HOW FAR SHOULD DESIGN BE AT THE HEART OF A 21ST CENTURY UNIVERSITY FOCUSSED ON CREATIVITY AND INNOVATION?

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ABSTRACT
This paper includes a case study of experiences over a two year period in a UK university in creating and developing a cross-disciplinary approach to both teaching and research, including the creation of an unusual cross-disciplinary masters in creativity and innovation

Keywords: Creativity, higher education, interdisciplinary

1   INTRODUCTION

In many countries, the roles of universities are in a state of flux, with traditional assumptions and priorities being under challenge. The focus here is with institutions which explicitly place a high priority on creativity and innovation, with particular emphasis on transferring their own insights to other sectors of the economy, both through teaching, research and knowledge transfer activities.

The paper reviews the meaning and nature of a university, referring to the differing historical traditions originating from Bologna and Paris/Oxford respectively, through the nineteenth century evolution of the German/US university, to the modern mass university system with a strong global dimension.

Creativity and innovation are well understood within individual disciplines, especially when applied to all forms of research. Some disciplines deal directly in particular forms of creativity, notably in the humanities and arts. Others have as their focus the support of "creative industries". Our concern in this paper is with not with traditional discipline-based or specialist forms of creativity and innovation, but rather with the potential of creativity as a core and indeed core value and objective of the university system as a whole.

The term "creativity" is in practice used in a variety of ways across different disciplines, and a wide variety of viewpoints on what constitutes the core dimensions of creativity and innovation. There is a tension between two concepts – the newness, future oriented and aspirational aspects of creativity contrasted with the more here and now, useful and reactive notion of innovation. Many contemporary definitions and approaches to creativity link this tension between newness & usefulness. Newness for its own sake is not necessarily useful. But put the two together and a powerful approach becomes possible.

Creativity has been described as a special class of problem solving where there is difficulty or ambiguity in problem formulation, there are unclear pathways forward, and a need for ideas to solve the problem as the outcome does not already exist [1]. Kirton [2] states that from the cognitive sciences, in order to influence the changing world around us and acquire what we need, we have to solve problems and to solve problems we have to think. Thinking is the process by which we solve problems and it is the same brain function that produces creativity, innovation and change.

Innovation and creativity processes are unusual in business due to some key dualities that are almost inevitable. The first key tension is that the creative process involves two phases, what some call a heartbeat, between divergent and convergent thinking. The second key tension is that two different personality types tend to be in tension – developers and explorers. There is some overlap and interrelationship between the creative process and the personality types. But one of the key aspects of both is that they do not limit what is possible by the process preferences or personality type of

participants. Accomplished managers are able to transcend their own type or preference, and play all the necessary roles.

Creativity often involves holding more than one viewpoint in mind at a time – what has been referred to as the need to be 'ambidextrous' or Janusian, after the Roman God Janus. Janus was the god of gates, doorways, beginnings, and endings, and of course his name led to the month of January. His representation as two heads looking in opposite directions at the same time, symbolises change and transitions such as the progression of one condition to another. His figure also represents time - seeing into the past with one face and into the future with the other. As F. Scott Fitzgerald [3] wrote: *"The test of a first-rate intelligence is the ability to hold two opposing ideas in mind at the same time and still retain the ability to function."*

In the far East with the ying and yang symbolism is closely related to the Janusian. Other dualities have been continually discussed over the centuries with recurring contrasts – rational and emotional, left and right brain and so on.

McGilchrist [4] is of particular interest as his early studies were in the humanities, but he then switched career and ended up as a neuroscientist. He believes that the excessive rationalism of the 21st century has tended to overwhelm our more affective thinking styles. If McGilchrist is right, there need to be proactive steps taken to encourage creative thinking. Given the overwhelming of the affective by the rational it will not happen by simple incremental change. There must be some doubt therefore, whether an emphasis on any particular approach such as design thinking will be sufficiently powerful to overcome the domination of the rational.

2   THE EVOLUTION OF THE UNIVERSITY

Our interest is in how the modern university might be able to adapt to contemporary thinking on creativity and innovation, and it is appropriate to highlight three key dimensions. Firstly, there is the role of sustaining the values of a civilisation, particularly to promote the health and survival of that civilisation. A key milestone was Europe's first University in Bologna, which has itself survived 800+ years. Bologna also highlighted contrasting philosophies of higher education. Was a University to be concerned primarily with the needs of students (*universitas scholarium:* Bologna)? Or was a university to involve masters whose job was teach the students (*universitas magistrorum et scholarium:* Oxford and Paris)? In Bologna, the students were very much in charge – rather a strong challenge to those who believe that "student-centric education" or even "Student-funded education" will make the sky fall in.

Secondly, a university clearly has a role to discover and enhance knowledge and skills. A crucial inspiration has Aristotle, who was not just a theoretical philosopher, but one of the greatest management educators of history. Aristotle paid very close attention to knowledge and skills in higher education, and Aristotle's [5] intellectual virtues, as set out in the Nichomachean Ethics, can be reduced to three dimensions: Epistime (Scientific knowledge); Techne (Skills); Phronesis (Practical wisdom). True leaders needed phronesis above all – Aristotle felt this made those expert in scientific knowledge (in our terms academics) particularly unsuited to high-level decision making.

