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Convergence, the university of the future and the future of the university

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Abstract The paper questions the ability of current university systems to respond appropriately to the complex demands of an Information Economy. It argues that new relationships between creative subjects and technology require new thinking about the nature and purpose of universities per se. In particular, attention is drawn to the growing involvement of the private sector in higher education. It is argued that it may not be appropriate to think of the ‘university of the future’ in terms of current public sector and quasi public sector institutions, but rather in terms of an emporium, based on an international trade in educational services, and with the ‘University’ as we now understand it occupying the functions of licensing, quality assurance and cultural custodianship.

Keywords Convergence · Cultural industries · Digital arts · E-learning · Universities

1. Introduction

If the industrial age was enabled through human control of mechanical (and chemical) energy, the enabling factor in the post-industrial ‘Information Age’ will be the control of what might be called ‘Information Energy’. For the first time in our history, society must maintain itself through the mass deployment of human intelligence, rather than by the direction of the labour of the many by a small and privileged minority of thinkers. The implications for education are both radical and dramatic. The ultimate resource in the Information Society, as in any other society, is human ingenuity, creativity and wisdom. The paradox of the new era will be to exploit this resource without simultaneously destroying it.

It is part of the conventional wisdom of our times that we live in an age of technological convergence. This world-picture attaches great significance to the coming together of the technologies of computing, broadcasting and mass media, and telecommunications (see Maherzi, 1997). This ‘convergence’ is

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expected both to transform core practices in all these domains and to enable the rapid evolution of a wide range of new practices.

The potential of convergence has been understood for a very long time. Garibaldo (1999: 7) points out that the idea can be traced back to Norbert Wiener in the 1940s (see also Naughton, 1999: 56–76). Leaving aside the insights of the occasional academic genius, the technological convergences which are now bringing the Information Society to fruition have been apparent for some years now to serious commercial enterprises. Thus, in his McTaggart Lecture to the 1989 Edinburgh Television Festival, Rupert Murdoch predicted that

the television set of the future will be in reality a telecomputer linked by fibre optic cable to a global cornucopia of programmes and nearly infinite libraries of data, education and entertainment. All with full interactivity.

These ... will revolutionise the way we are educated, the way we work and the way we relax ...

Progress towards this ideal has, of course, been rather slower during the intervening decade than Murdoch (or his technical wizards) seems to have imagined. But the recent commercial colonisation of the Internet and the almost overnight shifts in its underlying ethos from ‘hippy commune’ to corporate Klondike should alert us to the rate and the extent of change once it does actually begin to happen. We are faced by serious articulate global agendas. We cannot afford to be out-thought or outflanked by them.

Fortunately from our point of view, the transition from an economy based on design, development, manufacture and consumption of physical objects to one based on a complex hybrid of real and ‘virtual’ trade is still in its infancy. Indeed, as Francesco Garibaldo (1999: 7) points out, the specific details predicted for ‘la grande convergencia’ have yet to materialise: and may fail to do so. It is also worth remembering that even in the USA the penetration of online technologies is very far indeed from being complete. There are already disturbing signs that major sectors of the US population may be effectively excluded from participation in the Information Society (US Department of Commerce, 1999¹). In fact, this may extend beyond the borders of the USA (Denny, 1999²):

The typical Internet user worldwide is male, under 35 years old, with a university education and a high income, urban based and English speaking – a member of a very elite minority ...

The network society is creating parallel communications systems, one for those with income, education and – literally – connections, giving plentiful information at low cost and high speed; the other for those without connections, blocked by barriers of time, cost and uncertainty ...

Nevertheless, there is sufficient evidence for us to accept that Maherzi’s schematic of the convergence process (Maherzi, 1997: 34) is broadly descriptive of something real, happening today. There is also widespread agreement that our response to and use of convergence could change all our lives for good or ill in the very near future. Taking only the positive view, it is quite conceivable that people throughout the world could be freed from the necessity of drudgery and given opportunities for imaginative thinking and enabled to participate as both

¹This study, ‘Falling through the net’, is one of the best and most comprehensive to have been undertaken in recent years.

