http://www.lalinepaull.com/the-bees/synopsis/</u>, accessed on 28/5/16

not an ideal polity but a mindless and malign collective, the essence of which was 'the swarm', a multitude devoid of individual intelligence and free will.

Preston (2006) argues that the cultural history of this darker bee "starts, obliquely, with the Romantic critique of the industrial revolution":

This expression of anxiety at the power and human cost of the industrial process and the capitalist impulse that impels it, which convert the individual into an interchangeable part in a huge production machine, often alludes to the features of apian social organisation that were increasingly troubling nineteenth-century observers. The bee, once the uncontested emblem of moral rectitude in its communal cooperation, was now starting to be understood as radically, unnervingly 'unselfed', a natural emblem of the anonymous and identical part in a hive which quickly began to resemble nothing so much as a mill or a foundry.

If this analysis is correct, then it is not so surprising that the idea of the bee colony as a model of a better society has not been drawn into a discourse of cultural nostalgia which also has its roots in Romanticism (§6.4.1). Preston's analysis suggests that, in Romantic thought, there is a rift between different perspectives on bees, with bees in their capacity as social animals becoming associated with an anxious, industrialised present, while bees in their many other capacities remained associated with an idealised past.

7.3 Partners in relationships

Focused on a specific individual living thing, the processes of empathising with and projecting human characteristics can together lead to that individual being seen as a partner in a relationship, analogous to a friend or family member – a process which is most readily apparent in our relationships with pets.

One participant, a self-declared animal-lover, carefully distinguished:

- animals with which she formed a relationship, such as dogs, cats and horses: "I get terribly upset when one of them dies. [...] They're part of the family."
- other animals which were the objects of stewardship: "I'm not as emotionally attached to, like, the chickens."

When asked what her relationship with wildlife was, she inclined to the former view for some specific individuals that she recognised. Note however, how, in the quotation that follows, this line of thought leads her to talking about insects as well as birds.

I'm quite attached to a few wild animals that are around here, where I live, like my two cock pheasants. There's a woodpecker that keeps feeding and I wait for him all the time, but again, it's not... it's more like a pleasure. It's nice to see them out there on a regular basis, and I do care. I mean, I've got a bird feeder out there; I've got an insect hotel; I've got a little wild flower garden.

Insects may not be good candidates as pets; and the fact one cannot typically identify the same individual on different occasions makes it hard to see them as partners in relationships (although perhaps some beekeepers may take a different view on this). Given this, however, it is striking that there were *any* occasions when participants spoke about insects in such terms. One allotment gardener in a participatory group, for example, described the bees that had once been so plentiful as "friends". Participants in the art ethnography strand articulated the basic sense of sadness when something one cares about is lost, never to be seen again – as did the following child:

I think you would miss them if they weren't there. All the stuff you've lost. You'd miss the bees just as much as the other stuff.

In the picture in Figure 23, drawn by children, the reason given for saving the bees is not only that we need "more honey" but also that we need "more company".

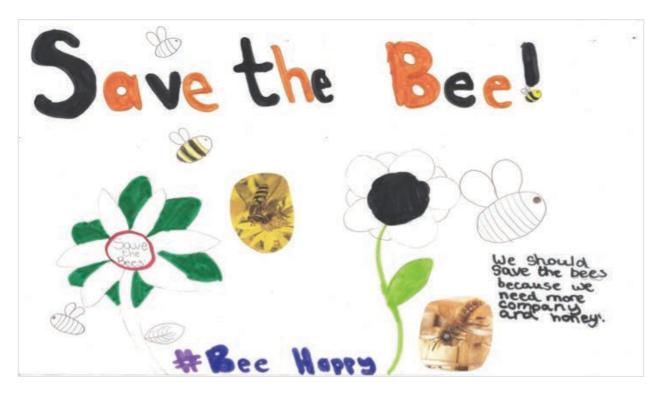


Figure 23: Drawing from workshop with children

8. Two perspectives on pollinators

In this chapter, we focus on the two social and cultural values which are used specifically in relation to pollinating insects *in their capacity as pollinators*: as useful things (§3.1) and as creative connectors (§5.3). Although logically not inconsistent, these two ways of understanding and valuing pollinators imply very different perspectives on the world, and a tension in thought which can be traced back at least to the Romantic reaction to Enlightenment science.

8.1 Holism and atomism

In the preceding chapters we have reviewed the key social and cultural values (templates) which we have seen being used in understanding and valuing pollinating insects.

Of these, two are used specifically in relation to pollinating insects in their capacity as pollinators:

- First, pollinators may be understood and valued as useful things (§3.1) providers of a vital service to human beings. We can describe this as an atomistic perspective on pollinators, as it isolates pollinators from the wider natural systems of which they are part, and focuses on services/goods provided to humans.
- Secondly, pollinators may be understood and valued as creative connectors (§5.3) –
 participants in a greater, interconnected whole, alongside many other participants, but with
 a role which, by its nature, draws attention to that greater whole. We have described this
 as a holistic perspective on pollinators, as it shifts attention to the greater whole in which
 pollinators participate. Adopting this perspective can, as we have seen, open up the other
 powerful meanings and sources of value reviewed in Chapters 5 and 6.

As a matter of *logic*, these two perspectives appear to be consistent with each other. While the holistic perspective highlights the role played by pollinators in a greater whole, rather than services/goods provided to humans, it can still be linked to human needs by noting our dependence on that greater whole. In line with this, we find examples of participants adopting (or quoting: see §3.1.1) the atomistic perspective and then pulling back to a holistic perspective; or starting from the holistic perspective and zooming in on an atomistic focus on our dependence on pollinators.

It's well documented the importance of pollinating bees, for instance. If we don't have any pollinating bees then we're screwed, so, you know, we need to support this. And so, I think it's just a really important part of how we should be relating to our world, you know, as much as we need a car park we also need bees and we need bugs, we need spiders and worms and everything else.

They're [insects] part of the, you know, the structure of how it all works. You know, the bees come and pollinate, the, you know, the butterflies come and eat those bugs, the worms filter out the mud and the soil, you know, there's a place for them all. It's all part of that big picture, isn't it? That none of those things would work, and I think sometimes, that is, the little things get missed, and they... how important they are. It's not just about whether you like spiders or not, there's a bigger picture in all that. They serve a purpose, don't they? And, you know, we couldn't grow vegetables if they weren't pollinated by the bees, and, you know, it's all part of that cycle.

Indeed, it could be argued (but see §8.3.2 for a counter-argument) that, while the atomistic perspective aligns closely with the concept of ecosystem *services*, the holistic perspective offers

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a more sophisticated understanding of these services which is more in tune with the broader ecosystems approach.²⁹ Consider, for example, the way in which the following passage from the foreword to Synthesis report of the *National Ecosystem Assessment* (NEA, 2011) attributes the provision of services and goods to the environment as a whole, and emphasises the importance of interaction in their delivery.

Our wealth as a nation and our individual well-being depend critically upon the environment. It provides us with the food, water and air that are essential for life and with the minerals and raw materials for our industry and consumption. Less obviously, it provides the processes that purify air and water, and which sequester or break down wastes. It is also in our environment where we find recreation, health and solace, and in which our culture finds its roots and sense of place. Scientists refer to these services that our environment provides as 'ecosystem services', recognising that it is the interaction between the living and physical environments that deliver these necessities.

Logic aside, however, we have also reviewed (in §3.1 and §5.3) clear patterns of difference in the ways in which these two perspectives are used in practice:

- quoting, rather than adopting, the atomistic perspective which may partly be explained by a lack of knowledge of the science which underpins this perspective
- confident adoption of the holistic perspective despite a similar lack of knowledge of the science which underpins this perspective
- defaulting to the holistic perspective and consideration of the greater, interconnected whole, even in response to questions specifically focusing on pollinators and pollination

Moreover, in contrast to the holistic perspective – which opens up powerful meanings and sources of values – the atomistic perspective seems cold and sterile, implying little beyond a bald statement that pollinators provide an important service.

Consistent as they may be from a logical perspective, from the perspective of a real, socially and culturally situated human being the atomistic and holistic perspectives offer very different templates for understanding and valuing nature. That this is so can perhaps best be illustrated by considering a specific example: the way in which, as Wilson (2004) describes it, "truckloads of honeybee colonies are heaved all over the United States".

- From the atomistic perspective, with its focus on the usefulness of living things to humans, this activity can be interpreted as clear evidence of the value of pollinators.
- From the holistic perspective, this activity can be interpreted as evidence of the extent to which we as a society have become disconnected from nature, and lost touch with the sources of value in our own lives: to borrow Wordsworth's phrases (see §6.4.1), this "getting and spending" of bees is just one more sign that we have "given our hearts away".

Further evidence of the tension between the atomistic and holistic perspectives in practice can be found in the public dialogue work carried out by Fish and Saratsi (2015). Noting that a "significant minority of participants were sceptical about advancing the use of the term 'services' to describe human relationships with nature", they state that one of the reasons for this scepticism was a "concern that human responsibilities and duties of care towards nature are obscured by the concept of services".

As an alternative [one] group suggested that services procured from nature might be better described as 'privileges', while another suggested 'gifts'. As they reflected on this

²⁹ See, for example, <u>https://www.cbd.int/ecosystem/principles.shtml</u>; accessed on 28/5/16/

point a common argument was to urge relationships with nature that are about people 'putting back in' as much as 'taking out' ('don't grab more out of the pot that is in the pot or put more in the pot'). Participants sometimes wondered how ideas of human harmony and reciprocation with nature might be better reflected in a framework governed by the concept of services.

Alongside this scepticism regarding the (in our terms) atomistic concept of "ecosystem services", and moves to reframe it in the holistic language of Chapter 5 and 6, Fish and Saratsi also note an enthusiasm for the way in which a broad approach "helps recognise how everything is connected":

The framework signified for participants that managing the natural environment is complex and multifaceted, with multiple effects and interactions. From a very early point in discussion many participants became animated by systems-type thinking. Some pointed generally to the idea that interconnectedness implies interdependency, and thus the framework may helpfully recognise that the system has to be managed as a whole [...]. Others interpreted the framework positively in terms of linking up personal action with higher scales and impacts such as understanding how local and global issues are intertwined.

Strikingly, it is the holistic context provided by the Ecosystem Approach that seems to have eventually reconciled participants to the potential usefulness of the atomistic concept of "ecosystem services":

They reacted cautiously to the NEA's framework and concept of ecosystem services but tended to be more positive about the framework's utility the more they used and applied it, for instance, within the context of the Ecosystem Approach. [...] Participants were particularly supportive of the framework's holistic and interconnected view of the environment and its recognition of complexity.

The patterns identified by Fish and Saratsi – "scepticism" about an atomistic approach to valuing nature, "animation" when offered a holistic approach – are entirely in line with the patterns noted in this regard specifically in relation to pollinators.

8.2 Holism and Romanticism

The atomistic and holistic perspectives offer very different templates for understanding and valuing nature to a real, socially and culturally situated human being. They are also templates with their own cultural histories: and it is useful to put the differences between them into this historical context.

In particular there are strong points of connection between the holistic perspective and Romanticism, over and above those already noted in §6.4.1. Holism is a central thread in the Romantic approach to science – in opposition to the analytical and (in the terms of the contrast drawn in the last section) atomistic perspective of Enlightenment thinking. As Cunningham and Jardine (1990a) explain:

The Romantics were certainly hostile to the mechanical natural philosophy and descriptive natural history that they inherited from the Enlightenment. [...] The hostility runs deep: for the Romantics mechanistic natural philosophy is the culmination of the analytic and judgemental approach responsible for our fall from grace with nature.

These ideas found their way into the sciences too, through figures such as Alexander von Humboldt, often considered one of the fathers of modern ecology. Nicolson (1990) argues that "Humboldt directed attention to the 'whole' because Nature could not be understood by concentrating only on particulars. Nature was one holistic unity." He quotes his own translation of a passage from Humboldt's *Essai sur la geographie de plantes*.

This science [la physique générale], which without doubt is one of the most beautiful fields of human knowledge, can only progress... by bringing together of all the phenomena and creations which the earth has to offer. In this great sequence of cause and effect, nothing can be considered in isolation. The general equilibrium, which reigns amongst disturbances and apparent turmoil, is the result of an infinity of mechanical forces and chemical attractions balancing each other out. Even if each series of facts must be considered separately to identify a particular law, the study of nature, which is the greatest problem of la physique générale, requires the bringing together of all the forms of knowledge which deal with the modifications of matter.

As well as finding its way into the foundations of sciences such as ecology, the holistic outlook of Romanticism has, as we have seen, lived on more widely in our culture, providing a coherent way of understanding and valuing the world which is available even to those lacking in scientific knowledge. Consider, for example, the participant whose confident adoption of the holistic perspective was discussed in detail in §5.3.3. As we saw, this participant – having arrived at the holistic perspective – argues that: "I think we human beings, don't understand properly the harmonious and... I can't even find the words, because it's so incredible, the natural world and nature." Having concluded that "probably there's something on the feeling level as well", she develops further the idea that, as a species, we may understand less than we think we do:

We think we're all so wonderful. We clever humans do XYZ, you know, and there we are with our GM foods and manipulating this and manipulating that, without looking at the bigger picture of the harmony and all that nature does for us, and how nature in a way serves us. And it's just disrespectful, and I don't like the way that it's going with you know, you know with the way we manipulate. I think we need to know more, and I think there needs to be more knowledge, so that people can really work with nature, and not try and dominate nature.

The views expressed here echo Goethe's Faust, who "spurns knowledge 'extorted with levers and screws', longing instead for a grasp of Nature's secret elements, her hidden active forces, the harmony of her whole and parts" (Cunningham and Jardine, 1990b). At this point, in response to the participant's suggestion that "there needs to be more knowledge", the interviewer suggests that: "when it comes to nature, there are experts who know a lot about it, and there are the rest of us who don't know much." This observation prompts the following response from the participant:

Can I say something about that? Often the experts will know these things. So say you might get an expert in ants and insects, and he absolutely knows how they work, how the function, why they colonise as they do, what... he understands it you know, like a PhD. But is he looking at those ants and insects in the context of how that relates to everything else, and all the other things. He can't be an expert in everything. And so I think often people are in their own little boxes and their own little like expert world of individualism, and they're not... they're not necessarily making the connection outside of their field. You know and connecting with the way that everything should be... I think a lot of different animal species exist like in a balance, or like in a harmony for a particular reason that we don't understand. It's hard for me to think that because I

don't understand it either. So I'm kind of like intuiting, you now, I'm intuiting what I scientifically can't back up, which is where the scientists always get me you know.

One may take issue with this participant's characterisation of contemporary science as necessarily reductionist and atomistic. Setting this aside, however, what is striking is that the aspiration she expresses here is directly comparable to Humboldt's, in his *Essai sur la geographie de plantes*, for a science which is "one of the most beautiful fields of human knowledge " and which "can only progress... by bringing together of all the phenomena and creations which the earth has to offer".

The Romantic commitment to a holistic perspective in science has implications for the diversity of ways in which one may arrive at an understanding or valuing of nature. For example, Humboldt tried to make room within his science for the kind of awe and wonder described in §5.1, alongside the dispassionate objectivity we have come to think of as the hallmark of genuine science. As Knight (1990) notes:

Humboldt sought to balance the subjective and the objective; and his later Aspects of Nature was an attempt at word-pictures of exotic scenery, informed by botany, geology and zoology. Descriptive natural science with Humboldt was passionate, in line with Davy's poem; and particularly united the aesthetic and the scientific.

