Chapter 1
Connecting art and technology: background considerations

Andrew Crabtree, John Hughes, Tom Rodden,
Craig Murray, Annika Blunk
Lancaster University, The University of Manchester, ZKM

One of the key concerns of the eSCAPE Project is the exploration of the relationship between art and the design of virtual spaces. One rationale underlying this motivation is that both endeavours - artistic production and the design of virtual spaces - are not necessarily bound by 'normal' conceptions and perceptions of spatiality and representation.[1] In the case of artistic production, the conventions of production can depart from, even violate, 'normal' conceptions of spatiality and representation and, indeed, very often this is their point. In the case of virtual spaces the affordances offered by the electronic medium means that, to a significant degree, the ordinary constraints of space – and time – can be transcended. However, this is to state a set of problems rather than offer a solution.

The bringing together of these artistic traditions with both technological development and the understanding of the social represents in itself a major methodological challenge. In this chapter we will set out some of the background considerations which bear upon the connection between art and technology and how they have been worked through in the eSCAPE Project. In significant respects it is a retrospective document reflecting upon work of the project to date.[2] In particular, it will set the scene for the more substantive considerations that entered into the design of the electronic landscapes which are discussed in Deliverables 4.1 and 4.2 and the construction of the technologies reported in D5.1.

[1] Of course, it is a moot point as to just what 'normal' conceptions of spatiality and representation might be given that these are, to a degree, culturally and historically variable. However, this does not detract from the point being made. See Ihde (1990) for a Phenomenological approach to the ways in which 'normal' conceptions and perceptions have been mediated by scientific knowledge.

[2] This chapter draws on the working paper Hughes, Crabtree and Murray (1999).

To begin the discussion we will review some general considerations relevant to the evaluation of artistic productions for system design.

General considerations

One of the problems of characterising the relationship between art and the design of technologies is that, typically, the question is posed as a general and highly abstract one rather than one to consider in an everyday practical sense. This is often conveyed by capitalising **A**rt and **T**echnology so inviting us to address the issue as a deep and fundamental one about profound and sublime matters. It also suggests that what we are seeking is a single answer, a truth, which would express *the* relationship between these two domains. While having a role to play in developing an understanding of Art and Technology we would argue that this construction of the problem fails to meet the need of those involved in the construction of new electronic landscapes. Essentially, in our experience we have found this way of posing the issue unhelpful for the purposes of design and in the rest of this section we wish to consider some of the reasons for this view.

Some concerns about general formulations

The general concerns about considering the relation between Art and Technology as a theoretical issue is a broader worry about the problematic nature of general formulations in the everyday practical work of design. However, the problem of generalisation here is even more acute as the general formulation of the relationship presupposes that Art and Technology each denote, relatively unproblematically, homogeneous domains. However, while it is always possible to formulate some general characterisation of what the various arts have in common - just as it is always possible to formulate some general description of ‘work’, ‘leisure’, ‘democracy’, etc. - this will leave open for further consideration and deliberation ‘just what’ the general characterisation amounts to in connection with specific kinds of artistic productions. The general formulation presupposes that, despite their variety and multitude of definitions, ‘the arts’ have some common quality or property which makes them what they are and not, say, scientific endeavours, sports, or even technological endeavours.

There are further considerations immediately relevant to this point. Our complaint against general concepts and characterisations such as this is not against general concepts as such. After all, in ordinary language we sensibly use them. However, their sense is contextually furnished in that what we say, the sense of what the meaning is, depends upon the *occasions of use*. For example, ‘British’ can be construed as a general category but the specific sense of what it might mean depends upon the circumstances in which the term is uttered. It might mean one thing if a passport is being applied for, another if responding to a

query as to where one is from, and yet another if discussing political devolution.[1] This is not to say that the different uses are unconnected; it is to suggest that the connections between them are, in Wittgenstein's terms (Wittgenstein, 1958), more of a 'family resemblance' than due to any common property from which the term gets its meaning. By this he means that the sense of general terms within ordinary language derives from the many interconnections that may be found in much the same way that the members of a family may show various similarities with other members. A nose may look like a mother's, while the ears look more like those of the father, hair colour shared by cousins, and so on, rather than any one all-encompassing alikeness.