²Newspaper article referring to an unspecified ‘UN Report, published this morning’.

creators and consumers in the Information Society. Intellectual emancipation of this kind could result in a new flowering of culture. It could also result in a release of creative energy through which not only processes and products, but even whole industries might evolve, flourish and die at a rate never before experienced.

The pace and nature of this process over the next decade or so will have quite profound implications for the development of society as a whole. But we have to accept that our capacity to intervene in any deterministic way is quite limited. We simply cannot plan the future on the basis of the past, any more than we can accept the uncritical 'hype' and 'feeding frenzy' which cloud so much contemporary debates on the issue. Neither can we base our thinking on some putative future start-point. We have to begin from where we are now.

In this context, the position of Information Technology as a core discipline appears to be secured for the foreseeable future. We are, after all, talking about the 'Age of Information'. However, it is possible to assert to the contrary that Information Technology, as currently understood, is losing strength and direction, and may eventually need to be subsumed into new configurations and new disciplines (See, for example, Kochhar, 1999b).

Studies by the Council of Europe (1999a) have attempted to define and track some career trajectories within the cultural industries. The project documents speak in terms of four 'interfaces':

- Management and Technology
- Content and Technology
- Design and Technology
- Distribution and Technology

Schmidt-Braul (1999) points out that these are not fixed categories, but rather attempts to come to some sort of understanding of a very complex process which is still in its early stages. In principle at least, they offer a provisional framework for charting out patterns of education and personal development.

In fact, there is one salient omission from the Council of Europe's list of interfaces, namely the identification and analysis of a career trajectory based on the interface between Art and Technology. This omission weights the Council's thinking heavily in the direction of established publishing and media industries (albeit new variants of them) and minimises the significance of current trends in thinking towards the recognition of 'Information Architecture' as a new substantive domain which is at once both practical and conceptual.

The absence of reference to 'art' thus removes a vital connection with the base of the value chain. Paradoxically, the potential significance of the arts in this respect was clearly recognised in another Council of Europe publication (1999b), which noted (p. 7) that

it appears that there is a limited appreciation within the information society of the strong relationship developing between the economy, especially the immaterial economy, and culture...

It goes on to argue for the need (Council of Europe, 1999b: 14)

to encourage the use of New Information Technology as a form of artistic and literary expression and as a means of forming creative partnerships, in particular between art, science and industry.

It is the strong assertion of this article that the above argument is well founded, and that the Art/Technology intersection is one case which indicates possible new directions for Information Technology in the twenty-first century.

2. Developing the cultural industries in Wales

In justifying the inclusion of 'Art and Technology' as a necessary formative convergence for cultural work in the Information Age, it may help to refer to the recent experience of Wales with respect to the development and promotion of the arts and the cultural industries.

Although administered as part of England (and more recently the UK) for over 500 years, the Principality of Wales is a distinct region of the British Isles, with its own language (in decline, but still spoken by up to 20% of a population of 2.75 million). Wales has a strong cultural tradition and a long history of local and regional identity, rooted in ethics of working class solidarity and, formerly, values derived from nonconformist religious practice. Political moves towards devolution of power in the UK have given Wales its own elected Assembly, though there is little real support for independence as such.

Most of the population of Wales live in the south of the country, and the greatest concentration of population is in a coastal conurbation stretching from Newport in the east to Swansea in the west. The immediate hinterland of the conurbation is hilly, and is dissected by a series of narrow valleys. The centre of the country is predominantly agricultural, and has, proverbially, more sheep than people.

In the eighteenth and nineteenth centuries, the discovery of coal and iron in the valleys established the region among the cradles of the European Industrial Revolution and laid the foundations for heavy industries which are still important to the UK economy. However, manufacturing now employs only 22% of the total Welsh population (32% in the Valleys). Coal-mining, once a stereotypic defining industry, hardly exists at all, while a small and rapidly declining number of giant steelworks employ a relatively tiny number of people compared with a few years ago. The rapid de-industrialisation of South Wales since 1980 has caused massive, though local, unemployment and great hardship. Ironically, one effect has been to produce what has been claimed as one of the lowest-cost skilled labour forces in the world,³ and the South Wales region has received very large-scale inward investment from Japan, Korea and Taiwan. However, the partial eclipse of the 'tigers' in the late 1990s has thrown the vulnerability of such an economic position into stark relief.

