Dancing with Design: Some Insights from the Perspective of Human Evolution on the relationship between the Body, Gesture, the Unconscious and Design

Abstract:

What is the relationship between our bodies and the things we live with? Design Historians, ethnographers or those studying material culture have mostly sought explanations for artefacts arising from an appreciation of the immediately contingent or historical contexts out of which they emerge. But what might the consequences of a fuller appreciation of our bodies' evolutionary origins for our understandings of such things? This paper proposes two. We inhabit evolved bodies, of which our sensorimotor systems are an integral part. We have evolved consciousness – but retain unconscious functions. We are a supremely social species; and we have adapted our environment by the introduction of artefacts. These commonly serve practical as well as social functions (or social functions alone, in the case of 'art' or other 'useless' artefacts). For millennia, we made them by hand, that is, using our bodies. Consequently, alongside highly-attuned sensibilities towards behaviour, including gesture and 'body language', as well as towards language as such, gesture and behaviour have been recorded in things made. We have histories of interpreting these records the better to survive and reproduce. Despite other means of making, I argue, we still do. The second consequence is that much of our physical experience of artefacts on a day to day basis remains at the unconscious level. Hence our abilities to drive and talk at the same time; to reach for the keys without – apparently – looking or thinking. Do designers need to think more about design and the unconscious? Do those who interpret design?

It is an ordinary day. You are leaving the house. You reach out for the keys on the hook in the hall and walk out, closing the door behind you. These actions are familiar, automatic. You take the usual walk to the shops, thinking about what you might buy for supper and where you might buy it. Walking demands little or no conscious effort, and your surroundings pass unnoticed, until suddenly you see a space, where a building has just been demolished. You take in the unfamiliar view. Still walking, you take out your mobile and ring a friend to suggest to you might visit. The friend needs a little persuasion, you persuade, gesturing as you do so at your unseen - and unseeing telephone correspondent. You put the phone away. A little further, across the street, you notice two people talking animatedly to one another. You can see them quite clearly, but you are too far away actually to hear what they are saying. Even so, you 'read' their body language, and you can tell – or think you can tell - that they are having a row, or an affair, or sharing a joke. You shop and go home. Later that day, you drive to see the friend, and you arrive, having followed your usual route, unaware of the precise sequence of gear changes, turns of the steering wheel, pressure applied to brake and other pedals and so on. On your arrival, after greetings, you fling yourself into a familiar armchair while the friend makes you both a cup of tea, reaching for the tea, the kettle, the tap, and the teapot, all in their familiar places. It is an ordinary day.

In ordinary life, our *unconscious* brains are fairly constantly at work. With regard to our bodies, they take care of two types of involuntary actions: practical activities, such as instructing our bodies to reach for the keys, to walk, to reach for the phone, change gear, fling ourselves into a chair or reach for the kettle; or expressive actions, such the gesture which may accompany speech, so urgent, that we can't help but do it, even if rationally, we would know if challenged afterwards that such gestures are unseen by the friend on the phone for whom they were – unconsciously – intended. The two are linked. Which of us has not sat at a café in the street and persuaded ourselves that a walk is revealing of character. Gesture and body language are can be reliable as indicators of mood, temperament and intention.

In the late psychologist, Jeffrey Gray's analysis, all unconscious physical actions might be thought of as 'goal' directed. He writes: 'We are unaware…of how we undertake actions, other than by way of percepts of the goals to which the actions are directed.'[1] Interestingly, he cites experimental evidence which shows that the speed at which a tennis player reaches for, makes contact with and returns a tennis ball, means that the entire action is accomplished *unconsciously*, and the brain only constructs the conscious narrative of the event immediately after the action is accomplished.[2]

