The Research project

Scientific Proposal

Context

Recent years have seen renewed attempts on the part of natural scientists to invigorate and inform the social sciences (Mesoudi et al. 2010, Mesoudi et al. 2006). Two prominent examples include the efforts of cultural evolutionary theorists to account for cultural change and cultural stasis, and the efforts of evolutionary psychologists to provide a scientific account of human nature. The two trends are sometimes seen as mutually complementary, sometimes as antagonistic: cultural evolutionary theory needs to be informed by research on human psychology, and some argue that evolutionary psychology can provide this. In both cases, these efforts have met considerable resistance from the social sciences, especially from social anthropology. Consider the example of Mesoudi et al's long target article in *Behavioural and Brain Sciences*, which aimed to construct a 'unified science of cultural evolution' (Mesoudi *et al* 2006). Their idea was to draw the attention of researchers in the social sciences to the explanatory and heuristic benefits which they saw in an evolutionary framework. Shortly afterwards a strongly-worded response appeared in *Anthropology Today* (Ingold 2007). Tim Ingold argued not so much that an integrated synthesis between cultural and evolutionary approaches was impossible, but rather that the evolutionists had wholly failed to understand the legitimate sources of resistance to neo-Darwinian approaches within social and cultural anthropology. This large project seeks to uncover the philosophical foundations of these disputes, to offer a resolution of them, and ultimately to point the way towards a reconciliation of the two domains.

Scientific importance

The work is of exceptional importance and novelty. It is also timely: the 2009 Darwin anniversary year elicited a range of calls for the 'Darwinisation' of various fields of learning, and these calls have yet to be digested and evaluated. Its ambition is considerable: to attempt a fair-minded unveiling and assessment of a series of philosophical disputes which, although they have not always been recognised, have kept the biological and human sciences from collaborating effectively. With a resolution of these disputes in place, we can perhaps expect greater scientific collaboration across the two domains. The work also contributes to a defensible account of human nature itself, and of the proper relationship of biological and cultural forces as they contribute to similarities and differences in human populations. The work is also methodologically innovative, in three primary respects. First, it attempts to take seriously the methodological and ontological concerns of both social and natural scientists: too often the views of one side in the debate are dismissed without due attention. Second, it combines philosophical and historical perspectives, not merely to understand better the sources of disagreement between these camps, but to learn how one might seek to resolve them. Third, it will have as its output a strengthening of philosophy of anthropology as a sub-discipline within the philosophy of science. This final aim fits well with the Cambridge HPS Department's strengthening of expertise in philosophy of the social science: our most recent appointment to a permanent lectureship (to start in October 2011) was the philosopher of economics Anna Alexandrova.

Interdisciplinary profile

A thoroughgoing interdisciplinary approach will be ensured at all times. The Cambridge-based advisory group (see below for details of its membership) will provide input from across the natural and social sciences. Lewens has a strong track-record in interdisciplinary work. He has recently won Cambridge's first Interdisciplinary Crausaz-Wordsworth Fellowship, which will enable some of the preparatory work for this much larger project to be achieved. In the past year his own work has appeared in leading journals aimed at very different disciplinary readerships: he has published in biology journals, philosophy journals, journals of applied ethics and a risk studies journal. He is well used to sitting in multi-disciplinary working groups and panels, such as the Nuffield Council's current working group on the ethics of organ donation, or the UK Government's Science and Trust expert group. In both of these cases, Lewens has worked with social scientists, natural scientists, and various practitioners (in, for example, medicine and the civil service). Lewens was also a member of the interdisciplinary group that recently gained funding for (and then organised) the highly successful Mellon-Sawyer Seminar Series (2009-10) on 'Modelling Futures: Understanding Risk and Uncertainty'.

Background: What are Cultural Evolutionary Theories?

There are two rather different perspectives from which one might characterise what an evolutionary theory of culture is. One begins from an entirely abstract standpoint. Evolution is change, and a theory of cultural evolution, one might argue, is any theory which explains cultural change, cultural stability, cultural divergence, or cultural homogenisation over time. Such a usage is defensible, but it renders any diachronic theorist of culture an evolutionary theorist, whether they would willingly accept the label or not. Since plenty of theorists of culture—most obviously social and cultural anthropologists—have resisted the evolutionary label, we need to find another perspective from which to make sense of this resistance.

We can do this by understanding cultural evolutionary theories as reactions from within the community of evolutionary biologists to mainstream presentations of the theory. Textbook presentations of evolutionary biology often assume that evolutionary processes must work on genetically inherited variation (Mameli 2004). Researchers steeped in the traditions of evolutionary biology, and familiar with its explanatory tools, may then point out that genes are not the only things passed from parents to offspring (Avital & Jablonka 2000; Jablonka & Lamb 1998; Jablonka & Lamb 2005; Griffiths & Gray 1994; Richerson & Boyd 2005). In the human species (for example) skills, values, folk knowledge, technical scientific knowledge, linguistic expressions and so forth can also be passed from parent to offspring by various forms of learning. If learned skills, or moral values, make a difference to survival and reproduction, then natural selection can promote the spread of skills or moral values, regardless of whether it is genetic inheritance or learning which explains their transmission. What's more, skills and moral values are not only transmitted 'vertically' from parents to offspring: they can be passed from children to their parents, from children to their friends, from teachers to children, from role-models to adults, and so forth. Such forms of transmission further complexify the ways in which a population's makeup can change over time, forcing us to take into account more than vertical transmission. Those who explicitly describe themselves as cultural evolutionary theorists typically use these sorts of insights to argue that a complete account of human evolution needs modification if it is to encompass all the forces which have shaped our own species—and perhaps some cognitively sophisticated animal species—over time (Richerson & Boyd 2005).

