

# Knowledge transfer without widgets: the challenge of the creative economy

by Geoffrey Crossick

A lecture to the Royal Society of Arts in Leeds on 31 May 2006

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The last decade has seen the arts assume a more prominent place in public discussion than they have for a very long time, maybe since Jenny Lee and the 1964 Labour Government. This is partly because of the immense growth in public interest, also because cultural spaces have been so important for urban renewal, but a striking dimension of the new interest and of the new public discourses has been the economic potential of the arts.

The creative industries are the clearest articulation of that new attitude to the economic potential of the arts, and this has produced an interest in the associated university disciplines such as the creative and performing arts, design and media. It was the arrival of New Labour to power in 1997 that made the creative industries a force to be reckoned with in public policy. We might imagine that New Labour found in 'creativity' something inclusive, open and democratic, and it has indeed continued to prevail in government speeches and reports, while the term 'culture' (seen as more elitist?) rarely appears.<sup>2</sup> Arts education, research and dissemination are insistently lauded for their ability to produce that rarely-defined phenomenon called 'creativity'. It is an emphasis that unfortunately marginalises the more fundamental ways in which cultural and artistic experience is important; fostering individuals, families and communities that are reflexive, thoughtful, aware of diversity and complexity, conscious of themselves and of others, including others who are very different in place or time.

No matter, the creative industries have been one of the growth ideas of the last decade. We know that every line in the Chancellor's Budget Speech is fought over, so when Gordon Brown specifically referred to the importance of the creative industries – 'soon,' as he said, '10 per cent of our economy' – we saw how much they have entered the government's thinking.<sup>3</sup> That's not surprising.

The contribution of the creative industries to the economy is substantially greater than that of the construction industry and to exports twice that of pharmaceuticals. They're also the fastest-growing part of the economy, with a real growth rate twice that of the economy as a whole.

No wonder government is increasingly interested in the creative industries. One of the core problems raised in this lecture is that those seeking to secure the economic benefits of research, which are seen conventionally to accrue through a process called 'knowledge transfer', try to understand the relationship between the arts disciplines in higher education and the creative industries business sector only through existing models of knowledge transfer. And those models were developed to describe the transmission to business of research in the science and technology disciplines - indeed in some circles 'knowledge transfer' and 'technology transfer' are interchangeable terms.

As a consequence, the character of what goes on in the arts and the creative industries is repeatedly forced into models of knowledge transfer devised for science and technology. The model may be caricatured as that of the 'widget economy', in which a university research team develops a widget, patents it and transfers it out to industrial enterprise. It may be a caricature, but caricatures carry considerable discursive power. Many have, in fact, questioned the validity of this technology-driven model of knowledge transfer even for science and technology, most notably Richard Lambert in the report that he produced a couple of years ago for the Treasury on relations between higher education and business.<sup>4</sup> But my argument is that a great deal of damage is done by trying to understand the ways in which research and knowledge are constituted on the one hand, and how that knowledge becomes available and used by business on the other, by seeking to force it into the knowledge transfer model constructed for science and technology.

We must find new ways of thinking about these issues. My lecture will reflect on this problem and its implications, and I know that in doing so I shall raise more questions than I have answers. Which is why I'm particularly looking forward to the discussion at the end. But, as neither of the key words seems at all easy to define in relation to the creative sector, my lecture might reasonably be re-titled 'What part of knowledge transfer do you not understand?'

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The development of research capacity in the creative and performing arts disciplines, a process given additional impetus by the creation of the Arts and Humanities Research Board (now Council) in 1998, raised important questions about the character of research. What is research and the generation of knowledge in the creative disciplines, where the research process is itself often articulated through creative practice, and where the principal outputs are not books or journal articles describing the outcomes of the research but a performance, an installation, an exhibition, a new form of digital content, an animation, a design? We can grasp how the new knowledge and insights are articulated, because they're bound up in the artistic output, but how are they captured and preserved as part of an overall developing body of knowledge in the field, capable of being accessed and reconsidered by others?

Outputs of these kinds from the arts and from research in the arts underpin some of the most important ways in which cultural activity engages with society and the economy. It is a theme to which I've already alluded: the importance of cultural institutions and activity for urban regeneration or for tourism, but just as much the ways in which artistic and cultural experience creates complex, thoughtful and critical citizens. Much of this would be unthinkable without the research and scholarship that goes on in universities. And the interplay of that research with artistic and cultural experience is often described as knowledge transfer.