"Davy's poem" in the above quotation refers to a poem from the notebooks of Humphrey Davy, another key figure in both Romanticism and the development of science. This poem is reproduced by Knight (1990):

Oh, most magnificent and noble Nature! Have I not worshipped thee with such a love As never mortal man displayed? Adored thee in thy majesty of visible creation, And searched into thy hidden and mysterious ways as Poet, as Philosopher, as Sage?

The Romantic ideal of science expressed in this poem seeks to accommodate within a larger, overarching perspective the different ways of understanding and valuing nature offered by the poet, the philosopher and the sage. There is room in this larger perspective for the "unscientific man's knowledge" so loved by Henry Thoreau (see §6.4.3); or indeed, to borrow the contrast drawn by a participant and quoted earlier (§6.4), the views of "a human being" alongside those of "a logical person":

I'm mentioning it because that's a distinction. As a logical person we see all the... I can understand the need for it [building new homes on greenfield sites] because the modern world is one of gradual destruction to the environment, that's just a fact. But as a person, the thing is, you can see that it's wrong.

Note, however, that this larger perspective still makes room for the dispassionate, objective perspective of scientist in the Enlightenment mode (i.e. the natural "philosopher"). As Cunningham and Jardine (1990a) note, notwithstanding the hostility of Romantic thinkers to the mechanical and (in our terms) 'atomistic' science of the Enlightenment:

their attitude was rarely one of outright rejection. Goethe's Faust spurns book learning and the cold-hearted attempt to extort knowledge from nature 'with levers and screws'. Yet Goethe's own ventures into the sciences are both methodical and solidly founded in observation and experiment. [...] In a letter to Wordsworth, Coleridge writes of 'the philosophy of mechanism, which, in everything that is most worthy of the human intellect, strikes Death'. But on reading the Optiks of the arch-mechanist Newton he declares his delight 'with the beauty and neatness of the experiments, and with the accuracy of his immediate deductions from them'. Nor does he envisage an outright refutation of the mechanical philosophy at the hands of his new 'philosophy of life and intelligence'; instead the mechanical view will be shown to embody only a superficial and partial insight. Though the natural history and natural philosophy of the Enlightenment typify for the Romantics the attitudes responsible for our fall from grace with nature, they are also seen as a necessary stage on man's 'eccentric' way to redemption.

It is not Enlightenment science that is rejected by the Romantics, but the pretensions of that science to completeness, and its refusal to countenance the possibility of other ways of understanding and valuing nature.

In a similar way, it is not logical inconsistency that brings the atomistic and holistic perspective on nature into conflict, but a perception that all other perspectives, including the holistic perspective, can and must be reduced without loss to an atomistic focus on usefulness to human beings.

8.3 McGilchrist on the divided brain

In The Master and his Emissary: the Divided Brain and the Making of the Western World, lain McGilchrist (2009) develops an argument which suggests the distinction we have made between atomistic and holistic perspectives may in fact be underpinned not only by history but also by human anatomy: specifically the separation of the brain into two hemispheres. Indeed, McGilchrist's argument suggests that the cultural history of these two perspectives can itself be understood in terms of the evolving relationship between the two brain hemispheres.

It will not be possible here to do justice to the sophistication and interdisciplinary breadth of McGilchrist's argument. Indeed, in drawing a contrast between atomistic and holistic perspectives, we run the risk of precisely the kind of "simplistic dichotomising" he is keen not to encourage: "The differences that I hope to establish are too nuanced to be encapsulated in a few words or simple concepts." With the few words and simple concepts at our disposal, however, we hope to show how the findings of our study can be situated in and made sense of with the model which McGilchrist develops over 462 pages of closely evidenced argument.

8.3.1 Two hemispheres, two perspectives

McGilchrist's argument takes as a starting point the "plethora of well-substantiated findings that indicate that there are consistent differences – neuropsychological, anatomical, physiological and chemical, amongst others – between the hemispheres." These differences can *not*, however, be characterised in terms of differences of *function*: "almost everything we once thought went on in one or other hemisphere alone is now known to go on in both." Indeed, the attempt to understand the difference between the hemispheres functionally is itself a symptom of the fact that:

we are obsessed, because of what I argue is our affiliation to left-hemisphere modes of thought, with 'what' the brain does – after all, isn't the brain a machine, and like any machine, the value of it lies in what it does?

On the basis of a wide-ranging review of evidence, McGilchrist argues that the difference between the hemispheres is in fact:

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not in the 'what', but in the 'how' – by which I don't mean 'the means by which' (machine model again) but 'the manner in which', something no one has ever asked of a machine. I am not interested purely in 'functions' but in ways of being, something only living things can have.

The two hemispheres, argues McGilchrist, can be thought of as "having a disposition, or stance, towards the world – having a 'take' on it, if you like." In the terminology we have used in this report, that is, the two hemispheres have different *perspectives*, and so understand and value things in different *capacities*.

Things change according to the stance we adopt towards them, the type of attention we pay to them, the disposition we hold in relation to them. This is important because the most fundamental difference between the hemispheres lies in the type of attention they give to the world.

Indeed, if the term 'individual value' is understood in the way proposed in 1.2 - a consistency across many distinct valuings of different types of object by the same individual – then the two hemispheres can be thought of as having different values:

It seems that they coexist together on a daily basis, but have fundamentally different sets of values, and therefore priorities, which means that over the long term they are likely to come into conflict.

In what ways do the 'takes' (or, in our language, perspectives) of the two hemispheres differ? Caution is needed in answering this question, since to offer a bulleted list of distinctions is already to adopt the perspective of the left hemisphere. McGilchrist offers the following overview:

If one had to encapsulate the principle differences in the experience mediated by the two hemispheres, their two modes of being, one could put it like this. The world of the left hemisphere, dependent on denotative language and abstraction, yields clarity and power to manipulate things that are known, fixed, static, isolated, decontextualized, explicit, disembodied, general in nature, but ultimately lifeless. The right hemisphere, by contrast, yields a world of individual, changing, evolving, interconnected, implicit, incarnate, living beings within the context of the lived world, but in the nature of things never fully graspable, always imperfectly known – and to this world it exists in a relationship of care.

These two perspectives, he argues, arise from "two opposing ways of dealing with the world that are both vital but are fundamentally incompatible", embodied in the divided brain by an evolutionary process of "neurological sequestration from one another":

One tendency [left hemisphere], important for being able to get things from the world for one's own purposes, involves isolation of one thing from the next, and isolation of the living being, perceived as subjective, from the world, perceived as objective. The drive here is towards manipulation, and its ruling value is utility. [...] The other tendency [right hemisphere] was centripetal, rather than centrifugal: towards the sense of the connectedness of things, before reflection isolates them, and therefore towards engagement with the world, towards a relationship of 'betweenness' with whatever lies outside the self.

In another passage, McGilchrist explores the ways in which these two tendencies and their associated perspectives underpin two senses of the English word 'know' which are, in many other languages, expressed by two distinct words (German: kennen/wissen; French:

connaître/savoir; Spanish: conocer/saber). He begins by considering what it means to *know* a person:

It's the way we naturally approach knowledge of a living being; it's to do with individuals, and permits a sense of uniqueness; it's 'mine', personal, not something I can just hand on to someone else unchanged; and it is not fixed or certain. It's not easily captured in words; the whole is not captured by trying to list the parts ('quicktempered', 'lively', etc); it has at least something to do with the embodied person (the photograph); it resists general terms; it has to be experienced; and the knowledge depends on betweenness (an encounter). These are all, in fact, aspects of the world 'according to' the right hemisphere.

This kind of knowledge derives from a coming together of one being or thing as a whole with another. But there is another kind of knowledge, a knowledge that comes from putting things together from bits. It is the knowledge that we call facts. [...] It is the only kind of knowledge permitted by science (though some of the very best scientists have used subterfuge to get away with the other kind). It concerns knowledge in the public domain – the local timetable, the date of the Battle of Trafalgar, and so on. Its virtue is certainty – it's fixed. It doesn't change from person to person or from moment to moment. Context is therefore irrelevant. But it doesn't give a good idea of the whole, just of a partial reconstruction of aspects of the whole. This knowledge has its uses. Its great strength is that its findings are repeatable. Its qualities are the inverse of those previously outlined, and they are associated with the left hemisphere: an affinity with the non-living; with 'pieces' of information; general, impersonal, fixed, certain and disengaged.

8.3.2 Atomism and holism revisited

At this point, points of connection with our own more limited distinction between atomistic and holistic perspectives should perhaps be apparent. A few such links in particular are worth emphasising. The first of these is the strong association between what we have described as atomism and the left hemisphere, while holism is associated with the right hemisphere:

One of the most durable generalisations about the hemispheres has been the finding that the left hemisphere tends to deal more with pieces of information in isolation, and the right hemisphere with the entity as a whole, the so-called Gestalt – possibly underlying and helping to explain the apparent verbal/visual dichotomy, since words are processed serially, while pictures are taken in all at once. [...] if it is true, the importance of this distinction is hard to over-estimate."

At times, McGilchrist even describes these conflicting tendencies to division and cohesion as "the main point of hemisphere difference":

If one had to characterise the left hemisphere by reference to one governing principle it would be that of division. Manipulation and use require clarity and fixity, and clarity and fixity require separation and division.

As this last quotation suggests, however, the atomism of the left hemisphere's perspective cannot be separated from other aspects of its 'take' on the world, not least its tendency to see everything in terms of its own ends:

Where the left hemisphere's relationship with the world is one of reaching out to grasp and therefore to use, the right hemisphere's appears to be one of reaching out - just that. Without purpose. In fact one of the main differences between the ways of being of the two hemispheres is that the left hemisphere always has 'an end in view',

a purpose or use, and is more the instrument of our conscious will than the right hemisphere.

This is an important point. It raises questions regarding the suggestion, made in §8.1, that the holistic perspective can still be linked to human needs by noting our dependence on the greater whole, and that as such the holistic perspective may represent a more sophisticated understanding of the concept of ecosystem services in the context of the broader ecosystems approach. Is this really still the holistic perspective? Or does it represent an attempt from a left hemisphere perspective "to grasp and therefore to use" something that *cannot* in and of itself be understood from that perspective?

Note that our choice of the terms 'atomism' and 'holism' to describe the two perspectives can itself be reconsidered critically in this light. By choosing these terms, we separated out and privileged just one key contrast between the perspectives of left and right hemisphere – "division versus cohesion". We chose to do this this *despite* a sense that the 'atomistic' perspective might just as well be described as a 'utilitarian' perspective. Moreover, having taken two whole perspectives to pieces in this way, it proved impossible to put them back together again: there was no straightforward logical reason to link atomism to utilitarianism. That connection, apparent when the perspectives of right and left hemispheres are understood *from a right-hemisphere perspective*, as wholes, disappears when they are understood *from a left-hemisphere perspective*, as pieces which we then try to put back together.

Atomism is indeed associated with the left hemisphere, holism with the right: but McGilchrist's argument suggests that the differences between the perspectives of the left and right hemispheres are only partially described by the contrast of atomism and holism, and that the wholes may not be captured by trying to list the parts.

With this in mind, it is worth noting one further 'part' of the perspective McGilchrist argues is associated with the right hemisphere: the fact that it is "the way we naturally approach knowledge of a living being".

The great neurologist François Lhermitte drew attention thirty-five years ago to an essential difference between the hemispheres, when he described a case which confirmed that the right hemisphere is more concerned with living individuals than man-made objects. This flows naturally from its interest in whatever it is that exists apart from ourselves, and its capacity for empathy, as well as from its capacity to see the whole, where the left hemisphere sees an agglomerate of parts: there is an intuitive relationship between cutting things up and depriving them of life. [...] Not only does the right hemisphere have an affinity with whatever is living, but the left hemisphere has an equal affinity for what is mechanical. The left hemisphere's principle concern is utility. It is interested in what it has made, and in the world as a resource to be used.

Our catalogue of social and cultural values has prized apart distinct perspectives on living things, and on pollinating insects in particular, so that they can be neatly tabulated (see §1.5) for "manipulation and use" (in Chapters 9 and 10). In doing so, are we not perhaps guilty of "cutting things up", and taking to pieces a whole which cannot be put together again. That whole, McGilchrist's argument suggests, comprises not only the interlinked components we have described as a holistic perspective, but an entire response to living things which also comprises fascination (§2.2), care (§4.1) empathy (§7.1) – indeed, perhaps all of the perspectives we have dissected out apart from one: understanding and valuing living creatures as *useful things*.

8.3.3 The hemispheres in history

If McGilchrist's argument is accepted, then the availability of two perspectives from which the world can be understood and valued rests on more than the dynamics of use described in 1.4. It is underpinned by the structure of the brain.

Patterns of use of these two available perspectives, however, remain in McGilchrist's argument distinctly social and cultural phenomena. Indeed, the second half of his argument is given over to tracing the shifting balance between the two perspectives in the cultural history of the West, and defending the claim that: "the story of the Western world is one of increasing left-hemisphere domination".

In §6.4.1 and §8.2, we argued that contemporary expressions of the holistic perspective, such as those identified in the responses of our participants and other materials reviewed, may be traced back to the ideas of Romanticism. In McGilchrist's argument, Romanticism is merely the most recent of a number of cultural shifts towards the perspective of the right hemisphere.

Romanticism in fact demonstrates, in a multitude of ways, its affinity for everything we know from the neuropsychological literature about the workings of the right hemisphere.

Characteristics of Romanticism which support this view include "its appreciation of the whole, as something different from the aggregate of the parts into which the left hemisphere analyses it by the time it appears in self-conscious awareness" and "its passion for whatever is seen to be living, and its perception of the relation between what Wordsworth called the 'life of the mind' and the realm of the divine (Blake: 'all living things are holy')".

McGilchrist also notes the tendency of Romanticism to seek to include rather than reject the left-hemisphere dominated perspective of the Enlightenment.

Romanticism is a manifestation of right-hemisphere dominance in our way of looking at the world. Here I am reminded of the fact that the right hemisphere is more inclusive, and can equally use what the left hemisphere uses as well as its own preferred approach, whereas the left hemisphere does not have this degree of flexibility or reciprocity.

This fundamental asymmetry between the hemispheres is a central theme of McGilchrist's analysis both of the relationship between the hemispheres and of the way that relationship has played out in Western history. Indeed, the evidence suggests that the left hemisphere does not just lack the "flexibility or reciprocity" to accommodate the perspective of the right hemisphere. For example, studies in patients with differential damage to the hemispheres reveal a refusal of the left hemisphere to accept anything that falls outside its perspective that is at times tragi-comic, such as a "willingness to deny a paralysed limb even when it is confronted with indisputable evidence".

Let us remind ourselves of the neurological literature for a moment. Although the left hemisphere does not see and cannot understand what the right hemisphere understands, it is expert at pretending it does, at finding quite plausible, but bogus, explanations for the evidence that does not fit its versions of events.

For McGilchrist, this kind of denial is characteristic of contemporary culture, which he characterises as a "hall of mirrors" constructed by the left hemisphere. Moreover, he argues, many of the exit routes from this "hall of mirrors" that existed in previous periods of left-hemisphere dominance, and through which culture shifted again towards the perspective of the right hemisphere, have now been blocked. For example:

the natural world used to be another source of contact with something that still lay outside the realm of the self-constructed, but that is on the retreat, and many people in many cases lead lives almost completely devoid of contact with it.