Once again, we need to reaffirm that the point we are making here is not one against the use of general formulations but, rather, to recognise that their sense, their import, is contextually furnished and that when we ask such general concepts to perform analytic work as if their sense were independent of some context, then we run into difficulties.[2] If we apply these principles to the category 'Art', then they recommend that we do not try to look for common elements which, as it were, brings together all the members of the collection as if they had some thing, some one thing, in common.

Wittgenstein's remarks were addressed to philosophical accounts of meaning and served as reminders to philosophers of the sense which ordinary usage already has. One of his main points was that when philosophers try to detach a word from its ordinary usage they tend to produce non-sense.[3] While Wittgenstein's remarks were directed to philosopher's attempt to provide theories of language, they also have relevance to our own concerns about the way in which the general question as to the relationship between art and technology is formulated.

The variety of artistic production

The presupposition that the category 'art' denotes some property which all members of the collection possess has the problem of formulating what this common property might be in light of the variety of the things which can, and are, included as art. Poetry, drama, sculpture, painting, novel writing, ballet, opera, music are among the activities conventionally nominated as among the arts. But what about architecture, film, rock music, folk song and folk dancing, calligraphy not to mention the many 'hybrids' such as body sculpture and even interactive art? Do we include these as arts? If not, why not?

---

[1] See Schegloff, 1972 for a discussion of matters relevant to this point.

2 This is essentially the point that Wittgenstein makes in his attack on philosophy and its predilection for taking words out of their 'home' context of ordinary usage such that their sense is lost. Garfinkel (1967) and Sacks (1995) make a similar point in connection with 'natural language' and its relationship to sociology.

[3] Wittgenstein does not mean here that they produce unintelligible gibberish, but that the accounts of the words would have no use and distort the sense they have in ordinary language.

These questions nicely illustrate some of the difficulties alluded to in the previous subsection. Which artistic activity are we to take as the inspiration for system design? Of course, what is often at stake here is not so much an issue of whether or not folk song or rock music, say, are rightly described as arts as if this was a matter of finding the correct way to describe these activities. A matter, so to speak, of discovering qualities in the activities which have been hitherto unseen or unrecognised. Rather, what is going on is an argument about how these activities should be valued and appraised. In the course of such arguments no doubt reference can be made to various qualities of the product and / or the performers, such as their skill, their artistry, their popularity, their innovative character, and so on. However, the point is that the issue here is not so much a matter of discovery as persuasion. A matter of persuading others that calligraphy or rock music, or whatever, have qualities that ought to be taken seriously and ranked alongside other activities which are taken seriously in this way. Artistic appreciation and evaluation is inextricably bound up with appraisal; that is, with making judgements about the relative worth or merit of some production or artefact.

The search for common properties

While the previous section has presented significant reservations about an overly general consideration of the relationship between Art and Technology we still wish to acknowledge the promise of a generic set of lessons. In this section we wish to consider what properties of artistic endeavour we may wish to exploit in the development of new technologies and how sustainable such an migration may be in practice; leaving on one side the issue of which to include or exclude as arts that arises from any general relationship we set out with technology. Clearly, if we are looking for some common quality that Art possesses, then this would have to be, to a significant degree, independent of the medium; independent, that is, of whether the art was embodied in painting, in sound, or in the written or spoken word. This brings us to the techniques and properties of art itself and a consideration of how we may migrate these properties to the world of technological development. The first of these surrounds the general issue of aesthetics.

Aesthetics

Perhaps the major candidate for a common quality underlying art is to be found in the notion of aesthetics. Simply put, aesthetics is that branch of intellectual endeavour concerned with inquiries into beauty or taste. However, and not surprisingly, putting it simply does not really take us very far given that it can have philosophical, psychological, linguistic and social dimensions, and each of these introducing manifold complexities.

It was probably Plato's theory of forms which placed on the agenda of aesthetics the notion that aesthetic terms, such as 'beauty', 'ugliness', when applied to artefacts or to aspects of nature gained their meaning and sense from their reference to qualities which inhered in the object or the scene; qualities which provoked a particular and distinctive experience in the viewer. More recently, this idea of a distinctive experience was talked about in terms of the 'aesthetic attitude'. This is held to be a style of perception concerned neither with facts or with practical use but with the qualities of the contemplative experience itself and works of art, (or, indeed, natural objects), human creations designed to stimulate this kind of attention (Beardsley, 1958; Scruton, 1974).