There are strong political reasons for doing so, and I did it shamelessly myself when Chief Executive of the Arts and Humanities Research Board. It is often important to pick up and use the current discourse if one wishes what one says to resonate with government. It is surely much better to say 'yes, the arts and humanities do knowledge transfer as well, and it is something a great deal broader than you think' than to say 'what we do is broad and complex and we're giving it a new name so that you won't count it as knowledge transfer'. There are times when this kind of nominalism suits me fine, but it does nonetheless raise some questions.

The questions arise from the origins and the conventional use of the term 'knowledge transfer'. The earliest known sighting of which I'm aware is in 1990 by CS Galbraith in an article in the *Californian Management Review*.<sup>5</sup> This was significantly called 'Transferring core manufacturing technologies in high-technology firms', underlining the technological meanings associated with its use. In the years that followed the term knowledge transfer came to describe the transmission of technological and management knowledge *within* complex enterprises, before being adapted for transfer *between* firms, and then between researchers and

high-technology firms. Those origins have left a legacy that pervades much knowledge transfer policy, assuming that the search is for technological solutions to problems in say engineering, biotechnology, aerospace – or the manufacture of widgets. Let's pass over the fact that the very concept of technology lacks the precision that many attach to it: as someone once observed, technology refers to something that wasn't around when the speaker was young.

No matter. The focus of knowledge transfer ideas – and by extension policy – on technology generates a marginalisation of areas such as finance or the creative industries, where knowledge is not primarily technological and where technology is not the principal driver. The fact that the government department responsible for knowledge transfer policy is the Department for Trade and Industry (DTI), which has primary responsibility for neither the financial nor the creative and cultural sectors, has implications to which I shall return.

We're thus confronted by the essential question of what it is that we mean by 'knowledge' in those areas of the economy where the arts are increasingly important, above all in the creative industries, and the question must surely resonate with the RSA's own enterprise agenda. We know that the creative industries rest above all on the interaction of different art forms, maybe different disciplines, often driven by the way digital technologies engage with these creative activities. How should we think about the knowledge that is generated by these activities – what is it, how is it constituted, identified and transmitted?

Let me start with an example that is on the margins of the creative industries but which illustrates the issue clearly. In a project jointly funded by Arts Council England and the Arts and Humanities Research Council (AHRC), the choreographer Wayne McGregor, the Random Dance Company and a team of neuroscientists led from Cambridge worked together to explore the relationship between choreography and cognition. McGregor hoped that neuroscience research might help him invent movement generation exercises that would disturb normal patterns of perception and motion control. The engagement of the neuroscientists made him think quite differently about the movements that he was choreographing. For the neuroscientists, the creativity of the dancers provided an opportunity to explore movement, perturbation, disruption, segmentation of dance sequences, forms of notation, and much else.

Through their discussion of these they stimulated in McGregor new ways of thinking about what went on in the mind and body of the choreographer and dancers during the choreographic process. The neuroscientists themselves wrote scientific papers and launched new projects through this engagement. A major research output on the dance side, however, was a significant new work titled *Ataxia* generated by new insights from the encounter, different ways of thinking about the creative process in dance, about movement control and co-ordination and a great deal more. The new dance was not about the neuroscience, but its character emerged from the exciting encounter of the different disciplines and their modes of understanding. The partners commented that the working together of cognitive and neuroscientists, dancers and a creative choreographer engendered a lively and playful dynamic that allowed all involved to take risks, and that stimulated changes in how the choreographer conceived of what he did and what he might do<sup>6</sup>

I draw three insights from this story. The first is that what happened in those encounters clearly constituted new understandings and new insights, ones that drove forward the research process and the creative process. But whereas for the scientists their work could lead to further research and scientific papers conceived in conventional ways, for the choreographer it is more difficult to identify let alone to bottle, protect and transmit the new knowledge. It changed him and his dancers and it was articulated through his creative work, then and in the future. The second insight is the importance of the interaction of disciplines in provoking that new knowledge, and the disruptive and disturbing potential unlocked when disciplines meet is fundamental to the most exciting work in the creative industries. The third insight is the fact that this new knowledge emerged from what were often intensive personal interactions, in which new ways of thinking and new ways of doing were generated as people engaged. It couldn't have been achieved by reading texts.

