

# **Hey! Who shook my academic tree? – or, why video games degrees break all the rules**

John N Sutherland  
Reader in Curriculum Development  
School of Computing and Advanced Technologies  
University of Abertay Dundee, UK

j.sutherland@tay.ac.uk

**ABSTRACT** Starting in 1997, the newly entitled University of Abertay Dundee converted parts of its existing academic expertise in Computer Science, Mathematics and Virtual Reality into a set of degree programmes to support the expanding video games industry. This proved to be a world first. Although now deemed successful on several fronts, this was an often painful experience and one from which many important curriculum development lessons have been learned. These include aspects of academic foundations for pedagogy, academic staff selection and development, commercial-academic linkages, extra-university perceptions, research standing, effects upon and from other academic fields and the long-term future of such new academic developments. Was it a good idea? Who did it benefit? What were the pitfalls? Why did it happen in Dundee? Why did it have to happen? Should/will/can it happen elsewhere? There is evidence that the video games developments at Abertay are part of a pattern of academic development dating back over a century, and one that, in the ever changing world of 21<sup>st</sup> century academia, we would all do well to learn from. It could be you next.

## **INTRODUCTION**

‘Science, philosophy, psychology ... economics, political science and history ... the principles of literature and art’

(Rose, 1931)

Such were among the boundaries of academic study and knowledge between the world wars last century according to one of the then popular bookshelf self-education tomes. It is easy to wear rose-tinted spectacles and imagine that acadæmia is an unchanging stream and drift into the nostalgia so beloved of many in the United Kingdom. But, as Lester Smith said,

‘What is education? ... when thinking about education we must not forget that it has the growing quality of a living organism. While it has permanent attributes, it is constantly changing, adapting itself to new demands and new circumstances’

(Smith, 1957)

To pretend that everything stands still is to watch time and events pass us by. And that is a very dangerous game to play in today's world of *bums-on-seats* funding, the RAE and academic redundancies. Looking backwards at a lost golden age is dangerous for yourself, fellow-academics and for students.

'Universities have a duty to their time and place'

(Boyle, 1998)

We live in a time when,

'In Britain, they are planning for half the youth population to go to university in the next century. More than a third of young people are already enjoying this opportunity in developed countries'

(Antonio Polito in Hobsbawm (2000))

It is simply not possible to produce more of the same graduates and expect them to fit into a society that is changing more rapidly than ever before. Britain is no longer a manufacturing economy, educators are ageing, university funding is sparse, job security is low, tertiary education is part of a growing global economy (e.g. Education Australia's IDP website: <http://www.idp.com>) - in all, it's not the world that most of us and our fathers and mothers were educated in.

But, what are valid new degree programmes?,

'Before devoting years to some subject which fancy or fashion suggests, it is surely wise to weigh with great care the worth of the results, as compared with the worth of various alternative results which the same years might bring if otherwise applied'

(Spencer, 1929)

If a student studies computer games programming, does he (he will be predominantly a *he*) get a good education and does he get a good chance of a good job? Would he have been better off in the short, medium or long terms studying archaeology, business studies or mathematics?

These are not new questions. Many have famously raged against modernisation in tertiary education. John Henry, Cardinal Newman (Newman, 1889), who I have great respect for, did not approve of a university where Theology was not taught. In the post-Robbins 1960's expansion the then new universities were ridiculed for not offering Philosophy. In the 1990's conversion of polytechnics to universities one old university vice-chancellor bemoaned that, 'Where everyone is someone, nobody is anyone.'

Yet, any reading of the history of higher education will show a system of constant forces for change, and reactionary forces. There was a time when Science, Business, English, Sociology and even Computing were new, and held in disrespect by the established. Indeed, I often take comfort that it was apparently said of the first BA degree in English that, 'it was just a degree in reading books.'

So, Abertay's development of the new field of video games development, comes in a long tradition of university innovation. And, if I'd read more at the time and spent more hours researching the issues of educational innovation, I would probably have acquired far fewer bruises and scrapes. Though much of what I experienced is not contained in such seminal books as Toohey (1999), which are, frankly, simplistic. The intention of this short paper is to cast light upon these six long years of degree development and roll-out and to help smooth the path of education innovation for other educational entrepreneurs.

