The Future of Creative Technologies

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Welcome everybody to this one-day conference on The Future of Creative Technologies. I would like to offer thanks to the Administrative team and the Marketing division of De Montfort University for their hard work, and in particular to Dr Tracy Harwood and Dr Jessicca Laccetti for leading the organisation of what will be a unique and extraordinary occasion.

There is a term in astronomy: *syzygy.* This describes the unexpected alignment of three celestial bodies. The best known example is an eclipse, but such alignments may occur within any gravitational system. When I noticed that, for a period of a few months only, the Institute Of Creative Technologies would have three Visiting Professors on its books whose research interests and expertise are pulled by the same forces of gravity, I became aware of a potential syzygy. This conference is the outcome of that realisation.

Howard Rheingold ends his term as Visiting Professor to the IOCT in December, although I am delighted to say that he will be able to continue some work with us after that, in particular the development of his MacArthur grant-funded Social Media Classroom. This will also have potential as a virtual research environment and we will be working on both aspects with students and researchers in the IOCT. Howard's role in the formation and development of the IOCT has been very important, and in July he was awarded an honorary doctorate by the university in recognition of his contribution and standing. He coined the term "the virtual community" in 1993, and his book Smart Mobs (2003) explores the potential for technology to augment collective intelligence. His major interest remains the ways in which collaboration and cooperation can provide a new model for business and culture.

Meanwhile, both Jim Hendler and Lev Manovich have just begun their stints as Visiting Professors with the IOCT. Jim is at the forefront of developments in the future of the web, working with Sir Tim Berners-Lee and others, with whom he co-authored the much cited article 'The Semantic Web' published in *Scientific American* in 2001. The semantic web, very briefly, is an extension of the existing web to encompass intelligence and meaning. He also bears the intriguing title of 'Tetherless World Research Constellation Chair' at Rensselaer Polytechnic Institute. I'll leave him to explain what that means! He is also the Editor in Chief of IEEE Intelligent Systems and is the first computer scientist to serve on the Board of Reviewing Editors for Science. He is a former member of the US Air Force Science Advisory Board and a former Chief Scientist of the Information Systems Office at the US Defense Advanced Research Projects Agency (DARPA). Jim is having a formative impact on the ways in which the semantic web will be realised and, as an aside, he and I have already embarked on discussions about what lies beyond metadata.

Lev Manovich will be familiar to all undergraduates involved in the study of media or new media, because his book *The Language of New Media* is require reading on practically every list in every university. It is the first and possibly the most important attempt to provide a rigorous theoretical understanding of this complex area. However, the area of his research that particularly interests us in the IOCT is 'cultural analytics' which involves using interactive visualization, GIS, and data analysis for research, teaching and presentation of cultural artifacts, processes, and flows. The name "Cultural Analytics" has been deliberately chosen to invoke connections with already existing fields of web analytics, business analytics, visual analytics, and knowledge discovery. In particular, the paradigm of visual analytics - combining data analysis and data visualization to enable "discovery of the unexpected within massive, dynamically changing information spaces" is perfectly applicable to cultural data sets.

So, today is structured as follows. From 11.00 there will be three workshops to identify pertinent high level issues facing researchers, industry and policy makers today. Each workshop will be chaired by professional researchers and leading names in their fields, about whom more in a moment. After a networking lunch from 12.15 to 1.15, I will give a brief

overview of the afternoon sessions. Our three visitors will then give half-hour vision statements highlighting key trends in their fields:

1.30pm Dr Jim Hendler
2.00pm Dr Lev Manovich
2.30pm Professor Howard Rheingold

After a break at 3.00, we will throw the programme open to discussion and questions from the floor based on the outcomes of the morning workshops.

I will close the conference at 5 p.m.

We now have three concurrent workshops.

The first is the Technology Workshop, focusing on the trends in internet and technologies. This is led by Jerry Fishenden, who is currently undertaking doctoral research at the IOCT. Jerry is Microsoft UK's lead technology advisor, strategist and spokesman. Since being appointed to the role in 2004, Jerry has been responsible for helping to guide Microsoft's vision for how technology can transform the way we learn, live, work and play. He plays a key role in an international team of technology officers who work closely with Craig Mundie, Microsoft's Chief Research and Strategy Officer. Jerry writes popular blog on issues of technology and policy. Prior to being recruited by Microsoft in 1997, Jerry worked in some of the UK's most senior IT positions including as Head of Business Systems for the UK's chief financial services regulator in the City of London; as an Officer of the House of Commons, establishing the Parliamentary data and video Network at the Houses of Parliament; and as a Director of IT in the National Health Service (NHS).