As noted, involuntary, unconscious gesture is usually an accurate expression of mood or intention. Perhaps our ability accurately and rapidly to 'read' such gestures is but one of the examples of how finely adapted we are towards the successful negotiation of our social environment, that is, we have evolved reliably to detect who might be an ally, who an enemy, who, perhaps a sexual partner, and who will be of no consequence to us at all. Has this consequences for our interaction with the things we design and live with? I think it has. I propose that we possess parallel abilities both to express and interpret socially valuable, adaptive data – rooted in gesture – through the devising and appraisal of artefacts. Delineating, briefly, the links between these two is the main purpose of this paper.[3] In addition, given that much of what I propose operates *unconsciously,* I will conclude with some reflections on the consequences for design of our evolved ability unconsciously to negotiation the physical environment.

I have spent the past few years trying to work out just how much design in human life remains to this day, in part, a function of our shared, evolved history as a species. Purely co-incidentally, at about the same time, I have been learning how to dance – most recently, the Argentinian tango. These apparently disparate activities have not only been enjoyable and rewarding in ways I could not have foreseen, they have, to my surprise, informed one another and, taken together, have fundamentally changed my conception of how design 'works'. We are considering the relationship of design to the body and the senses. In this paper, I

will be referring both to that research work and to the dancing to support my argument.

Of course, gesture and body language does not have to be involuntary. It can also be a quite deliberate, self-conscious performance, of which dance is just one example. Dance is a human universal. Merlin Donald, in a study sketching the origins of both our minds and of language writes that 'Mimetic action,' – by which he means 'mimetic' as in 'mime', rather than 'meme' – 'is basically a talent for using the whole body as a communication device.'[4] The tango which I dance may, in part, have emerged among the men waiting their turn in the brothels of Buenos Aires in the late nineteenth and early twentieth centuries (when there were many men and very few women)[5] and subject to any number of contingent variations, developments and nuances since then. To that extent, my dancing is the end product of (in terms of evolutionary time) near-contemporary, cultural and other contingent factors; but mimesis, including both the involuntary gesture and the deliberate performance such as dance, plus the ability to interpret it is probably very old indeed. Like Donald, Chris Knight (in company with Michael Studdart-Kennedy and James Hurford) believes that gesture and the use of the body to communicate is actually older than language itself. He writes:

> We are justified in regarding mimesis…as a unitary mode of representation, peculiar to our species, not only because it emerges naturally, independent of and dissociable from language in deaf and aphasic humans unable to speak, but also because it still forms the basis of expressive arts such as dance, theatre and ritual display. The dissociability of mimesis from language also justifies the assumption that it evolved as an independent mode before language came into existence.[6]

Though others place mimesis's emergence alongside, rather than before that of spoken language,[7] all are agreed on its antiquity, ubiquity and adaptive importance.

How does this affect design? For hundreds of thousands of years, the ancestors from whom we are descended – and whose genetic make-up we, in part, inherit – created artefacts using their hands and simple tools. Hundreds of thousands of tools for various uses survive; and it is worth noting that among our own species especially, and like many of our own modern, practical devices, these practical objects commonly have degrees of finish, levels of care taken over their form and structure, or additional work devoted to ornament or decoration which use alone cannot justify. This is important. In the evolutionary environment, all effort expended should be thought of as a 'cost' to be offset against some advantage with regard to survival, reproduction, or both.[8] Alongside the tools, still other artefacts resembling our modern notion of 'art' seem at first sight to serve no overt practical purpose. Yet the figure found at Willendorf, the cave paintings at Chauvet, at x or y plainly took considerable investment in terms of time, effort, materials and skills acquired. In both cases, both tools and artworks appear even to many modern eyes, attractive, and sometimes breathtakingly beautiful.

