

Introduction

Mind and body are symbiotic. We can understand the spirit and intellect best when we locate them in the grid and grit of the material world, where they belong but where they are not confined.¹ - Felipe Fernández-Armesto

The purpose of this study is to establish the extent to which evolutionary theory can help explain both how and why humans attribute significance and meaning to the material world; and then to infer from this something of the consequences for our understanding of design. I do this by building a theoretical model which, I argue, accounts for *all* the ways in which humans attribute significance and meaning to *artefacts*.²

To achieve this, I have divided this study into three parts: in the first, 'The Evolutionary Context', I lay out some of the principles according to which (it has been argued) evolution works; and I begin to consider something of the evolutionary history of our brains and neural equipment, to the extent that it has been made use of in design and our uses of tools. In the second, 'The Attribution of Significance and Meaning to Artefacts', I focus, in turn, more sharply on the origins of our reflexive, sensory and perceptual equipment and the aesthetic sensibilities these support; and on the origins of abstract, symbolic thought, as it applies to our attributions of symbolic and narrative meanings to artefacts. In the last part, I build and test the model; then extrapolate from it; and then speculate and conclude.

The focus of this study is on design (useful objects) rather than 'art' as it is conventionally construed (that is: objects of contemplation with no intended or overt practical function). However, in practice, the division between them is blurred. To resolve this dilemma, I propose a continuum which would include *all* artefacts - from paintings and sculpture, to towns and cities, books, products of industrial design, of engineering, the hand-made - every tangible, material thing, in fact, that humans have ever produced. I will distribute those artefacts along this continuum, with the practically useless at one end, and the practically useful at the other.

These crude approximations to poles of 'art' and 'design' have, inevitably, in between them a good many articles which do not sit easily at either extreme, such as coins or stamps, for example, which are not 'useful' in that strict practical sense, but are not 'art' either; and still others which are practically useful - and to that extent are 'design' - but which nonetheless embody much extra work, over and above that which utility might warrant and which some might designate as 'artistic'.

To resolve this apparent conundrum, I have elected to impose a somewhat arbitrary division: everything practically useful counts as design; everything which fulfils a symbolic role or otherwise facilitates human social relations - like coins and stamps - and is in this other way 'useful', but which does not correspond sufficiently to conventional definitions of 'art', I also claim for design. The rest is art. This rough distinction more or less corresponds to modern practice. Of course, in practice, even this division cannot be strictly adhered to, for to do so would unnecessarily cramp the body of available evidence, and art is routinely included in these discussions. Indeed, the decision as to what, for the purposes of this particular study, to include and what exclude is, I allow, somewhat arbitrary. I do not propose, for example, to open up much by way of a line of inquiry relating to buildings, architecture, the creation of towns and cities, agricultural landscapes, parkland, or gardens, although logically these might all be considered. Similarly, cases could be made for considering the extent to which we render ourselves designed artefacts by means of clothing, grooming, tattoos, jewellery and other body adornments, yet this is barely touched on; and for that other great expression of our material, creative talents towards the practical - our preparation and presentation of food. The severest critic might argue that - given the centrality of reproduction (much of which might hinge on how we present our bodies to one another) and survival (which apart from the avoidance of danger, depends greatly on the securing of food), these last two are unwise omissions. However, that which remains is quite sufficient to articulate the central thesis. If subsequently, it is judged broadly sound, these other

fascinating areas will beckon, but such undertakings lie beyond the immediate objectives of this doctoral study.

With these caveats, for the purposes of this study, I intend the word 'design' (as a noun) to mean all the processes by which, and the manners in which, humans conceive of and create useful (as widely defined above) artefacts, and attribute significance and meaning to them. I am concerned not only with the significances and meanings which the originating 'designers' (often, but not always, the makers as well) may have intended for their creations, but with those of their first and subsequent 'users' in the course of those artefacts' existences.