The second is the Content Workshop, focusing on trends in digital content. This is led by Professor Sue Thomas, Professor of New Media at the IOCT. Her most recent book is the non-fiction travelogue of cyberspace 'Hello World: travels in virtuality' (2004). She has published extensively in both print and online, and has initiated numerous online writing projects including The Noon Quilt, now an iconic image of the early days of the web. She

founded the trAce Online Writing Centre in 1995 where she was Artistic Director until joining DMU in January 2005. She is Programme Leader of the online MA in Creative Writing and New Media and leads the Transliteracy Research group. Her research interests include transliteracy, collaborative media, and psychogeography. She is currently writing The Wild Surmise, a study of the relationships between cyberspace and the natural world.

The third is the Design Workshop, focusing on trends in digital art and design. This is led by Professor Martin Rieser, Professor of Digital Creativity at the IOCT. Martin has always been fascinated by the possibility of creating fragmentary narrative structures and interactive stories using new technology. This has led him into his current explorations using mobile and locative technologies and large-scale interactive video experiences.. Martin's current projects include Riverains: a mobile location-sensitive exploration of underground Manchester which has been short listed for the Between Festival Awards, and Underground Vienna, which employs similar technology as part of the e-mobilart European artists' workshop. His current book The Mobile Audience is an exploration of Mobile technology and emergent artworks and is published this year by Rodopi.

We are here to contemplate the future of 'creative technologies'. It is worth pausing for a moment to consider that phrase, because it carries several layers of meaning. The most immediately obvious is the creative use of technologies by human beings. This of course characterises creative activity throughout history, but I think we would all agree that the recent developments in digital technologies have brought about a profound cultural change. The rise of user-generated content that is readily accessible, the plurality of means of communication, the formation of groups around shared interests and ideas rather than geographical location... these and many more changes have unleashed a barrage of creativity unimaginable thirty years ago.

I'll give you one example from my own experience: in my student cohort studying music at university in the 1970s, I was one of only two composers. To be a composer was to be a very

unusual type of musician. Today, the entire cohort studying Music, Technology and Innovation at DMU - more than 300 people - are composers, producing digital music that both sounds good and contains originality.

A second layer of meaning in the phrase 'creative technologies' is a more subtle implication that the technologies themselves are in some way creative or at least have creativity embedded within them. As artificial intelligence improves and as nano- and other new-technologies develop, so I think we will increasingly see evidence of this.

A third layer of meaning links the more abstract research work undertaken within the IOCT to industry and commerce through the 'creative industries'. As many of you will know, the IOCT undertakes research at the intersection of science and technology, the arts and humanities. All of its 100+ projects combine in various ways researchers from specialist disciplines within those broad categories. The combination may be multidisciplinary (several disciplines working alongside one another to common purpose), interdisciplinary (work that goes on between established areas) or transdisciplinary (work that moves across the disciplines, generally our preferred mode). In any event, we can see a pattern here that is reflected in the world beyond the university, and is my first prediction for the future: cross-specialist working will increasingly become the norm. The ability to move flexibly and with fluidity between different platforms and environments, applications and challenges, is a skill that is being required more and more in industry as the new technologies enable extremely rapid change and create opportunities. A creative approach is often the best way to gain a competitive edge and open up new markets. The phrase 'creative technologies' implies a dynamic merging and evolution of traditional practices.

In research, traditional science is increasingly seeking new 'grand challenges' as many of its long-running key questions are answered. It looks outside of the familiar confines of established scientific thinking to try to identify these new challenges. Meanwhile, technological development increasingly moves away from a traditional high-end solution offered to many low-end users to a more collaborative and communal approach, as users share knowledge and understanding. User-generated content now populates media platforms in a way which even ten years ago was unpredictable and it is easy to predict that this

tendency will continue. Government has (belatedly) begun to engage with the transformational impact of new technologies on the way people live their lives and express themselves. And artists, as they have always done, continue to innovate ahead of the game. Closing the time-lapse between artistic inspiration and industrial exploitation is one way in which an economy could achieve a competitive advantage.

I will make three predictions about the short-term future of creative technologies. None of these concepts is my own, but perhaps I can claim their syzygistic alignment.

The first is an increase in *hyperconnectivity*. I first came across this term during a visit to Nortel's UK R&D centre. It was invented by Canadian social scientists Anabel Quan-Haase and Barry Wellman, and refers simply to the use of multiple means of communication. The central axiom is that all things that can or should communicate through the network will communicate through the network. This has obvious technical consequences, such as large increases in bandwidth demand, but also changes in the nature of communication itself because of the complexity, diversity and integration of new applications and devices using the network.

The second is the increasing emergence of *amplified individuals*. This term was introduced to the IOCT by Andrea Saveri of our partner institute in California: the Institute for the Future. Amplified individuals, she said, are the superheroes within organisations: highly socially networked and possessing multiple technical skills. These people can amplify not just themselves, but also what small businesses do well: building relationships, understanding niche markets, rapid and agile exploration of new areas. During her visit, Andrea outlined a collection of a dozen or so future job descriptions that would suit such people, including Chief Visualisation Officer and Affinity Agent.