What is fairly clear is that the attempts to identify a quality, such as 'beauty' or 'sublime feelings' as the defining characteristics of art failed to carry the day. While not dismissing aesthetic expressions as senseless, it was clear that their meaning could not depend on reference to some substantive quality that objects might possess. However, the demise of this view also seemed to deliver the quietus to the notion that aesthetic judgements could be objective giving credence to the view that aesthetic judgements were subjective and akin to expressions of taste worth hardly any more than expressions of taste regarding ice cream or pints of beer (Ayer, 1936). Aesthetic judgements, in other words, are subjective expressions of personal preference and no more than that.

One serious implication of this view is that it makes no sense to compare aesthetic preferences other than to say 'I like this' and 'You like that'. In the absence of any objective quality against which to measure aesthetic judgements they can only be matters of personal taste or preference and not rankable in any sensible way. Accordingly, there can be no experts in artistic judgements since there is no expertise to acquire other than the capacity to express personal taste.

Not surprisingly, such a view has its stern critics and, what is more, seems to fly in the face of the fact that throughout recorded history human beings have discriminated among artistic artefacts in terms of their quality and, what is more, such discriminations have often become institutionalised and presented as exemplars of aesthetic achievement. In which case, it is difficult to see such achievements as simply the exercise of personal tastes. Something more must be at work; the task is to specify what this 'something more' can be.

It is arguments such as this which direct attention to the social dimension of artistic production and seeing the aesthetic as rooted in society and culture.

The social shaping of the arts

One of the hallmarks of artistic production, and one which stands out after even only a slight acquaintance, is the variations in styles. And this is so for most if not all of the arts, painting, sculpture, poetry, novels, the theatre, and so on. Accordingly, it should be no surprise that efforts have been made (from a variety of human studies disciplines), to periodise and describe the various movements in artistic creation relating these to features in the wider culture, religion, politics

and even economic organisation. Indeed, from a sociological or history of ideas point of view, the character of art has much to do with the nature of the society and the culture in which it is embedded.

As Norman (1998) points out, there are aspects of art which are a product of European history and the changing role and status of the artist in society. The relative autonomy of art and the artist is, historically speaking, a relatively recent innovation. Prior to this, artistic creation and production was treated very much as a craft and artists, in terms of social status, treated very much as artisans. Until the eighteenth century the peak of artistic creation was seen as the Classical Age of Greece and, to some extent, that of Ancient Rome and which could never be superseded.

However, it was in the eighteenth century that the attempt was made to treat as a whole painting, the theatre, music, literature, poetry and dance. During the Enlightenment, especially in France and Germany, distinctions were starting to be made between the 'fine arts' of music, poetry, painting, sculpture and dance and mechanical skills, a domain to which the arts had hitherto been consigned. In Germany, Baumgarten (who invented the term 'aesthetics' in the 1750s), Moses Mendelssohn, and Immanuel Kant placed a theory of beauty and the arts on a par with the theory of truth and goodness and established the arts as a distinct area of philosophical inquiry (Brewer, 1997).

Though these ideas did not dwell exclusively on artefacts but included discussion of the way in which nature could provoke feelings akin to those evoked by a work of art, they effectively created a category of what Burke called 'works of the imagination and the elegant arts'.[1] Of course, and as the Enlightenment philosophers recognised, ideas and writings about beauty and sublimity dated back to at least antiquity, but until this time, and as indicated earlier, the arts had not been given this special collective identity.

The reasons for this shift in the characterisation of the arts are, not surprisingly, complex. According to Brewer (1997) the rethinking of knowledge provoked by the scientific discoveries of Galileo and Newton drew a distinction between the arts and the sciences. Equally important were changes in the arts themselves. In the eighteenth century they ceased to be the preserve of royal courts and moved out toward a larger public:

> This more commercial and less courtly culture was to be found in coffee houses in Venice, Amsterdam, London, Paris and Vienna, clubs and reading societies in Germany, academies in provincial France, literary and philosophical societies in provincial Britain, commercial theatres of London, Paris and Lisbon, art dealers' shops and auction houses in Naples, Rome and Amsterdam and at professional concerts performed in London, Paris, Frankfurt, Berlin and Vienna (Brewer, 1979: xvii).