Those three insights help us understand much of what goes on in the more business-oriented areas of the creative industries. Let me give some examples of engagements of these kinds. The computer games industry is a particularly striking case, because it expanded rapidly on the back of technological innovation only to find as time passed that software engineering and console design could not sustain the sector into the future. Chris Van Der Kuyl of Vis Entertainment, a major computer games developer, had already noted six years ago the dramatic widening of the age profile of gamers, speaking of the 'silver surfers' who were the future<sup>7</sup>. This much more diverse market needed new approaches to gaming and this could not be led by technology.

Those at the forefront of the computer games industry – and this meant the small-scale developers, not the large publishers seeking to establish the dominant position of particular consoles – knew that the game had to change. The new pressures demanded other ways of thinking that came from drama and dance, interactive design, non-linear narratives, animation, music and much more. As we now realise there are significant differences between film narrative and games narrative, and the presence of literary theorists in an industry-linked games research centre such as that at Abertay University should not surprise us at all. In the most exciting of computer games development it is the arts that drive the technology. With the different skill sets come different kinds of knowledge.

Pervasive gaming takes this even further. The artists' group, Blast Theory, is involved in a major EU-funded research project that brings them together with a variety of universities (Nottingham, Tampere, Gotland amongst them) and global companies in mobile technologies (such as Sony and Nokia) to take games out into the physical world. Through mobile phones or laptop computers individuals can engage in games with unknown others moving around in the real physical space of the city. Without arts groups such as Blast Theory, developing these forms of interaction would have been impossible: they were not produced *by* the technology but instead showed its potential to create new forms of activity. The outcome of this research project may be seen in two ways. It generated new knowledge about the potential of pervasive gaming, and did so in a way unthinkable without the creative engagement. But for Blast Theory and others, the experimentation with pervasive gaming created knowledge about many other issues, such as how we can think about intimacy in the electronic realm.

Steve Benford, a computer scientist in Nottingham University's Mixed Reality Lab, described how working with artists in this way created new understandings of the potential, constraints and opportunities of the new technology. This came above all from creating, through performance and interactions, wholly new insights into the ways people engaged with the technologies and thus created new ways of thinking about them. Benford stressed that this was not some superficial addition but a transforming engagement that depended on the creativity, imagination and deeply-embedded skills of the artists<sup>9</sup>

Or let me list some of the creative industries projects in which researchers in my own institution, Goldsmiths, are currently involved: new tools for the development of interactive digital moving images with BT, Tate Modern and researchers in Cambridge; algorithms for music segmentation and the analysis of music;

the development of haptics interfaces for artistic creation and access to textile artefacts in museums, in collaboration with MIT Touch Lab; the potential of second generation broadband and associated interactive technologies. The key point about these projects, and similar ones involving other universities with creative businesses, is that artistic creativity and technological development are now weaving together in ways that make it impossible to think about artistic practice on one side and technological opportunities on the other.

They become so woven together that one cannot talk about knowledge being constituted and thus transferred, whether in one direction or the other. And central to this is an understanding that digital technologies do not provide new ways of *transmitting* content but are themselves *redefining* it. As Location One in New York explains in its manifesto, 'the internet will be *about* content and not just serve as a *conduit* for it', and one core transforming feature of that is that content can now evolve through the creative interventions of those who were once conceived of as mere recipients. The business as well as the artistic potential of this is enormous. Location One commission work that asks contemporary artists (painters, sculptors, dancers, musicians, poets, storytellers) to collaborate with computer, video and new media artists. To see what can be unlocked.<sup>9</sup>

I hope that by now you're feeling as uncomfortable as I am with the concept of 'knowledge transfer'. Does 'transfer' make any real sense as a description of what is going on in encounters such as these? Knowledge of the kind I've described for the creative industries is constituted as a social phenomenon rather than as innovations that can be fixed and made specific for others to access, acquire, learn and use. It is given form in social interactions within value chains that go outside the academic world, and they go outside not to test the knowledge in some conventional way but through the interactions that actually generate that new knowledge. And the processes of generating the knowledge are resolutely non-linear. Attempts have been made to get beyond the term 'transfer' and to think instead of 'knowledge exchange' or perhaps 'knowledge interaction'. But in my mind this still assumes a parcel of knowledge that is passed – albeit in these formulations passed backwards and forwards – rather than as something that is actually formed within risky and uncertain interactions.

This signals something very important about how knowledge is constituted within the creative industries: rather than being formed and then transmitted to others, knowledge in the creative industries is constituted within the interaction itself and it is from that engagement that value itself is derived. One might say that

knowledge here is, by its very nature, networked. It comes from the engagement of people with different skills, imaginations and often different goals. When government seeks to facilitate knowledge transfer for the creative industries, through the Higher Education Innovation Fund or other such methods, it is through constructing spaces for these creative conversations that they might begin.