The third is *tetherlessness*. I will leave Jim to explore that idea in depth, but it seems fairly clear that the world will become increasingly web accessible and all our various handheld and desktop devices will tend to converge to enable us to move seamlessly between them without being tied to a single technology.

You will notice a common thread between these three: communication. The IOCT emphasizes collaboration and cooperation by deliberately setting out to create encounters between people from different research backgrounds. Of course, for this to be successful, people have to understand each other. This is something we face daily: people using different words to describe the same thing, people using the same words to describe different things, and people not having the words to describe things that are so new they do not yet have names. This last can be particularly problematic when contemplating the future, because it can usually only be described in the language of the past. On several occasions, when trying to explain some new concept or technology to someone, I have been forced to reduce it to something the other person already understands. At which point, the usual reaction is "oh ... one of *those!"* and a disappointed shrug.

Highly specialist knowledge tends to generate its own jargon or, more politely, *argot.* There are good reasons for this, and it must not be a consequence of collaboration that we lose depth in our attempts at mutual comprehension. At the same time, we do need to understand one anothers' value systems. I'll give an example that I have used before: the word 'pattern'. For a sicentist, to discover a pattern is often the Holy Grail and can lead to glittering prizes. A designer begins with a pattern and then often *de-patterns* in order to create interest. To accuse an artist of making mere patterns is jst about the worst possible insult, implying a complete lack of originality. If I begin a talk to a typical IOCT audience by saying: "here is a pattern", the scientists get all excited, the designers think 'obviously' and the artists look at their watches. I will forecast, therefore, that the future of creative technologies will also involve an evolution in language and types of literacy.

Our two research themes are Quality of Life and Cultural Horizons. Both of these reflect an interest in the way people use technologies, rather more than the technologies themselves. We are in a digital economy now and any benefits we may gain from that depend on some key aspects. Digital technologies should be designed to create opportunities for all, and should be sustainably embedded in business and user practices. Trust is very important and this relies on security and privacy, so, espeically in these economically turbulent times, it is crucial that we have an effective social and technical infrastructure. At the same time, the technologies should be accessible and engaging. By the way, I have observed with interest

over the past few years the great extent to which the so-called 'disabled' are in fact leading developments in creative technologies, from wheelchair painting using adapted Wii controllers to gaze-interaction with World of Warcraft, from soundscape therapies for terminally ill people to brainwave readers used for writing stories... the list goes on.

I'd like to conclude by offering up a fairly random selection of IOCT projects that seem to embody the future in some way. I'd be happy to discuss these further with interested individuals during the course of the day:

The work on robotics includes HaRT, an animatron that rreacts intelligently to events around it, and some autonomous flying robots that communicate by sonic signatures.

A Million Penguins was the world's first wiki-novel, puublished by Penguin and co-authored by several thousand people. The subsequent analytical research paper reveals as much as the novel itself about this highly experimental process.

We have a programme of Knowledge Transfer Fellowships funded by research councils, taking new creative approaches into industry.

NESTA (National Endowment for Science Technology and Arts) has just given £200,000 support to a project provisionally entitled "The Wisdom of Leicester", which asks: how can difference stimulate innovation? and tests the proposal that 'the many are smarter than the few' in one of Europe's most diverse cities, by connecting the city's varied workplaces to create a city-wide project using collaborative innovation to tap into the 'wisdom of crowds' of the Leicester community and map the knowledge gained.

The Virtual Romans project is rebuilding an exact model of Roman Leicester then populating it with virtual characters who will live out their 'lives' there, programmed with the belief systems, socioeconomic and environmental apsects of the time.

There is a project to map human creativity using a graph-theoretic approach to model the creative process. This is also producing tools, including the De Montfort Creativity Assistant.

CREEM, the Creativity East Midlands network, established a programme of discussion, seminars and public debates about creativity. This is being extended by the Creative Coffee Club and other social networking initiatives aimed at a wide public.

Ximena Alarcón has created a web sound installation which links the memories of commuters on the London Underground. This project was recently extended to include Mexico City's underground, and the Paris Metro is the next step.

The *Stereo Bodies* dance performance used an Access Grid, next generation videoconferencing system, to create a telepresent pperformance involving real dancers interacting with virtual dancers in a number of remote physical locations.

Our Masters programme is co-taught across three Faculties and has recently produced its first cohort of successful students, one of whom achieved a distinction and has gone on to undertake PhD research into transdisciplinary research methods.

There are many more such projects described on our website.

> I think today will offer you time to reflect and question your understanding of some of the latest developments in creative technologies and their relevance to your organisations. You will be exposed to new ideas which may spark innovations and you will be hearing about forthcoming developments from the source, so to speak. Also, clearly, you will have much opportunity to discuss with others from different backgrounds and different organisations how these developments and key issues influence them. I do hope you enjoy the day.