This has necessarily led to a search for more stable economic sectors on which to build high added-value employment and sustainable growth. It is a small triumph for a working party convened and led by Yvette Vaughan-Jones, formerly of the Arts Council of Wales, that the Arts and Creative Industries have now clearly been recognised as one such sector, and have been appropriately factored into economic plans currently before the Welsh Assembly. Consultation papers produced for this working party established that as defined in the UK Creative Industries Mapping Document (Department for Culture, Media and Sport, 1998), the Arts and Creative Industries currently employ about 2%

³It has been asserted in the local press (1997, no attribution) that skilled workers in Newport command salaries approximately half those of corresponding workers in the advanced Pacific Rim.

of the Welsh population and account for approximately £1 billion of GDP annually.

A Sector Study (unpublished data, Vaughan-Jones, 1999) produced by the working party argued that these domains offer indirect benefits beyond those conventionally taken into account in economic planning, and stated that

Creativity and innovation within knowledge-based industries are vital in future economic development. The arts and cultural industries are key elements of this:

- They provide some of the future industries themselves;
- Through participation in the arts, people develop skills that will enable them to achieve successfully in the new working environment.

This report concluded that

Arts and culture have at their heart the ability to transform ideas, people and attitudes, and it is the transformative power of arts and culture that allows it to be instrumental in a range of other fields – for example in regeneration plans, in human resource development, in training and education and in encouraging participation by disenfranchised groups.

In future, the promotion of the Arts and Cultural Industries is likely to be a major force in the development of the Welsh economy, even if it is unlikely to become a dominant force in the short term. The new media, such as networked multimedia (the Internet), digital television and so on, will be important contributors to this, and must be supported appropriately. However, although it is clear that the creative application of new digital technologies will be part of any new economic drive, it is also clear that the ‘old’ conventional arts and crafts have a role to play and so must be supported according to the same logic. We are not dealing with a ‘year zero’ revolution, and our view of the future must accommodate established specialisms. A similar point was made by Francesco Garibaldo (1999: 7), when he drew attention to the incremental nature of the move towards the ‘Information Society’, and the likely persistence of professional identities such as ‘graphic designer’ even with the creative teams developing the new media. One of the problems facing Wales is to educate (and re-educate) people in new ways of thinking without simply sweeping away an established and effective culture.

3. UWCN and the digital arts: a case study

The development of digital arts and media in the University of Wales College, Newport, may help to provide a case study of educational developments which embody some of the subject convergences discussed above, but which also meet the need to sustain established discourses.

The former ‘Newport School of Art and Design’ was one of the first institutions in the UK offering honours degrees in Art and Design. Most courses were originally based on the conventional Fine Art and Graphic Design curricula. However, the school was also widely known as a major centre for documentary film and photography (a reputation which it continues to enjoy).

By the early 1990s, a small group of academics at the school had responded to the creative potential of the new computer-based media by introducing a subject which, following Nora and Minc (1978), they labelled ‘Telematics’. The popularity of the subject led the school to close its conventional Fine Art courses and to take a long-term view of the development of Art and Design in Higher Education. This has led over the years to the development of innovative courses blending elements of Art and Technology and Design and Technology: exactly

along the lines indicated by the Draft Recommendation. The current Art and Design course portfolio includes undergraduate degrees in Interactive Art, Multimedia and Design Futures, as well as a taught masters course in Multimedia and Information Design.

Steve Thompson, Course Leader for Design Futures at UWCN, describes his subject in the following terms:

Digital technology fundamentally changes the way we think about geography, identity, space, time and even what it is to be human. We predict and instigate the appliances and applications of the future and take a radically new approach to design that questions the relationships between technology, the identities of the products, services and users in a connected society.