Hey! Who shook my academic tree? – or, why video games degrees break all the rules

John N Sutherland

## ABERTAY BACKGROUND

‘The sources of policy generation are so difficult to locate, let alone place in any logical pattern, that detecting the changes in values, or the pressures by which change is effected, is more a matter of art than of analysis’  
(Maurice Kogan quoted in McPherson & Raab (1988))

It would be a lie to write this paper as a series of pre-planned events. This happened, then that, then that, then everything worked well and everyone lived happily ever after. In our *post-modernist* world we are all wiser to the pretensions of those who would simplify complex events. There *is* a pattern of events, but I would not want to oversimplify them into a *plan*.

The Timex manufacturing plant in Dundee produced the world-wide supply of Sinclair home computers: ZX81, Spectrum, etc. Many young lads in Dundee had, by various routes, this easily programmable machine. An evening games programming class was run once a week at the then Dundee College of Technology (DCT) (a previous Abertay title) and many attended who are now leading games developers: Dave Jones and Russell Kay in particular. At the same time, the early-1990’s, DCT ran a BSc (Honours) degree in Computing and Microsystems which had the precise profile required by early games developers and allowed many graduates to go into this very new market.

One of our former students, Dave Jones, went on to write one of the first million-pound games, Lemmings, from his Dundee studio, using graduates of DCT and the University of Dundee. At this time I was working in Virtual Reality research, developing computer models on the new world of 3D graphics on PCs. I spent part of 1996-97 in Japan as a Visiting Professor in Virtual Reality at Gifu University and came back to be famously told by a senior colleague in the corridor, ‘John, you’re in charge of the games degrees.’ This sounded so interesting that, after bouncing it off my *sensei*, Professor Ojika Takeo, I decided to forego applying for a position at the EdVEC labs at the University of Edinburgh.

(As an aside – was that a good idea? I’m still not entirely sure.)

Dave Jones and I sat down and talked together – he was a former student of mine, so we already knew each other – and it became clear that there was a real problem. Video games had just gone 3D; images now moved in and around a virtual world, not just across a piece of ‘flat paper’. And, this was exactly what I had been doing in my virtual reality research. Dave’s world and mine had converged.

We got together a set of leading people in games and virtual reality and brainstormed out the necessary components of a games degree. I then set these down and planned a roll-out of the new programmes: conversion masters first (to get new graduates out quickly into the field), a four-year undergraduate bachelors next then a final degree programme in creating the aesthetic visual and sonic components of a game.

To cut a very long story short, the programmes took off like rockets, attracting extremely highly qualified students and lifting the brand new university’s standing from Britain’s newest and, according to all league tables, worst, to an exciting place to be.

## THE COURSES

MSc Computer Games Technology – a course based on an already successful course, the MSc Software Engineering. Indeed, these (the MSc and BSc, below) programming courses are software engineering degrees, tuned for interactive 3D graphics programming. It was originally entitled *MSc Software Engineering (Games and Virtual Environments)*, a hideous but honest mouthful as the course was designed to produce graduates also for the then developing virtual reality industry. But it didn’t develop and this part died on the bud.

Hey! Who shook my academic tree? – or, why video games degrees break all the rules

John N Sutherland

BSc (Honours) Computer Games Technology – a full, four-year Scottish honours degree. Originally designed as a mix of technical competence, mathematical underpinning and creative content creation.

BA (Honours) Computer Arts – another four-year degree. Designed mainly for visual artists to develop skills in the creation of time-based-art-works like animations, games, etc.

BA (Honours) Digital Music and Sound – originally killed by the School once the others were off the ground, but now being reconsidered as the success of the BSc and BA courses is being further considered. May happen, but only in cooperation with other institutions. Basically, Abertay got cold feet.

## MAJOR ISSUES

Academic jealousy soon broke out. I was accused of theft of video players, etc. (quite believable as much of the teaching equipment was all suitable for home use). After a tussle, and with my strong backing from the Vice-Chancellor and Head of School, the courses were relocated in a new Division of Computer Arts. The dust of this has only now, four years later, begun to settle. But in the meantime the Division that lost has recreated its own games degree for the mobile phone market in opposition to the BSc CGT which is aimed at producing graduate programmers for the console (e.g. Microsoft Xbox, Sony Playstation 2) and PC market; and a good degree programme it is proving too.

Why did this row happen? Much of it happened due to the personal circumstances of certain academic staff. Academics are often insecure people who rage, rather than discuss, against those who disagree with them. In creating new developments, the history of the personnel in a department is central.

Next there was a very serious tiff over course direction,

“My aim in educating people is to develop specialists ... by trading on the suggestion that pursuing this, and only this end, is consistent with educating people”

“... [in] a more precise specification of what an educated man is considered to be [certain ] features would be emphasised – e.g. critical thinking, specialised knowledge, autonomy, aesthetic sensitivity ...”