McGilchrist does not discuss the concept of ecosystem services, but his argument invites the question: what is *its* place in this "hall of mirrors". At first sight, an approach that seeks to capture the value of nature in terms of goods and services to human beings looks like an uncompromisingly left-hemisphere perspective – another exit route blocked.

But perhaps the reality is more complex: after all, the thing that is being *approached* by this approach remains the natural world, a "source of contact with something that still [lies] outside the realm of the self-constructed." For an external observer, what is striking about the *NEA* and *NEAFO* is the parallel development of two central intuitions: first, that the natural world has value from a left-hemisphere perspective that an over-reliance on market values leads us to neglect; and secondly, that, even when non-market values have been taken into account, *something* is still missing. It is the sense of something still missing, for example, that accounts for projects such as this one.

As such, to dismiss the concept of ecosystems services as one more mirror in the hall would perhaps be to indulge the preference of the left hemisphere for what is fixed and certain. The approach is itself changing and evolving, and what matters is not what it is but what it will become.

In particular, how will those who lead its future development come to terms with that *something* that is still missing? Will they opt for the left hemisphere's preference of "cutting things up and depriving them of life"? Or will they discover the "flexibility and reciprocity" of the right hemisphere, learn to live with the implicit and the incomplete, and in so doing help our culture find a way out?

Simon Christmas Ltd

IMPLICATIONS

9. Social and cultural values and communications

In the findings chapters we have reviewed a range of different perspectives from which pollinating insects are understood and valued. In this chapter we ask: what difference should this understanding of social and cultural values make to communications?

We begin by considering, in §9.1, the specific opportunities suggested by our findings for communications seeking to promote awareness of or action to support pollinating insects. In §9.2, we set out a broader – and timely – opportunity for pollinators to serve as flagships for a wider range of environmental policies and approaches which relate to the *connectedness* of nature: for example, maintaining wider natural connectivity, protecting biodiversity, ensuring environmental resilience and landscape level conservation.

We conclude by reviewing, in 9.3, some general implications for communications that follow from our understanding of social and cultural values. These have more general applicability – but as such also apply specifically in the case of communications about pollinating insects.

9.1 Opportunities for communications about pollinating insects

Social and cultural values provide a powerful resource for effective communications, a store of pre-existing meanings and associations that can be used to frame messages.

Even if social and cultural values are not much *used* in practice, they remain socially and culturally *available* as templates which could, if prompted, be used to understand and value objects. As the participant quoted in §10.2.1 put it: "all these thoughts are relatively new, but they've always been there."

In an analogous way, communications can draw on available social and cultural values to encourage people to think thoughts that are "relatively new" even though they have "always been there". Such communications work *with* the social and cultural grain, activating perspectives that are already out there, if latent – rather than trying to work *against* the grain and foster entirely new ways of understanding and valuing the world. As Christmas et al. (2013) note: instead of trying to change people so they better understand expert concepts, it may be easier and more effective to reframe those concepts so that they resonate better with people.

In the findings chapters, we have identified, on the basis of empirical evidence, a range of different perspectives from which pollinating insects can be understood and valued. Two key areas of opportunity stand out for communications seeking to promote awareness of or action to support pollinating insects:

- The potential of the, as yet, relatively underused holistic perspective (§9.1.1)
- The power of the 'popular bee' (§9.1.2)

9.1.1 Using the holistic perspective

In Chapter 8, we compared and contrasted two social and cultural values used specifically in relation to pollinating insects *in their capacity as pollinators*:

- On the one hand, pollinators may be understood and valued as useful things (§3.1). We described this as an *atomistic* perspective, as it isolates pollinators from the wider natural systems of which they are part, and focuses on services/goods provided to humans.
- On the other hand, pollinators may be understood and valued as creative connectors (§5.3). We described this as a *holistic* perspective on pollinators, as it shifts attention to the greater whole in which pollinators participate.

As discussed in §3.1.1, national campaigns to promote awareness of pollinators, both by Defra and by other organisations, have tended to emphasise the atomistic perspective and highlight pollinators in their capacity as useful things, providing services/goods to humans. While these messages appear to be getting through to people, there are reasons to question whether they are really resonating with them. In particular, we noted a pattern of participants *quoting* rather than *adopting* this perspective.

In part, this can be explained by lack of knowledge of the science which underpins an understanding of pollinators as useful things. However, as we noted in §5.3, a comparable lack of knowledge of the science underpinning the holistic perspective caused no such hesitation in that case. In fact, participants tended to default to the holistic perspective, even in response to questions specifically focusing on pollinators and pollination.

In §5.3.3, we argued that this pattern is explained by the unique role that pollinators play as 'creative connectors', a role which, *by its nature*, draws attention to the greater whole in which they are participants, and so prompts a holistic perspective. That role does *not* draw attention in the same way to the benefits for human beings, or prompt a perspective which understands pollinators as 'useful things'. Hence, when asked to look at or think about pollinators, what participants *saw* was creative connectedness – and *not* services provided to humans.

Moreover, adopting this holistic perspective opened up to participants the range of powerful meanings and sources of value discussed in Chapters 5 and 6. The ways of understanding and valuing the world opened up by this perspective can be traced back to the ideas of Romanticism (see §6.4.1, §8.2). By contrast, the atomistic perspective seems cold and sterile, implying little beyond a bald statement that pollinators provide an important service.

By emphasising the atomistic perspective and highlighting pollinators in their capacity as useful things, providing services/goods to humans, campaigns are missing out on an opportunity to tap into a perspective that is more readily prompted by pollinators, more emotionally resonant, and more deeply rooted in our society and culture: the holistic perspective.³⁰

What would it mean in practice to make greater use of the holistic perspective? We suggest the following as possible principles for the development of a campaign, based on the evidence presented in this report:

- Highlight first and foremost the critical role played by pollinators as creative connectors in a greater, interconnected role (§5.3)
- Acknowledge our dependency on that greater interconnected whole, but also our responsibilities as participants in it (§6.3)

³⁰ There is an argument to be made that the holistic perspective is also more consistent with the *Common Cause* approach. Crompton (2010) highlights a distinction between egoistic and ecocentric values. The former are driven by outcomes that are in the self-interest of the individual (e.g. reduce your energy consumption because it will save you money), and are therefore readily aligned with the atomistic perspective. The latter stem more altruistically from a concern for other living things, and ultimately derive from a greater sense of identification between the individual and environment, and are therefore readily aligned with the holistic perspective. Crompton highlights the dangers of well-meaning campaign approaches which undermine long-term engagement by appealing to egoistic values.

- Be willing to embrace and use non-scientific language, imagery, ideas and tonalities in talking about both pollinators and the interconnected whole of which they are part, for example:
 - spiritual/religious language in evoking feelings of awe and wonder at the greater interconnected whole (§6.1)
 - evocations of an idealised, traditional way of life, and the possibilities of reconnecting in some small way (§6.4)
 - metaphorical characterisations of pollinators as spreading life and love (§5.3)
- Recognise that we face choices about the environment not just as individuals, but as a society; that people see evidence of our society as a whole making the wrong choices; and that the actions of any body seeking to campaign about pollinators will speak as loudly as, if not louder than, the messages it promotes (§6.4)
- Emphasise in messages, but also in developing the *case* for a campaign the link between the holistic perspective, subjective wellbeing (§10.1.3), and reconnection:
 - reconnection with nature: the consolation of knowing that one has a place in an enduring, greater whole, and a responsibility to play a positive role in that whole (§6.1, §6.2, §6.3)
 - reconnection with self: the experience of a moment of self-aware contemplation in contrast to the day-to-day stresses of life (see §2.3)
 - reconnection with history: a sense of contact with an idealised traditional way of life (§6.4)

The development of a full campaign strategy making greater use of the holistic perspective is beyond the scope of this project. Work to develop such a strategy would need to consider the implications of this perspective not only for messaging, building on the principles above, but also for objectives, audiences, channels and activities. For example:

- Objectives might be focused on engagement, rather than awareness, with a focus on prompting/helping people and drawing out their own views on creative connectedness, and stimulating them to take the synecdochic step from pollinator to greater, interconnected whole.
- Engaging deliberately diverse audiences might help to stimulate thinking around diversity and connectedness. Groups might also be recruited around themes such as faith and spirituality, or wellbeing.
- Channels and activities might be selected which brought to life the idea of interconnectedness: for example, approaches that involved capturing stories, poems and pictures would create very different experiences compared to, say, the distribution of information leaflets. Activities might also create opportunities for people to take the right hemisphere perspective discussed in §8.3.

Decisions on objectives, audiences, channels and activities would also need to take into account the general implications for communications that follow from the understanding of social and cultural values set out in Chapter 1; see §9.3.

9.1.2 The 'popular bee'

Compared to other pollinating insects, bees occupy a central position in our participants' responses, in the materials reviewed in the discourse analysis strand, and in our culture more widely. Indeed, in deference to the prominence of the bee relative to other pollinating insects, even Defra's campaign to raise awareness of pollinators is called Bees' Needs. A number of the social and cultural values identified in this report were used primarily in relation to bees.

The social and cultural category of bees, however, does not coincide neatly with taxonomic boundaries. In particular, popular ideas of the bee may confuse honeybees and bumblebees, while overlooking the existence of other kinds of bee entirely.

The 'popular bee' is not a *real* insect, being as it is a product of a blurring of species, idealisation of the past, ignorance of the diversity of pollinators and, frequently, a shaky grasp on what pollination actually means. It is, however, a very *meaningful* insect:

- a creative connector, fulfilling a role which, by its nature, draws attention to the greater, interconnected whole of which it is part (§5.3)
- a creature which signifies, through its decline, the damage caused to nature by human activity; and through its presence, the endurance of nature despite human damage (§5.2)
- a symbol of an idealised past in which we lived more in tune with nature (§6.4.3)
- an object of stewardship and care for nature actions through which we can reconnect to nature, and to our collective and personal pasts (§6.3, §6.4) and an indicator of the good we achieve by such acts of stewardship (§4.1)
- a focal point for experiences of groundedness, calm and wellbeing linking feelings of being in the moment to a sense of our place in nature and in the narrative of humanity (§2.3, §6.1, §6.4)
- the provider of one of nature's sweetest gifts honey (§3.1)
- a fluffy, fat, friendly creature which is both cuddly and hard-working (§7.2)

The 'popular bee' provides a perfect flagship species for pollinator awareness. As one of our participants put it:

It would be the same as, you know, somebody standing up and talking about manure and the goodness that manure does to the fields, you know, that sort of thing. There is only so far you can take this. But at least with pollen you've got cute little minibeasts that you'll get every single child completely hooked on, and the adults, it will take the adults back to their, sort of, youth, as it were, and, sort of, think, oh, gosh, yes, I remember doing a bit of that in school or wherever, at scouts clubs. [MD01]

On the other hand, the use of the bee as a flagship species carries a clear risk of crowding out other pollinating insects from consideration. In particular, the use of cartoon bees may risk exacerbating a tendency to identify bees with bumblebees (see §7.2), and thereby consigning a raft of other bees (including, sometimes, honeybees) and pollinating insects to the more negative categories of 'wasps' or even 'flies'. A tradition of anatomically precise drawings of insects on flowers as objects of aesthetic appreciation (see §2.1) may offer an alternative worth exploring – and perhaps, through a careful choice of flowers, a way of subtly challenging aesthetic preferences for wildflower meadows which is not always helpful in terms of providing an effective mix of pollinator-friendly habitats (also see §2.1).

9.2 Pollinators as flagships for wider issues

Much of the public campaigning and engagement around pollinators to date has focused on their role in providing pollination services, reasons for their decline, and the importance of actions by citizens and other key players in providing local habitats for them.

As discussed in §9.1.1, these campaigns currently emphasise an atomistic perspective, and highlight pollinators in their capacity as useful things, providing services/goods to humans. By doing so, they are missing out on an opportunity to tap into a perspective that is more readily

prompted by pollinators, more emotionally resonant, and more deeply rooted in our society and culture: the holistic perspective.

Adopting that perspective, however, has larger consequences for the role that pollinators could play in public communications and engagement. In particular, the synecdochic power of pollinators to stand for the greater, interconnected whole of which they are part (§5.3.2), and the range of social and cultural values unlocked by the holistic perspective they therefore prompt (Chapters 5 and 6), makes them ideal flagships for and ways into a wider range of environmental policies and approaches which relate to the *connectedness* of nature: for example, maintaining wider natural connectivity, protecting biodiversity, ensuring environmental resilience and landscape level conservation. Bees in particular have great potential in this respect (§9.1.2).

Given this, bees and pollinators could play an important role in delivery of the 25-year plan for the environment which, at the time of writing, is being developed by Defra,³¹ and in particular in efforts to increase public engagement.

This is a timely point. An upsurge in interest in pollinators has been significantly driven by concern about pollinator declines, and in particular colony collapse in domestic bees colonies and related matters such as the role of neonicotinoid pesticides. The synecdochic power of pollinators suggests that – if issues such as these were framed effectively – this upsurge of interest could be amplified and broadened to other issues. A key part of that framing would be to link communications about pollinators to wider communications efforts around biodiversity, natural resilience, and our place in nature.

There is an interesting historical comparison to be made here: Rachel Carson's 1962 Silent Spring highlighted a major environmental issue driven by a predominantly agro-chemical impact (DDT), and focused on similarly charismatic organisms in the environment – birds. Despite strong opposition from the chemical industry, the book raised significant support from an informed and concerned public, and resulted in a reversal in government policy in regard to spraying. While the present day issues are not the same, the potential power of the plight of pollinators as a call to arms for broader issues should not be underestimated.

9.3 Using social and cultural values in practice

In this section we review general implications for communications that follow from the understanding of social and cultural values set out in Chapter I. These would apply to any communications seeking to tap into social and cultural values. For example, these implications should be born in mind in delivery of the 25-year plan for the environment which, at the time of writing, is being developed by Defra – whether or not bees and pollinators are deployed as flagships for and ways into a wider range of environmental policies, as suggested above.

As noted in §1.5, the social and cultural values identified in this report are templates for understanding and valuing pollinating insects which are socially and culturally available for individuals to use. This means that they are used at least sometimes and by some people: but it does *not* necessarily mean that they are currently widely used, or used by many people.

We have already considered one critical implication of this in 9.1: effective campaigns can work *with* the social and cultural grain, activating perspectives that are already out there, if latent – rather than trying to work *against* the grain and foster entirely new ways of

³¹ See for example §1.1 of <u>https://www.gov.uk/government/publications/defra-single-departmental-plan-2015-to-2020/single-departmental-plan-2015-to-2020; accessed on 28/05/2016</u>

understanding and valuing the world. The resources to address so-called 'awareness' issues may in fact already exist – not in expert knowledge or science papers, but in latent but potent social and cultural values.

The aim of a campaign which seeks to draw on these latent social and cultural values is not to *educate* so much as to *activate*: to promote the more frequent *use*, or *use* by more people, of social and cultural values which are currently *available* but underused. Achieving this aim will call on techniques and methods which focus less on imparting new knowledge, and more on prompting the use of available templates in discussion or in action. For example, one might seek to mix people with different existing levels of engagement – some of whom already use the social and cultural values in question – in a participatory and deliberative context.