- We investigate the changing role of the ‘Appliance’ in an era of miniaturisation, over functionality and connectivity.
- We instigate new ways of thinking about ‘Applications’ as service or system products in a culture of complex identities and sophisticated branding.
- We explore new ‘Approaches’, understanding, poeticising and choreographing the way we might live and enjoy technology.

The UWCN course portfolio is part of a wider discourse which examines the very roots of culture and enables students to contribute to its growth. These courses are not ‘Something and Technology’, but represent attempts to develop new fusions of ideas which, though using and referring to technology and its discourses, are still firmly grounded in Art and Design. UWCN courses stress interaction, teamwork and collaboration without losing sight of individual creativity.

Any future ‘Information Society’ will need a very wide range of more ‘utilitarian’ courses throughout the whole spectrum of education and training. This will necessarily include a variety of vocational elements. But to ignore a more ‘abstract’ view of the fostering and development of creativity is to risk destroying our greatest human resource. Of course, it is necessary to avoid the risk of falling into a kind of educational determinism. It would be quite disingenuous to assert that there is any clear and direct link between support for ‘art’ (however defined) and specific acts of creation and invention. The reality is that we have no way of guaranteeing that *any* educational innovation will necessarily achieve this.

However, it is one of the founding premises of the current debate that

The constantly growing need for both existing and new contents and innovative services has transformed cultural industries into strategic industries of the information society. (Council of Europe, 1999b: 22)

If we accept this premise, then it follows that art and art education must be significant contributors to the human resource of creativity within the Information Society. UWCN provides a model for the design and development of new courses in this field of the conventional university curriculum. However, this on its own does not begin to meet the implicit demand for entirely new structures which will arise as the movement towards the ‘Information Society’ gathers momentum. Indeed, it is questionable whether the university system as presently conceived is capable of responding to this need.

4. The university of the future: and the future of the university

The university system as we now know it has served Europe with varying degrees of success for the best part of a thousand years, and has been imported into

many other regions of the world, though with varying degrees of success (see, for example, Kochhar, 1999a). However, we must be prepared to ask whether these essentially mediaeval institutions have – or indeed, deserve to have – any role in preparing the citizens of the new globalised Information Society for the challenges of the Information Society.

In a sense, this argument has already been pre-empted by commercial and technological decisions taken elsewhere. Our system of small national and even local institutions is being rapidly challenged by an accelerating trend towards the internationalisation of tertiary and higher education. The academic ‘corner shop’ is increasingly faced by the economic and intellectual reality of the ‘educational megastore’. Universities, whether or not they acknowledge the fact, are already functioning in an international traded market in instructional design and educational services in the context of a ‘knowledge industry’. Rupert Murdoch’s observation is only one aspect of a hard-nosed view of where all this might lead. In fact, large corporates are already beginning to move into markets which might once have been regarded as the specific preserve of a specialised subset of the public sector. Like it or not, the universities – in fact, educational institutions in general – are now part of a mixed economy.

It is important at this point to appreciate the vast scale of the ‘educational economy’. It is important also to see this as an economic subsystem in its own right (what Bell, 1980, called a ‘quinary’ activity), rather than simply as an isolated (but huge) expenditure item on a local or national balance sheet. Put simply, education and training are part and parcel of the information economy, and must be seen in this context. Both (if we are still to distinguish them apart) are highly marketable knowledge-based information services with global markets, in which governments, public institutions, corporations and SMEs are increasingly becoming involved. Indeed, it might be borne out that this pattern of development is quite clearly unfolding in India, where, to extend Kochhar’s (1999a) metaphor, the ‘Kshatriya-isation’ of science can be seen to be giving way to a process of ‘Vaisiya-isation’.

Educational services and artefacts will increasingly form the bases for a significant sector of wealth-creating knowledge-based high-technology, high value-added activities within the economies of many nations (and not just currently ‘developed’ nations). The dynamics of the development of an international trade in this sector have always been difficult to predict (Smith, 1988), but there are clearly great potential rewards for those in both the public and private sectors who are early and effective actors in this market. It is not beyond the bounds of possibility that the future of some of our smaller (and less worldly?) universities could be as educational ‘call centres’, serving the tutorial needs of other more predatory organisations.