Cultural evolutionary theory is itself a broad church. It is opposed to the most straightforward ways of applying Darwinian thinking to human culture, as exemplified by the dominant Santa Barbara School of evolutionary psychology. And yet it remains a recognisably biological way of thinking about human culture, not because it thinks of cultural phenomena as simple products or analogues of biological processes, but instead because it typically recommends that explanatory tools of a kind that have been successful in the biological sciences can be used to good effect when one confronts human culture. These include mathematical models similar to those used within population genetics, as well as various techniques for reconstructing the branching histories of biological species (Boyd & Richerson 1988; Cavalli-Sforza & Feldman 1981; Gray et al. 2007; Mace & Holden 2005).

Our two perspectives on the nature of cultural evolutionary theories allow us to make sense of what might otherwise be a puzzling tension (Lewens 2008). On the one hand a theory of cultural evolution seems non-negotiable: if we are to understand cultural change, there must be some way of explaining it, and whatever explains it will be a cultural evolutionary theory. On the other hand, theories of cultural evolution are up for grabs. Opposition to cultural evolutionary theories come from those who are not opposed to understanding culture, but rather from those who doubt that tools adapted from evolutionary biology provide us with the best way of doing it (Kuper 2000b). Some even go so far as to deny that any strictly 'scientific' account of culture is possible, while acknowledging that a more piecemeal form of interpretative explanation is appropriate (Geertz 1973).

The Questions to be Examined

The philosophical issues underlying these debates focus on five interconnected themes.

i) The Construction of Cultural Niches

Cultural evolutionary theorists themselves often assume that hostility to their discipline is driven primarily by ignorance of what they are attempting to achieve, and of the tools which they are using (Perry & Mace 2010). But there are also philosophical disputes that lie at the root of this hostility. For some social anthropologists, it is simply a mistake to think that explanation of cultural change and cultural variation should be 'scientific', if what one means by this is that it should follow a pattern of explanation usually attributed to physics and chemistry, whereby general explanatory laws underwrite causal relations between the events studied (Risjord

2007). Clifford Geertz has drawn on explicitly philosophical considerations (derived from Gilbert Ryle) to suggest that an understanding of culture should not proceed along the lines of the natural sciences:

> Believing, with Max Weber, that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning. (Geertz 1973, p. 5)

In part, Geertz is pointing out that groups of humans communicate, they formulate public rules of conduct, they develop expectations, and these acts of communication have various complex feedback relationships resulting in the formulation of new rules of conduct, new expectations, and new forms of communication. This is all undeniable, but how, if at all, does it cast doubt on the propriety of applying evolutionary thinking to humans? Here, research will examine whether, for example, one might replace Geertz's 'webs of significance [man] himself has spun' with Laland, Odling Smee and Feldman's language of 'niche-construction' (Laland et al 2001). The cultural environment is sustained by the niche-constructing action of humans; these cultural niches have impact on subsequent evolutionary and developmental trajectories of human populations; and different human populations occupy different cultural niches. Theories of niche-construction stress the reflexive nature of the relationship between organisms and their environments. The development of organisms is guided by stimuli from environments, but those environments are themselves produced by the earlier actions of organisms. The evolution of organisms is affected by selection pressures imposed by environments, but those environments, and the selection pressures they bring, are shaped by the nature of organic activity, including active choice. When Ingold (2007) replied to Mesoudi et al, he worried that dominant evolutionary accounts would struggle to cope with 'historical agency', and that they would render humans passive. However, the theory of niche-construction stresses the mistakes of thinking that adaptation is always produced by environments shaping passive organisms via natural selection. It offers as a corrective the thought that adaptation is often achieved through the alteration of environments by active organisms, and it explicitly endorses the role of active choice in the construction of environments