Recognising the distinction between the availability and use of social and cultural values also has implications for the ways in which audience research is used. Often, audience research is used to measure what people already know, understand and value. But audience research can also play a critical role in exploring how people *could* understand and value a topic, especially during the development of a campaign. This kind of research could be undertaken nationally, to develop a framework of social and cultural values – as the current research has done for pollinating insects. Or it could be undertaken locally (ideally building on and using such a framework) with a view to exploring how particular values play out in a local context (e.g. attachments to particular locations, species, etc).

Finally, an understanding of social and cultural values provides a starting point for a consideration of the *risks* to a campaign arising from competing social and cultural values. For example, in §10.3, we will discuss how action to support pollinators by reduced mowing of areas of land managed by a local authority can prompt complaints owing to the operation of a very different social and cultural perspective, which understands and values these patches of land *in their capacity as* evidence of the character of the body responsible for managing them, and assesses that character in the context of a wider understanding of the proper relationships of care between councils and communities. Unmown land is interpreted not as a deliberate act of allowing nature to flourish, but as an omission demonstrating neglect of local communities. Identifying risks such as these is the first step towards identifying mitigation strategies: for example, in this case, clear communication of the *intent* behind areas which may appear untidy or neglected, as in Figure 24.



Figure 24: Communicating intent (photograph by team member)

10. Social and cultural values in policy- and decision-making

In the findings chapters of this report we have reviewed a range of different perspectives from which pollinating insects are understood and valued. In this chapter we ask: what difference should this understanding of social and cultural values make to policy- and decision-making?

In §10.1, we review the relationship between social and cultural values and formal economic valuation, and consider ways in which the perspectives described in previous chapters might be taken into account in an economic valuation. In §10.2, we explore the ways in which an understanding of social and cultural values can help in developing and exploring scenarios and assessing the *risks* to such a valuation arising from possible changes in 'public opinion'.

In §10.3, we consider the ways in which social and cultural values can influence policy- and decision-making through mechanisms other than economic valuation, such as consultation, political representation, open policy-making, or public lobbying and campaigning. In §10.4, we consider the possibility that some social and cultural values might be excluded entirely from policy- and decision-making, and ask whether policy- and decision-making can ever be truly 'objective'.

The primary focus of this chapter is on the ways in which the social and cultural values associated with pollinating insects, as identified in Chapters 2 to 8, might be taken into account in policy- and decision-making. In §10.5, however, we step back from the specific topic of pollinating insects and consider what general lessons might be drawn, and outline an evidence-based approach to taking social and cultural values into account in policy- and decision-making. We also consider how *indirect* values might best be accommodated in this approach.

10.1 Taking account of social and cultural values through economic valuation

From an economic perspective, valuing is an individual activity, driven by individual motivations and preferences; and value a quantity to be arrived at by the aggregation of many such individual valuings. From this individualistic perspective, social and cultural values appear to pose a challenge: these values are not held by any one individual, but across a whole society or culture. How then, we might ask, should they be included in a calculation of value? Are they extra terms, to be added over and above aggregated individual values? Are they commensurable with those individual values, or do they need to be accounted for in non-monetary terms?

While superficially plausible, these questions in fact neglect the relationships between social and cultural *values* and individual *valuings*. In Chapter 1, we defined social and cultural values as follows:

Social and cultural values are shared, socially and culturally available templates for understanding and valuing objects, which may be used by particular individuals in their valuings of particular objects on particular occasions, and which both reflect and sustain consistency in these individual valuings. They represent consistent, shared perspectives on objects, from which those objects are therefore understood and valued in consistent capacities.

With this definition in mind, we can clarify the relationship between social and cultural values and economic valuation as follows:

- First, social and cultural values reflect existing consistencies in individual valuings. If those individual valuings are taken into account in an economic valuation, therefore, the associated social and cultural values are *already* taken into account as well. There is no need to include an extra term: indeed, to do so would be a clear instance of double counting.
- However, this is only the case if the individual valuings in question are taken into account:

 i.e. if individuals have been given appropriate opportunities to understand and value objects
 from the relevant perspective and in the relevant capacity, and if their responses have been
 captured in an appropriate (monetary or non-monetary) way. An understanding of social
 and cultural values therefore provides a basis on which to review critically the use of
 evidence in an economic valuation. Such a critical review involves two key steps:
 - 1. Develop an evidence-based catalogue of relevant social and cultural values (§10.1.1)
 - 2. Review whether and how these different perspectives should be taken into account in an economic valuation, considering:
 - a. Options for monetisation (§10.1.2), including measures of wellbeing (§10.1.3)
 - b. Non-monetary measures (§10.1.4)
 - c. Alternatives to economic valuation (§10.1.5)
- Social and cultural values do not just reflect existing consistencies in individual valuings; they
 also sustain future consistency, by providing a shared, socially and culturally available set of
 templates. An understanding of social and cultural values therefore also provides a basis on
 which to develop and explore scenarios and assess the risks and opportunities arising from
 possible changes in 'public opinion' (§10.2).

10.1.1 Developing an evidence-based catalogue

In Chapters 2 to 8, we have identified, on the basis of empirical evidence, a range of different social and cultural values which we have seen being applied to pollinating insects. This is an example of what we mean by an evidence-based catalogue of relevant social and cultural values.

This catalogue is unlikely to be *complete*, for a number of reasons:

- The catalogue presents a broad-brush review of social and cultural values, but is very likely to omit values associated with smaller groups in society, such as minority cultural or special interest groups. Additional dedicated work would be needed to explore the values available in such minority groups.
- The categories should be subjected to ongoing critical review and improvement by both researchers and users. This review should include a critical analysis of the ways in which we as researchers may inadvertently have introduced our own perspectives into our interpretation of the evidence (see the Reflexive Analysis in the Introduction).
- The methods used to develop this catalogue are themselves subject to ongoing debate and development. Different methods might reveal aspects of social and cultural value which we have failed to identify.
- Culture itself is changing and creative. New social and cultural values may emerge in the future which are, by definition, missing from the existing catalogue in the same way that, albeit on longer timescales, new biological species will arise which are missing from existing taxonomies.

Completeness is an impractical and perhaps impossible condition to require of a catalogue of this kind. It seems entirely reasonable, however, to require that such a catalogue should be based on *empirical evidence*.

This point is worth stressing, because investing in such evidence seems to be the exception rather than the norm; and because the practice of offering catalogues of social and cultural values in the absence of evidence appears to be widespread.

Consider, for example, a recent review commissioned by Defra of the Status and value of *pollinators and pollinating services* (Vanbergen et al., 2014). Having first explored the "commercial values" of pollinators, associated with "market-valued outputs such as agricultural crops", the authors turn their attention to "amenity or non-market values":

Insect pollinators provide benefits to society in many ways which are additional to their role in commercial farming. From an economic value viewpoint, this happens in at least two ways:

- First, individuals derive pleasure from seeing pollinators, especially the larger, showy and distinctive species, and knowing they exist. [...]
- Second, individuals may care about the consequences of pollinators' actions. For example, this could be through the effects of wild pollinators on the diversity and abundance of wild flowers and trees. If people enjoy flower meadows, then they get an indirect benefit from the actions of pollinators. People who enjoy growing flowers and vegetables in their own gardens or allotments also get an indirect benefit from the actions on pollinators. [...]

On what evidence is this catalogue based? Why these two types of value and not others? Where is the evidence that any real human beings derive pleasure just from "knowing [pollinating insects] exist"? Why the focus on "indirect" value – that is, *not* reasons why people actually value pollinating insects, but reasons why they *should* value them if only they were experts – when the ways in which individuals *actually* understand and value pollinating insects have barely been explored?

An analogy may help to clarify how odd this way of approaching things is. Suppose a survey were being undertaken to establish which species of pollinators were present in a particular habitat. Would the survey team be asked to offer a speculative set of results based on anecdotal observations, thought experiments, and reflections on the requirements of taxonomy. What would be the value in doing so? What use would such speculations be for practical purposes?

Yet this is *exactly* what Vanbergen et al. appear to have been asked to do: speculate on the ways in which human beings *might* understand and value pollinating insects in the absence of a robust evidence base. Indeed, the lack of reference to evidence makes it impossible to establish whether these categories are based on any at all. What is the value of this kind of evidence-light speculation? What practical use is it? Why would it be considered acceptable as a starting point for policy- and decision-making?

Moreover, this particular catalogue is offered, as the authors note, from "an economic value viewpoint": that is, from one particular (if very powerful) social and cultural perspective. In the words of the participant quoted in §6.4, we might say that this classification is made from the perspective of "a logical person" rather than "a human being". By framing the matter in this way there is a clear risk of ruling out *a priori* entire elements of what actually matters to citizens. It may well be appropriate to exclude certain perspectives and associated values from policy- and decision-making (see 10.4); but where such an exclusion is made, it needs to be the consequence of a reasoned and conscious judgement – and not of the limitations of one particular social and cultural perspective on value.

10.1.2 Options for monetisation

Having developed an evidence-based understanding of the social and cultural values associated with pollinating insects (or any other object of value), one may then consider whether and how these different types of value should be taken into account in an economic valuation. Note that there is no reason to assume that *all* of the different types of value identified should be taken into account in the same way: indeed, given the diversity of perspectives and values identified, such an outcome seems very unlikely.

From an economic perspective, the preferred option is to find ways to monetise values. Despite some suggestions to the contrary there is *no logical inconsistency* between social and cultural values and monetisation: how could there be, given that the value of money is itself a social and cultural construct? The question of whether or not a value is monetisable turns on whether or not it can be expressed through behaviours (valuings) which involve payment or comparable forms of exchange (see §1.1). For each type of social and cultural value identified, therefore, one needs to consider whether it can be expressed adequately, or indeed at all, through such behaviours. For those that can, one can then consider how those potential exchange behaviours might sensibly be used as a basis for quantification, using methods such as those discussed in *The Green Book* (HM Treasury, 2011).

Take for example the value of pollinating insects as fascinating creatures, discussed in §2.2. As noted, two interviewees with small children talked about their gardens as being a bit like 'private zoos'. One might therefore conceivably ask how much they would be willing to pay to enter a 'zoo' of this kind. Or one might look at how the value they attach to these fascinating creatures is demonstrated through other kinds of exchange – the money spent on buying 'insect hotels', for example, or the time and effort expended on planting flowers that will attract fascinating creatures.

It is worth restating that, even where social and cultural and values can sensibly be monetised, doing so relies on a prior, evidence-based understanding of what those values are (see 10.1.1). To ask a sensible question about willingness-to-pay, for example, we need to know from what perspective to *frame* the object of value: as noted in 1.3, people do not assign value to objects, but to objects-understood-from-a-perspective, or objects-understood-in-a-capacity.

For example, consider the value that can be attached to pollinating insects as signifiers of achievement (§4.1). Asking someone how much they would be willing to pay to have more pollinating insects in their garden is unlikely to shed light on this potential source of value, compared to, say, asking them how much time and effort they would be willing to invest to experience the feeling of satisfaction when, as a participant quoted in §4.1 put it, the "bees come back and say thank you".

Note also that, for types of value such as this, *time* may offer a more meaningful unit of exchange than money. For example, making time to "stop and stare" in a world "full of care" (§2.3) is already, in and of itself, an expression of value; as is the time spent creating an environment for pollinators (§4.1). Asking people about their willingness-to-spend-time, or their willingness-to-volunteer, might yield more illuminating answers in some cases than a direct enquiry about willingness-to-pay – while leaving open the option of subsequently converting time into money.

The Green Book discusses valuing time, but primarily in respect of time saved (e.g. travel time), not time invested. This may reflect a broader positioning of citizens as passive consumers (e.g. of ecosystem services) rather than active participants (e.g. in an ecosystem). That positioning may also explain a wider focus on payment-with-money, apparent in the widespread use of willingness-to-pay questions – as if this behaviour were in some way the purest or most basic

way of expressing value, despite the obvious fact that human beings were valuing things long before they got round to inventing social and cultural institutions such as money.

10.1.3 Subjective wellbeing

While monetisation is clearly an option for some kinds of social and cultural value, such as those discussed in Chapters 2, 3 and 4, it is harder to see how it would be applied in other cases. For example, how would one go about monetising the experiences of awe and wonder described in §5.1?

One option might be to explore the connections between some of the emotional responses described by participants and the concept of subjective wellbeing. In particular, the concept of wellbeing may be well-suited to thinking about the ways in which pollinating insects can serve as focal points for experiences of reconnection:

- reconnection with nature: the consolation of knowing that one has a place in an enduring, greater whole, and a responsibility to play a positive role in that whole (§6.1, §6.2, §6.3)
- reconnection with self: the experience of a moment of self-aware contemplation in contrast to the day-to-day stresses of life (see §2.3)
- reconnection with history: a sense of contact with an idealised traditional way of life (§6.4)

The emotional content of experiences such as these is not entirely positive: as discussed in §6.4, for example, the latter may be characterised by a sense of nostalgia for what has been lost. Nevertheless, there is a strong theme of associating moments such as these with a sense of personal wellbeing. A similar pattern is apparent in the public dialogue work carried out by Fish and Saratsi (2015), who highlight the importance of: "the perceived effect of nature on inner health and peace".

Not surprisingly, this sense of wellbeing was strongest in those who were most active in reconnecting with nature – for example, the participants in the art ethnography project. They contrasted what they saw as the loss of a connection with the land over recent generations, as human concerns became more industrial and urban, with their own first-hand experiences of what was to be gained by way of emotional, physical and spiritual wellbeing from finding one's place in nature again.

In your own space you can create your peace.

Furthermore, some argued, reconnecting with nature could be a *shared* activity, creating meaningful opportunities to reconnect with other people as well. This is in line with the finding of Christmas et al. (2013) that nature is seen as "a place where one reconnects – with nature, with each other, across generations, with what really matters, with oneself". Fish and Saratsi (2015) also note that: "It was very common for participants to suggest that natural environments were spaces of valued social interactions."

If nothing else, reconnecting with nature affords the opportunity to escape, if only for a moment, from an anxious, modern way of life. Thanks to their role as creative connectors (§5.3), pollinating insects can act as a focus for all of these diverse kinds of reconnection experience.

Given this, it may be worth exploring the applicability of methods such as the subjective wellbeing approaches described in *The Green Book*:

The life satisfaction approach uses econometrics to estimate the life satisfaction provided by certain non-market goods, and converts this into a monetary figure by combining it with an estimate of the effect of income on life satisfaction.

Taking this approach may also help to address (or avoid) a tricky logical question raised by the holistic perspective (§8.1): what is actually being valued from this perspective? As argued in §5.3, the value assigned to pollinators from the holistic perspective is underpinned by the way in which they stand for the greater, interconnected whole. This leaves it uncertain whether it is the pollinator or the whole that is the true object of value. Focusing on wellbeing addresses (or avoids) this problem by identifying a third object of value: the emotionally rich *experience* of this synecdochic ambiguity.

10.1.4 Non-monetary measures

As noted earlier, there is no logical inconsistency between social and cultural values and monetisation. However, it is possible, even likely, that monetisation may be deemed inappropriate for certain types of social and cultural value. In such cases, as *The Green Book* notes: "Alternative non-monetary measures might be considered most appropriate." Such non-monetary measures can be incorporated into an appraisal of options using methods such as multi-criteria analysis.