Whether it is the surface of the flint blade, bearing the delicate, regular traces of a sequence of carefully calculated, repeated blows, or the strokes which make up the animated representations of the teeming wildlife or apparently mythical figures, all of these prehistoric, hand-made artefacts are, inevitably, records of gesture. Why such efforts? Why such costs? The blade may have been useful in hunting, in the preparation of food or skins, or otherwise of practical value, helping offset the costs of its production. Having noted the usefulness of what might be mistaken for useless art among modern hunter-gatherers,[9] one may also legitimately speculate on the potential utility of cave paintings as repositories of wisdom about the recognising and hunting of game, the hunting of which was sometimes critical for survival[10], or the recording or augmenting of narratives, myths or rituals useful to the group in terms of identity and social cohesion, re-inforcing the will to survive and reproduce and with corresponding increases in effectiveness in the securing of resources.[11] Once again, these adaptive advantages may have offset costs. Need one look further?

I believe one should. However else these artefacts may have supported adaptive behaviours and been selected for, I suggest that as *records of gesture,* these artefacts also had an adaptive value, and that this value lay in these records acting as aids to the successful negotiation of the social environment. Let me explain.

In the past, as now, the levels at which we humans use our minds, bodies and senses to engage with artefacts are many and complex. They include:

- data from the senses and perceptions;
- arising out of these data, aesthetic pleasure, technical pleasure or both;
- appraisal of the *style* of the artefact – that is, the way in which it has been designed and made – for *tacit social intelligence* (of which these records of gesture are a major part);
- and finally, the attribution symbolic or narrative meanings.

I list these in the order of their probable emergence beginning with the simplest and most genetically determined – the senses and perceptions – and ending with the most recently emerged – symbolic and narrative meaning – the foundation or accompaniment to the emergence of language, and the most open to contingent cultural content. Please note that these different modes of engagement can occur sequentially, simultaneously, constantly, intermittently or partially.

I suggest that whatever other adaptive value pre-historic, human artefacts may have possessed, and at whatever other levels they may have 'worked', those which bore reliable traces of human gesture – in a manner akin to the generation and interpretation of gesture itself – provided tangible records of the accumulated skills, the temperament, disposition and intelligence of their creators. And just as we are attuned to interpreting gesture, body language or dance, I suggest these traces of human action were similarly susceptible to appraisal, with corresponding, potentially adaptive benefits in terms of successfully negotiating one's social environment. Sometimes evidence of those qualities may be the accidental by-product of an individual striving to achieve a

practical, economic outcome – analogous to the unseen observation of the involuntary gestures of those engaged in conversation. The data is unintended, but more or less reliable, and susceptible to detection. And, just as on the dance floor, where in principle at least, a tango couple are only interested in entertaining each other with the skill and invention of their brief, shared, spontaneous drama, but where such 'private' dancing is easily codified, formalised and perhaps exaggerated to become a spectacle for the benefit of others, so too, on other occasions, and more commonly, perhaps, the creators of artefacts may have deliberately striven for the effects thought to exhibit favoured human qualities. So, for example, rather than being a by-product of effective making, regularity may also be sought for its own sake. Pattern may be desired, created, and valued.

Further, as I have argued elsewhere,[12] an artefact's power to act as an expression of *tacit social intelligence* does not disappear, once it becomes remote from its creator (or its creator remote from it). On the contrary, as artefacts change hands (or the creators of cave paintings die), those who subsequently choose to be associated with the artefact are, whatever else they may be doing, choosing to be associated with the human qualities the artefact is judged both to embody and express; and to no small degree, those embodied qualities are expressed through the traces of gesture. Thus the artefact may serve to articulate any number of social – or sexual – relationships, and enhance the ability of the individual successfully to negotiate their social environment, increasing their chances of surviving and reproducing. Further, if one accepts (as not all do[13]) the concept of *group selection* – that is, that adaptations may primarily benefit the group and the group will be selected for, rather than (or as well as) at the level of the individual, or their genes, or both – then it follows that just as dance routinely figures in group identity-affirming ritual, giving expression to shared human values through gesture and the defining of space, so too, artefacts embodying human characteristics expressed through commonly valued physical traces of gesture may also re-inforce a sense of group identity, and so increase the group's chances of surviving and reproducing.