This massive increase in the public consumption of the arts was sustained by printers and publishers, engravers and printsellers, who were linked together throughout Europe. Although the influence of the courts, especially in theatre

[1] Quoted in Brewer (1997: xvi).

and music, remained strong the arts became more commercial and less courtly because they were more urban. Artistic taste was considered a sign of refinement, cultivation and politeness, qualities which were believed to be nurtured best in towns and cities.

Taste also became the attribute of a new type of person who was literate, able to talk about art, literature and music and displayed his refinement through polite conversation. This new type of person did not include the urban poor or the peasantry who, in any case, lacked the wealth and leisure to enjoy such tastes. While women of the appropriate status were also seen as capable of belonging to this community of taste, they were excluded from some of its institutions, notably clubs and associations. Their domains were of the drawing room and salon rather than the taverns or the coffee-houses. Emphatically, taste was not confined to the aristocracy. All over Europe artisans, merchants, shopkeepers, farmers, lawyers, doctors and more bought books and prints, and attended plays and concerts. The fine arts, in short, were viewed as one of the characteristic features of the modern commercial and urban society.

Interestingly from the point of view of the relationship between art and technology, the growth and spread of the arts was seen as intimately tied to the practical and technological improvements of the new commercial society and a sign of how civilised a nation had become. The same age which produces great philosophers, generals, poets and painters also produces skilful craftsmen. However, while the period enables a literate and urbane class to enjoy the unprecedented supply of artistic creation, it also marginalised forms of popular expression such as ballads, folk song, woodcuts and seasonal festivals. These were viewed, on the one hand, as the primitive expressions of an earlier stage of social development and, accordingly, as society advanced would vanish and, on the other, as insufficiently refined so that they were condemned as vulgar.[1]

Of course, it was to be some decades before the full realisation of these changes was to become firmly institutionalised. Even during the eighteenth century, modern English painters were highly marginalised figures dismissed as ‘mechanics’ performing a ‘servile’ art. Writers, too, were little better off and widely regarded as ‘drudges of the pen’. Nevertheless, the longer term consequences of these changes which were to work themselves through over the next century or more, were to be profound for the current ways in which we think about the relationship between art and technology.

However, such an approach seemingly relegates ‘the aesthetic’ also to being a social construction, rendering aesthetic judgements as if not exactly expressions of personal taste then expressions of cultural preference and, as such, a happenstance of history and social conditioning. Finding Mozart’s Requiem moving is as much a cultural preference as is a liking for fish and chips. Both are contingent on being a member of a particular culture and society.

[1] There was a reaction to these sentiments and doubts about the beneficence of wealth. See Brewer (1997) for further details.

Revisiting the aesthetic

A sociological view on art would seem, on the face of it, to put the final nail in the coffin of views which have attempted to bring some objectivity to aesthetic judgements through trying to identify some property or quality possessed by artistic productions or natural objects. If art is subject to wider social and cultural influences, as indeed is aesthetics itself, this also seemingly implies that aesthetic judgements are subjective in being expressions of cultural taste. Aesthetic judgements are relative judgements and no more than that.

However, for us such a conclusion misconstrues the logical grammar of aesthetic judgements and, moreover, misconstrues the force of social constructionism by elevating it to an ontology rather than a methodological point of view.[1] Although a fuller discussion of the issues here would take us too far away from the concerns of this Deliverable, suffice it to say, by way of summary, that what is ignored is the sense that aesthetic judgements have in ordinary language use and, as part of this, the place they have in the orderly affairs of the members of society.

Aesthetic expressions, to use this rather general phrase, invoke standards of appraisal. Standards, which are conventional in the sense that they are not, so to speak, given in nature but are public. They constitute the publicly available grounds upon which appraisals and judgements are exercised in social activities ranging from games and sports, to legal decisions, to morality and, our special concern, art.[2]

An analogy here might help. The rules of soccer, for example, are conventional in that they could have been otherwise – and in the past have been otherwise and, no doubt, will be in the future. But the results of a soccer match are objective in any reasonable sense of the word. The rules of the game, the conventions, do not determine the outcome, as it were. This is a matter of how well the game is played and in the context of the application of the rules. So it is with aesthetic standards. The application of a standard, in whatever domain, cannot simply be a matter of personal preference or taste in the sense described earlier. It makes sense to discuss and debate, argue over, disagree with, etc. some particular judgement as to the merit, or otherwise, of something to which a standard applies.