For example, it could be argued that experiences of awe (§5.1) and groundedness (§6.1) should be understood as quasi-religious in character, and that monetisation of these experiences (for example, via a measure of subjective wellbeing) does not respect or reflect their spiritual nature. Precisely such an argument appears to have been offered by some of the participants in the public dialogue work conducted by Fish and Saratsi (2015):

Participants offered dimensions of personal and social experience – such as pleasure, worship and wonder in nature – as illustrations that numbers and money provide a very blunt measure of value.

Participants in Fish and Saratsi's public dialogue work raise a number of other concerns about the appropriateness of monetary valuation. For example: "Participants were generally alarmed by the prospect of investing too much faith in monetary methods alone because they appeared to work with a generally limited set of assumptions to produce results." Their participants also highlighted the fact that money itself is not a neutral but a value-laden metric, replete with social meaning, and that a focus on monetary value may risk "propagating the values of *'profit'* and *'self- interest*":

Participants thus generally asked why a policy and decision making process would be interested in using money as a measure of nature's value, when the natural world should be managed for the public, rather than private, good and when other measures might be used. Why, they asked, would this metric be chosen, if there wasn't some implicit financial and profit imperative in play? At the very least, participants highlighted the potential for monetary valuation to be misunderstood in these terms, even if the intentions were claimed to be different.

Perhaps underpinning this is the connection – noted in §10.1.2 – between monetary value and behaviours (valuings) which involve payment or comparable forms of exchange. Participants in Fish and Saratsi's work:

maintained that the value of nature is inherent, non- negotiable and tradable. Therefore any attempt to translate it into money is 'belittling'. Nature 'is priceless, isn't it?'

Overall, Fish and Saratsi conclude, "there was a very strong message about the need for pluralistic approaches to valuation, especially for issues of high complexity at all levels of decision making".

The need for pluralism also follows from the argument developed by McGilchrist (2009) regarding the different perspectives of the left and right hemispheres of the brain (see§8.3). If this argument is accepted, then it seems unavoidable that non-monetary measures need to be included in a valuation exercise. Money, argues McGilchrist, "replaces things with signs or tokens, with representations, the very essence of the activity of the left hemisphere"; as such, it seems unlikely to provide an appropriate metric for valuing from the perspective of the right hemisphere.

However, McGilchrist's argument also suggests a more fundamental concern. After all, it is not just money that reflects the perspective of the left hemisphere: the entire project of economic valuation is clearly a left-hemisphere project (see §8.3.1 for the characteristics of the left hemisphere perspective). As such, the attempt to assimilate value from the perspective of the right brain to that project in the form of *measures*, albeit non-monetary ones, could be interpreted as an example of a characteristic pattern of left-hemisphere behaviour noted in §8.3.3; as McGilchrist puts it:

Although the left hemisphere does not see and cannot understand what the right hemisphere understands, it is expert at pretending it does, at finding quite plausible, but bogus, explanations for the evidence that does not fit its versions of events.

McGilchrist's argument, that is, opens up a more radical position: that *The Green Book*'s "alternative non-monetary measures" are not in fact ways to *include* alternative perspectives, but mechanisms that *exclude* them, and so block another exit from the "hall of mirrors" (§8.3.3).

10.1.5 Alternatives to economic valuation

Techniques such as multi-criteria analysis offer ways of incorporating non-monetary measures into an economic valuation of options.

In practice, however, social and cultural values such as these can also influence policy- and decision-making through mechanisms other than economic valuation, such as consultation, political representation, open policy-making, or public lobbying and campaigning. Moreover, it is possible that these mechanisms provide a better way of taking into account some kinds of social and cultural value which are hard to accommodate in an economic valuation. We discuss this possibility further in §10.3.

It is also possible that the decision might be taken to exclude some social and cultural values *entirely* from policy- and decision-making. For example, should the fact that people like bumble bees because they are fluffy (§7.2) really be a consideration in public policy- and decision-making? *The Green Book* states that: "The relevant costs and benefits to government and society of all options should be valued" – leaving open the question of which social and cultural perspectives are considered *relevant*. We discuss this question further in §10.4.

10.2 Using social and cultural values as a basis for risk assessment

As noted in §10.1, social and cultural values do not just reflect existing consistencies in individual valuings; they also sustain *future consistency*, by providing a shared, socially and culturally available set of templates for individual valuings. An understanding of social and cultural values therefore provides a basis on which to develop and explore scenarios, and assess the risks and opportunities arising from possible changes in 'public opinion'.

To understand how this is so, it helps to return to our definition of social and cultural values, and the distinction it implies between the *availability* of social and cultural templates for understanding and their *use* on specific occasions.

10.2.1 Availability and use

Availability and use are clearly connected: it is only because a template is used that it is available; and only because it is available that it can be used. However, they are not the same thing. An analogy with words (as in $\S1.4$) is again useful here: a word can remain available for use by an individual even if that individual does not make much use of it. The same applies to social and cultural values: a perspective may remain available to individuals even if they do not usually adopt it. In the following quotation, an interview participant describes the experience of adopting a perspective which has always been available to him but which he has not previously had occasion to adopt:

I completely agree with everything I'm saying, I'm just slightly surprised that... It's almost when I speak about it and then I go, oh, gosh, I actually do feel that way, sort of thing, because it's just nothing I've concentrated on for so... You know, talk to me about rugby or cricket or something then, yes, I'll be able to do it properly, but all these thoughts are relatively new, but they've always been there.

Use and availability can diverge in other ways. For example, use of a word may be largely confined to a particular context – sport, for example, or the law – yet that word may nevertheless be (or become) available for use outside those contexts. Similarly, use of a template for understanding and valuing might be largely confined to a specialist sphere – beekeepers, for example, or ecosystems services valuation – and yet that template be (or become) available more widely. For example, the tendency of participants to *quote* the idea of pollinators as useful things (see §3.1.1) can be seen as an example of use of this particular perspective on pollinators spreading as a result of campaigns.

As this example illustrates, both use and availability can change over time. An individual, for instance, may find themselves starting to use a word which they had known but not used much before – a change in use; but they can also learn new words, which they may or may not then use much – a change in availability. Likewise, at the level of an entire language, certain words or phrases may come into or fall out of fashion (changes in use); while at the same time, new words may enter the lexicon while others become archaic (changes in availability). Similar patterns can be anticipated with regard to social and cultural values. Once again, there is a connection between changes in availability and use – declining use, for example, may in time lead to a word or perspective becoming unavailable – but the two are not the same.

The example of words also suggests that these two types of change may happen on rather different timescales. While the stock of available words may change relatively slowly, use can change rapidly and significantly – with the internet and mass communications apparently increasing both the speed and scale of such changes. It is not unreasonable to suppose that similar patterns might again apply in the case of social and cultural values.

10.2.2 Changes in use and risk

The distinction between availability and use and the ways in which both can change make consideration of social and cultural values important in an assessment of risk. In particular, by understanding the socially and culturally *available* templates for understanding and valuing pollinating insects (or any other object and value), we can anticipate ways in which *use* of those templates might change in the future.

Consider, for example, the discussion by Kenter et al. (2014) of the 2011 consultation into the part-privatisation of the public forest estate in England. Noting that 'The scale of the protest seemed to take the government by surprise', the authors explain this surprise in terms of a failure to take account of culturally *available* but (prior to the consultation) little *used* ways of understanding and valuing forests. For example, they argue that the consultation itself "acted as a catalyst point in which values for woodlands *not normally articulated* as part of everyday discourse became a topic of debate and discussion across society" (our emphasis); and that "The events provide an example of how values *came to the fore* due to the catalyst of the privatization" (our emphasis). What was lacking, they suggest, was precisely the kind of evidence-based understanding of social and cultural values advocated in §10.1.1:

A narrative-based study approach that included understanding of trees and woods in art and culture would have revealed a strong connection in Britain to myths, poems, stories and legends associated with trees and woodlands [...] and deliberative and participatory methods could have revealed how people would have felt these cultural values to be threatened by privatisation.

Note that the point here is not that an evidence-based understanding of social and cultural values would have enabled anyone to *predict* the response to the consultation. It would, however, have allowed a thoughtful observer to *anticipate a scenario* in which the consultation prompted rapid increases in the use of an already available social and cultural value, and to have considered the implications of this risk for the decision being taken.

In the same way, our catalogue of *available* social and cultural values associated with pollinators allows anticipation of possible changes in future *use*, and consideration of the associated (positive as well as negative) risks. For example:

- At a national level, campaigns to promote awareness of pollinators, both by Defra and by campaigning organisations, currently highlight pollinators in their capacity as useful things (§3.1). In doing so, they overlook a potentially more powerful perspective on pollinators as creative connectors (§5.3). Campaigns or events which moved beyond the current focus on pollinators as service providers and unlocked the social and cultural values associated with a more holistic perspective could lead to a significant mobilisation of public opinion around issues such as, for example, the use of neonicotinoids.
- At a local level, setting aside land for pollinator-rich habitats creates opportunities to
 engage volunteers in creating and maintaining those habitats. Those volunteers may then
 experience the satisfaction associated with seeing the insects they have created a home for
 (see §4.1) even though in advance they may not anticipate this sense of satisfaction, or
 cite it as a reason for volunteering. Such a volunteer scheme may therefore create value
 which can only be anticipated on the basis of an understanding of relevant social and
 cultural values. Moreover, an option which increased the chances of realising this value (for
 instance, by encouraging volunteers to revisit the site once established) would have greater
 potential benefits associated with it than an option which did not.

10.3 Other mechanisms to take account of social and cultural values

As noted in §10.1.5, social and cultural values can influence policy- and decision-making through mechanisms other than economic valuation, such as consultation, political representation, open policy-making, or public lobbying and campaigning.

Consider, for example, a decision which can have a significant bearing on pollinating insects: how often and when to mow areas of land managed by a local authority. The following is a fairly typical example of the sort of controversy decisions like this can prompt: GREAT Ayton parish councillors are to complain to North Yorkshire County Council about its decision to withdraw funding for the grass cutting of community areas in the village. [...]

Dozens of residents in the village have complained to councillors about the neglect of community grass areas which are overgrown and full of dandelions and at the meeting Cllr Ron Kirk said: "North Yorkshire County Council has let this community and this village down." [...]

Visitor Ruth Brook, from Huddersfield, said: "My friends and I come to North Yorkshire several times a year to walk and I always stay in Great Ayton, which is a lovely village, but I've noticed on this visit that many of the grass areas are overgrown and uncared for, which creates a poor impression."

County councillor Heather Moorhouse said: "All funding for grass cutting in North Yorkshire has been reduced but the county will still cut grass areas where it is deemed essential for roadside safety. Some parishes have welcomed this as they wish verges to grow to their fullness and encourage wild flowers."³²

Pollinating insects are not mentioned in this story at all, but social and cultural values are centre stage. The complaints being made by Cllr Ron Kirk and visitor Ruth Brook are not merely aesthetic in nature: rather, patches of land are being understood and valued *in their capacity as* evidence of the character of the body responsible for managing that piece of land, and that character in turn being assessed in the context of a wider understanding of the proper relationships of care between councils and communities. Moreover, the county councillor responds from the same perspective, arguing that the lack of mowing can instead be interpreted as evidence not of neglect but of a positive intent to allow "verges to grow to their fullness and encourage wild flowers". We saw clear evidence of this way of understanding and valuing patches of land in our interviews as well, with participants distinguishing locations which they interpreted as examples of neglect from those they interpreted as examples of intentionally allowing nature to flourish:

I can kind of empathise with people feeling a bit like that [complaining about unmown grass], because what people don't want to feel is that their living environment is not cared for, [...] our communities not being cared for, it's been left unattended, it's just basically no one cares.

The Darlington & Stockton Times story provides a clear example of this particular social and cultural standpoint on unmown land playing a critical role in debates about a decision. It is not hard to find examples of this particular social and cultural value leading to a change of mind – without any evidence of a formal economic valuation of options, and with obvious consequences for pollinating insects.

Grass cutting is back in Walsall after mass complaints

A fortnightly grass-cutting service which was axed to help Walsall Council save $\pounds 43,000$ a year is to be reinstated after a barrage of complaints. [...] Opposing views were voiced by some residents who felt that a more natural appearance, featuring wild flowers and associated wildlife, was preferable but the majority opinion was clearly in favour of keeping the grass short.³³

³² Darlington & Stockton Times, 22nd May 2015,

³³ Express & Star, June 26th 2016, <u>http://www.expressandstar.com/news/2015/06/26/grass-cutting-is-back-in-walsall-after-mass-complaints/</u>, accessed 28/5/16

From a purist perspective, it might be argued that considerations such as those raised by the residents of Great Ayton and Walsall *ought* to have been brought into the ever-expanding scope of economic valuation; and that any policy- or decision-making mechanism which *cannot* be accommodated within that paradigm represents a watering down of the aspiration set out in *The Green Book* of "ensuring that public funds are spent on activities that provide the greatest benefits to society, and that they are spent in the most efficient way".

Pragmatically, however, it might be wiser to take seriously the role of these other mechanisms, and to consider the ways in which they can be used to ensure that adequate account is taken of social and cultural values. For example, our interviews with key informants – individuals who were themselves involved in national and local policy- and decision-making relevant to pollinating insects – suggested that limited time, resources or capabilities can make economic valuation (and ecosystem services valuation in particular) impractical in many instances.

There is also a democratic case to be made for the use of mechanisms which increase the involvement of members of the public in policy- and decision-making. In the public dialogue work carried out by Fish and Saratsi (2015):

Participants highlighted the involvement of local communities and beneficiaries as an important condition of good decision making. There was a need to look beyond scientific research findings and expert knowledge, and to avoid over-reliance on decisions being taken from above and at a distance. They argued that local publics have the right to be involved in decision making process across the full range of services and that they bring knowledge and innovation to the way decisions are made and actions framed.

Over and above these considerations, however, it could be argued that mechanisms such as consultation, political representation and public lobbying or campaigning are ideally *suited* to taking into account social and cultural values. All of these mechanisms have in common a reliance on citizens *actively* developing and expressing the way in which they understand and value a particular object of value – drawing, as they do so, on socially and culturally available templates. For example, co-design methods used as an element of open policy-making³⁴ provide an obvious setting in which social and cultural values can be, not just measured or assessed, but actively *used* in policy-development.

Participatory and deliberative methods also provide ways of encouraging individuals to take this more active role, and to *use* social and cultural values which were previously available but unused. For example, Fish et al. (2011a) discuss a specific example of the way in which such methods can shift participants from one perspective to another:

Whether individuals choose to regard themselves as isolated beings driven to satisfy their own needs and desires before taking account of others' needs, or whether they see themselves as wanting to moderate their rights to maximise their own satisfaction because they have shared responsibility for collective well-being, is a matter of context and philosophical perspective. [...] Through a group valuation process individuals are encouraged to: 'extend beyond their own personal welfare so that the resulting values, judgments will reflect a more complete and socially equitable assessment of the issue at hand'. [Fish et al., 2011a, p1184/8]

³⁴ For more background on open policy-making, see <u>https://www.gov.uk/guidance/open-policy-making-toolkit/getting-started-with-open-policy-making</u>, accessed 28/5/16

Well-designed participatory methods (along with well-designed consultations) may also avoid some of the concerns that may arise about the *objectivity* of, for example, public campaigns and lobbying (see §10.3.2).