The term 'creative conversations' is often used to describe what is going on when knowledge is developed for the creative industries. There are some interesting implications to this metaphor. One is the intriguing paradox of intensely global phenomena – the digital creative industries are global if they are nothing else in their ability to communicate ideas – that thrive off very personal and local interactions. Another is that in the most digitally-driven of fields, exciting breakthroughs generally come when people argue and disagree face-to-face, each bringing their own ideas and knowledge to the table. I'm told that this rarely happens as successfully when it is done online, virtually. And the best conversations are sustained over time. We might see this process as an exchange of difference. Encounters of different art forms, technologies, cultures, disciplines or whatever are a powerful element in creating new opportunities and new knowledge in the creative sectors.

People share their ideas freely in these encounters, and that is why the creative industries are compelling a fresh look at what we mean by intellectual property and how it may be protected. The encounters between the different players – artists, designers, software developers, the owners of small creative enterprises (and these are not always distinct people) – is one in which the creative engagements are often not susceptible to the negotiation of intellectual property ownership that one might see in sectors where patents can define ownership and rights. People share, consciously share, freely of their thinking – and then seek to protect within the engagement that dimension out of which they will generate their financial return. Open source software provides a useful analogy: the self-defined 'community of hackers', openly sharing their ideas, provides, I am told, an environment in which everyone's business and value gain is enhanced, and so they get involved and take a very different approach to intellectual property. I don't know enough about open source software or about intellectual property issues to pursue this further, but if my depiction of the creative conversations is correct then we can see why the question of intellectual property (IP) in the creative industries is seen as such an urgent issue to address.

If sharing ideas freely is the source of value gain for all those involved, what is it that needs protection and how should one do it? As is so often the case, Thomas Jefferson captured the issue elegantly. Writing to Isaac McPherson in 1813 he observed of ideas that 'he who receives an idea from me, receives instruction himself without lessening mine; as he who lights a taper at mine, receives light without darkening me.'<sup>10</sup> Thus it is that the ways in which value is formed in the creative industries require that we redefine what it is that needs to be protected and what can be freely shared. Without an extraordinary level of free-sharing, value cannot be formed.

My argument so far forces us to question the ways in which we conventionally categorise research: as blue skies, basic on the one hand; and applied, close to market on the other. This distinction has shaped government, research council and university debates about how best to support research. It is to be found in the Organisation for Economic Co-operation and Development's (OECD) definitions of R&D (research and development) in its influential *Frascati Manual*<sup>11</sup>! It is one of the driving principles behind the government's *Ten Year Framework for Science and Innovation*<sup>12</sup>, and its latest *Next Steps* document<sup>13</sup>, arguing that investment in pure science is fundamentally important and that it will yield results in the medium to long term; and arguing at the same time that a separate commitment is needed from research councils and universities to the more mundane activity of rolling out applicable and more immediately useful research findings to industry. It is assumed that much of the latter is research of a less challenging kind, and is increasingly associated in government thinking with universities that are not research-intensive. In this model, applied research is thought to derive only at a distance from basic, blue-skies research.

That neat distinction is intriguingly undermined by the character of knowledge in the creative industries. Cutting-edge research in areas such as new media, games, design, digital content – and probably in other creative industries too – moves very rapidly into applications and thus into business. It is, indeed, often developed in a symbiotic relationship between researchers and business, one in which the distinction between the two becomes increasingly blurred. Entrepreneurs in the interlocking micro-enterprises that characterise most of the creative industries rarely conceive of what they're doing as research. But what is, in effect, going on is a very rapid and exciting generation of cutting-edge new ideas that is driven into rapid application by the social organisation and the value chain of the creative industries.

The distinction between basic high-quality research on the one hand, and close-to-market more mundane research on the other, thus breaks down. I'm told that the process of writing new software systems for air-traffic control offers a parallel: the research was in fact constituted within the product that was being made, rather than being independent of and prior to the project. Few involved would have described it as research in any formal terms, in spite of the intensive intellectual challenges that were involved. The parallel with the creative industries should hardly surprise us, because the creative industries are but one specific dimension of the larger knowledge economy. Cutting-edge new knowledge is generated within the process of production, rather than elsewhere and then transmitted to it. There is often no separation, conceptually or practically.