I am trying to open up a border between design and biology, in the sense of a better understanding, by those in design, of the effects our shared evolved history has on its practice. Anyone producing a study which embraces more than one discipline risks incurring the wrath of those who have made those disciplines their life's work. In assembling this work, I am drawing on evidence from a diverse range of authorities. These include: evolutionary psychologists, cognitive scientists, philosophers, archaeologists, palaeontologists, literary critics, ethnographers, anthropologists, primatologists, art historians, a neuro-surgeon, as well as (very briefly) a novelist, a journalist and some others. There are, by contrast, very few contributions from design historians or theoreticians. There are reasons for this asymmetry: coming from design myself (I am a lecturer in the history and theory of design at Buckinghamshire Chilterns University College), I have prepared this study with a design audience chiefly in mind. I warn those from the other side of this divide - the evolutionary psychologists and others who have thought profoundly about evolution - that some of the preliminary stages of this exposition may seem comparatively simple. This is because, rather than being exhaustive, I have assembled just enough plausible theory to establish a foundation for the more complex material which follows.

To those from the design field, who may wonder at the absence of familiar texts, I reassure them that the present work is intended as a constructive contribution to design theory, but that its immediate purpose

is not to articulate in detail how it may correspond to, qualify or contradict existing points of view. I am erecting a platform. That very necessary - and very interesting - undertaking also lies in the future, beyond the immediate scope of the present work. However, in the final chapter, I begin to explore an example of existing theory - semiology as espoused by Roland Barthes - with a view to illustrating how such much needed undertakings might be carried out.

If the ideas proposed here are to be shown to be sound, or even likely, when applied to historical and modern artefacts alike, then those ideas must be measured against evidence: evidence, in this case, is, as indicated, 'useful' (in the wide sense) artefacts and the significances and meanings attributed to them. Potentially this might include all useful artefacts created in the past 6,000 years up until (and including) the present, across the whole world and in all cultures, plus any significances and meanings they have had attributed to them, and any existing analyses of these artefacts' significances and meanings. The range of objects alone is a vast area to negotiate, made yet bigger by its attendant and diverse descriptive, analytical and theoretical sources doubtless required comprehensively to cover it. I have, therefore, adopted an altogether different means of negotiating the immensity of this territory, and in so doing, of bringing 'design' to evolutionary theory: I will make some 'bore-holes' - that is, throughout this study, I will periodically refer to six real objects drawn from the past 3,500 years of human history. They are: a scarab from ancient Egypt (*fig. 1*); a silver Roman coin (*fig. 2*); a sumptuous sixteenth-century Persian carpet (*figs. 3 and 4*); a seventeenth-century earthenware garden watering pot from the south-east of England (*fig. 5*); a late twentieth-century wood screw (*fig. 6*); and a late twentieth-century laptop computer - the Apple iBook on which this study is being typed (*fig. 25*). From now on I refer to these objects collectively as the 'bore-hole objects'.

I have deliberately sought objects diverse in character and origin. They will all periodically be used as references, to establish whether the attributions of significances and meanings they embody, or may have

embodied, or could embody, are consistent or not with the model being developed. In this way, co-ordinates radiating from the individual 'bore-holes' can be articulated, with the intention that, to the extent to which these can be drawn across time, space and culture, we may infer something of the character of the terrain as a whole.

It might be argued that this 'broad brush' technique is too subjective; that only examples and interpretations might be chosen which are seen to exhibit the looked-for evidence. This is a charge which cannot be wholly countered, save to say that no such selection has been made, other than by the criterion of diversity already acknowledged, and that now that I have completed this study, I am confident that identical conclusions could and would be drawn from any number of different sample configurations. If the ideas examined here are indeed credible, then they should be more or less evident in *any* example considered.

The second apparent drawback of this method is that I am obliged, in most cases, to proffer interpretations of their significances and meanings which are plausible and probable, rather than only those which can demonstrably be shown to have been ascribed. However, in this respect, this makes the present undertaking no worse than many others, where the reader is implicitly invited to compare its author's observations with their own experiences of the world, and how they believe it works. Indeed, it is marginally better than some, because it does try, at least, to pin down proofs arising from real examples which have and do exist, rather than remaining at the level of generalisation and abstraction.