ii) Interpretation and Ethnography

The suggested *rapprochement* offered by niche-construction is likely to be only partially effective, because it fails to address deeper philosophical concerns about the very possibility of a general scientific framework within which one might construct explanations for intentional behaviour. There is an exceptionally rich set of traditions, in both philosophy and social science, of scepticism about the unity of natural and social science. In some cases this is based on the claim that interpretative explanation of action—the sort of explanation that might 'make sense' of cultural phenomena—is either non-causal, or deeply subjective, or both. There are, of course, equally rich philosophical views that seek to counter these movements: Donald Davidson's claim that reasons can also be causes is a case in point, yet for Davidson, of course, there remain no psychophysical (or psychological) laws of nature. The conjecture to be examined in this element of research is that opposition to cultural evolutionary theories derives from more basic philosophical scepticism about any natural science of human culture. A number of potential responses may open up to the cultural evolutionist, which the proposed research will examine. To give just one example, much cultural evolutionary theory is focused not so much on giving a law-governed account of the rational *causes* of beliefs in cultural groups. Instead, it addresses the *consequences* for the population as a whole when a group of individuals with characteristic cognitive profiles interact with each other. This focus on so-called 'population thinking' is characteristic of leading work in cultural evolutionary theory, especially the work of Boyd and Richerson. This difference in explanatory focus may insulate cultural evolutionary theory from traditional philosophical scepticism about the very possibility of a law-governed science of rational explanation. But the price of such a defence may be considerable, for if successful, the defence may greatly temper the potential ambitions of evolutionary thinkers aiming to revolutionise the social sciences. That is because, in focusing on a populational theory of consequences, one seems to leave interpretive ethnography undisturbed (see also Tehrani 2006).

This strand of investigation also enables the project investigators to examine the degree of conflict between anthropological claims about cultural specificity, and evolutionary claims about cultural universality. Take the examples of the social anthropologist Catherine Lutz, and the evolutionary psychologist Paul Ekman. Ekman (1973) says anger is a universal basic emotion; Lutz says that the Ifaluk people (from the Caroline Islands in Micronesia) recognise an emotion that they call '*song*' (Lutz 1988). *Song* is like anger in some ways, but unlike anger *song* must come from a morally justified cause. It may seem, then, that disciplinary conflict is inevitable: Lutz's picture suggests that *song* does not exist in European cultures, and anger does not exist in the Ifaluk culture. Ekman, meanwhile, appears committed to the view that anger exists in all cultures, Ifaluk included. Mallon and Stich (2000) have argued that we can accept a large amount of what both Ekman and Lutz say. Ekman claims that a small number of emotional 'affect programs' are universal.

This entails that the Ifaluk have the anger affect program. But it does not entail that they have any *concept* of the anger affect program, and it does not entail that recognition of the anger affect program as such plays any role in their social interactions. Ekman's view can be made compatible with that of Lutz if we hypothesise that the Ifaluk use concepts that have their proper application only to affect programs when they are triggered in particular ways. On this view, *song* is something like *the-anger-affect-program-when-triggered-by-a-justified-cause*. Here, the project's investigators will examine how successful the reconciliation offered by Stich and Mallon is likely to be. One large stumbling block may consist in what are viewed as important explanatory goals. A social anthropologist may complain that Ekman's work, even if well grounded, simply will not illuminate what one might think of as the broad politics of *song* in Ifaluk society. Here we need culturally specific investigations of (for example) the sorts of causes viewed as morally justifying, accepted practices for how someone who is *song* will be permitted to treat others (including the person towards whom *song* is directed), and so forth. Work on the interest-relativity of explanation will, it is hypothesised, be illuminating in this context (e.g. Lipton 2004).

iii) Cultural Particles

Tim Ingold (in his recent attack on cultural evolutionary theories) has pointed to problems associated with cultural evolutionary theorists' reliance on the notion of 'cultural traits', understood as particles which can be transmitted through societies (Ingold 2007). Here, conceptual work is needed to clarify the sense in which cultural evolutionary theory relies on a 'particulate' view of the constituents of culture, and the ways in which such views come into conflict with philosophical conceptions of the nature of beliefs, values and so forth. The 'population thinking' which typically characterises cultural evolutionary theories demands that we can characterise cultural entities in the abstract, in ways which allow them to be counted. These theories require, for example, that we can discuss 'having a small family', or 'believing in God', or 'making a traditional basket' in such a way that we can determine, in the population under study, how many instances of these entities may be present. If we cannot do this, then we cannot characterise a human population in terms of the differential representation in that population of one technique compared with another, we cannot characterise the individuals in the population as having cognitive dispositions making it easier for them to learn one technique over another, and so forth. The question for this element of the research is whether this conception of cultural elements as 'particles' can stand up to a series of concerns about whether (for example) the spread of some belief through a given culture is really a matter of transmission from one individual to another, whether items of culture can be transmitted intact across cultural groups, and whether it even makes sense to think of culture as decomposable into separable entities. Such criticisms are familiar from earlier critiques of 'diffusionism' within anthropology, and some social anthropological commentators imply that those earlier critiques suffice to cast doubt on cultural evolution itself (e.g. Bloch 2000). (Interestingly, diffusionism itself was considered an antidote to an earlier form of evolutionism within anthropology—one that has a distant relationship to modern cultural evolutionary theory.) This strand of thinking will lead on to a further evaluation of the extent to which cultural evolutionary theories are inappropriately focused on human individuals, as opposed to social systems. On the face of things, by stressing a concept of culture as something largely contained within individuals' heads, modern evolutionary theorists draw attention away from the functionings of systems as a whole. This latter theme has been a recurring motif, understood in quite different ways, of many large movements in anthropology, especially forms of functionalism and structuralism (e.g. Durkheim 1938, Lévi-Strauss 1969, Radcliffe-Brown 1950; see also Layton 1997 for commentary). The question is whether evolutionary theories can at least partially account for these broader social functional relationships by attending to the causes and effects of changes in population structure.