Accordingly, aesthetic standards are public matters which can and are used to evaluate artistic productions. The fact that such standards may be rather less precise than the rules of soccer does not affect the argument. Having said this, however, there are one or two points that are worth mentioning about aesthetic standards since they are germane to the discussion.

---

[1] The notion of 'logical grammar' here is derived from Wittgenstein's views on ordinary language and what it makes sense to say. It has little or no relationship to logic as this is commonly understood or to grammar as this is understood in traditional linguistics.

[2] See Goodman (1968).

Aesthetic standards, like moral standards, are not the sole preserve of artists of whatever medium but can be invoked by anyone and in any context. As expressions of taste and appraisal they are statements of 'where one stands' in terms of something's beauty, attractiveness, charm, splendour, sublimity, etc. It is to state an attitude toward something in terms of its aesthetic qualities. It is, of course, open to others to disagree, and to disagree with reason. That is, to adduce support for the judgement by invoking whatever qualities the proponent might deem relevant. How successful this might turn out to be would depend on the persuasiveness of the arguments and how effectively they are put. However, in the end, if persuasion is not effective and agreement on the aesthetic worth of something is not forthcoming, then it will remain a matter of having different tastes as to what it is one appreciates.

The point of drawing attention to and reinforcing this feature of aesthetic appraisal – and it is not unique in this – is that despite the fact that there are no 'objective' standards in the sense in which these are typically required, it still makes sense to agree, disagree, argue over, dispute, change one's mind, etc., in reasonable ways. In other words, aesthetic appraisals are not merely matters of taste in the way that is often implied in saying that whether one likes vanilla ice cream or not is 'just a matter of taste'.

However, unlike moral standards, where there are no experts, art is, typically, produced through the exercise of skill and expertise gained after a long period of training and apprenticeship. In other words, it can be said that acquisition of the skill and expertise gives such persons a special license to understand and evaluate what some artistic production involves and what an achievement it might constitute. It is considerations such as these which introduce the possibility – and again it is not unique to aesthetic judgements – of judgements being 'ill-informed', or 'failing to understand what the artist is trying to convey ', and so on. However, what this suggests is that 'aesthetic judgements' are something more than expressions of liking or taste even though this may well be a response, and a legitimate one at that, to some artistic production. 'Aesthetic judgements', we might say, require that the judgement be an informed one with this relevant to how seriously the judgement is to be taken.[1]

Learning from artistic traditions

Given the problematic nature of uncovering common properties of Art that are of utility for design it is worth focusing on the process through which different artistic endeavours have been undertaken and what we may learn from this. In fact, this very reflection on the nature of artistic production provided a theme of the work of the first year of the project and is reported in the field studies of the work of ZKM reported last year. In this section we wish to reflect on these

[1] Of course, how well the judgement is 'informed' and by what may well be an issue for appraisers and part of the debate about some work of art.

traditions as a potential candidate for providing a bridge between Art and Technology.

Earlier we referred to the way in which, around the eighteenth century in Europe, artistic production began to gain an autonomy it had not had previously. One result of this cultural shift was to bring to the fore the extent to which distinct artistic endeavours had their own traditions and conventions which, though not unconnected to the wider society and culture, to a significant degree possessed their own internal impetus. By this we mean that other artists work figures significantly in the undertaking of artistic work.

The dominant motif of artistic practise is what Norman (1998) refers to as 'reactive switches in thinking' in which artists and schools succeed one another largely through a process of reaction to previous artists and schools.[1] Norman (1998) notes that even in the brief period of western art history, definitions and practices vary considerably, and in ways which amount to 'reactive switches'. Thus, and to use her own examples, the English Romantic loners of the 19th century were succeeded by Ruskin's and Morris's ideals of anonymous arts and craft workers. Parallel to this movement, in France the academicians were supplanted by a group of anti-academic outdoor enthusiasts who launched the Impressionist movement.

This not only means that aesthetic standards, and hence judgements, can change but also that there are standards which are very much internal to the traditions themselves and which cannot be easily understood outside of them. Indeed, there is more than a little truth in the adage that artists tend to produce their work for other artists rather than for the general public.