10.3.1 Getting pollinating insects onto the agenda

Just as perspectives on the meaning of mowing shape decisions with a significant impact on pollinating insects, so too the social and cultural values associated directly with pollinating insects *could* influence policy and decision-making through mechanisms such as those described above.

They could: but in general, it seems, they do not. Interviews with key informants suggested that, as things stand, perspectives on pollinators have little influence in practice. The problem, it appears, is that pollinating insects themselves are not on the policy- and decision-making agenda in the first place.

This suggests a shift in focus from values to objects of value. The important question is not: how can social and cultural values be better taken into account by these mechanisms outside economic valuation? Social and cultural values already are taken into account by these mechanisms. The important question is how can *pollinating insects* be better taken into account?

Interviews with informants suggested a number of ways in which, in practice, an issue can make it onto the policy- and decision-making agenda.

Passionate individuals

Passionate individuals (professional and public) can play a critical role in getting issues onto the agenda. For example, a committed councillor or council officer can play a pivotal role in ensuring an issue is considered in policy- and decision-making. At the community level, decisions may be taken (below the 'radar' of policy) which are almost entirely driven by such passionate individuals.

There are of course individuals who are passionate about pollinating insects, and who have done valuable work at both the national and the local level – such as those involved in setting up the Get Bristol Buzzing scheme (www.getbristolbuzzing.org) or those delivering work on pollinators as part of a farmer-led project in the Marlborough Downs (www.mdnep.org.uk). Such individuals may however face an uphill task in getting things done: key informants noted that the natural science evidence in relation to specific pollinators can be weak, for instance, and that pollinator experts typically lack power and resources.

<u>Existing policy and guidance</u>

Interviews with key informants suggested that much decision-making, especially at the local level, is driven by compliance with national and local policy and guidance. Planning, for example, is a quasi-legal process: planners take their cue from planning policy, and the plan has to be justified by national guidance.

The availability of *hooks* in this policy and guidance can be critical in getting an issue onto the agenda, whether by enabling a passionate individual to take action, or by obliging a less passionate individual to take that issue into account. For example, such hooks can be critical in ensuring that issues are addressed in public consultation exercises.

Informants suggested that the policy and guidance framework for pollinators is weak in this respect, and provides little if any basis for them to push for consideration of pollinators in, for example, planning decisions and public consultations.

Alternatively, policy and guidance might be used as a way to reduce the *need* for this kind of case-by-case consideration. For example, with respect to decisions on local land use, informants suggested that embedding the social and cultural values of pollinators in national policy and guidance could be more pragmatic than expecting detailed work to consider social and cultural values in multiple, specific decisions. ³⁵ This is the approach already adopted *within* some organisations: ensuring that public values are reflected in policy, and ensuring that policy is then reflected in decisions.

This has important implications for the 25-year plan for the environment which, at the time of writing, is being developed by Defra.³⁶ A policy document of this importance plays a powerful role in determining, for example through its inclusion of (or failure to include) relevant hooks, which objects of value are even considered in subsequent policies and decisions, which social and cultural values taken into account, and which objects and values are neglected or overlooked. Development of the 25-year plan creates clear opportunities to ensure that pollinating insects, and the social and cultural values associated with them, are on the wider policy- and decision-making agenda.

Public concern

In the absence of passionate individuals or hooks in existing policy and guidance, high levels of public concern about an issue can still drive it onto the agenda. To put the point another way, very high levels of use of a social and cultural value can ensure that value is taken into account. Such, for example, is the case in the examples of complaints about unmown grass, cited earlier. Public concern can also be critical at the community level, providing a context for action.

Unfortunately, only those issues attracting the most public concern are likely to make it onto the policy- and decision-making agenda in this way. Issues of less concern are likely to be neglected entirely. Not surprisingly, there are many competing issues that are closer to people's everyday lives and concerns than pollinating insects, such as jobs, homes, or the needs of vulnerable people.

The social and cultural values described in the findings chapters may be widely *available*, but interviews with key informants suggested they are not being *used* much in relation to pollinating insects. This in turn raises a question: does the fact that pollinating insects are not on the agenda *prevent* the social and cultural values of these insects from being properly taken into account, or does it *accurately reflect* the fact that, by and large, the public do not care much about them? We shall return to this question at the end of §10.3.2.

10.3.2 The challenge of objective measurement

Some of the mechanisms described in this chapter raise legitimate questions about the objectivity of policy- and decision-making. For example, mechanisms such as public lobbying and campaigning (or even, to some extent, consultation and political representation) run the risk of policy- and decision-making by who-shouts-loudest. Economic valuation can seek to mitigate this risk by treating values assigned by different individuals as having equal weight. Effective participatory and deliberative methods are also designed to manage this risk.

³⁵ Cf the way in which rule utilitarianism argues for the adoption of rules based on generalised calculations of utility, as opposed to calculations of utility for every single decision

³⁶ See for example §1.1 of <u>https://www.gov.uk/government/publications/defra-single-departmental-plan-2015-to-2020; accessed on 28/05/2016</u>

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However, there are other concerns about objectivity which these methods cannot set aside so easily. These relate to the idea that it should be possible, at least in principle, to develop objective measures of how much people value things – measures which can then be used as the basis for objective policy- and decision-making. For example, it should be possible to find methods which create an *opportunity* for social and cultural values to be used without *prompting* the use of those values, and therefore biasing the results.

Some of the mechanisms considered in this chapter are clearly questionable in this respect. Public campaigns, for example, are often described by those who dislike their direction of travel as "orchestrated", a word which deliberately implies that the values being expressed are in some sense manufactured, and can therefore be discounted. While the use of this term is itself often "orchestrated", concern about the objectivity of public campaigns remains legitimate.

Unfortunately, similar concerns also arise for more formal research methods. Consider again, for example, the quotation discussed in §10.2.1, in which a participant describes thoughts that are "relatively new, but they've always been there". Has this participant been provided with an *opportunity* to express something he really values, or has he been *prompted* to express views that he would not have done spontaneously?

Some discussions of participatory and deliberative methods attempt to side-step this question by asserting that these methods uncover values that are, in some sense, *deeper*:

Shared values resulting from deliberative, group-based valuation are different from individual values. Case study evidence suggests that they are more informed, considered, confident and reflective of participants' deeper-held, transcendental values. (Kenter et al., 2014)

The problem is that we lack an independent way of establishing "participants' deeper-held, transcendental values" against which the outputs of a deliberative, group-based valuation can be assessed. Indeed, if such an independent way existed, we would not need the participatory and deliberative methods in the first place. The fact that expressions of value in deliberative groups are "more informed, considered, confident" is therefore equally consistent with participants having simply changed their minds about the topics under discussion.

Similar concerns arise with regard to simpler methods such as willingness-to-pay. Such methods have to specify what a respondent is being asked to pay for: the question necessarily frames the object of value in a particular capacity, from a particular perspective, and therefore prompts the use of one kind of social and cultural value rather than another. Indeed, just by framing the topic in terms of payment, such questions will exclude some perspectives and prompt others.

As such, even market behaviour is not as objective as it might appear. It could be argued that, as market behaviour is not prompted by any researcher or question, it is therefore more objective. However, markets are themselves social and cultural phenomena, contexts which require from their participants a particular way of understanding and valuing the world around them. By participating in a market, we take on a particular social and cultural perspective, and view things in their capacity as objects of possible exchange, shorn of personal significance: one does not expect others to pay for the memories one attaches to one's house, or the personal meanings one attaches to one's wedding ring. To the extent that a society or culture fosters or promotes participation in markets, therefore, so too the adoption of this particular perspective, and the use of these social and cultural values, will become more widespread (and vice-versa in societies or cultures that discourage market behaviour). Market behaviour is as

much a product of policy and decisions as it is, through mechanisms such as economic valuation, a determinant.

As noted in Chapter 1, the value assigned by an agent to an object on a specific occasion reflects a wide range of situational factors; and one very important situational factor is the perspective adopted by that individual on that occasion, and the capacity in which s/he therefore understands that object. The idea of objective measurement of value rests on the fantasy of asking a question or finding a social context which prompts no perspective at all.

This leaves policy- and decision-makers with a tricky question. In §10.3.1, for example, we asked whether the fact that pollinating insects are not on the agenda *prevents* the social and cultural values of these insects from being properly taken into account, or *accurately reflects* the fact that, by and large, the public do not care much about them? We must now consider a third possibility: that this fact reflects *a deficit, in our society and culture, of questions and contexts* in which concerns about pollinating insects would come to the fore. The tricky question facing policy- and decision makers is whether that deficit is *acceptable*, or whether it needs to be addressed through mechanisms such as consultation and research.

10.4 Excluding values from policy- and decision-making

So far in this chapter we have considered a range of ways in which social and cultural values may be taken into account in policy- and decision-making: through economic valuation; through an assessment or risks; and through other mechanisms such as consultation, political representation, open policy-making, or public lobbying or campaigning.

As noted in §10.1.5, however, it is also possible that the decision might be taken to *exclude* some social and cultural values entirely from policy- and decision-making. For example, should the fact that people like bumble bees because they are fluffy (see §7.2) really be a consideration in public policy- and decision-making?

In the same vein, we might raise questions about one of the few types of value included in Vanbergen et al's (2014) catalogue (§10.1.1): the "pleasure from seeing pollinators, especially the larger, showy and distinctive species³⁷, and knowing they exist". Should the size, showiness or distinctiveness of a species be a factor in decisions about whether or not to save its habitats? There are undoubtedly people out there, often quite small ones, who derive pleasure from pulling the wings off pollinating insects; but no-one is seriously suggesting including this amenity value in an economic valuation.

The problem is that exclusions of this kind, appropriate as they may seem, call into question the objectivity of policy- and decision-making. On what basis are these exclusions to be made? The decision that these values are in some way *less important* must itself be made from some kind of perspective. It is, in short, a value judgement.

10.4.1 Values and knowledge

This problem becomes even more troubling when we consider the interaction between valuing and knowledge, and the possibility of excluding those expressions of value which are based on misinformation. For example, if people attach negative value to hoverflies in the mistaken belief that they have stings, should this negative value be taken into account? And what about the

³⁷ The showiest pollinators, butterflies, are in fact relatively poor pollinators; and their larval stages, caterpillars, can be significant pests.

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failure of people positively to value hoverflies because they do not understand their involvement in pollination? Should we instead count the counterfactual value they *would* attach to hoverflies if only they knew more?

One of the justifications offered for the use of deliberative methods is precisely the fact that they can address this kind of knowledge deficit. For example, Fish et al. (2011b) describe the use of deliberative methods to elicit willingness-to-pay values:

This is partly about the use of group deliberation to enhance the quality of the monetary valuation procedure. The rationale is that individual preferences will be more informed as they learn more about the issue.

The problem with this justification is that, once again, it implies a value judgement: that valuing by a more informed person is of greater value than valuing by a less informed person. To put the point another way, people need to be made more like experts before their valuing really counts. Indeed, applying this logic rigorously, one might abandon group deliberation altogether and instead ask the experts directly what we *would* all value if only we all knew as much as them.

10.4.2 Value to whom/what?

Problems of objectivity also arise in connection with the idea of pollinating insects as creatures with lives – objects of empathy and compassion, or bearers of rights (see §7.1).

To understand why this perspective is problematic, it helps to take a step back and look at the role that the construct of 'value' plays in the project of decision-making. Whereas the natural sciences investigate the probabilistic consequences of different courses of action, an assessment of value is supposed to indicate which of these consequences and courses of action to *prefer*. To paraphrase David Hume: science provides the 'is', but assessments of value provide the 'ought'.

Another way to express this is to note that 'value' provides an end to a regress of questions 'why' which the natural sciences can only prolong with another 'because'. Why should we protect this species? Because it plays a key role in sustaining this habitat. Why should we sustain this habitat? Because it is essential to water quality downstream. Why should we maintain water quality downstream? Because the people in the town there value it.

Critically, as this example illustrates, value is a relational concept: it is value to someone or something. It is the *moral standing* of this someone or something that actually ends the regress. For example, we could frame the role of the species in sustaining the habitat as 'value to the habitat'; but unless the habitat itself is seen as an entity with moral standing, this does not preempt another 'why'. Of course, if we believe the species itself has moral standing, then the question of why we should protect it may not arise in the first place.

Economic valuation assigns moral standing to a single class of entity only: human beings. For example, consider the definition of the term 'good' provided in the conceptual framework chapter of the NEA:

the term good(s) includes all use and non-use, material and non-material outputs from ecosystems that have value for people. (Mace et al., 2011)

The "for people" at the end of this statement is a critical limitation on who has moral standing.

While economic valuation assigns moral standing only to human beings, those human beings may themselves assign moral standing to a range of other entities: animals, places, 'nature',

God. They rescue bees and bring spiders into their houses (see §7.1). They empathise, care, and attribute rights.

All of these real values assigned by real people are *excluded* by valuation approaches which assign moral standing only to humans. In their place, people are allowed to have only 'option' and 'existence' values, while their empathy and care are reduced to:

a benefit from just knowing that an ecosystem and/or its component parts exists and will continue to exist. (Mace et al., 2011)

This is *not* what a person who assigns moral standing to another living creature is saying. They are saying that value to that creature ought to be included in the calculations from the outset. They are *disagreeing* with the stance taken by the NEA on who/what has moral standing. We can see this even more clearly if we replace the words 'an ecosystem and/or its component parts' with 'God': a religious person does not just derive a benefit from knowing that God exists, but believes there are things s/he *ought* to do because they are valuable *to* God. In the same way, someone who feels empathy for a bee is not deriving a benefit from knowing that bee exists, but feeling there are things s/he ought to do because that bee will benefit.

The point we are making here is not that economic valuation is wrong (or right) to assign moral standing only to human beings. The point is merely that economic valuation does take a very definite stance on this question, and by doing so excludes a tranche of social and cultural values. Once again, we may ask, on what basis? The view that these values should be set aside is not a mathematical matter but a value judgement.

10.4.3 Exclusion and objectivity

It is probably impossible, and almost certainly impractical, to take into account every single kind of value in policy- and decision-making. The objective, value-free 'view from nowhere' is not attainable.

As such, it will always be necessary for policy- and decision-makers to make judgements about what kinds of value to exclude which will themselves, unavoidably, be made from a particular perspective, and therefore value-based. These judgements, and the perspective and values which underpin them, should be clearly articulated in a form that allows others to contest them. A good example of this approach is provided by the rationale provided in the conceptual framework chapter of the National Ecosystem Assessment (Mace et al., 2011) for the exclusion of "non-anthropocentric" or "intrinsic" values:

'Intrinsic value' refers to the view held by many people that the natural world, and therefore ecosystems, biodiversity and geodiversity, merit conservation regardless of any material benefits or measurable values. This viewpoint is a meta-ethical claim such that the intrinsic value of nature cannot be compared with any other value set. Therefore, it lies outside the UK NEA, but we recognise that this is an important consideration for many people.

It is beyond the scope of this report to consider whether or not this exclusion is justified. The important thing is that the exclusion is explicitly acknowledged, and the rationale for it – a view that decisions should be based on values that can be "compared with any other value set" – stated. The judgement, and the perspective and values which underpin it, is clearly articulated in a form that allows others to contest it.