iv) Typological thinking, nominalism and essentialism

In the middle of the twentieth century, the eminent evolutionary biologists Ernst Mayr (1976) and Theodosius Dobzhansky (1951) argued that Darwin replaced 'typological thinking' with 'population thinking'. The population thinker (so the story goes) sees natural populations as entities that vary in manifold respects: populations should be characterised in statistical terms, and no explanatory reference should be made to stable 'types' underlying observed natural variation. Since then, a fairly widespread consensus has emerged in both biology itself and in the philosophy of biology that being a tiger, or being a human, is not a matter of having some internal constitution characteristic of the species in question. In more technical language, it is said that species do not have intrinsic essences (Sober 1980, Dupré 1981, Griffiths 1999, Okasha 2002), although they may constitute natural kinds (Boyd 1991). This view has not gone unchallenged: part of this project will examine arguments from those such as Michael Devitt (2008), who have tried to resuscitate the essentialist view. This strand will look at the significance of the anti-typological consensus, especially as it plays out when biological and social scientists discuss the propriety of appeals to 'human nature'.

It is sometimes said that species in general are not the sorts of things that have underlying natures, and that we consequently have good biological reasons for thinking that human nature is a spurious concept (Hull 1986). This might be taken to show on biological grounds that realist views of human nature are untenable, and that constructivist views, long championed in the human sciences, are to be preferred. Recall, however, that for the likes of Mayr the population thinker denies an explanatory role for underlying essences, while remaining open to characterising populations in statistical terms. The project will examine the possibility of salvaging a nominalist conception of human nature, while rejecting a stronger typological notion of the human essence. Such a position may also receive endorsement from a form of neo-pheneticist thinking in biology itself: James Mallet (1995) thinks of species as 'genotypic clusters', which can be subject to robust statistical characterisation, without having anything that would answer to a traditional conception of essence.

v) Channels of Inheritance

Roger Smith, a historian much influenced by social anthropological accounts of the human species, complains that 'Modern evolutionary accounts of human origins continue to reflect belief that there is an essential human nature, the nature all people share through their common root.' (Smith 2007) He seems to think that humans, as reflective, language-using creatures, cannot be investigated using the evolutionary tools one uses to investigate other animals. Part of his worry (again prompted by readings of Clifford Geertz) is that human nature could not persist in any stable way when our thoughts, behaviours and even our bodies can be modified in the wake of communication and rational reflection. There are, however, many evolutionary theorists who are happy to acknowledge the significant impact cultural inheritance has on human nature. The question remains: how should we conceive of the relationship between genetic inheritance as it is traditionally conceived in biology, with cultural inheritance that proceeds via learning? One popular way of doing this is via so-called 'dual inheritance' theories, which conceive of genetic and cultural inheritance as alternative inheritance channels (Laland et al. 2002). Some anthropologists have been suspicious of thinking of inheritance as something that occurs via distinct channels. It can make sense to ask whether cultural variation, rather than genetic variation, explains some aspect of phenotypic variation in a population. In a group of genetic clones, in which some learn one set of moral values from their parents, and others learn different moral values from their parents, it is obviously not genetic variation that explains variation in the population. But this insight does not legitimate talk of distinct inheritance channels (Gray 1992). In talking of 'channels' one seems to imply that some aspects of phenotypic resemblance are controlled by the genetic channel, others by the cultural channel. It isn't clear how we can demarcate distinct channels of inheritance within the web of developmental relations by which inheritance comes to be realised. This element of research will address the possibility that so-called 'Developmental Systems Theory' (DST), developed by Griffiths, Gray and Oyama, might serve as a venue for the integration of biological and cultural conceptions of human nature. DST places stress on the interaction of many different forms of developmental resource—anything from genetic transmission to the passing on of symbionts or the stability of the environmental niche in which parents and offspring develop—in the production of parent-offspring similarity (Gray 1992; Griffiths & Gray 1994; Griffiths & Gray 1997; Griffiths & Gray 2001; Oyama 2000). DST's advocates have been suspicious of the prospects for locating distinct inheritance channels within this network of interactions. And yet, some DST theorists—most obviously Russell Gray (Gray et al 2007)—have been among the most enthusiastic advocates of cultural evolutionary theory.

Methodology

The work has an obvious interdisciplinary character, and relies essentially on input from experts in the social and natural sciences. To this end, collaborative ties have been established with the University of Cambridge's Department of Zoology, Leverhulme Centre for Human Evolution (LCHES), Department of Social Anthropology and Faculty of Philosophy. Distinguished supporters have been enlisted in all of these departments, and they have agreed to form a local Advisory Body. They are:

> Prof Nicola Clayton (FRS): Department of Zoology, expert in comparative cognition
> Prof Robert Foley (FBA): LCHES, expert in biological anthropology
> Prof Dame Marilyn Strathern (FBA): Department of Social Anthropology, expert in social anthropology
> Prof Tim Crane: Faculty of Philosophy, Knightbridge Professor, expert in philosophy of mind

All four have expressed willingness to read work, attend seminars, and advise on appropriate readings.