Good morning, thank you for calling ‘Unicorp’. This is Professor Smith speaking. How may I help you?

Wherever and however the learning environment for the future Information Society is to be constructed, it cannot be based on an anarchic infrastructure of squabbling fiefdoms, with their interminable ‘turf wars’. One lesson from the experience of recent years is that it is probably counter-productive to attempt to work within the demarcations of the conventional institution. Even twenty years ago, Nora and Minc (1978) saw educational institutions as essentially

conservative structures which were more likely to hinder than to promote necessary changes:

The priority given to the acquisition of a universal microknowledge is now related to a concept of culture whose permanence is ensured by the school...

In any case, as Francesco Garibaldo argued (Garibaldo, 1999: 10), the real need is

not to create hybrid skills and professions, but to develop organisations supporting cooperation...

This is easier said than done!

There are many examples, ranging from Norbert Wiener's informal gatherings to the hothouse environment of MIT's Media Lab, of structures and organisations which have brought together an intellectual elite into productive synthesis, and there will always be a role for such social and intellectual convergences. However, if we are talking about a world economic order which requires the mobilisation and utilisation *en masse* of human intellectual capital, then we must also think in terms of other forms and spaces for convergence. The Internet is one of these, and it will obviously grow in significance over the next few years. But it can only be one of a range of possibilities. Arguments (see, for example, Thorne, 1999) that the entire future of higher education will be based on digital networking ignore both real-world demographics and the realities of individual taste, personal economic circumstances and psychological preferences.

In point of fact, one of the best analyses of the potential role of the Internet in university-level teaching concluded that:

Online teaching and learning can be done with high quality if new approaches are employed which compensate for the limitations of technology, and if professors make the effort to create and maintain the human touch of attentiveness to their students... The seminar participants thought, however, that it would be inappropriate to provide an entire undergraduate degree program online. Participants concluded that the ongoing face-to-face interaction between teacher and students, and among students themselves, was an integral part of a university education.

Because high quality online teaching is time and labour intensive, it is not likely to be the income source envisioned by some administrators. Teaching the same number of students online at the same level of quality as in the classroom requires more time and money...

Taking such factors into account, the compilers of the New Information Technologies Project publication referred to above (Council of Europe, 1999b: 21) argued that

neither cultural policies nor the provision of public services shall, in the foreseeable future, be based on the assumption that even the majority of the citizens would be using new information technology.

In fact, we should go further. Our tacit understanding of this whole issue should always be based on the astute observation (Denny, 1999) that

The market alone will make global citizens only of those who can afford it.

Whatever some economists may say, public sector agencies and institutions cannot abrogate their responsibilities. Francesco Garibaldo (1999: 1517) is surely quite right in his assertion of the role of 'Public Powers' in the Information Society, and makes a convincing case for the role of cities and regions in this context. Writing of the 'strategic relaunching of the city', he sets out a

cogent argument for the city-region as the critical locus for establishing an equilibrium between the local and the global in the new economic order:

A positive path for city development should . . . be sought in the full appreciation of the city's historically progressive character: as a place par excellence for social creativeness, that is, the specific form of 'production' that arises from the inter-relations among the broadest array of crafts and cultures . . .' (Garibaldo, 1999: 16)

Ironically, therefore, it can be argued that the future of the university lies in its past. The university as institution must give way to the university as community. Perhaps the best archetype for this is some contemporary version of the mediaeval mercantile city-state, such as Bologna or Baghdad.

The 'university city-state' of the future will support a complex hybrid of private and public sector enterprises offering a very wide range of learning experiences and environments. Some of these will be offered in 'virtual' mode but many others will involve various levels of face-to-face interaction. In this scenario, the university as an institution may exist primarily to license and validate courses and, as a Cultural Institution, to conserve non-commercial fields of study, to develop pre-commercial fields and to secure continuity of socially valued intellectual activities and cultural traditions.