Such 'reactive switches' have much of the character of what Kuhn refers to in the entirely different context of scientific change as a 'paradigm shift' (Kuhn, 1970).[2] That is, a major change in the fundamentals of existing practise. In other words, it is open to artists to abandon 'received wisdom' and challenge what is to count, for any particular art, as an artistic achievement. Indeed, it is plausible to regard 'interactive art', which is of especial interest here, as challenging 'received wisdom' in just this way by mediating the experience of art and immersing the spectators in the artefact so that they are not longer 'mere spectators'. The analogies between this shift and the use of the term 'paradigm shift' in technology is more than a passing resemblance. Much of the revolutionary rhetoric of new technological innovations has considerable similarities to those observed in the emergence of these new artistic traditions.

[1] See, for example in interactive art, Shaw's (1998) account of the genesis and rationale of The Legible City.

[2] The arts may well vary in the extent to which they are prone to such 'reactive switches'. Impressionistically, it seems that the plastic arts are more prone to these than literature or drama.

Revisiting art and technology

As should be clear so far from the discussion, while we have no quarrel in principle with the ambition to establish closer links between the art worlds and that of design, there are aspects of this which leads us to cavil with some of the presumptions behind the way in which the issue is typically posed, some of which have already been aired above. Moreover, our doubts are not sheer academic pedantry but, as we hope to show later, important for realising the ambition which the initial question sets out. We might say that one of the important tasks here is trying to get a clearer sight of just what the question amounts to *as a practical endeavour* rather than remaining as an abstract intellectual puzzle.

The original question posed about the relationship between Art and Technology contains a further presumption, namely, it assumes that there is an issue here, a problem which needs a solution. It presumes, to put it another way, that there is currently a separation between these two domains and that this is something to regret. Hence, the idea that ways should be found in overcoming the distance between them to their mutual benefit. However, as discussed previously, it was the eighteenth century, in Europe at least, which saw, on the one hand, a growth in the consumption of the arts and a consequent elevation in the status of the artist and, on the other hand, a developing sense of the arts as a distinct sphere of cultural activity. As we pointed out, it took some decades for these processes to work themselves out to their fullest extent, but our major focus here is with the sense of the arts as a distinct field of activity divided from other activities, especially science and technology.

There are strong echoes of this current preoccupation with a similar issue that emerged during the 1950s and 1960s in regard to science and art. C.P. Snow's, *The Two Cultures and the Scientific Revolution* (1959) was seminal in setting out what came to be seen as a major problem of our age, namely, the separation of art and science to the detriment of science especially. In brief, the argument was, and it has been reiterated in various forms since, that science needed 'humanising' to better serve the interests of society rather than the narrow ones of science and technology. At the time the argument was a persuasive one and, in the United Kingdom for one, resulted in none too successful curricula experiments to broaden the outlook of science students.[1] Irrespective of whether or not encouraging scientists and technologists to read novels, visit the theatre and art galleries, or attend courses in Jane Austen would ever have the desired effect of 'humanising' these disciplines, the point is that it reflected a strong feeling that art, and science and technology, were worlds apart and that this was to be regretted and, if possible, changed. A similar sentiment, we suggest, lies

[1] Efforts to broaden the outlook of arts students by making them more aware of science were even less successful.

behind the kind of question about the relationship between Art and Technology that prompts this and other research initiatives.

However, for our part, we find that the issue and its proposed solutions, have an air of unreality about them, although having said this, its importance as a widespread sentiment within our culture is not to be gainsaid. As we have already outlined in the previous sections, this is a state of affairs which has been inherited from the changes which gained momentum in the eighteenth century. To describe it as a problem, of the way we happen to think about art and technology, is not to minimise it. It ought, however, to encourage us to look rather more closely at the relationship.

In an earlier section we suggested that Art and Technology were glosses for a tremendous variety of activities, a point at that juncture of the discussion mainly to do with the logical grammar of general formulations.[1] Here we want to focus more on the consequences of acknowledging this variety of activities giving special attention to art and technology-in-use. The use of the term 'technology-in-use' is intended to encourage a look beneath, as it were, the idea that the cultures of art and technology are distinct and separate domains. In doing so we hope to bring out the extent to which art and technology are already, and have always been, intimately associated.