So much for human pre-history. Does this speculative account of the remote past, if true, have consequences for design today? I believe it does. Put simply, I suggest that each of us has inherited and is possessed of sophisticated, adaptive neural equipment, refined over the hundreds of thousands of years of our ancestors' devising (designing, if you like), making and appraising hand made artefacts in order to facilitate social relationships. This equipment – while it operates today in a much changed environment – has not suddenly been wiped out or wholly negated by the recent advent of complex machinery and computer-aided design and manufacture (CADCAM), let alone modern society and all that follows in its wake. In evolutionary terms, these developments have been with us for half the blink of an eye – far too recent to have had much impact on our genetic make-up. On the contrary, while any number of contingent cultural causes may affect how designs emerge out of any particular context, and irrespective of the fact that many of today's artefacts actually involve little or no hand work in their manufacture, I suggest that, on average, those designs in which the style of the lines, shapes or forms corresponds to those which, if the object were hand- made, might reveal attractive human characteristics, tend to be commonplace and favoured, while those that do not are rare.

Two important qualifications: firstly, this is only *one* of the evolutionary roots of our aesthetic preferences. There are others. One, for example, emerges out of a still more ancient ability successfully to discriminate in the organic world between that which is sound, and so potentially good to eat, or to have sex with, or more likely to attack, rather than that which is rotten, sick, or dying. Another – allied, but not identical to this detection of tacit social intelligence – is the aesthetics of economy, that is, the achievement of greatest effect by the minimum of means. A further one – often linked with sexual selection (that is, the accumulated effect of what reproductive sexual partners value in one another) is allied to extravagance in the use of resources (and equates neatly with many of Thorstein Veblen's account of beauty and luxury among the East Coast wealthy of late 19th century America in his *Theory of the Leisure Class*). These then, in this account, represent the rich evolved architecture in which the more recent,

culturally contingent factors we are more accustomed to consider, play themselves out. Secondly, I suggest the mechanisms of discrimination and appraisal I describe are executed *unconsciously* by the brain. We may only be conscious subsequently of the sense that we favour or dislike this or that artefact.

Finally, pursuing for a moment this matter of the evolved unconscious and design, I should like to reflect a little on the relationship between our *unconscious* uses of our bodies and our designed environments of spaces and artefacts. It is noticeable when learning a new figure in dancing that, at first, not only may it look difficult to follow and understand, it also requires great, *conscious*, concentration. One observes others doing it; one imitates – however clumsily at first. With each repetition, however, the move become easier, somehow, more 'naturalised', internalised. The brain and body – the sensorimotor system, if you prefer – learn, and as they learn, the move lodges somewhere in the brain (or should that be brain and body? – I think it should), such that it can eventually be 'replayed' with ease. Surprisingly, after time, perhaps days or weeks after the move has been acquired, it might occur, almost involuntarily on the dance floor, an appropriate response to the music, to one's partner and to the floorspace available. Before one knows it, one is doing it; it is barely consciously chosen at all. Still more remarkably, it is perfectly possible to execute complex moves while sustaining a conversation with one's partner (though in truth, the most satisfying dancing rarely includes such an unnecessary addition). How can this happen? Part of the answer, I suggest, rests with the evolved, modular structure of our brains;[14] where different parts process different types data. This understanding helps explain some commonplaces of the ways in which we physically – and unconsciously – engage with our physical environments.

This may or may not have consequences for understanding design. Consider: I have not time fully to develop the consequences of these observations for design and its analysis here, save to say that I doubt a radical new approach to design is needed. It is commonly acknowledged that the process of designing involves both conscious reasoning and other, more instinctive tactics.[15] Designing may also, in part, be unconscious. A good

designer whose designs are enduringly satisfying, is probably, one way or another, addressing some of these factors. Much design today lives as image; doubtless many novel designs will have lives as virtual entities, but designs intended to enhance lives here and now in the physical world will, of necessity need to be satisfying at many different levels. With time, it may well be at this unconscious level that the design may unobtrusively contribute to the ordinary pleasures of living and we may come to value once more the finger plate on door which is to be pushed, which cues exactly the right, unconscious physical action.