An extension of this points in the direction that much of the economy is actually moving, with industries increasingly shaping what they do through interaction with intermediaries and users. One could call it a product of the consumer economy, but the description of consumer is too passive, missing the new and critical active dimension. HP Labs Mobile in Bristol develops products in continuing research engagement with a general public of creative micro-businesses and other users – they do the technological R&D, of course, but the engagement with users is a part of the R&D process from the outset – not developing technical possibilities and testing them but getting users to define their needs and only then addressing them technically.

When I lived in Lyon in France in the early 1990s, Sony were proud of the innovative nature of their products and everyday I'd pass a big poster announcing 'Tu l'as rêvé, Sony l'a fait', 'you dreamed of it, Sony made it'. It was an illusion then, but working with users as part of the research process is now making the slogan more relevant. It is what drew BBC New Media to approach the AHRC when I was there – and they continue to work together – to engage with research about the digital content revolution: what did people do with all the content becoming available and, more importantly, how might they choose to use it, how could their uses transform what it was?

It is, of course, not difficult to network and exchange knowledge, even in these areas. The activity becomes meaningful interactive research only if that network is locked into larger value chains of the kind that characterise many parts of the creative industries. Then the knowledge becomes operational in business. Often by itself redefining the business model – as with SE3D and HP Labs turning freelance animators into a community of practitioners bound into a different business

model and a research relationship with HP Labs. None of this kind of research in the market, locally with communities of users and micro-enterprises, qualifies as research and development under the OECD's Frascati definition and the *Oslo Manual*<sup>14</sup> that made the definition operational.

If what I've been describing seems distinctive then one reason is the character of the business model and value chain that characterise much of the creative industries. Although I've mentioned a number of big global players, the reality is that the creative industries are dominated by small and often micro-enterprises, brought together in networks of business and knowledge that are about personal interactions. Without the networks the creative industries could not function, and networking is the predominant business model in many of its sectors. When my own institution, Goldsmiths, was declared to be London's friendliest university, in a study by Friends Reunited of the volume of e-mail traffic between alumni of each institution, we proudly proclaimed it to the world. Deep down, however, I suspected that our high proportion of graduates in creative, cultural, digital and media disciplines was the explanation: networks formed at university were vital to making a living once you'd left.

Why are networks of small and micro-enterprises so characteristic of the creative industries? The roots lie in the way that knowledge is constituted, developed and transmitted, often in cross-disciplinary and cross-sectoral interactions. Only through interactions of practitioners, brought out of larger networks to work together on specific projects, can much of the creative industries remain truly innovative and creative. The business model of the creative industries, in other words, is shaped by the character of its knowledge base. One result is clusters of practitioners in specific parts of a town. These creative clusters may have been actively constructed, as with the Media Centre in Huddersfield or the Cultural Quarter in Sheffield, or formed by more random gatherings such as in Hoxton or Deptford in London.

University researchers are often embedded in these networks, perhaps themselves forming their own micro-enterprises so that the knowledge transfer process becomes even more difficult to define. As I've argued, interactions between people are the primary relationship between research ideas and creative industry businesses. In his report on business-university interaction, Richard Lambert suggested that this might be more common right across the research landscape than is thought, but it seems clear that the way knowledge is constituted within and for the creative industries makes it unusually people-centred.

And students are people. It is through students that some of the most exciting new ideas and knowledge make their way into the creative industries: by setting up their own little freelance enterprises, working for existing and larger ones, inserting themselves into the value chains and networks. Appreciating this gives a very different edge to what is seen as the 'skills agenda', and explains why the approach of sector skills councils can be so inappropriate in these domains, courting the danger of reducing skills to a mundane practical level and undermining the creative heart of what is being carried by students as they emerge from higher education. Of course the creative industries need a workforce that will be effective today, but even more they need one that will continue to be valuable tomorrow and the day after. The attempt to transfer the sector skills council model to the creative and cultural sectors fails to see students as they enter the workforce as the carriers of knowledge that derives from research rather than of narrowly-conceived skills. In so doing it undermines a key feature of the creative industries. That key feature is conceptual and theoretical imagination, critical and lateral thinking across disciplines, and the willingness to take risks. The unfortunate proposal to kitemark approved skills-focused degree programmes ignores the very characteristics of the creative industries on which their success rests.

It is right that universities now listen far more to employers when shaping their degree programmes, but it is equally important not to assume that employers automatically know best what education their future employees need. Universities should be more confident of what they're good at, and that is developing people not just with the skills to meet today's needs but also the conceptual abilities and imagination to take risks that will generate what is needed in the future. That is what universities can particularly offer the creative industries.