Economic valuation techniques, alongside other mechanisms, can of course improve the ways in which social and cultural values are taken into account in policy- and decision-making in many ways. But we should not allow ourselves to imagine that the mathematics of economic valuation entirely removes the need for value judgements. Of course, it would always be possible to pursue the *illusion* of objectivity – for example, by developing *a priori* classifications of value, unsullied by evidence of what actually matters to people, and force-fitting everything one subsequently encounters into the categories one has come up with. In doing so, however, one would emulate the pretensions of Enlightenment science to completeness, and its refusal to countenance the possibility of other ways of understanding and valuing nature (see §8.2); or indeed, the tragic-comic refusal of the left hemisphere to accept anything that falls outside its perspective (see §8.3.3).

A better way forward, we suggest, is for policy- and decision-makers to take an evidence-based approach to understanding the true diversity of social and cultural values – the real ways in which real people understand and value the world around them – and to accept the responsibility of adopting and owning their own unavoidably social and cultural perspective on the world, and for articulating this in a form that allows others to contest it. McGilchrist (2009) quotes a passage from the American Pragmatist thinker John Dewey's *Context and Thought* which eloquently encapsulates this practical alternative to an appealing but illusory objectivism:

Bias for impartiality is as much a bias as is partisan prejudice, though it is a radically different quality of bias... One can only see from a certain standpoint, but this fact does not make all standpoints of equal value. A standpoint which is nowhere in particular and from which things are not seen at a special angle is an absurdity. But one may have affection for a standpoint which gives a rich and ordered landscape rather than for one from which things are seen confusedly and meagrely.

10.5 Taking social and cultural values into account: an evidence-based approach

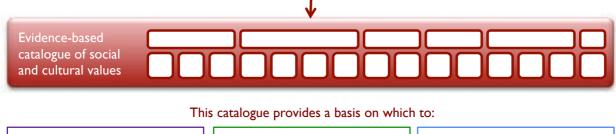
The primary focus of this chapter has been ways in which the social and cultural values associated with pollinating insects might be better taken into account in policy- and decision-making. Stepping back from the specific topic of pollinating insects, however, we may also ask what general lessons can be drawn regarding the ways in which social and cultural values can and should be taken into account.

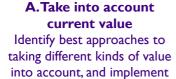
The starting point, we have argued, should be the development of an evidence-based catalogue of social and cultural values relevant to particular objects of interest: just as this report has offered (in Chapters 2 to 8) an evidence-based catalogue of social and cultural values relevant to pollinating insects. Drawing on the discussions in $\S10.1$, $\S10.3$ and $\S10.4$, Figure 25 illustrates how such a catalogue provides the basis to develop a robust, reasoned and contestable approach to assessing current values – as well as a starting point for anticipating future values (see \$10.2) and also for influencing future behaviour (the topic of Chapter 9).

Note that pragmatic and technical considerations, such as what it is easy or possible to measure or monetise, play an important role in the proposed process; but the role they play is in selecting *how* to deal with different kinds of value identified in the evidence-based catalogue, and not in determining *whether* those kinds of value are considered at all.

Taking social and cultural values into account: an evidence-based approach

Develop an evidence-based catalogue of social and cultural values, using a mix of interpretative and participatory methods to explore how, and in what capacities, people can and do value objects of interest



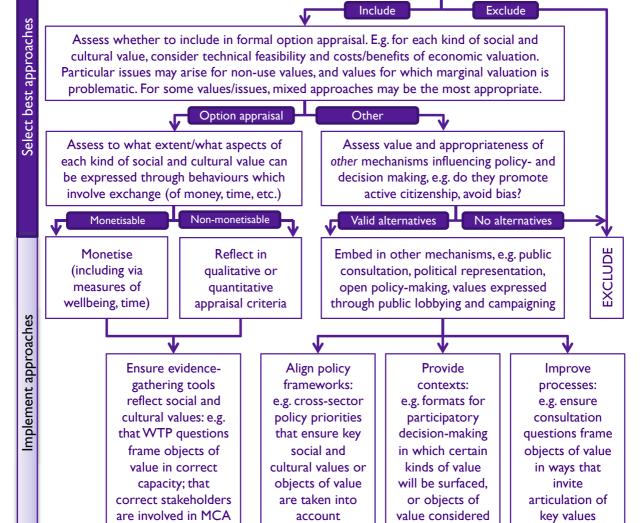


B.Anticipate future value Develop scenarios, and assess risks arising from possible changes in 'public opinion'

C. Influence future behaviour Develop communications and engagement approaches which draw on available values



Articulate a clear rationale for judgements about which kinds of social cultural values are to be included in analysis, policy- and decision-making, and which are to be excluded; i.e. which are the "relevant costs and benefits to government and society" (Green Book)



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10.5.1 A framework for assessing the indirect values of pollinators

The aim of this project has been to enhance understanding of the social and cultural values of pollinators, and to improve the way in which these values are taken into account in policy development, decision-making and evaluation at a variety of spatial scales.

However, the evidence requirement which the project addresses also refers to *indirect* values. As an example of what is meant by the term "indirect", the National Pollinator Strategy mentions "fruits and berries contributing to a healthy diet and the contribution of pollinators to nature-rich environments leading to improved health and well-being" (Defra, 2014). These examples suggest that the term "indirect values" is intended to refer to values which attach to objects which are not themselves pollinators but which are, as a matter of fact (and independently of whether the individual valuing them knows this to be the case), dependent on pollinators.

Put simply, "indirect values" are not a different type of value, but values attaching to different object of values which are dependent, as a matter of fact, on a *primary* object of value. As such, assessing the indirect values of some primary object of value would require an iterative approach as follows:

- 1. Identify which other objects of value are, as a matter of fact, dependent on the primary object of value. Note that the issue at stake here is whether these other objects of value are, *as a matter of fact*, dependent on the primary object of value, and not whether they are perceived and understood as such by those valuing them. As such, natural scientists and other experts should play a central role in the task of identifying these other objects of value. The question of what the wider public *think* depends on pollinators is not relevant to this step.
- 2. Iterate: identify further objects of value that are, as a matter of fact, dependent on the objects of value identified in step 1. This process could be repeated indefinitely, meaning that the scope of a project to identify and assess indirect values could be very wide, and potentially limitless. As such, it would be necessary to prioritise, based on a clear and contestable rationale for the inclusion/exclusion of objects of value and indirect values (see §10.4.3).³⁸
- 3. Apply the process illustrated in Figure 25 to each of the further objects of value identified through steps 1 and 2: i.e. develop an evidence based catalogue of social and cultural values relevant to them, and develop a robust, reasoned and contestable approach to taking these values into account.

This iterative approach to identifying indirect values is illustrated in Figure 26, below.

³⁸ In light of this, it may also be worth revisiting the question of whether the concept of "indirect values" is necessary or useful for sound valuation. It could be argued that the need for this concept arises only if one adopts an atomistic perspective (see §8.1). As pointed out, this perspective isolates pollinators from the wider natural systems of which they are part, and focuses on services/goods provided to humans. Services/goods delivered only *via* the natural system of which those pollinators are part therefore appear, from this perspective, at risk of being left out. By contrast, the holistic perspective understands and values pollinators in their capacity as participants in a greater whole in which humans also participate: from this perspective, a clear-cut distinction between "direct" and "indirect" value may be harder to maintain. Further work on "indirect value" should consider the possibility that the concept itself risks locking valuation into a narrowly atomistic perspective; and that a reappraisal of the concept may be needed to support a more holistic perspective, in line with the broader ecosystems approach.

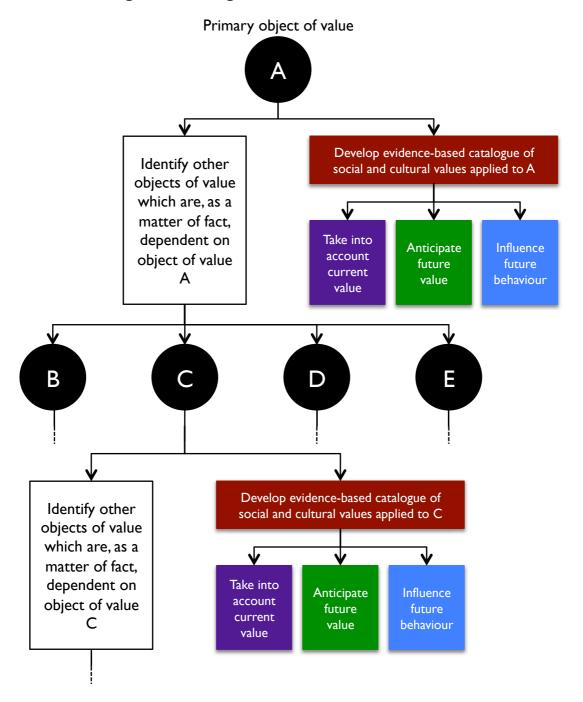


Figure 26: Taking indirect values into account

How might this process (and specifically steps 1 and 2) work in the case of pollinators? It is not hard to think of *examples* of objects of value which are, as a matter of fact, dependent on pollinators. We noted above the examples provided in the National Pollinator Strategy. Vanbergen et al. (2014) also provide examples to illustrate the possibility that:

individuals may care about the consequences of pollinators' actions. For example, this could be through the effects of wild pollinators on the diversity and abundance of wild flowers and trees. If people enjoy flower meadows, then they get an indirect benefit from the actions of pollinators. People who enjoy growing flowers and vegetables in their own gardens or allotments also get an indirect benefit from the actions on pollinators.

A harder task is to develop a comprehensive list of *all* the different objects of value which are, as a matter of fact, dependent on pollinators. IPBES (2016) indicate a wide range of indirect benefits other than crops that might need to be taken into account when they describe pollinators as:

contributing directly to medicines, biofuels (e.g. canola3 and palm oil), fibres (e.g., cotton and linen), construction materials (timbers), musical instruments, arts and crafts, recreational activities and as sources of inspiration for art, music, literature, religion, traditions, technology and education.

Moreover, it is essential to be precise about the *primary* object of value, as this has a bearing on the scope of the enquiry. Are we interested in pollinating insects *in their capacity as pollinators*, or pollinating insects in general? Honey and wax are examples of additional objects of value which would be excluded by the first definition but included by the second.

Assuming a focus on *pollinating insects in their capacity as pollinators*, we propose the following framework for the development of a structured and comprehensive list of objects of value dependent on pollinators.

- Iteration I: objects of value biologically dependent on pollinators, e.g.
 - o Species
 - Habitats/ecosystems
 - Natural processes
- Iteration 2: objects of value dependent in turn on the objects above, e.g. (in England)
 - Products e.g. crops, materials, medicines
 - Places e.g. gardens, meadows, hedgerows
 - Experiences e.g. recreation, spirituality
 - Practices e.g. farming, gardening, conservation, art inspired by nature
 - o Identities e.g. gardener, nature-lover

A third iteration could be undertaken: for example, practices such as house-building or medicine are to some extent dependent on products listed in iteration 2, but are clearly at some remove from pollinators. As noted previously, it would be necessary to prioritise, based on a clear and contestable rationale.

Having created a structured and comprehensive list of objects of value dependent on pollinators through these iterations, the process summarised in Figure 25 would then need to be applied for each object of value identified: i.e. develop an evidence based catalogue of social and cultural values relevant to them, and develop a robust, reasoned and contestable approach to taking these values into account.

APPENDIX

Primary research methods

Full details of the five methods used in the research strand are provided in the sections that follow. The table below summarises these five methods:

What?	Why?	Who?	How many?
Participatory groups (whole day workshops)	Designed to explore collective values using more participatory methods.	Individuals with interest and expertise in pollinators Individuals with a connection to the site where the workshop took place Other local community members	18 in each of two locations. Total: 36
Art ethnography projects (6-8 weeks)	Designed to explore individual values using more participatory methods	Individuals actively involved in the interest of pollinators in some way Also, as co-researchers, artists (composers, sculptor)	3 participants in each of two locations. Total: 6
Discourse analysis	Designed to explore collective values as expressed in popular cultural forms of many kinds, from advertising to home decor to children's' books and beyond.	Samples drawn from popular sources such as advertisements, magazine features and social media postings, and a smaller number of specialist sources such as academic articles.	Visuals and copy from around 350 items in total
Interviews (I hour, in- home)	Designed to explore individual values, in context of understanding how interviewees experienced, made sense of and found value in pollinating insects.	Individuals with limited engagement, recruited using the Tiering Study in Christmas et al. (2013); participants were recruited from Tiers 1 and 3.	Total: 20
Workshops with children 2 x short workshops	Designed specifically to explore the responses of children.	Children aged 8-11 years (Key Stage 2) at two separate primary schools.	8 children at each school. Total: 16

Participatory groups

Role in overall design

The participatory groups were designed as one of the earliest elements of the 'research strand' of the project. The research strand as a whole focused on answering the question: what do pollinators mean to people and why do they care about them? It comprised a mix of in-depth qualitative, interpretative, creative and participatory research.

Within this mix, the participatory groups were designed to explore collective values using more participatory methods.

Our spoken words increasingly reflect what we hear from sources outside of ourselves, rather than expressing what we really feel within. This method allowed us to explore in depth internalised values which groups working together find in pollinators, using approaches which avoid the risk of over-rationalisation associated with talk-only deliberation, and allow a full engagement of emotional, aesthetic and ethical values.

Positioned early in the research work, the participatory groups have provided an opportunity to explore in an open-ended way the potential range and extent of such values. The function of this type of research is that it allows us to explore in depth how pollinators could be valued as well as how they are currently valued.

Recruitment

Two workshops were run, one in each of our two case study areas (Bristol and Marlborough Downs). In each area, a specific site where work to support pollinators had been undertaken was identified as a venue for the workshop:

- The Bristol workshop took place at the Pavilion, Nicholas Lane, St George which stands on the edge of the Bristol East Allotments.
- The Marlborough Downs workshop was held at the Barbury Castle Members Barn located close to Barbury Castle farm and country park, where the walks took place.

The two workshops were attended by a total of 36 people, recruited from within the local community via local contacts; 18 in Bristol (plus 1 participant from the project team) and 18 in Marlborough Downs. Participants were recruited from within the local community and included a mix of:

- individuals with specific interest and expertise in pollinators
- individuals with a specific connection to the site and
- other local community members with no pre-existing connection to pollinators or the site

There was a mix of age (from 16 to 80) and gender, with a bias towards female participants over 40. Participants were remunerated for their time at market research rates.

Method

Groups were run using the Chormmunity group methodology.³⁹ This methodology is designed to explore collective values through the co-creation of a ritual. Specifically, Chormmunity reflects the power and importance of somatic expression and ritual, while respecting our human ability to communicate through words. It allows groups and individuals to explore ideas and express themselves through movement, words and images. It helps to balance the power within groups, so that different types of intelligence and expression are given a more equal share.

The choice of this particular participatory methodology was guided by a number of considerations, including:

- The method readily accommodates an experiential dimension (the 'silent walks' see below) and an alternation of individual reflection and group creativity.
- The method provides opportunities for participants to express themselves through a number of different modalities, including verbal, visual and somatic: as well as catering to different participant preferences, we also envisaged that these different modalities might allow for expression of different kinds of value.
- Non-verbal modalities, and somatic expression in particular, can provide a 'neutral' space for experts and non-experts on a topic to engage with each other on a less hierarchical basis.