Moving on to the time of the industrial revolution, the particular significance of Humboldt is the emphasis on discipline-based research. Existing knowledge is subject to research which changes what is understood by a community as knowledge. Although this has worked well enough for a century and a half there has been an extensive discussion which started before world war 2 about whether societal and wicked problems can adequately be addressed from within a disciplinary tradition.

A common theory of the 21st century university sees it as having three roles: research, teaching and knowledge transfer. Creativity and innovation are expected as being of particular importance in research, the creation of new knowledge or, more typically, the evolution of existing knowledge.

Scharmer and Käufer [6] more radically proposed seven theses to reorientate the 21st Century university, and their thesis number 7 saw "universities as birthplaces and hubs for communities of creation", which

"do not strive for a type of science which merely reflects the world, but for a science capable of grasping reality by contemplating the underlying forces of its genesis. In such a university, learners and researchers shift from being distant observers to creative co-designers of a praxis in progress – to midwives assisting in the birth of innovation."

A third and final role of universities was brought home by Manuel Castells [7]. He sees a key role for universities as challenging the status quo in society, partly because of its emphasis on the scientific method, (which is never satisfied with the status quo), partly because of the historic quasi-independence of universities, and partly because it is one of the few areas of civil society actually able to challenge. That challenge role is becoming harder, but as a result more vital. One clear illustration is the Bauhaus which despite working within the strict German accreditation system had an enormous influence on the theory, practice, pedagogy of design, which it helped radically to change [8].

3   THE CASE FOR DESIGN AT THE CORE OF A CREATIVE UNIVERSITY

This paper reviews what might be at the core of university-based initiatives relating to creativity and innovation. There have been many different approaches advocated. For example, in Finland there has even been the creation of Aalto as a "creative university" (Ministry of Education Finland, [9]). In a historic context, Wick [8] sets out an insightful review of the Bauhaus as a teaching institution, perhaps the "design university" par excellence, with much that is relevant to teaching and research in any discipline.   However, Volkmann and De Cock [10] warn against simplistically pushing the Bauhaus metaphor too far in business education.

There are continual educational innovations taking place, for example a very interesting grassroots initiative took place at the Rochester Institute of Technology (RIT) [11].   This focussed on bringing together the arts, sciences, humanities, and technology, and also seeking collaboration among faculty, students, colleges, and disciplines in co-curricular activities and courses. It also encouraged a dialogue on the role of creativity in teaching, learning, research, and leadership; one of the most impressive dimensions of this was the "unlikely partners" collaboration, involving staff and students in, for example, engineering and poetry working together.

Less frequent are policy-driven initiatives, perhaps the most notable being in Finland.   Here, as part of generic university reforms, in 2009 Aalto University was being created through a merger of three existing universities: the Helsinki University of Technology (TKK), the Helsinki School of Economics (HSE) and the University of Art and Design Helsinki (TAIK). Markkula and Lappalainen [12] argue that much of the logic for the new institution lies in is promotion of innovation, and indeed at one point this institution was given the provisional title of "the innovation university".

There are strong advocates [13] [14] of a role for design at the very centre of both corporate and educational initiatives to stimulate creativity and innovation. Ford [14] defines design thinking as:

"a methodology that imbues the full spectrum of innovation activities with a human-centred design ethos"

However Merholz [15] criticizes this approach:

If design thinking is interdisciplinary and synthetic, then "design thinking" is a disingenuous term. Design is only one component among many to be considered. Part of my point is that the phrase "design thinking" is simply marketing—marketing for design firms. The kind of interdisciplinary thinking we seek is not simply the purview of designers, and shouldn't be considered as such.

We tend to agree with Merholz. Many historic professions such as architecture and engineering have always embodied generic principles of design. And more modern professions such as marketing have certainly done so, as can be seen from the systemic nature of the 4 P's of marketing (Product, Price, Place, Promotion). We have been particularly struck by how extraordinarily difficult are some design problems are within the engineering domain (Marashi and Davis [16]):

"An organisation's success in solving complex problems through design will depend largely on its ability to manage the complexity associated with these problems… Complex systems can exhibit behaviours which are properties of the whole system. These properties seem more intricate than the behaviour of the individual parts. An effective and efficient design could not usually be achieved without a proper understanding of the relationship between the whole and its parts as well as the emergent properties of the system. …… The vast range of stakeholders involved in an engineering design project, e.g. public, client, construction team, designers, financers, managers, governmental agencies and regulating bodies; and their changing requirements from the system, escalates the complexity of the situations." P160

4 ONE INSTITUTIONAL APPROACH TO CREATIVITY

Our central concern at City University has been with how a Janusian approach can be developed through interdisciplinary higher education. It is worth noting at this point that a great deal has been progressed in the last decade across a small number of universities. Taking business schools as a single example, this has particularly been through individual innovators, though the loose umbrella of the "arts and management" movement has had something of a centrifugal effect in building a wider community. However this has quite deliberately not set out to create a new sub discipline or silo within the field of management studies.