Let me give you an example from my own institution. Mary Rose Cook, who graduated last year with a BA in Design, won the Business Design Centre's New Designer of the Year award for 2005. Her kitchen measuring system for baking cakes – one that works without scales – is made of greaseproof paper that can be reused in baking. The judges wrote: 'Mary Rose Cook has created a new simple, poetic object and impressed us with her lateral thinking, creativity, experimentation and observation.'<sup>15</sup> As one of the judges observed of new design graduates, 'we want them to have a grounding in key practical and business skills, true, but really we want them to be unfettered bundles of buzzing creativity. And because we look to graduates to be our future, we expect them to have some kind of fast track or sixth sense about future trends.'<sup>16</sup> The critical issue here is that Mary Rose Cook's design of a greaseproof paper measuring system emerged from a long final-year project in which she was exploring the concept of negative space. As the same commentator

observed, 'she didn't start designing the answer without stopping to think about the question, but instead reached this idea the long way round, beginning with a testing rumination on negative space that would have stumped less agile minds.'<sup>17</sup> That design student's journey, one that ended with her designing office spaces as readily as cake measuring tools, reinforces what I'm saying about knowledge in the creative industries: its range and versatility, its continuing mutations and development, and the fact that it exists in the heads of individuals much more than on paper. Even on greaseproof paper. And that to generate this, students must not be constrained by a narrow skills agenda, but be allowed to flourish.

I've talked about the distinctive way that knowledge is constituted, shared and transmitted in the creative industries. I've stressed personal engagement, creative interactions, networks and small enterprises in concentrated urban space, and the importance of universities as a part of all of this. It is all terribly new, isn't it? Well, historians are always reluctant to accept the newness found by others, and I've been struck by interesting historical parallels. You'll indulge my short digression into these, partly because I find too few occasions these days to remind people that I'm at heart a historian, and partly because historical parallels are needed not to show that there is nothing new under the sun, but rather to give us an external purchase for some of the ideas we're playing with.

If we're looking for knowledge engagement between researchers and business through personal interaction, sociability and networks, then we can surely find it in the 18th-century coffee house culture of Enlightenment England or in organisations such as the Lunar Society of Birmingham. In provincial societies amateur scientists, gentlemen manufacturers and professionals would meet regularly to explore the excitement of ideas in an atmosphere of openness, sharing, enthusiasm. Similar conversations and debate would go on in the coffee houses of London. These were embedded in a culture that did not separate science from literature and the arts, and the new ideas spread above all through these networks and intellectual communities. It may well be that the century of heavy industry and formalised relations between knowledge and production was the exception rather than the new rule. Today's creative and knowledge economy may be less without parallels than we think. I was, in this context, delighted to be reminded that the first meeting of William Shipley's 'Society for the encouragement of the Arts, Manufactures and Commerce', which subsequently became known as the RSA, was held in 1754 at Rawthmell's coffee house in Covent Garden.

If we're looking for dense networks of small enterprises clustered together in urban neighbourhoods, following a business model in which skills are provided by a range

of specialist enterprises rather than by a single concentrated production unit, then we can find them readily in the gun quarter and jewellery quarter of 18th- and 19th-century Birmingham. A host of independent skilled workshops, clustered together and each specialising in one part of the process, created intensive networks of practitioners. If I cite also the cutlery quarter of 18th- and 19th-century Sheffield, it is not simply because it is another excellent example of these neighbourhoods of networked production, but because it is now (how coincidentally?) the site of the city's Cultural Quarter, where Sheffield's creative industries are developing.

And what about the engagement between universities, business and knowledge in the urban economy? The origins of the university in which I have the pleasure of speaking this evening provides an excellent example of that. The University of Leeds can be traced back to a visit by Leeds industrialists to the Paris Exhibition of 1867 and their realisation that manufacturers needed knowledge and needed skills, and that higher education was the way to generate both. The fact that they learned this from such a visit shouldn't surprise us – the great European exhibitions from 1851 onwards were constructed environments for displaying and sharing knowledge, inspiring others to emulation through displaying the achievements of that knowledge. Leeds industrialists in chemicals, textiles and mechanical engineering returned from Paris convinced that change was needed if they were to remain competitive. They grasped the role of a university in embedding people and knowledge, and people *with* knowledge, in a region to the benefit of its industry and its innovative capacity. Yorkshire College, which was founded in 1874 and eventually became the independent University of Leeds thirty years later, came to pursue both teaching and research because both were intertwined in the way that knowledge flowed into the local economy. And it also demonstrated another fundamental characteristic of universities in this role, one that is all too often overlooked: they are stable and continuing in a way that business often wasn't and still isn't today. As we rightly seek to make universities flexible and adaptable we should not overlook the special contribution made by their local permanence – it is that very permanence that allows them to play a lasting role in local economies, and that allows them to be innovative and to take risks and thus bring new ideas, new research, new knowledge to the local business table.

