

So who now believes in the transfer of widgets?

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This talk was given at the Knowledge Futures Conference, organised at Goldsmiths 16-17 October 2009. It is intended to take forward the thinking in my May 2006 lecture to the Royal Society of Arts, subsequently published as a pamphlet, Knowledge transfer without widgets: the challenge of the creative economy. [<http://www.goldsmiths.ac.uk/warden/creative-economy.pdf>] Some of the early part of the talk recapitulates the argument, and some of the examples, from the 2006 lecture. It then moves on to consider what is distinctive, and what now seems to me to be less distinctive, about knowledge development and knowledge transfer in relation to the creative economy in comparison with other areas of research and industry.

Three years ago I argued in a lecture to the Royal Society of Arts that the ways in which knowledge is constructed in the creative disciplines, and in relation to the creative industries, was often very different from that in science and engineering. As a result, the ways in which knowledge is transferred is very different. The lecture questioned the conception of 'knowledge transfer' in relation to the creative sectors. It might work in relation to the invention and patenting of new widgets, I argued, but it doesn't work for the creative economy. I coined the phrase 'knowledge transfer without widgets', which became the title of the lecture.

This conference on *Knowledge Futures* offers an opportunity for me to revisit that lecture. I hope that it will seem relevant at an event concerned above all with exploring 'the movement and transfer of knowledge', the ways collaboration happens across disciplines and across forms of activity in such a way as to develop knowledge. The publicity for the conference talks about the conditions for 'soft knowledge transfer'. That isn't a term with which I feel comfortable, contrasted as it is with the different, widget-like and, above all, hard knowledge transfer. In exploring again some of the ideas in my earlier lecture, I'll suggest that that contrast might now seem overstated. I'll argue

that, in many ways, the arts and humanities were in some ways ahead of the game. And that the hard knowledge transfer, involving science and technology, might be softening even as I speak.

My current position at Goldsmiths and my last, as chief executive of the Arts & Humanities Research Board, brought me into increasing contact with the creative industries. The creative economy was of increasing interest to government – the scale and growth of what seemed a very new part of the economy was unavoidable. This was an attractive area for a New Labour government that had picked up the discourses of ‘creativity’ - perhaps as a less elitist alternative to ‘culture’ in the public sphere and, in the economic sphere, as part of the knowledge economy that was seen as an alternative to the declining manufacturing sector. The problem is that government didn’t really understand the importance of universities for the creative economy, through graduates and research. They still don’t, as exemplified by the *Creative Britain* strategy that emerged from the Department for Culture, Media and Sport last year. When government did see some connection to research, it was slotted into conventional ideas about knowledge transfer.

My lecture, which followed an invitation from the RSA to reflect upon the character of knowledge in the creative economy, has had an impact greater than I’d anticipated, if only on those interested in the creative industries. It’s much less clear that it has changed government thinking, though when the then Department for Trade & Industry asked for additional copies of the published lecture I thought that I might just be getting somewhere. But knowledge transfer thinking was dominated by Lord Sainsbury’s belief in technology-driven change, which has continued during Lord Drayson’s reign as Minister for Science. It may, however, change for reasons unconnected with the lecture, and that is the fact that those discussing knowledge transfer in science and technology might be less certain themselves about conventional ways of thinking about it. Hence my title for this talk ‘Does anyone believe in the transfer of widgets anymore?’

The exchange of ideas in the 21st-century world might constitute not to so much a disjuncture with the past but rather an act of leap-frog over the aberrant period of heavy industry that separates us from the eighteenth century. Knowledge engagement between researchers and business through sociability and networks can surely be found in the eighteenth-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 explore the excitement of ideas in an atmosphere of openness, sharing, enthusiasm. Similar 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 in which new ideas spread through these networks and intellectual communities. It may well be that the intervening 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.

The eighteenth century might also help us think about the implications for intellectual property. If sharing ideas freely becomes the source of value gain for all those involved, what is it that needs protection and how should one do it? Thomas Jefferson, writing to Isaac McPherson in 1813, captured the issue elegantly. He observed 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.' It is an approach that cannot be avoided in discussions of intellectual property in the creative economy

Let me first of all reach back to my RSA lecture, recapitulating and developing the argument in the light of subsequent debates. A great deal of damage is done by trying to understand how 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. 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. I shall suggest

that this is increasingly a caricature of science and technology, but caricatures carry considerable discursive power.

What then do we mean by 'knowledge' in those areas where the arts are increasingly important, above all in the creative industries? We know that they rest on the interaction of different art forms, maybe different disciplines, often driven by the engagement with digital technologies. How should we think about the knowledge generated by these activities – what is it, how is it constituted, identified and transmitted?

Let me talk about a project which illustrates the issue clearly. The choreographer Wayne McGregor, the Random Dance Company and a team of neuroscientists 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. Working with the neuroscientists made him think 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, and much else.