Innovations have covered individual modules in masters programmes, innovative teaching methods and resources and even the orientation of a whole school such as IEDC-Bled. Cass Business School pioneered a whole MBA programme, the Management MBA, which placed a modest emphasis on the rational and a very heavy emphasis on integrating the personal and intuitive with the external and analytical. Ultimately it did not prove to be possible to gain accreditation for such a radical degree with a relatively lightweight rational emphasis, but the experience has been well documented [17]

In any case, one might expect the educational inputs on creativity to go very much wider than a single school. To this end City University has set up a major interdisciplinary initiative. Its starting point was an internal competition which led to the funding for 2 years of 6 interdisciplinary centres covering teaching/learning, research and knowledge transfer. This paper reports on the Centre for Creativity in Professional Practice. The university is named after the City of London, the financial and commercial district, and is strategically positioned as "the University for Business and the Professions". The University already has a School of Arts which is active in relation to the creative industries, but that is not the central thrust of the new centre. By contrast, the particular focus of this centre, more unusually, is creativity within and across the wider professions such as law, engineering, health, education, business etc. Secondly, the aim of all the City centres is not simply to focus on a topic in a single-loop learning fashion [18]. They are also explicitly geared to double-loop learning, hence to promoting change in educational and research practices and behaviours within the institution.

Certainly in the UK, it is unusual to create inter-disciplinary centres which are not either exclusively research or exclusively teaching/learning based. An important recent report [19] has helpfully reviewed 8 case studies of multi-disciplinary approaches to design and creativity. These included cross-institutional collaboration, embedding design thinking in business and entrepreneurial education, multi-disciplinary research and teamwork, creativity labs and spaces, as well as specific modules and also, as at Nottingham Trent, cross-disciplinary masters.

The first step at City involved developing a University-wide understanding of creativity that built cross-discipline communication and collaboration, including two sub-objectives:

• Developing new high–engagement, experience-based approaches with which to learn about creativity good practices, techniques and tools, drawn from science, business and the arts

• Researching and developing new activities, tools, techniques and resources that enhance and support creative problem solving in a range of professional practices that draw on City's unique disciplinary mix

The Centre was set up with a brief to undertake five main activities:

1. Creation of a core team (director and researcher) to stimulate and orchestrate interdisciplinary working, to secure funding and to disseminate outcomes
2. Creation of a national research seminar series network running up to 6 seminars in 2009-2010
3. Small innovative projects in each main school involved
4. Creation of a university, rather than school-based, masters in creativity/innovation
5. Promotion of university-wide approach to creativity at undergraduate level within schools and disciplines

A director was appointed in May 2009 marking the effective start of the project. This then in turn accelerated the need to progress several of the activities in parallel, in particular the research seminar series. Activities 1-4 above have all been achieved; it has not been possible to create an undergraduate initiative in creativity due to multiple other initiatives relating to the undergraduate curriculum and faculty. The Centre for Creativity in Professional Practice spans five of the seven schools of the university, and a heavy emphasis was put initially into the team-building of the core group of about 10 academics. this proved to be invaluable as the idea emerged of a wholly cross-disciplinary Masters in Innovation, Creativity and Leadership (MICL).

This degree was launched with its first student intake in September 2010, and is one of the only ones in the world which is not based in an individual school. For administrative purposes it is shown in the course catalogue of the School of informatics, and that school is also the logistical host. But its curriculum demonstrates the very type of eclectic mix that is needed to develop Janusian approaches to creativity and innovation. The Masters consists of 8 core modules plus one dissertation project. Depending on the dissertation students may finish with an MSc, an MA or a Minnov. It components are in summary:

Creative Problem Solving and Leadership (Cass Business School)
Creative Writing (School of Arts)
The Psychology of Creativity and Innovation (School of Social Sciences)
Leading Creative Design (School of Informatics)
Technologies for Creativity and Innovation (School of Informatics)
Delivering Innovation - Turning ideas into action (Cass Business School)
The Law, Creativity and Innovation (The City Law School)
Creativity and the Creative Industries (School of Arts)
Individual Project (Learning Development Centre)

5 CONCLUSION

The Design Council study [19] warned that:

"…it is important to remember that most of the activities detailed here have been in existence for only two or three years, and represent just the beginning of a long-term commitment on the part of their institutions to embedding multi-disciplinary team working into higher education. Academics in our network have frequently commented that it takes time to build relationships between colleagues and institutions, to appoint staff with the appropriate skills and experience to teach these courses, to test, iterate and refine new methods of teaching and new administrative models, to market new courses and recruit students onto them."

Our own experience fully endorses these words of caution. The single major time overhead has been into building relationships, which has little short-term return either for teaching or research, but is a vital precondition of longer-term success and embedding.

Design is an attractive metaphor for creativity and innovation as university-wide values, but a more enduring foundation might be systems thinking [20]. Transdisciplinarity would form a dominant mindset. The creative university would, like Janus, be able to live with duality and multiplicity with "and" being the dominant word:

<div align="center">

hard AND soft
left brain AND right brain
explorer AND developer
innovator AND adaptor
convergence AND divergence
long term AND short term
task focus AND people focus
internal AND external
head AND heart

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