These historical parallels open up fresh ways of thinking about the distinctiveness of the creative industries, but they mustn't distract our attention from the new aspects of the creative economy that raise significant questions about how we think about knowledge transfer. Until recently, no-one cared a great deal about what constituted knowledge in the arts – and even if the debate over practice-

based research over the last decade or so has compelled academics to reflect upon knowledge in those disciplines, they had little effect on the evolution of government thinking and policy about knowledge transfer. The emergence of the creative industries as a powerful economic force means that the arts are now seen to matter in spheres that once upon a time did not have to engage with them. And therein lies a set of problems to which I've been leading through this lecture. Industrial strategy, and the technology transfer strategy embedded within it, is not a supple and adaptable creature. As a result, we have seen the creative industries forced uncomfortably into the discursive framework known as 'knowledge transfer'.

Government knowledge transfer policy finds it very difficult to grasp the character of knowledge for the creative industries, of what is appropriated and shared, of the business models and value chains by which knowledge construction takes place. I promised at the outset that this lecture would lead from understanding knowledge to understanding policy, so in my final section I shall reflect a little upon some of the policy consequences of the distinctive character of knowledge in the creative economy.

Principal responsibility for the creative industries in Whitehall lies within the Department for Culture, Media and Sport (DCMS). This location derived from the need to satisfy specific ministers when the New Labour government was establishing itself in 1997. Whether intended or not, and I suspect that the answer is not, the consequence of putting the bulk of the creative industries in DCMS has been to privilege creativity over industry, implying that something that is intrinsically, but misguidedly, seen as about rather fluffy and fun people should not be glorified by putting it in the DTI and associating it with aerospace or pharmaceuticals. 'Creativity' was for too long seen as a soft subject located within an arts ministry, and DCMS has never been one of the powerful and influential departments. Frequent changes in the Minister responsible for the creative industries merely reinforces that problem.

I've detected a degree of change in recent years, with government acknowledging the creative industries far more in policies on innovation, entrepreneurship and skills. The DTI at last sees them as important, and in addition to commissioning the Cox report on creativity in business they're even putting a modest sum into the AHRC's new programme on the nature of creativity. The Technology Strategy Board is also now beginning to engage, knowing that there is something going on in the creative industries that its own world-view finds hard to grasp.

'Creativity' has, of course, become a buzz word in New Labour circles and the subject of successive reports to and for government since 1997. But the meaning of the term within these discourses has been very elusive. Listen to the words of the then Secretary of State in the DCMS's *Creative Industries Mapping Document* published in 2001. 'The most successful economies and societies of the 20th century,' he wrote, 'will be creative ones. Creativity will make the difference – to businesses seeking a competitive edge, to societies looking for new ways to tackle issues and improve quality of life... I want all businesses to think creatively, to realise creativity is not an add-on but an essential ingredient for success.'<sup>18</sup> I genuinely don't know what this means, sliding as it does between the creative industries as a sub-set of the economy that was the subject of the mapping document, to creativity as an agent of strength across the economy. Creativity has almost replaced innovation in the lexicon of economic cures, though the Cox Report tries to align them in sequence in a fashion that it cannot really sustain!<sup>19</sup> The accompanying DTI report on *Creativity, Design and Business Performance* reinforces this, locking creativity and innovation tightly together.<sup>20</sup> Read this report if you want to see how 'creativity' has been appropriated and boxed in.

I cannot be the only person who suspects that there is a conceptual error in thinking of a generic phenomenon called 'creativity' that can be developed as a skill and then transferred to other areas. Participate in lots of painting and music when you're nine years old, the argument seems to run, and you'll be a creative entrepreneur or innovator, or even a creative accountant. What is this thing called 'creativity', other than a mantra to be repeated by a government that knows that the creative industries are important, doesn't grasp what creativity and knowledge are within them, and senses that the excitement to be found there can be extracted, trained for and then deployed to benefit the economy as a whole? Innovation and creativity should not be confused, let alone inextricably linked. We need a good deal more analysis of this thing called 'creativity', and a multi-disciplinary approach might in time help us to focus some of the questions. A multi-disciplinary approach that should include disciplines seemingly as distant as neuroscience and anthropology, in both of which very interesting work is going on. The study of creativity has suffered from being too closely focused on the final creative output – the painting, the design, the performance, the textile – whereas what we really need is to find out far more about how people move through creative space, in what are often very individual journeys configured around opportunities and options.