Workshops lasted between 5 and 6 hours and comprised:

- 1. Physical warm up led from within the group in this case a silent walk in a pollinator-rich environment
- 2. Discussion in pairs or small groups of the topic or issue
- 3. Expressing the themes that came up in those discussions, visually but silently drawing, making collages.
- 4. Translating this expression in to a "movement text" a kind of dance...This culminates in a "performance", not for an audience, but still with the attention to detail that is so important when we create ritual.
- 5. A facilitated discussion about the experience in which individuals list the underlying values and beliefs that they have discovered, and those which they share as the group.

Data was collected through the workshops through a variety of methods:

- Individual reflection sheets completed by participants following silent walks, and collected following the session.
- Images created at step 3.
- Recordings of group discussions, along with key themes recorded by the facilitator on postit notes.
- Video recording of movement texts.

³⁹ Loper, P. (2000), Chormmunity: Co-Creating Embodied Community, <u>http://eric.ed.gov/?id=ED443009</u>, last accessed 15th October 2015. The Chormmunity method has been used extensively by our researcher-facilitator, Kay Scorah, (including work alongside the method's originator, Dr Paul Loper) to explore issues such as: 'body image' among a cross-generational group of women; shared workplace values in a multicultural group; the value of indigenous tribal culture in modern Mexico, with a multi-cultural group of community workers; and sustainability in the context of energy supply.

In line with a number of participatory methods, Chormmunity involves the group itself in starting the process of analysis – for example, the group was engaged in sorting the images created in step 3, and commenting on patterns they identified; while the discussion at step 5 included participant reflection on patterns in the movement texts. Analysis following the workshops continues this process, using a thematic approach to the organisation and interpretation of evidence.

Art ethnography

Role in overall design

The art ethnography projects were designed as one of the earliest elements of the 'research strand' of the project. The research strand as a whole focused on answering the question: what do pollinators mean to people and why do they care about them? It comprised a mix of in-depth qualitative, interpretative, creative and participatory research.

Within this mix, the art ethnography projects were designed to explore individual values using more participatory methods. The approach allowed us to explore in great depth the kinds of value which pollinators have for individuals, the complex relationships between value, engagement, empowerment, and action, and the development of values over time.

Recruitment

In an urban and a rural location (Bristol and the Marlborough Downs) we recruited an artist as well as three individuals who were actively involved in the interest of pollinators in some way ('participants'). Artists and participants were found through local contacts that employed a mixture of direct approach recruitment and open advertising in relevant newsletters. Participants were remunerated for their time at market research rates.

Method

The methodology was designed specifically to help understand how pollinators are culturally and socially valued by individuals working in the interests of pollinators. It involved introducing artists to the more conventional qualitative approach of ethnographic interviews.

Ethnographic interviews work to uncover insights by allowing the researcher to observe the subject operating in their 'natural' context, as uninhibited and unaltered by the researcher as practically possible. In the art ethnography approach, the researcher was joined by an artist, who was briefed to create a work of art in response to their own observations and insights. This approach allowed us to introduce a different *kind* of observing into the ethnographic encounter, drawing on the very different approaches used by artists not just to identify meaning and value (as a researcher would), but also to *respond* to them, and to *make* something of them.

Having a researcher present at all ethnographic interviews meant that more traditional ethnographic observations were also gathered, including those that were not drawn upon by the artist in their piece.

The steps of the process were as follows:

1. A researcher met with the artists to brief them on the project and to get a sense of their individual creative process.

- 2. An appointment was made for the artists to meet each of the three participants in their area individually. These meetings lasted from two and a half hours to as long as a day depending on the availability of both artist and participant. A researcher attended these meetings and oversaw initial introductions. Conversations were audio-recorded and transcribed.
- 3. Artists were invited to re-contact any individuals they felt they would benefit from spending more time with.
- 4. The artists were commissioned to create a piece of art based on their experience of meeting the individuals and their interpretation of the cultural and social value of pollinators.
- 5. The artists kept a reflective journal to capture their thought processes throughout the creative journey.

Materials gathered throughout the process were analysed thematically.

Reception of the methodology

The art ethnography approach was well received by participants, who welcomed a more intuitive, creative method as an antidote to the somewhat 'colder' numerically driven traditional approach they considered less sympathetic to their concerns.

We're always told that it is about science, but sometimes it isn't about science.

Artists adapted well to the role of ethnographer, showing high degrees of emotional intelligence and personal curiosity in both the subject area and the subject. They seemed to engage meaningfully with the topic almost immediately. The pieces they created in response to the ethnographic visits were new articulations of the social and cultural values of pollinators.

Discourse analysis

Role in overall design

Discourse analysis was undertaken as one of the earliest elements of the 'research strand' of the project. The research strand as a whole focused on answering the question: what do pollinators mean to people and why do they care about them? It comprised a mix of in-depth qualitative, interpretative, creative and participatory research.

Within this mix, the use of discourse analysis allowed us to explore collective values as expressed in popular cultural forms of many kinds, from advertising to home decor to children's' books and beyond.

The other methods in the mix sought to generate knowledge and insight directly from people – by asking them questions, observing their behaviour and/or asking them to perform relevant tasks. This strand of work took a different approach to the generation of insight; rather than people, it treated cultural artefacts as the subject of analysis. So, just as for other qualitative methods, it looked for patterns, but this time for patterns in representations – in words and images found across the public domain. It asked how bees and pollinators appear 'out there' in popular discourse – in texts and items that are available to anyone in the UK – and how patterns in these representations might help us understand their social and cultural meaning.

Materials analysed

This analysis encompassed analysis of visuals and copy from around 350 items in total, comprising pieces of text or whole documents. These included samples drawn from popular sources such as advertisements, magazine features and social media postings, and a smaller number of specialist sources such as academic articles. Sampling was focused on bees or beekeeping, bees being the pollinators which feature in the widest range of popular texts and sites. However, we also explored the 'edges' of the bee discourse – looking for examples of parallel popular representations of wasps, and other pollinators like hoverflies.

Sites and sources sampled included the following:

- Art
- Beauty magazines, websites, ads
- Beekeeping amateur
- Blogs
- Books
- Campaigning organisations online and publications
- Children's books
- Cookery books/blogs
- Gardening T.V. & popular magazines, blogs etc.
- Homes/décor magazines, websites
- Historical references and accounts (NB this was not a full historical analysis but included historical sources which are easily or commonly available i.e. able to be treated as part of our contemporary popular discourse)
- Images miscellaneous online
- Literature
- News
- Retailers incl. homes, jewellery, clothing
- Scientific publications
- Social media
- Text books children's & older

Method

Discourses are standardised ways of referring to or constituting a certain kind of phenomena. They are made up of language use through talk, text and other semiotic activity such as visual images. Discourse analysis is a method of identifying discourses and the processes by which they are constructed. This includes systematically teasing out the discursive resources that are available in a social or cultural domain at a point in time. By discursive resources we mean culturally available terminology, rhetorical devices, clichés, binary and hierarchical positionings, associations, and lines of argument and logic (in this case regarding bees and other pollinators) which are regarded as 'normal' in a culture.

These commonly available terms, forms of language and implicit logical connections are powerful, because they 'go without saying'; they seem unremarkable and natural and are

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therefore hard to dispute. As such, these popular 'truths' can be drawn on, almost as shorthand, by individuals or groups to fulfill a purpose, whether personal, commercial, political, or other. Usage of discursive resources is not necessarily conscious, nor Machiavellian (although it could be), but is a fundamental way we all make sense of the world, explain its phenomena to ourselves and others, persuade people, make a case for or against something, or decide how to take action.

In this work we sought to analyse the discourse of pollinators, especially bees, available to a British public in 2015. So we gathered a very wide range of material in which bees and other pollinators feature – from scientific articles to children's books to Twitter accounts to honey packaging and popular magazines on home décor. In conducting the discourse analysis, we looked systematically for patterns in the use of these discursive resources in order to identify the discourses within which bees themselves are represented, and how other agents, actors and objects are also positioned – humans who keep bees, for example, or the very honey bees make. This allowed us to see the kinds of 'shorthand' being drawn on in each of these sites and texts – and putting those together we can propose a map of the current discourses.

Interviews

Role in overall design

The interviews were the last of the elements of the 'research strand' of the project to be delivered. The research strand as a whole focused on answering the question: what do pollinators mean to people and why do they care about them? It comprised a mix of in-depth qualitative, interpretative, creative and participatory research.

Within this mix, the interviews were designed to explore individual values, in the context of a wider understanding of the ways in which interviewees experienced, made sense of and found value in pollinating insects.

Recruitment

20 participants were in an urban and a rural location (Bristol and the Marlborough Downs). Recruitment was undertaken by professional market research recruiters using a questionnaire based on the Tiering Study in Christmas et al. (2013); participants were recruited from Tiers I and 3. Equal numbers of male and female participants were recruited, with a spread of ages from 18 to 70. Individuals working in farming, forestry, conservation or other environmental work were excluded, as were beekeepers (professional or hobbyists). Participants were remunerated for their time at market research rates.

Method

Semi-structured interviews were undertaken in home and lasted 60 minutes. The interview was designed to create meaningful opportunities for unprompted discussion of pollinating insects, and subsequently to prompt such discussion where it did not happen spontaneously. Note that pollinating insects (or often, more specifically, bees) were raised by at least some participants at *each* of the steps in the interview described below.

Following confirmation of consent, key steps in the interview were:

• Initial broad discussion of the participants relationship with nature, using statements from the Monitor of Engagement with the Natural Environment survey as prompts.

- Responses to pictures of a variety of spaces containing flowers. Participants were asked to comment on any similarities and differences they saw, as a way of exploring their own constructs with relation to these spaces.
- Experiential visualisation and description of a real place "with flowers in it". If not mentioned, prompting on insects.
- Prompted discussion of pollinating insects. Participants were initially shown a collage of photographs showing various pollinating insects on flowers, and asked to describe what was going on in the pictures. The term pollination, and a description of it, were introduced subsequently if and as necessary.
- Discussion of action to support pollinators. What might prompt individuals to take action?

Interviews were audio-recorded and transcribed prior to analysis. Transcripts were analysed thematically, using an iterative, inductive approach to the development of themes.

- 1. A first review of transcripts identified an unstructured longlist of provisional topics, observations and patterns, which provided a starting point for analysis.
- 2. Material relevant to these topics, observations and patterns was then grouped together and reviewed. This included supporting and counter-evidence for a provisional topic, observation and pattern. Not surprisingly, some material was grouped under more than one topic.
- 3. The initial longlist of topics and patterns was then revised and developed:
 - a. Items were provisionally validated, refined/sophisticated to reflect supporting material, qualified to reflect exceptions, replaced with a better item, or rejected entirely as unsupported.
 - b. In particular, over successive iterations, themes (categories) were replaced with propositional findings (statements).
 - c. Where needed, items were grouped together to create new superordinate categories/statements, or split to create separate items. Connections between items were also noted.
 - d. New items were added as needed: in particular, material which had not been grouped under existing items was carefully reviewed, and new items were identified.

Review of the material focused not just on what participants said, but also on how they said it and in response to what. Care was taken to ensure that material which was grouped under items contained sufficient indication of context: for example, researcher questions or notes on what had happened earlier in the same interview.

Scrutiny of the evidence was also, inevitably, informed by familiar theory and past experience. These factors unavoidably shape what researchers see in the evidence (and also, therefore, what they miss).

4. The new longlist of topics and patterns was then used as the starting point for a new round of grouping (step 2) and reviewing (step 3). The process was iterated until a stable, propositional structure emerged which both was supported by and accounted for the evidence.

In practice, the first few iterations of this process were undertaken without physically grouping transcript material, using paper-and-pen methods. Thereafter, as a more stable structure began to emerge, coding software was used as a practical way of grouping and regrouping large

quantities of material. (The software used was TAMSAnalyzer, a freely available coding package for Macintosh computers.)

A final detailed evaluation of the relationship between propositional findings and evidence was also undertaken. Where necessary, final checks were also made on the original context of material, to ensure it was not being quoted out of context.

Workshops with children

Role in overall design

Exploratory work on children's' values was incorporated as part of the overall programme, as we believe this audience is critical to the long term engagement of society with the needs of pollinators. If the social and cultural values of pollinators are going to change in the future, then this process is likely to start with children.

To fit in with the school timetable, this project was positioned relatively late in the research process. This meant that the project was be able to draw on a range of inputs from across the other strands of work – findings, hypotheses, materials and methodological insights. For example, we used outputs from the Art Ethnography strand as part of the stimulus material.

Recruitment

The research focused on children aged 8-11 years (Key Stage 2). The majority of children in this age group have an interest in plants and nature, but this tends to fall away once they move to secondary school. The basics of pollination are included in the National Curriculum in Year 2, at Key Stage I, which in theory gives them a degree of awareness of the topic.

The research was carried out in two separate primary schools with established programmes involving growing, conservation, environment, and forest schools. Schools were recruited from existing networks. Teachers at each school were asked to select a group of eight children, with a mix of boys and girls and different abilities and backgrounds.

School A

- State Primary, above average size, age range from nursery to Year 6
- High proportion of pupils from Black and Minority Ethnic groups, including many with English as a second language. The school's catchment includes families linked with the university (UEA) and with the Norfolk and Norwich Hospital
- The school has extensive grounds, including wildlife and growing areas (fruit, vegetables, flowers), and runs an afterschool garden club. Parents help out with the garden club and with special projects.
- 8 children from Year 6 (age 10-11)
- 4 boys, 4 girls
- 4 White British, 4 BME

School B

- Primary Academy, average size, age range from nursery to Year 6
- Mainly White British, with a small proportion of pupils from Black and Minority Ethnic groups and Traveller families. The catchment area includes a significant proportion of local authority housing, and is one of the more deprived areas of the city.
- The school has extensive grounds, including wildlife and growing areas (fruit, vegetables, flowers), and a grazing area where children are encouraged to pick and eat produce. Outdoor learning is incorporated into the daily curriculum, with a specialist teacher for this. Parents are invited in to school to sample cooking

Mixed ability

made from school produce, and to help out with outdoor projects.

- 8 children, 3 from Year 4 (age 8-9), 5 from Year 5 (age 9-10)
- 4 boys, 4 girls
- 7 White British, one BME
- Mixed ability

This strand of work was delivered in Norwich, where we have strong existing relationships with schools. There are other sound reasons for working in Norwich, as there is good involvement with conservation issues in the city as a whole (Britain in Bloom past winner, well-supported schools competition run by Norwich in Bloom, high levels of commitment by many of the city's schools to a wide range of outdoor activities).

Method

Each school was visited twice, at a week's interval. We conducted two groups with the children in each school, and also conducted a follow up interview with the teacher involved.

- In the first session, we explored the children's understanding of pollinators, the ways in which they value them, who they see as responsible for the well-being of pollinators, what role children can play, whether this matters, and why. They were then briefed about the creative task they would be undertaking in the following week's session.
- The second session was held a week later, when children undertook a specific activity, creating pictures to express their understanding, values, and interactions.
- In between the two sessions, they were encouraged to think about the artwork they would be creating, and to discuss this among themselves and with others (friends, family etc.) to help with ideas.
- A short teacher interview took place after the child research was completed, asking about relevant activity in school and also exploring points that had emerged during the two child sessions.

Groups were audio-recorded and interviews noted, and a thematic analysis undertaken of the children's responses, including pictures.

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