To a large extent the approach to the question is obscured by the social and cultural changes alluded to earlier. If we return, for a moment, to the period prior to the eighteenth century we can perhaps obtain a clearer picture of the relationship between art and technology. Then, and again we are speaking of European experience, the status of the artist was of craftsman, artisan and belonged not so much to an independent domain of art but to trade and the 'commoner' activities.[2] The acquisition of the skills of a craft was through a prolonged apprenticeship, often closely controlled and regulated by guild associations. Not only were the skills acquired those of the relevant trade but were also closely intertwined with what we would now describe as aesthetic elements. Nor was this surprising given that the main market for the output of the craft was, in the main and prior to the development of mass markets, aristocratic patrons, the court, the church and the municipality.

In other words, no sharp distinction was drawn between the artist and the craftsman. (Indeed, the lowly status of the artist can be traced fairly directly to the fact that he – and they were mainly male – was a craftsman and had to earn a living by using these skills). The medieval master builder, for one example, was responsible not only for realising the building as a construction, but also for whatever aesthetic qualities it came to have. Indeed, the kind of specialist divisions between, say, engineering, craft, technology, artist, etc., that are so familiar to us would be difficult to apply in quite the same way to earlier periods of our history. The point is that from the point of view of the activities involved,

[1] On glosses see Garfinkel and Sacks (1970) and Heritage and Watson (1977).

[2] For an excellent discussion of relevant issues to the changes in the status of the arts, see Hall (1998).

it would be difficult to identify, and separate out, those activities which were artistic and those which were technical, to put it simply.

Certainly, and again from the point of view of technology-in-use, it is not difficult to appreciate the craft elements that not only must have gone into the production of art but continue to be so. From the beginning, for example, painting has had to develop tools and technological knowledge of, to mention but a few, the creation of pigments and colours, understand how to reproduce the effects of light and shade, and sculptors discover ways to work marble, stone or clay, use heat to bend metals, and more. The history of artistic endeavour is as much a history of technology as it is of aesthetic production.

However, as we have already pointed out, we cannot dismiss the distinction between art and technology as entirely without point or substance, as merely some cultural misconception. The social changes already described as well as others involved in the move of European societies toward industrialism have wrought significant changes in the place of art, engineering, technology, and science in our society and our culture. For one, the perceived division between the arts and the sciences discussed earlier does have its institutional expressions, not least in the education and training of the respective practitioners. Engineering cannot now be mastered through an apprenticeship but requires a high degree of theoretical knowledge as well as, sometimes, practical experience. It has become a discipline – or set of disciplines – no longer a craft. The training of artists, though more variable than in the case of engineering, is also more 'professionalised' and though inevitably retaining important craft elements does not require routine exposure to engineering theory as a requirement for the practise of the artistic endeavour.

An important change which needs to be noted is that with the growth of mass markets and mass consumption, artistic products, to use this clumsy term for the moment, have become more available than ever. This has not only involved an expansion of the number of artistic consumers of books, prints, video, museums and galleries, etc., but also an increase in the number of producers as well as the domains which are now seen as among the arts. Film, television, and radio, for example, are just the more prominent of the media which can now be included among the arts. People training in the arts are also involved in a variety of industrial and commercial activities in advertising, TV production, manufacturing of all kinds, architecture, theatre design, fashion, and so on. Despite this unprecedented extension of talents and skills which can plausibly be regarded as involving the aesthetic, the distinction between 'high' and 'low' taste with regard to art and its products remains: a distinction which can be instantiated in so many ways and which both reinforces and complicates the divide between art and technology as distinct spheres of activity.[1]

[1] It can also create tensions within organisations where it is often difficult for artists and engineers to work together while retaining a strong sense of their own identity. See Norman (1998) for a discussion of such issues.

The ‘aesthetically decorative’ and ‘aesthetically informed’

In the last years exploration of the relation between art and technology, Norman (1998) draws a distinction between the ‘aesthetically decorative’ and the ‘aesthetically informed’. Essentially, this is a difference, which is to do with the contribution of the artist. An example would be the case of engineers developing innovative computer tools and seeing the artist as someone ‘adding value’ to the product by differentiating it from that of competitors. This would be to regard art as ornamental or decorative rather than an integral part of the development process. It is a form of window-dressing helping to make what might otherwise be dull, austere, obscure, etc. more accessible and palatable. While by no means unimportant, such a role is *not* the one envisaged for eSCAPE.