Groundwork will be laid for the project prior to its start date. Lewens has secured a term of sabbatical leave (Easter 2011) at Cambridge University's Centre for Research in Arts, Social Sciences and Humanities (CRASSH) where he will begin to examine the dispute between interpretative and causal models of explanation in more detail. CRASSH also provides an interdisciplinary environment which will allow Lewens to make contact with researchers from diverse disciplines. These contacts will be important as the project unfolds.

In terms of a structure for the project, there will be five key individuals conducting research under the grant: Lewens as PI, two postdoctoral researchers (to be offered four-year positions), and two PhD researchers (to be offered three-year studentships). There will also be a half-time research assistant/administrator. PhD and Postdoctoral researchers will all be recruited in year one of the project, to arrive at the beginning of year two. The questions posed by the project require input at a high level of expertise—specifically at the postdoctoral level—from the history of anthropology and the philosophy of social science. These individuals will provide essential knowledge where Lewens's own background (as a philosopher of biology) is lacking.

Duties of the Half-Time Research Assistant/Administrator (18hrs/week): Responsibilities will include producing literature reviews; drafting reports; sourcing documents; organising conferences; managing overseas visits; keeping records; organising project meetings; taking minutes; keeping project action plan and accounts up to date; maintaining project website; liaising with expert group members and visiting fellows; producing publicity materials; answering queries; liaising with departmental and university administrative staff; general clerical work for the research team.

Justification for a postdoctoral historian of anthropology: As has been explained above, the disputes which are to be explored in their philosophical aspects also have historical dimensions. It is the view, for example, of some social anthropologists that cultural evolutionary theories have already been shown lacking, several times over, and that the proponents of these theories are ignorant of history. In some cases these claims point towards the rejection of so-called 'diffusionist' theories, in some cases towards earlier rethinking of the relationship between cognition and anthropology, in some cases towards ethnographic work that appears to undermine any plausible claims about a universal nature underlying apparent diversity. Detailed historical work will achieve two goals that directly inform the overarching aim of the project. First, this work will increase the quality of philosophical discussion regarding the precise nature of conceptual arguments around the relevance of evolutionary thinking for the social sciences. Second, by explaining the actual grounds for friction between diverse anthropological schools, historical work will also point to the practical difficulties in building a synthesis between these schools. The appointee will be integrated into a world-leading department in history of science. Professor Simon Schaffer, for example, (also within the History and Philosophy of Science Department), is an exceptionally distinguished historian of science with a strong interest in the history of anthropology.

Justification for a postdoctoral philosopher of social science: Although few philosophers specialise in the philosophy of anthropology, the philosophy of social science is a broader and more populated field. Many of the questions that arise in the debates between evolutionists and anthropologists are exemplary of debates treated more generally within philosophy of social science. These include Wittgensteinian themes familiar from the work of Peter Winch (Winch 1958), regarding the very possibility of modelling an interpretive social science along the lines of a causal-explanatory natural science. They also include debates about the proper ontology of social explanation: should culture be understood as a phenomenon reducible to facts about

individual psychologies, or is some form of explanation that grants autonomy to social structural facts appropriate (Kincaid 1996)? It is hoped that by bringing established expertise from philosophy of social science to bear on the specific questions posed by cultural evolutionary theories, the quality of debate in this area will be greatly enhanced.

Two PhD students will also be recruited. They will work under Lewens's supervision, on two questions that lend themselves to treatment within the limited term of a three-year PhD studenship, but which are also essential to provide a rounded account of the relationship between evolutionary and social scientific understandings of culture:

- *PhD Project One—Conceptualisimg cultural inheritance*: How should we conceive of the relationship between genetic inheritance as it is traditionally conceived in biology, with cultural inheritance that proceeds via learning? One popular way of doing this is via so-called 'dual inheritance' theories, which conceive of genetic and cultural inheritance as alternative inheritance channels (Laland et al. 2002). Some critics have complained that we cannot demarcate distinct channels of inheritance within the web of developmental relations by which inheritance comes to be realised. It raises the possibility that so-called 'Developmental Systems Theory' (DST), might serve as a venue for the integration of biological and cultural conceptions of human nature. DST places stress on the interaction of many different forms of developmental resource—anything from genetic transmission to the passing on of symbionts or the stability of the environmental niche in which parents and offspring develop—in the production of parent-offspring similarity (Gray 1992; Griffiths & Gray 1994; Griffiths & Gray 1997; Griffiths & Gray 2001; Oyama 2000).
- *PhD Project Two—Embodied cognition and cultural evolution*: Does the culture concept underlying much work in cultural evolution exclude so-called 'embodied cognition' or 'extended cognition'? Is the role of artefacts as storehouses of cultural tradition downplayed in evolutionary theorists' conceptions of culture? Boyd and Richerson define culture as 'information capable of affecting individuals' behaviour that they acquire from other members of their species through teaching, imitation, and other forms of social transmission'. The key term 'information' is not given any explicit definition; instead we are told of the sorts of things it is meant to cover. It is, Mesoudi et al say, 'employed as a broad term incorporating ideas, knowledge, beliefs, values, skills, and attitudes.' (Mesoudi et al. 2006) They do not mention artefacts here, and yet anthropologists, as well as cognitive scientists who focus on so-called 'extended cognition', have drawn attention to the ways in which artefacts, too, are parts of culture, and the ways in which they might be said to store transmissible information regarding cultural traditions, status, folk knowledge, or technical knowledge (Clark & Chalmers 1998; Mithen 2000; Sterelny 2006, Henare et al. 2007).