(Hirst & Peters, 1970)

The two above quotes illustrate the two philosophies that came into early and direct competition over the direction of the BSc Computer Games Technology. A few (including myself, the course author) were in favour of a degree that produced an *educated man* with *specialised knowledge* while the majority wanted to *educate specialists*. An unholy row then ran for 2-3 years that split the Division. Terrible accusations were made, Chairs withheld and careers left in tatters. The majority won and Abertay stopped teaching courses in Creativity as a consequence.

The nett effect was to neuter an important aspect of the courses: the creation of creative technical minds. This ran contrary to our academic research (e.g. Pfenniger (2001) and Sternberg (1999)) and the idea of the *creative industries* that are the apple round the core of video games (National Advisory Committee on Creative and Cultural Education (1999), Ivey (2001), Howkins (2001)). Despite the fact that these underpinned the wider logic for these degree programmes.

Why did this happen? The two groups had a fundamental difference of paradigm. This overworked word means simply *mind-set*. The two groups viewed the world in different

Hey! Who shook my academic tree? – or, why video games degrees break all the rules

John N Sutherland

ways. To one group education was about education and to the other it was about graduate employment. This also surfaced in differences of teaching and assessment approaches. To the *education* group student encouragement and creative thinking were at least as important as technical programming. To the *employment* group nothing mattered except the ability to write good computer programs.

As in all such paradigm wars, nobody gives ground as both groups are convinced of being right. The curriculum was remoulded to exclude almost all input from the *education* group and to further concentrate teaching upon the *employment* group. Interestingly, the loss of myself, the course designer, from the core group did not have any major effect upon the success of the degree programme.

But, to sharpen my *education* knife, the rate of failure and drop-out of these students remains far too high for such bright students. 80% failure is common in some modules and 33% loss each year is typical.

Why does this happen? There are many possible answers. Perhaps the effects of the academics' wars of several years. Perhaps the fear in students of failure caused by previous failures. Perhaps a mismatch between AAA school-leavers and new university education. Perhaps an over-expectation by students or staff. Perhaps this is normal for highly-complex technical degree programmes? Whatever the reason(s), the resulting failure rates are embarrassing.

On the positive side, there has been a huge burst of extra-curricular activity in student entrepreneurship. Only the people who own games companies get to own the *big red cars*. Employees earn OK money, do a cool job, and get a decent bonus if the games makes millions. To become another Dundee games millionaire requires ownership of the company. Student companies have turned over well over £200,000 of funding in recent years. None has yet produced the million-seller, but, that takes time. This has now spilled over into work with students and national organisations in Canada and the Republic of Ireland.

Why has this worked so well? Dundee has a core of successful games companies: Real-Time Worlds, Visual Science, Denki and VIS Interactive. All have had world number-one selling games. Scottish Enterprise has been, after some cajoling, very supportive. The heads of some games companies have been made Visiting Professors. Although Dundee is perceived in Scotland to be a 'skanky' (as one rude Glaswegian said) place, it is actually a very nice, safe and inexpensive place to live, particularly when compared with the major Scottish and UK cities. The games industry does not stigmatise failure. Everyone running a games company has had a company failure; its excellent experience; also, significant academic Abertay Computing staff are or have been in business.. Importantly, young graduates don't have huge financial overheads and can afford to take the chance and gain experience in setting up a company. Finally, all ideas for games and companies are vetted and supported by a forum of advisers through a collaboration of the local universities, Dundee City Council, Scottish Enterprise and the local games companies. The local authority is very supportive as part of the regeneration of a post-industrial economy with real social and economic problems.

The Computer Arts degree was a gamble. I 'felt' it would work. The Head of School disapproved. One of Europe's largest and one of the UK's most prestigious art colleges, Duncan of Jordanstone, is less than a mile away with 1,500 students. New staff were recruited for the BA and space was found in a soon-to-be-demolished building. As part of the BSc CGT paradigm wars I was not allowed to teach on the course. However, the four artists and one musician have produced a course that is first class. Students have won national awards, including a student BAFTA and BAFTA-sponsored awards and have produced artworks for commercial and national organisations. The success of the Computer Arts degree has begun a reconsideration of the losers in the paradigm wars, both by the School and the war winners.

Hey! Who shook my academic tree? – or, why video games degrees break all the rules

John N Sutherland

Why was this degree such a gamble? It mixed visual art and music/sound teaching in a single degree programme. I bounced this off Sheridan College in Canada, producers of the Pixar team who wrote Toy Story and other Disney computer animated movies, but they disagreed that this mixed degree would work. Yet, this mix was essential for the field, but hadn't been academically done before. It was successful, and even Sheridan now admit this. If anything it proves that odd mixes can come together even if academic experience and habit says otherwise, if practice proves the mix correct.