Norman (1998) goes on to support the conception of the artist’s role as that of a ‘poetic interpreter’ of life’s mysteries cultivating an awareness of those aspects of human existence which are prone to radical transformations. The most important quality here is that of creativity and ‘interpretative energies’. Unfortunately, it is this role which is the most incomprehensible to non-specialists, including potential technological collaborators. The ‘aesthetically decorative’ is much more approachable and understandable than is the radically challenging. Be this as it may, for eSCAPE one of the important themes is to try to gain experience, and derive lessons from, bringing the challenges that can be posed by the ‘aesthetically informed’ to bear on the conception of electronic landscapes.

Although there are problems about the distinction especially if pressed too strongly – such as how we might systematically distinguish the ‘aesthetically decorative’ from the ‘aesthetically informed: is a reproduction picture of a Van Gogh in someone’s living room merely decorative? – nonetheless, as a thought provoking couple of phrases they do take us forward.

What is being suggested is that an important aspect of artistic work is to challenge existing conceptions whatever these may be – the ‘poetic interpreter’, as it were. There needs to be some caution exercised here in that we are using a highly general category without specifying the kind of art. However, and it is an important point, these inspirations often have their sense from *within* artistic traditions, and artistic traditions alone.

The aesthetically informed and interactive art

Artists, in most if not all domains, have never been slow to make use of new technologies and media. One has only to take note of film, radio and television, the use of acrylics and plastics and, earlier, photography and printing not to mention the untold technological innovations throughout the history of art and artistic production. So, it is no surprise that artists should turn to the computer as the latest technology for exploring the means of artistic expression and for ‘poetic interpretation’.

However, an argument can be made that the networked computer represents a very different technological medium than previous technologies in its very flexibility and ubiquity for imaginatively exploring the limits of human experiences in much the same way that earlier printing did. It is the possibility of creating virtual worlds which has been seized upon by many cultural commentators as likely to become the defining feature of the 'post-modern' age. Such possibilities putatively challenge the very foundations upon which our 'modern' experience is built by creating conceptions of space, time, identity, subjectivity, community which owe nothing to the world built out of the hard won visions of the Enlightenment.[1]

Placing on one side the hype which infects much of this kind of thinking, it does appear that there is an interesting coalescence of one of the main objectives of art and technological possibility which makes, perhaps, for a closer affinity between art and the design of technologies. The task is to explore, and work through, what this can mean.

Conclusions

In this chapter we have reviewed some background considerations relevant to the eSCAPE strategy which will be elaborated more fully in the following chapter. Much of the review has concerned itself with issues to do with the nature of art and what relevance it might have for the design of technological systems. While expressing serious doubts about raising the question of the relationship between Art and Technology as a general question requiring a general answer, we have tried to move toward being able to state a more specific but practically realisable position which neither denigrates artistic endeavour nor technological design. We do not pretend in what follows that we have, once and for all, resolved all the problems here. After all, all that we are attempting to achieve here is to set out the strategy that has emerged in the course of conducting the project and in addressing the contingencies that arose in doing so.

In addressing the contingent practical problems engendered in the course of this particular project's execution, there are a number of caveats we need to mention. The first is that within the practical realisation of the project, the team has been dealing with a specific collection of artworks, namely interactive art works, so there needs to be some hesitancy in generalising from the studies to be reported. Second, and we will discuss this a little more fully in the next chapter, we shall not be making aesthetic judgements about particular works of art. These, from our point of view, are matters for the artistic traditions themselves. Third, we are not subscribing to a point of view which sees art as the only source of

[1] Again, a great deal of caution needs to be exercised when considering such claims. As Button (1991: 4) reminds us 'theories about the cultural transformation of society, may challenge existing bodies of thought, but they do not challenge the very foundational act of theorising. Findings may be challenged but the methodological foundations through which those findings are generated remains intact'. *Ergo*, under the auspices of 'post-modern' inquiry, the foundations of the 'modern' project remain intact.

creativity in the design of innovative virtual reality systems. Few artists, we are confident, would subscribe to such a view. Though artistic production offers a possibly unparalleled opportunity to explore experience in ways which would not, typically, be open to the technical designer, this is as much a comment about the kind of attentiveness required by the respective work roles as it is about imagination.