



How Might Future Technologies Change the Nature of Education?

Preface For Creative Science 2013 (CS'13)
Kings College London, UK. 29th of November 2013

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Creative Science 2013 (CS'13) is the *third* in a series of workshops that have explored the use of science fiction to motivate and direct research into new high-tech products, environments and lifestyles. In particular these workshops have sought to apply a methodology called *Science-Fiction Prototyping (SFP)*, a practice developed by the Intel Futurist Brian Johnson, to serve as prototypes to explore a wide variety of possible futures. This workshop differs to earlier workshops in that it has sought to use SFPs as a means to *explore, inform, and influence future scientific research and development in education*, with a *special emphasis on immersive education* (the focus of the host conference). The workshop was structured around a series of presentations and discussions, the first being a welcome by Professor Callaghan who explained the ideas underpinning SFPs and paraphrased the aim of the workshop in somewhat stark terms as, “*can we identify what technologies might spell the end of schools and universities as we know them?*”! He motivated this theme by pointing back at different moments in history where various major organisations and companies seemed unassailable only to eventually fall (or, at least, lose their dominance) by the advent of new and disruptive technologies. A few notable examples were cited, such as the role of microcomputers in unseating IBM & DEC, how digital photonics took Kodak by surprise, the way the Internet obsoleted the business plans of Blockbuster and Borders, how smart-phones wrong-footed Nokia” and noted that current industry giants, such as Microsoft, struggle to survive the effects of technology and societal changes. *Could the same happen to education, and where might those threats come from?* In effect, this is what the CS'13 workshop is considering. Of course, online immersive reality technologies (the focus of the host conference) are, potentially, one such disruptive technology! The organisers would have been happy for this workshop to provide a comprehensive insight to such questions but they are pragmatists and know that, from such a small workshop (and with such a variety of SFP aims and styles), that this was unrealistic, so the aims were more modest, simply to begin a conversation and, perhaps, decide whether future events based on SFP would be useful as a language and mechanism to discuss (and take a hand in) the future direction of education.

Towards those ends the workshop consisted of *one* keynote talk and *six* peer-reviewed Science Fiction prototypes (SFPs). The keynote talk was delivered by *Brian David Johnson*, a Futurist and Principal Engineer at Intel Labs, who devised the *Science Fiction Prototyping* methodology. Brian's talk “*How to build the future?*” explained how futurecasting works; using social science, technical research, statistical data and fiction can be used to create pragmatic models for a future that he said he hoped researchers would be able to start building today. Brian also introduced innovations to education based on the “*Maker Movement*”, a new type of crowd driven education (that

combines students, educators and companies); see an introduction in an earlier SFP [http://victor.callaghan.info/publications/2013_CoT13\(MakerFables\).pdf](http://victor.callaghan.info/publications/2013_CoT13(MakerFables).pdf). Following Brian's talk a set of six peer-reviewed SFPs were presented by authors drawn from a diverse set of disciplines including education, computing and business. The first presentation, "*The Turing Shroud*" was from Jim Hensman (Coventry University) and Ian Upton (*Get-Real Solutions Ltd*) and considered how technology, in the form of a concept called "SurroundMind" (which could be regarded as equivalent to a very sophisticated brain interface) can be used to enable the internal mental configurations of individuals to be externalised and communicated so as to allow collective intelligence, perception and consciousness to be realised in a group setting that could, in turn, have dramatic impacts on the nature of education. The second presentation, *Stories of the Virtual Mind*, from Anasol Pena-Rios (Essex University), Emmanuel Ferreyra-Olivares (Fundación Universitaria) and Alejandra Pena-Rios (Universidad del Valle de México) explored the use of technology implanted into a person's brain to capture, preserve and transfer knowledge, in the form of experiences, from one individual to another creating the possibility for "programming human brains" in an accelerated manner using mixed reality environments. The third presentation, "*Storyweavers*", by Carlos Sanchez-Lozano (Freelance Designer) imagined that nanobots, implanted in people's bodies, might enable the modification of brain and body signals, creating virtual worlds that would blend with or entirely replace reality requiring teachers to translate knowledge, experience and expertise into fully immersive stories. The fourth presentation, "*Ureka Potential*" by Paul McCullagh (University of Ulster) explored the possibility that advanced technologies, such as electrophysiology and brain interfaces, could be used to monitor and signal cognition and acquisition of knowledge or understanding thereby, for example, ushering in some radically new ways of assessment in education. The fifth presentation, "*Science Fiction Prototypes in Educational and Business Settings*", by Gordon Fletcher (University of Salford), Anita Greenhill (Manchester Business School), Marie Griffiths (University of Salford), Rachel McLean (Liverpool John Moores University)" examined the workings of Science Fiction Prototypes (SFP) in business education, which they explained has been largely delivered within classroom style workshops, and proposed a modified form called "*an expansion event*" that would seek to reach out to issues and roots beyond the academic classroom, thereby creating a more pragmatic and effective business innovation and planning tool. The final SFP presentation, "*The Dream Machine*" was from Victor Callaghan (Essex University) and included two fictional scenarios, "*The Education Pill*" and "*Plug and Learn*" that explored a post singularity world where brain augmentation enabled "learning free, education".

Given the central role of the human brain as a repository of knowledge and sensory experience it is, perhaps, not surprising to discover that five of the six SFPs in this workshop concerned storylines describing technology that operated on student's brains (if only that was available now, we hear some of the teachers amongst you shouting!!)

Finally, it remains only to thank all those that have contributed to the success of this workshop. Firstly, we would like to acknowledge the valuable contribution of the host conference team whose support and advice throughout the year has contributed greatly to the success of this event. Most importantly, we want to thank the authors as, without their outstanding work, imagination, and commitment to writing these visionary SFPs,

there would be no workshop. Thus, on behalf of the organisers and all those people who have enjoyed reading these SFPs, thank you!

16th November 2013

PS If these science fiction prototypes have inspired you, why not write one yourself and join us at our next Creative Science event (see creative-science.org for details)