## CONCLUSIONS

'One way of representing the present condition of our educational system is as follows: it is as if we are driving a multi-million-dollar sports car, screaming, 'Faster! Faster!' while peering fixedly in the rear-view mirror. It is an awkward way to tell where we are, much less where we are going.'

(Postman & Weingartner, 1969)

To look backwards while driving forwards is very dangerous. We need to be aware of the road ahead of us, other traffic, a personal role and destination, and other passengers in our car.

In developing a new degree programme – new either in the 'brand new' meaning or new as in 'new to us' - many questions need to be posed,

*Why are we doing this?* You need a plan that fits the needs of the university, staff, potential students and graduate destinations.

*Who will benefit?* It is quite normal that academic innovators are discarded once the innovation is established. Universities rapidly revert to type once the novelty is established. The individual academics concerned need to keep a very clear focus on their future career.

*How long will it last?* History tells that innovations can fail, and if successful, are eventually taken over by competitors and, eventually, the establishment. For example, in the 1970's Glasgow College of Technology pioneered Sociology in Scotland, now the prestigious University of Edinburgh also teaches and researches the field.

*What are your plans for dealing with problems?* Things will go wrong. Academics will try and destroy each other. The entire project depends on the continued support of these volatile, *prima donna* individuals.

*If you aren't innovating, what and who will you be teaching in 10 years time?* Universities teach the people who will work, lead and innovate tomorrow. Society needs such graduates and will not continue to support tradition for tradition's sake.

There is a window of opportunity for a new area of teaching. While open it offers support from Vice Chancellor downwards. But, once established it ceases to be an innovation and becomes another ho-hum degree to the university. Yet, it is only now that the hard work really begins. You need to stick with it for years and be willing to see your academic career change. I entered this development as a Software Engineer, publishing in virtual reality. Now, six years on, I am a Social Scientist researching and teaching course development and entertainment technology ethics. This was not planned. And my colleagues have likewise seen their careers change completely. But, our jobs are far safer, students smarter, networks wider and research more interesting than we were doing back in the mid 1990's.

But, it was painful. No, I wouldn't do it again. But, on balance it was, all things considered in equal balance, probably, 'a good thing' (Seller & Yeatman (1930)).

Hey! Who shook my academic tree? – or, why video games degrees break all the rules

John N Sutherland

## REFERENCES

- Boyle, N (1998), *Who are We Now? Christian Humanism and the Global market from Hegel to Heaney*, Notre Dame, Indiana: Notre Dame Press, p63
- Hirst P.H. & Peters R.S. (1970), *The Logic of Education*, London: Routledge and Kegan Paul, p27
- Hobsbawm, Eric (2000), *The New Century*, London: Abacus, p. 118-9
- Howkins, John (2001), *The Creative Economy*, London: Penguin
- Ivey, Marlene (Editor) (2001), *Exploring the Interface Between Education and the Creative Industries*, Glasgow: The Lighthouse
- McPherson, A. & Raab, C.D. (1988), *Governing Education: a Sociology of Policy since 1945*, Edinburgh: Edinburgh University Press, p10
- National Advisory Committee on Creative and Cultural Education (1999), *All Our Futures: Creativity, Culture & Education*, London: Department for Education and Employment
- Newman, J.H. (1889), *The Idea of a University Defined and Illustrated in Nine Discourses*, reprinted by, *inter alia*, Notre Dame, Indiana: Notre Dame Press, 1982
- Pfenninger, Karl H. & Shubik, Valerie R. (2001), *The Origins of Creativity*, Oxford: Oxford University Press
- Postman, N & Weingartner, C. (1960), *Teaching as a Subversive Activity*, Harmondsworth: Penguin, pp12-13.
- Rose, W. (1931), *An Outline of Modern Knowledge*, London: Gollancz, pp.v-vii
- Sellar, W.C. & Yeatman, R.J.(1930), *1066 And All That*, London: Methuen.
- Smith, W.O. Lester (1957), *Education – an introductory survey*, Harmondsworth: Penguin Books, p.7
- Spencer, H. (1929), *Education: Intellectual, Moral, and Physical*, London: Watts, p6.
- Sternberg, Robert J. (1999), *Handbook of Creativity*, Cambridge: Cambridge University Press
- Toohy, S. (1999), *Designing Courses for Higher Education*, Buckingham : Open University Press