As PI, Lewens will ensure that all philosophical work is informed by the best work in social and natural science. Researchers will be expected to have an outstanding record of academic excellence, and be prepared to familiarise themselves with work in non-philosophical areas.

A distinguished visiting fellowships programme will be established in the Cambridge History and Philosophy of Science Department. Visits by non-philosophers will be especially welcome. We hope to attract workers in (for example) comparative cognition, social anthropology or biological anthropology, who have an interest in foundational debates in these areas. This will insure the ongoing interdisciplinary character of the research. One visiting fellow will be recruited each year, and s/he will come to Cambridge for one term. Funds will be available to house the visitor, provide a research environment in HPS, and pay for a return flight.

In order to ensure genuine cross-disciplinary collaboration, all those involved in the project will attend a weekly reading group. This will bring together PhD students, postdoctoral researchers, visiting fellows and members of the Cambridge Advisory Group, to discuss works of mutual interest.

In years two and four, international workshops will be organised. These will be venues for distinguished scholars to be invited to speak to the Cambridge group, but they will also be foci for the presentation of work by the PhD students, visiting fellows, and postdoctoral researchers. In year five a larger intentional conference will be organised.

Key outputs

Contributors to the visiting fellows' programme, and to the workshops staged throughout the conference, will

be asked to provide research articles for publication in a book (edited jointly by Lewens and the Postdoctoral Researchers) provisionally entitled *Why we Disagree about Human Nature*. A contract will be sought with Routledge, with whom Lewens has already published two books.

The Postdoctoral researchers will each be expected to produce a series of three journal articles across the four years of their tenure, in major peer-reviewed journals.

Each PhD Student will be expected to produce two articles by the end of their PhD tenure, in order to ensure their subsequent employment prospects.

Lewens himself will use the project to complete a book, provisionally entitled *Nature and Culture: Towards an Eclectic Synthesis*. The book will be written over the course of five terms of research leave, costed into the grant. The first of these terms will be taken in the first year of the grant (enabling a thorough proposal to be sent to a publisher, and a contract to be secured), then a full year of sabbatical leave will be taken mid-way through the grant (enabling a complete draft of the book to be finalised and submitted for publication), and a final term of sabbatical will be taken in the final year of the grant (enabling any readers' comments to be taken into account in preparing final revisions). The first part of this book will examine a series of philosophical disputes—primarily located in the philosophy of mind—which underlie apparent disputes between 'interpretive' schools of anthropological thinking and cultural evolutionary theorists. The second part will turn to more metaphysical issues arising from the nature of species, the concept of a species nature, and the relationship between different forms of inheritance. The book will be complemented by a series of three major journal articles (all written by Lewens) focusing on more specialised issues. The first of these (to be aimed at *Philosophy of Science*), will examine the status of species natures in the light of the anti-essentialist consensus in philosophy of biology. The second (aimed at *Biology and Philosophy*) will examine the culture concept typically endorsed by cultural evolutionary theorists, in the light of recent anthropological critiques. The third (aimed at *Ethics*) will subject recent neo-Aristotelian work in meta-ethics to scrutiny, in the light of cognitive anthropological work on intuitive essentialism about species. When Lewens is not on leave, 40% of his time will be devoted to this project, and he will also be committed to supervision and mentoring of the postdoctoral and PhD researchers.

List of references

Avital, E. & Jablonka, E., 2000. *Animal traditions: Behavioural inheritance in evolution*, Cambridge Univ Pr.

Bloch, M., 1998. *How we think they think: anthropological approaches to cognition, memory, and literacy*, Westview Pr.

Bloch, M., 2000. A well-disposed social anthrologist's problems with memes, *Darwinizing culture: The status of memetics as a science*, 189–204.

Boyd, R. & Richerson, P.J., 2000. Memes: Universal acid or a better mousetrap. *Darwinizing culture: The status of memetics as a science*, 143–162.

Boyd, R. & Richerson, P.J., 1988. *Culture and the evolutionary process*, University of Chicago Press.

Boyd, R. 1991 'Realism, Anti-foundationalism, and the Enthusiasm for Natural Kinds', *Philosophical Studies*, 61: 127–148.