Their discussion made McGregor think in new ways about what went on in the mind and body of the choreographer and dancers during the choreographic process. From this engagement the neuroscientists wrote conventional scientific papers, whereas the major research output on the dance side was a significant new work titled *Ataxia* that was generated by new insights about the creative process in dance, about movement control and co-ordination and a great deal more. The new dance emerged from the encounter of different disciplines and their modes of understanding. The partners reported that the working together of cognitive and neuroscientists, dancers and a creative choreographer engendered a dynamic that allowed all involved to take risks, stimulating changes in how the choreographer conceived of what he might do.

I draw three insights from this story. The first is that what happened in those encounters constituted new understandings that drove forward the research process and the creative process. But whereas for the scientists their work produced scientific papers, in the case of the choreographer it is more difficult to identify - let alone to bottle, protect and transmit - the new knowledge. It was articulated through his creative work, then and in the future. The second insight is the importance for new knowledge of the disruptive and disturbing potential unlocked when disciplines meet. The third insight is the fact that this new knowledge emerged from intensive personal interactions, in which new ways of thinking and of doing were generated as people engaged. It couldn't have been achieved by reading published papers. Or by online encounters.

Those three insights help us understand much of what goes on in the more business-oriented areas of the creative industries. The computer games industry is a good case, expanding rapidly on the back of technological innovation only to find that software engineering could not sustain the sector as the widening age profile of gamers created a much more diverse market. Games developers knew that new approaches were needed. These came from drama and dance, interactive design, non-linear narratives, animation, music and much more. 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 further. The artists' group, Blast Theory, has worked with universities and global companies in mobile technologies 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 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. Performance interactions created wholly new insights into the ways people engaged with the technologies. It generated new knowledge about the potential of pervasive gaming, and did so in a way unthinkable without the creative engagement.

Does 'knowledge transfer' make any real sense as a description of what is going on in encounters such as these? Knowledge is here constituted as a social phenomenon, rather than as innovations that can be fixed and made specific for others to access, acquire 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.

Rather than being formed and then transmitted to others, knowledge in the creative economy is constituted within the interaction itself and it is from that engagement that value itself is derived. This knowledge is, by its very nature, networked, coming from the encounter of people with different skills, imaginations and often different goals. The term 'creative conversations' is often used to describe these processes, and there are interesting implications to this metaphor. One is the paradox of intensely global phenomena that thrive off very local interactions. Another is that in the most digitally-driven of fields exciting breakthroughs generally come when people shape ideas face-to-face. And the best conversations are sustained over time, in an exchange of difference. Encounters of different art forms, technologies, cultures, disciplines produce new knowledge in the creative sectors and it produces them when people are together. That is why Goldsmiths is leading a University of London plan for a creativity centre in King's Cross where researchers and business can engage in a deliberately low-key space. It is why the British Library hopes to build a Digital Research Centre, when others claim that in a digital world knowledge can be fashioned as effectively through online communities as through face-to-face encounters. Plans for this Digital Research Centre starts from the premise that that is not the case, that the imaginative potential of the digital is best exploited by creating spaces for encounters.

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 creative engagements between artists, designers, software developers, the owners of small creative enterprises and so on 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 in such an interaction obviously develop and take ideas – intellectual property perhaps – from the encounter.

I talked recently to someone engaged in film script development. A wide range of people from various businesses were involved in the creative product, in this case a film. A single product was indeed being developed. The production company owned the core ideas around the film, but each participant in the creative discussions carried away all sorts of ideas that were generated in the discussion. What they leave with in their heads is their own, both in terms of being distinctive to them and as being their own possession to use elsewhere if they wish to do so. In creative encounters people share ideas, and then seek to protect the dimension from which they will generate their financial return. It is a development of Jefferson's conception. We can see why the question of intellectual property in the creative industries is seen as such an urgent issue to address.

The creative industries are, with a few high-profile exceptions, dominated by small and often micro-enterprises, brought together in networks of business and knowledge that are about personal interactions. Networking is the predominant business model in much of the creative industries. The explanation lies 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. As I've argued, interactions between people are the primary relationship between research ideas and creative industry businesses.

This is far from the widget economy, I thought in March, as I boarded a plane for La Jolla in southern California. I'd been invited by the Kauffman Foundation for a small seminar on 'What industry wants from universities' that grew out of a project to understand industry-university relations in the US, Japan, Canada and the UK. I guessed that I'd been invited because of my published RSA lecture on the distinctiveness of knowledge in the creative economy. I set off for La Jolla in uncharacteristically belligerent mood, ready to do battle against the misunderstanding of how knowledge was constituted and generated in a neglected part of the contemporary economy and society.