The new enthusiasm for creativity is thus intriguing but problematic, and those concerned with the creative industries should be less seduced by the rhetoric and

more concerned by the ways in which the core knowledge transfer instruments deployed by government lie within the DTI and are shaped by its assumptions. For reasons that I hope are by now clear, I don't see these instruments as well-adapted to the needs of the creative industries, whether we're thinking of the innovation strategy, the Technology Transfer Board, patents and royalties, R&D tax credits and indeed the precise definitions of research and development imposed by the Frascati Manual and the Oslo Manual.

The challenge for government policy is not so much to adapt these instruments to include the creative sector, though the movement to expand the DTI's Knowledge Transfer Partnerships over the last couple of years must be welcomed in itself. Instead, the challenge is to embrace a new conception of what is needed. If the argument of this lecture is correct, what is needed is not new or adapted instruments for knowledge transfer, but something quite different: the spaces in which interactions can take place. Why spaces? Because what is needed is not a system to transfer from one party to another some knowledge that has already been produced, to transfer something that has already happened. But, rather, the need is for a system to create spaces in which something can happen. In the creative industries, much of the time, once it has happened it has already been transferred. That is the compelling difference.

This is not a problem for the UK alone. Far from it. A recent report in New Zealand on 'R&D for Creative Industries' struggled in a way no different from that seen in this country.<sup>21</sup> The case studies are telling. One business seeking research support for a 3D game engine to explore a virtual house noted that it fitted no existing arts or business or technology funding stream, and pointedly asked 'who is interested in the total package?' The report's revealing comment in response was that 'this proposal, or part of it, could be fundable if it involves technological stretch'.<sup>22</sup> Exactly. The instruments for R&D and for knowledge transfer keep coming back to technology. On the assumption that what might be good for conventional industry is applicable to the creative economy. But this dismembering of the different components, of the total creative package, was in fact the problem.

Over the last fifteen years university business offices have emerged with government encouragement, and they have been built on a specific model of the relationship between knowledge generated by university research and the economy, one rooted in a particular view of science and engineering. It was one in which you secured bits of knowledge through intellectual property instruments and commercial law, with a process use in mind, and then sold them off. This is the spin-out model, but

also less ambitiously and more generically the patent model.

In creative industries, however, the character of the knowledge – there was no widget to patent – means that the model of individual consultancy at times seems a more suitable analogy, though still not a satisfactory one. It is about engaging in discussion and interaction around opportunities and challenges that are often thrown up by the creative process and then pursued to see where they lead. Insofar as individual researchers and generators of new knowledge are a key element in this, it is their brains and imagination that one is accessing, rather than a product or process that can be pinned down in papers and patents. You get it on the day and the hour that you access it, but you cannot bottle it or patent it, and if you access it again the next day it might be different.

This, then, is the challenge. In thinking about the ways in which the arts impact economically, or to be more precise the ways in which knowledge that is developed in arts research and related areas becomes of importance to the creative industries, we are repeatedly dragged back to a science and technology model that is inappropriate. If we're to engage with these issues, then we need more appropriate tools for doing so. The challenge is one to which we need to rise, because in doing so we'll begin to articulate the relationship between the arts, research, innovation and enterprise in the new knowledge economy.

Actually, economies have always been about knowledge. The West Riding industrialists who founded what became this university knew that well. But when you remove the widget from the equation it is as if one had removed the Cheshire cat, and left only the smile. Grasping the smile is hard, and so too is seeing the way it is passed to someone else. But the trade in smiles is growing very fast and we need to master its implications.

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- 1 This is the text of a lecture delivered to the Royal Society of Arts in Leeds on 31 May 2006. I would like to thank the Royal Society of Arts and Dr Jonathan Adams for an invitation which gave me the opportunity to pull together my thinking on this theme. I am grateful to all those whose conversation and help contributed to my thinking for this lecture, above all Julie Taylor of the Arts & Humanities Research Council and Bronac Ferran of Arts Council England.
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