Buller, D.J., 2005. *Adapting minds: Evolutionary psychology and the persistent quest for human nature*, MIT Press.

Clark, A. & Chalmers, D., 1998. The extended mind. *Analysis*, 58(1), 7.

Devitt, M. 2008 'Resurrecting Biological Essentialism' *Philosophy of Science* 75: 344-382.

Dobzhansky, T. 1951 *Genetics and the Origin of Species*. Third Edition. New York, NY: Columbia University Press.

Dupré, J. 1981 'Natural Kinds and Biological Taxa' *Philosophical Review* 90: 66-91.

Durkheim, E, 1938. *The Rules of Sociological Method*, trans. SA Solovay and JH Mueller, London: Macmillan.

Ekman, P. 1973 'Cross-Cultural Studies of Facial Expression', in P. Ekman (ed.) *Darwin and Facial Expression: A Century of Research in Review*, Academic Press: New York.

Geertz, C., 1973. Thick description: Toward an interpretive theory of culture. *The interpretation of cultures.(pp. 3-30)*, New York: Basic Books.

Gray, R.D., 1992. Death of the gene: Developmental systems strike back. *Trees of Life: Essays on the Philosophy of Biology. Kluwer, Dordrecht*, 165–209.

Gray, R.D., Greenhill, S.J. & Ross, R.M., 2007. The pleasures and perils of Darwinizing culture (with phylogenies). *Biological Theory*, 2(4), 360–375.

Griffiths, P. 1999 'Squaring the Circle: Natural Kinds with Historical Essences' in R. Wilson, ed. *Species: New Interdisciplinary Essays*. MIT Press, pp. 209-228.

Griffiths, P.E., 2001. Genetic Information: A Metaphor in Search of a Theory. *Philosophy of Science*, 68(3), 394-412.
Griffiths, P.E. & Gray, R.D., 2001. Darwinism and developmental systems. *Cycles of contingency: Developmental systems and evolution*, 195–218.
Griffiths, P.E. & Gray, R.D., 1994. Developmental systems and evolutionary explanation. *The Journal of Philosophy*, 91(6), 277–304.
Griffiths, P.E. & Gray, R.D., 1997. Replicator II–judgement day. *Biology and Philosophy*, 12(4), 471–492.
Henare, A.J.M., Holbraad, M. & Wastell, S., 2007. *Thinking through things: theorising artefacts ethnographically*, Routledge.
Hull, D. 1986 'On Human Nature' reprinted in Hull and Ruse, eds. (1998) The *Philosophy of Biology*. Oxford: Oxford University Press: pp. 383-397.
Ingold, T., 2007. The trouble with 'evolutionary biology'. *Anthropology Today*, 23(2), 13–17.
Jablonka, E. & Lamb, M.J., 1998. Epigenetic inheritance in evolution. *Journal of Evolutionary Biology*, 11(2), 159–183.
Jablonka, E. & Lamb, M.J., 2005. *Evolution in four dimensions: Genetic, epigenetic, behavioral, and symbolic variation in the history of life*, The MIT Press.
Kincaid, H. 1996. *Philosophical Foundations of the Social Sciences*. Cambridge University Press.
Kuper, A., 2000a. *Culture: The anthropologists' account*, Harvard Univ Pr.
Kuper, A., 2000b. If memes are the answer, what is the question. *Darwinizing culture. Oxford Univ. Press, Oxford, UK*, 175–188.
Laland, K.N., Brown, G.R. & Gintis, H., 2002. *Sense and nonsense: Evolutionary perspectives on human behaviour*, Oxford University Press Oxford.
Laland, K.N., Odling-Smee, J. & Feldman, M.W., 2001. Niche construction, biological evolution, and cultural change. *Behavioral and brain sciences*, 23(01), 131–146.
Layton, R., 1997. *An Introduction to Theory in Anthropology*. Cambridge: Cambridge University Press.
Layton, R., 2010. Why social scientists don't like Darwin and what can be done about it. *Journal of Evolutionary Psychology*, 8(2), 139-152.
Lévi-Strauss, C 1969. The *Elementary Structures of Kinship*, trans. JH Bell and JR von Sturmer, London: Eyre and Spottiswoode.
Lewens, T., 2007. *Darwin*, Routledge.
Lewens, T., 2008. Cultural Evolution. *The Stanford Encylopedia of Philosophy*. Available at: http://plato.stanford.edu/entries/evolution-cultural/ [Accessed October 10, 2010].
Lipton, P. 2004. *Inference to the Best Explanation*. London: Routledge.
Lutz, C. 1988 *Unnatural Emotions*: *Everyday Sentiments on a Micronesian Atoll and their Challenge to Western Theory*, Chicago: University of Chicago Press.
Mace, R. & Holden, C.J., 2005. A phylogenetic approach to cultural evolution. *Trends in Ecology & Evolution*, 20(3), 116–121.
Mallet, J. 1995 'A Species Definition for the Modern Synthesis' *TREE* 10 (7) 294-299.
Mallon, R. and Stich, S. 2000 'The Odd Couple: The Compatibility of Social Construction and Evolutionary Psychology', *Philosophy of Science*, 67: 133-154.
Mayr, E. 1976 'Typological versus Population Thinking' in E. Mayr, *Evolution and the Diversity of Life*. Cambridge, MA: Harvard University Press: pp. 26-9.
Mesoudi, A., Whiten, A. & Laland, K.N., 2004. Perspective: Is human cultural evolution Darwinian? Evidence reviewed from the perspective of The Origin of Species. *Evolution*, 58(1), 1–11.
Mesoudi, A., Whiten, A. & Laland, K.N., 2007. Science, evolution and cultural anthropology: A response to Ingold. *Anthropology Today*, 23(2), 18.
Mesoudi, A., Whiten, A. & Laland, K.N., 2006. Towards a unified science of cultural evolution. *Behavioral and Brain Sciences*, 29(04), 329–347.
Mesoudi, A., Veldhuis, D. & Foley, R.A., 2010. Why aren't the social sciences Darwinian? *Journal of Evolutionary Psychology*, 8(2), 93-104.
Mithen, S., 2000. Mind, brain, and material culture: An archaeological perspective. *Evolution and the Human Mind: Modularity, Language and Meta-Cognition*, 207–217.
Okasha, S. 2002 'Darwinian Metaphysics: Species and the Question of Essentialism', *Synthese*, 131, 191-213.
Oyama, S., 2000. *The ontogeny of information: Developmental systems and evolution*, Duke Univ Pr.
Perry, G. & Mace, R., 2010. The lack of acceptance of evolutionary approaches to human behaviour. *Journal of Evolutionary Psychology*, 8(2), 105-125.
Radcliffe-Brown, A. R. 1950. 'Introduction', in A. R. Radcliffe-Brown and D. Forde (eds), African Systems of Kinship and Marriage. Oxford University Press: pp. 1-85.
Richerson, P.J. & Boyd, R., 2005. *Not by genes alone: How culture transformed human evolution*, University of Chicago Press.