The outcome was not what I'd anticipated. About 30 specialists in industry-university relations were there, mostly involved with science and technology. By the time I gave them the summary of my RSA lecture, which is what I'd been asked to do, I realised that I was pushing at a door that was gradually opening. My presentation of the issues in relation to the creative economy turned out not so much to challenge them to accept difference but, rather, to provide them with a conceptualisation that they had been reaching towards. My talk was heard not as a presentation of the very different world of the creative economy, but as an analysis of a sector whose distinctiveness illuminated, more than it conflicted with, their own experience.

At the seminar, practitioners in knowledge transfer related to science and technology spoke of universities' role in providing public spaces for networking, the facilitation of interactions, alumni networks, entrepreneurial centres and so on. In other words, not in transferring knowledge about the latest widget but in providing a very people-based environment in which knowledge could be developed. What I heard was grist to my mill. That university business offices did not exist to be IP police because that would destroy their ability to bring people together in knowledge interactions. That what was needed was for people to come together in innovation eco-systems, and that business offices should know that if you want to destroy an eco-system you try to manage it. Time and again, the discussions revolved around the university as a site for interactions between people from across its disciplines and with those from the business world, who were working

together to define problems in new ways and to find new approaches to thinking about them.

Why are universities involved in knowledge interactions and intellectual property? In my view it is because they further research activity and because they fulfil the university's public good mission. Academic researchers are above all excited by the research, and it is through external interactions that that research can often best be pursued. Ensuring that the researchers and the university benefit from any commercial exploitation of their intellectual property is a necessary protection, but it should not be the driver.

The difficulty is that universities are under pressure to derive income from their IP – partly as public sources of income become constrained, but also because the Sainsbury formula for HEIF funding measures the success of external encounters by the income generated. Collaborative agreements far too often tie down IP at a very early stage and, if my arguments in this talk are correct, constrain the potential benefits that can flow to researchers and to those outside the academic world, whether those are business, cultural sector or not-for-profit organisations.

The world has got out of kilter in this area. There is a growing disjuncture between what government shapes through its discourses and instruments relating to knowledge transfer on the one hand, and the very social and interactive way in which knowledge is generated on the other. At a recent government round table I attended on this issue, the business participants were as insistent as most of those from universities that the key driver was relationships around research issues that came to be defined only as the interactions took place. Clarity is certainly needed over how the IP issues will be resolved when progress has been made, but attempts to tie down the IP before anything happened mostly ensured that nothing did happen.

It all sounds rather familiar to those in the creative and cultural sectors, doesn't it? And it makes the concerns that I expressed in my RSA lecture seem less unique to the creative process than I'd thought. The construction of

knowledge through relationships is clearly far more general than those in the cultural disciplines have somewhat preciously imagined. We need to know more – perhaps through ethnographic research - about how these social encounters in the generation of knowledge actually occur.

Ideas and new knowledge develop out of relationships between people, often bringing together the disruptive potential of different disciplines, different imperatives, different employment settings. The lessons from this should be familiar to those in the creative sectors and they're becoming familiar to those across other sectors and other disciplines. Relationships are not just for Christmas or for funding bids – they need to be made, nurtured and sustained over time. It is, for example, why Intel come from Portland, Oregon to work with Goldsmiths researchers in design and in sociology on how people engage with changing technologies socially, culturally and in space and time. It is not that a sudden breakthrough appears that can be rolled out profitably, it is about a long-term intellectual engagement that influences the way all those involved think about their own intellectual and business challenges.

I'm not saying that the creative sector is really just like all others, though if you got away from pharmaceuticals and biotechnology you'd find a great deal more similarity than you might expect. And I'd certainly still insist that the government's current conception of knowledge transfer is ill-fitted to the ways in which knowledge is formed in the creative sector. For reasons that I hope are clear, I don't see the government's instruments of knowledge transfer as well-adapted to the needs of the creative industries, whether we're thinking of the innovation strategy, the Technology Strategy Board, patents and royalties, R&D tax credits or the Frascati and Oslo definitions of research and development.

The challenge for government policy is not so much to adapt these instruments to include the creative sector, but to embrace a new conception of what is needed. This is not new or adapted instruments for knowledge transfer, but something quite different: the spaces in which interactions can take place and be supported. 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 to create spaces in which something can happen. Often in the creative industries, once it has happened it has already been transferred.

University business offices have been built on a specific model of the relationship between 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. It rarely works in the creative economy. Insofar as individual researchers are a key element, 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. There is still something distinctive here about the creative sector – but I’ve now realised that it is not as distinctive as I once thought.