One further possible objection to the approach adopted here needs addressing: rightly, in the sciences, there is a preference for proofs which are falsifiable and, if possible, rest on objective measurements. In the present study neither of these apply, leaving it open to the accusation that - to invoke the conventional jibe levelled at work in this field - it is a 'Just-So' story; that is, an account where some characteristic has been noticed, and an (over?-)imaginative, evolutionary history is conjured up to explain it. What follows is, indeed, to some extent an imagined story, but I would defend it as an approach in two ways. Firstly, in assembling it, I have

referred wherever possible to the views of respected authorities in each of the areas this inquiry passes through. To that extent, this study rests on the works of others; some of these, though by no means all, rely on just such a 'scientific' approach. However, I argue that the more substantial answer to such a criticism is that, in the past, as now, valuable insights have been arrived at by just such speculations built on the best available evidence, not least by Charles Darwin himself - and, I hasten to add, this account cannot be compared with his at all in terms of magnitude and import; few can. But like his, it will stand or fall according on the extent to which others - each from the perspective of their own discipline - find it congruent and satisfying, or wanting.

It will be appreciated that this inquiry, inevitably, impinges on the much wider debate concerning the relationships between biological, evolutionary change and cultural change. From time to time, this will be referred to; however the present study makes but a limited contribution to that complex area of controversy and, while the full complexity of that debate is, for the most part, left unexplored, something of the scope and potential of that contribution will be summarised towards its conclusion.

A practical matter: in the following exploration, wherever language obliges me to ascribe a gender to an abstract, hypothesised individual - and unless I expressly indicate the contrary - I have randomly alternated between 'she' and 'he' to signal that the argument applies to both and to avoid either the exclusivity of the earlier grammatical convention of claiming 'he' stood for 'he *and* she', when the feminine remained conveniently absent from postulations so expressed, or the clumsiness of having constantly to refer to both.

Finally, before embarking on this undertaking in earnest, I would like to take the opportunity, briefly, to spell out the precise extent to which what follows is original: previous studies, which might be thought of as 'in this field' as defined above, have invariably only focussed on aspects of it. Most of the categories of specialists listed above, it will be appreciated, are more or less tangentially relevant; of those with the most relevance, in that they are directly concerned with the physical environment, including

artefacts, each has, as I would see it, more narrow or more diffuse concerns: thus, Richard Coss, whose fascinating work concentrates on the evolution of perceptual biases; or, from differing perspectives, Geoffrey Miller's, Randy Thornhill's and Eckart Voland's recurrent pre-occupation with the themes of 'beauty' and 'aesthetics' which have long featured in traditional art theory. These are relevant to this study but, as the above account of its scope indicates, represent neither its focus nor its limits. There is much rich material from archaeologists and that will be referred to; but among those, the chief interest is the times from which their found artefacts date. There has been little systematic effort on the part of archaeologists to extrapolate much that can contribute to our understanding of our contemporary relationship with artefacts. This, the present study seeks to do.

So, I maintain that this is the first account to draw together all these disparate ways of considering the whole of humankind's physical, material output, up to and including the present; it is the first to seek to apply the insights of such an exercise to the whole field of design (as defined above) rather than just aspects of it; it is the first study to present, on the basis of reflecting on the consequences of evolution, a comprehensive model which articulates *all* the diverse ways in which humans attribute significance and meaning to material creations; it is the first to propose a mechanism by which this occurs which can be applied throughout the whole of human history (and pre-history, insofar as it concerns modern humans with modern minds) up to and including the present day; it is the first such model, based on evolutionary insights, which can explain in detail how the different levels at which we interact with artefacts - reflexes, senses, perceptions, technical, aesthetic, and stylistic sensibilities, artefacts as signs, as symbols, or as symbolic elements in narratives - relate to and affect one another, and function together as a coherent whole; and - in a significant departure - it is the first model to propose a central role for *style* based on an evolutionary approach. Style has conventionally been regarded as an aspect of the process and practice of design, of greater or lesser importance. Indeed, as the popular, pejorative epithet 'style over