A student in our 'Conversity' might expect to undertake courses provided by a mixture of public and private sector agencies. For example, she might be working in (or for) a corporation (public or private) which has a progressive on-job-training (OJT) framework. Indeed, she might even have been associated with that particular corporation since her schooldays (quality staff, like budding footballers, will be in short supply, and will be nurtured and developed accordingly⁴). Her employer will have a comprehensive human resource development policy which can take her from school through to post-doctoral study, and this framework would encompass all levels from apprentices through to board directors. Some learning would be online and some would be face-to-face, depending on the exact nature of her specific route of study and its particular pedagogic demands. The employer would expect to shop around for value and effectiveness, and local colleges would have to compete with global corporations and regional SMEs for this business. She would expect to go to software developers or their accredited representatives for package-specific training, which would no longer be the concern of the public sector. She might follow online courses offered by overseas institutions, and would expect to travel to participate 'live' where that was the best available option.

In a foreseeable situation, where vertical distinctions between the public and private sectors, between institutions and between their internal structures are progressively eliminated, the implications for subject disciplines such as Information Technology are profound. The 'academic ghetto' of the conventional university department has little place in such an environment. Instead, a new structure needs to evolve, based on the realities and cultural values of contemporary society, not on the *soi-disant* authority of mediaeval academia or on the cargo cult optimism of 'cybertopians'.

Cultural institutions will not be able to depend on momentum generated by history, custom and established prestige to secure their place, but will have to

⁴The analogy is not at all far-fetched. Some companies in the UK and USA are already looking for talented young people, offering them sponsored higher education and many other benefits.

display their 'wares' in a very complex global market-place. The role of the university in basic education could ultimately be limited to quality assurance, credit accumulation and transfer (CAT), certification and the essential function of securing culturally significant but low-demand subjects such as philosophy. It might also provide the ceremonial component of educational 'rites of passage'.⁵ Another possible role would be supporting 'blue-skies' research, but even here the role would have to be earned and not taken for granted. Universities are not immune from the fundamental changes which are implied in the concept of the Information Society. It is time to begin to apply some fundamental rethinking. That is what artists and designers are good at, and why we will always need them!

5. Conclusions

The post-industrial Information Society will require that the now dominant 'front-end' model of education must be supplemented, or even supplanted, by structures more appropriate to lifelong continuing education and training, and where there is a clear and acknowledged role for alternative provision, not only from the private sector, but also from new public sector or public interest actors (including trade unions, self-programming community groups and so on).

Education is already losing its particular association with childhood and early youth. Instead of aiming to equip young people with a lifelong 'toolkit' of skills, knowledge and attitudes directed towards the stable and predictable requirements of a limited range of vocational possibilities, educational systems must provide for a varied succession of careers by offering the maximum potential choice in the face of great and increasing uncertainty. We have to doubt whether the current system of protected institutions has the capability or the will to achieve this.

Ultimately, the higher educational system of the future must aim to meet human development needs summarised by the British computer technologist Sir Leon Bagrit (1965) in his 1964 Reith Lectures:

We shall have to produce men and women who are able to understand the significance of the past, who are in the stream of current ideas and who can make use of them, and who have the quality of imagination that is capable of foreseeing and welcoming the future.

It is no longer true (if it ever was) that this set of objectives is only capable of achievement from within the conventional university sector, or even from within the non-for-profit public sector.

But although we cannot disembed education from its economic context, it must nevertheless meet the needs of individuals for personal growth and intellectual satisfaction. If the 'right' to education means anything at all, then it implies more than simply the right to become a machined component, slotted into an economic system. At the same time, the real needs to conserve and transmit what we value in our cultures must somehow be secured. The balance between socio-political commitment to culture and human rights and the

⁵Just as UK citizens in general use the Church of England almost exclusively for baptisms, weddings and funerals. This may also already be established as the pattern of usage of the authority of the IITs by ambitious young Indians who are more interested in the cachet of the alma mater than in the career for which they have supposedly undergone training (Kochhar, 1999b).

infrastructural requirements of 'human capital formation' is difficult to achieve, but it is critically important that it should be attempted.

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