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[1] Gray, J. A., *Consciousness: Creeping up on the hard problem* OUP, Oxford, 2004, p. 91

[2] In improvised dance, too, it is common to find oneself in the middle of spontaneous moves one has little conscious sense of having commissioned. Gray, pp. 7-9

[3] Dennett, D. C., *Consciousness Explained*, Allen Lane, The Penguin Press, London, 1993 (orig.1991), p. 16

[4] Donald, M., *Origins of the modern mind: Three stages in the evolution of culture and cognition*, Harvard University Press, Cambridge, Mass., 1991; the quote from Donald in this extract is from Donald, M., 'Précis of "Origins of the modern mind', *Behavioural and Brain Sciences* 16, 1994, pp. 737-91; cited by Kohn, M., *As We Know it,* Granta Books, London, 1999 p. 192

[5] See, for example the account given by Christine Denniston, author of *Dancing Tango – Unlocking the Mysteries,* in her short article 'Clichés of Tango: Origins of the Dance' at http://www.history-of-tango.com/tango-origins.html accessed 15 Aug 2007

[6] Knight, C., Studdert-Kennedy, M., and Hurford, J. R., 'Language: a Darwinian Adaptation?' in *The Evolutionary Emergence of Language,* Cambridge University Press, Cambridge, 2000, pp. 8-9

[7] Sceptics for mimesis preceding symbolic language are Robin Dunbar and Terence Deacon. Dunbar, R., *Grooming, Gossip and the Evolution of Language,* Faber & Faber, London, 1997 (orig. 1996), pp. 133-142; Deacon, T. W., *The Symbolic Species: The co-evolution of language and the human brain*, The Penguin Group, London, 1997, pp. 355-356

[8] For a fuller exploration of the possible consequences of the constraints of natural selection, and its counterpart, sexual selection, see Batchelor, R., *Evolution, Artefacts, Meaning and Design,* PhD study, Brunel University, 2004, pp. 235-243

[9] Scalise Sugiyama studied 600 stories told by the Apache, Crow, Selknam, and Yanomamo peoples of North America. Each group is geographically and culturally distinct from one another, so their stories have been created independently, rather being the products of cultural transmission. On the basis of this evidence, Sugiyama suggests that contemporary 'hunter-gatherers use narrative as a conduit of subsistence-related information', that is, information about the securing of food and other resources. I suggest cave paintings may have supported similarly useful data. Sugiyama., S., **'**Food for Thought: The Role of Narrative in Human Subsistence', paper delivered at the Human Behaviour and Evolution Society Annual Meeting, Amherst College, Mass., 07.06.00 – 11.06.00; abstract accessed at http://www2.bc.edu/~richarad/lcb/fea/arch/hbes2ss.html on 22 Jan 2004

[10] For most of human history, foraging has often been more important than hunting in terms of nutrition, but hunting has had higher status and importance in terms of social mediation.

[11] Dissanayake, E., 'Sociobiology and the Arts: Problems and Prospects', in Bedaux, J. B., and Cooke, B., *Sociobiology and The Arts,* Editions Rodopi, Amsterdam, 1999, pp. 27-42

[12] Batchelor, pp. 195-198

[13] Richerson, P., Boyd, R., *Not by Genes Alone: How Culture Transformed Human Evolution*, University of Chcago, Chicago, 2004
[14] Fodor, J. A., 'Précis of *The Modularity of the Mind*', *Behavioral and Brain Sciences,* vol. 8, 1985
[15] Lawson, B., *How Designers Think,* Architectural Press, London, 2000 (orig. 1997)