Risjord, M., 2007. Ethnography and culture. *Philosophy of anthropology and sociology*, 15, 399–428.
Smith, R., 2007. *Being human: historical knowledge and the creation of human nature*, Columbia University Press.
Sober, E. 1980 'Evolution, Population Thinking, and Essentialism' *Philosophy of Science* 47: 350-383.
Sperber, D., 2000. An objection to the memetic approach to culture. *Darwinizing culture: the status of memetics as a science*, 163–74.
Sterelny, K., 2006. Memes revisited. *The British Journal for the Philosophy of Science*, 57(1), 145.
Tehrani, J., 2006. The uses of ethnography in the science of cultural evolution. *Behavioral and Brain Sciences*, 29(04).
Tooby, J. & Cosmides, L., 1992. The psychological foundations of culture. *The adapted mind: Evolutionary psychology and the generation of culture*, 19–136.
Winch, P. 1958 *The Idea of a Social Science*. London: Routledge.

The Research Environment

Host institution

The largest university department of its kind in the UK, the Department of History and Philosophy of Science has an outstanding international reputation for teaching and research. There are nine established University Teaching Officers in the Department, including five Professors and two Readers. Around 100–140 undergraduate students are taught by the Department as part of the Natural Sciences Tripos. The Department offers an MPhil in History, Philosophy and Sociology of Science, Technology and Medicine, with approximately 25 students per year. PhD students at any one time total approximately 45. There are also a number of Research Fellows and Visiting Scholars attached to the Department.

In the last two Research Assessment Exercises (RAE) the Department was awarded the highest mark of 5*, and in the 2008 RAE the overall quality profile was 74% with 65% of the submission rated as world-leading or internationally excellent. Research Environment was rated at 100% and feedback states that the Department provides an exemplary research environment, in particular in the number of active research groups, the level and use of research income and the provisions for postgraduate students. The Department's 1996 and 2001 performance was exceeded on the new methods of assessment employed, so that in terms of 'Power Ratings', the Department is second to the Oxford Faculty of Philosophy in the country. The pass rate in all courses approaches 100%, and approximately 80% of successful doctoral students take posts in the field of HPS.

Research Seminars are held in the Department throughout the academic year. At the weekly departmental seminar, papers are given by invited speakers from across the field of history and philosophy of science and medicine. In addition, there are regular specialist seminars, reading groups and workshops on a variety of subjects.

The Department is based in the centre of Cambridge, in the old physical chemistry laboratory on Free School Lane. At its heart is the Whipple Museum a world-class collection of scientific instruments and models. As well as being open to the public, it is regularly used by the Department's staff and students for teaching and research. The museum is named after Robert Whipple, who presented his unique collection of scientific instruments to the University in 1944.

Next to the museum is the Department's library, the Whipple Library, which was founded on Robert Whipple's collection of rare scientific books. The library has extensive holdings in all areas of the history, philosophy and sociology of science, technology and medicine, making it the largest library in the UK specialising in this field.