substance' reminds us, it is commonly thought of as superficial, if not trivial. This study argues that, on the contrary, far from being trivial, its role in design is evolved and absolutely central; and that a comprehensive understanding of this role is the key to understanding the workings of design as a whole. Finally, it is the first theory explaining how, in terms of material culture, significances and meanings are ascribed and - I will justify this immodest claim towards the end of this study - *on which all others must rest.*

¹ Fernández-Armesto, F., 'Too little wind, too much hot air', *The Times Higher Education Supplement*, London, 19.09.03, pp. 20-21

² A few remarks at the outset as to notions of 'truth' and claims of universality. Scientific truth is commonly assumed to rest on its degree of correspondence with objective reality, against which it may be tested. Stephen Shapin, author of *A Social History of Truth: Civility and Science in Seventeenth-Century England*, writes (elsewhere - see below):

When one says that "the pressure and the volume of a gas stand in inverse proportion" [Boyle's Law], this proposition, idea, and associated belief stands in a causal, but contingent, relationship to the state of affairs in nature to which it refers. It is a proposition in English, whose sense depends upon the stock of knowledge that you happen to have about the meanings attached to gases, pressure, and volume, and whose credibility is shaped by processes of socialization in cultural institutions. What else could it be but a social construct?

This short passage gives a flavour of the complexity and richness of the debates surrounding notions of scientific truth. How, for example, is one to judge the value of a proposition about some inherently remote phenomenon - such as sub-atomic particles or the Galaxy - without direct access to that reality? Much hinges on trust. To the extent that scientific ideas are generated by human beings living social lives, they can, indeed, be thought of as social constructs. Similarly, in this study many ideas are, in part, assembled on the basis of the credibility I may lend to this or that source (and deny others). I have not witnessed in person the phenomena on which these authorities pronounce and, therefore, I also take much on trust; even those to whom I refer may sometimes, in turn, have done the same, increasing still further that problematic remoteness. As Shapin would have us remember, scientific ideas or 'truths', apparently based on 'facts', may more properly be evaluated as products of countless social interactions.

The only really interesting task for the sociologist or historian is to give an account of the ways in which different sorts of ideas are socially constructed.

From this perspective, any claims for 'truth', universality or comprehensiveness should be viewed with suspicion, if not outright alarm. And if this stricture is thought to apply to ideas about galaxies or the behaviour of gases, how much more urgent the caveat with regard to propositions about the behaviour of ourselves. Indeed, it can be argued that because of this social element, the presupposition must be that no such claims should be made.

I cannot settle nor even materially contribute much to the debates surrounding the various - and very real - issues touched on in this philosophical arena; it has never been among my objectives to do so. In this instance, I stand neither as a sociologist nor an historian of ideas (or at least, only rarely). And I have elected to make just such claims: I believe the ideas proposed here are true and universal. The arguments in support of that position follow. I will only note here at the outset that when I write of 'truth', the reader will understand that I mean an interim hypothesis; that is, a set of propositions I put into the world which I am suggesting represents an account that, indeed, corresponds to objective reality, and that these propositions may stand until shown wanting. Some remarks about the relationship of this study to post-modernist relativism will be found in the concluding chapter. Shapin, S., *A Social History of Truth: Civility and Science in Seventeenth-Century England*, Chicago University Press, Chicago, 1994; quotes from: Shapin, S., 'The Social Construction of What? By Ian Hacking. Cambridge, Mass.: Harvard University Press, 1999 (Book review)', *American Journal of Sociology*, May 2001, Vol. 106, Issue 6, accessed at http://www.drewish.com/school/hon199/shot/resources/review_by_shapin.html on 26.02.05