I gave evidence to a major project on interdisciplinarity and innovation led by Alan Blackwell in Cambridge. I was intrigued to find the following in the draft of their report, which followed far more discussion with technology and science innovators than with someone like me talking about the creative sector. I’m sure that Alan won’t mind my quoting the draft: “Crossick’s admonition to avoid the use of conventional knowledge transfer instruments in innovation policy, and to focus instead on the provision of ‘creative spaces’ to foster interpersonal interaction, echoes the calls for capacity building expressed by our expert witnesses or implicit in their accounts of interdisciplinary engagement.” And these other expert witnesses, as I said, were from established areas of science and technology, or new areas driven by cross-disciplinary encounters such as nanotechnology. The report goes on, “A utility model of knowledge, its value being derived from its use, underpins the depersonalisation of knowledge evident in technology transfer models. This conception of knowledge discounts the generative potential of social

relationships through which dispersed creativity and divergent practices might result in new forms of knowledge or knowledge practices. This insight would seem to be more widely applicable to innovative research beyond the creative industries.”

So, just how special is the generation and development of knowledge in the creative sectors? An approach that just three years ago seemed to me distinctive to the creative industries is now proving to be far more widespread. Are we talking about something fundamental to how knowledge is generated in many other areas, above all where different disciplines or different sectors are involved? It is that which led me to ask the question in the title of this lecture: does anyone believe in the transfer of widgets anymore?

The answer – fewer and fewer outside government and the Technology Strategy Board– leads us into the way in which arts and humanities people think about themselves in a world where STEM (science, technology, engineering and mathematics) seems to rule. This is not the place to proclaim the importance of the arts and humanities (and indeed the social sciences) to the achievement of a good economy, a strong society, a diverse and engaged citizenry and a secure global order. The arts and humanities are no more important than science and technology, but nor are they any less important to the achievement of government’s and society’s ambitions.

If we see the research world through a STEM lens we need to recognise the way in which that lens has been changing, moving towards an arts and humanities approach to knowledge and the ways in which it is constituted and transmitted. Look at the debate over science policy in recent years and we’ll discover that the arts and humanities were not so much lagging behind the approaches of science but ahead of them. When the arts and humanities said that metrics could not be used as the main way to evaluate research, our science and engineering colleagues then said that they didn’t work for them either. The arts and humanities questioning of narrowly-defined impact, of short-term conceptions of research value, of knowledge transfer models, of the ways in which business and science connect, of the relationship between

curiosity-driven research and applications – all of these have been echoed, sometimes after a long time lag, by researchers in the STEM subjects.

We can all act unwisely in our arguments to government. For the arts and humanities it was going along with the importance of something called ‘creativity’, which keeps returning to haunt us. It’s our own fault that government is fixated on it, seeing it as a linear precursor to innovation, because we made so much of it. Scientists have a parallel problem. They’ve so insisted upon the economic importance of their research, using it as a means to unlock considerable additional funding, that they’re now being asked to show the economic impact as if it is its main purpose. My lesson from both of these is to beware of how you persuade government of why you matter, because they might just believe you.

So it is that science and engineering may have lost its faith in the transfer of widgets. The arguments in my RSA lecture about how knowledge is constituted and shared in the creative sectors remain broadly valid. And I’m not claiming that the science and engineering that has shaped government thinking on innovation and on knowledge transfer is really the same as the arts, in the character of knowledge, and the mode of its construction and diffusion. But there is a great variation within the arts and humanities disciplines themselves, let alone when these are exposed to the disruptive and innovative impact of interdisciplinarity. It is simply that the distinctiveness of knowledge in the creative sector seems to me now to be less clear-cut than it was when I formulated my argument about knowledge transfer without widgets three years ago. I’m not at all sure that anyone in research – or in most areas of business and other sectors – does believe in the transfer of widgets anymore.

I’ve recently read China Miéville’s marvellous new novel, *The City and the City*. In that book, there are two cities in two different countries, with different languages, styles of dress, building styles and cultures. But they occupy the same space. Some parts of the overall space are exclusive to one or the other, but much of it is cross-hatched – occupying the same streets. If you are a

citizen of one city you have learned from childhood not to see the other. When you're in the street, when you're driving your car, when you're shopping or moving round the urban space you only see those in your own city. The people in one city have learned to 'unsee' the other, in the language of the novel.

Much of our approach to STEM and the arts & humanities does just that. We unsee each other, not understanding our respective languages or cultures. That happened over knowledge construction and exchange. Yes, there are differences and often important ones, about conceptions of knowledge and its development, and in the way research is cumulative in much of science and engineering. But as I've argued today, those differences are turning out to be less compelling than I once thought, certainly in the conceptions of how knowledge is developed in relationship to those outside the academic world. We're part of a single intellectual landscape, albeit a subtly differentiated one. My lesson from the issues I've been outlining today, and the way they've unfolded since my RSA lecture, is that we're not two cities but one. We must acknowledge that the city is one, that academic disciplines occupy the same broad territory. In other words, we should stop unseeing each other.