

Industry – Academia: How Can We Collaborate?

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Abstract

With the growing popularity of degree programs in computer game development as well as the continued expansion of games-related research in a multiplicity of academic disciplines, it is critical that academia establishes more extensive collaborations with industry developers. Additionally, the increasing worker shortage and the growing complexity of game technology act as powerful motivators for industry to seek out academic affiliations. Over the past few years this issue has garnered significant attention and has been a recurring theme at various games-related conferences. This paper discusses some of the obstacles faced by potential collaborators, as well as some strategies and approaches the author has used in establishing working relationships with several game companies.

The Gap

Starting with GDC 2002 and the IGDA Academic Summit, the IGDA has organized numerous panel discussions with academics and industry leaders to discuss how to bridge the gap separating them. Since that time, “the gap” has been a recurring topic at various game related conferences. In fact it has appeared as a topic of discussion (as panel debates, roundtables, workshops, presentations) at virtually every GDC since. This concern over how to facilitate relationships and build collaborations between industry and academia has now spread beyond GDC/IGDA and has appeared as a prospective theme in numerous game related conferences (iDig 2006, Massive 2006, FuturePlay 2005).

Evidence of the rift is easily discernible when reading some developer/academic postings on the Terra Nova web blog site. Although most bloggers are polite and not blatantly disparaging, others are anything but shy in voicing their opinions:

Developers have a hard time listening because you haven't been there and done that. Most of us have been on the receiving end of a multi-million dollar Crater Maker Mark I. That tends to teach one some things and we trust our experience. Most academics have been on the receiving end of... what? Spending grant money to create 35 new words and a paper that maybe 10 people world-wide will read?” (posted by a developer, Terra Nova 2006)

Proceedings of CGSA 2006 Symposium

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In reply, a user on the academic end commented that perhaps some developers are bordering on hubris. On the issue of finding common ground one blogger was indeed very blunt about whose responsibility it might be to resolve “the gap”:

So when we get right down to it, I guess the crux of the issue is that game developers don't feel they have any shortage of good ideas and plausible theories, and they don't feel that academic research into games is a cause worthy of donations of charitable funds. ... Should developers be expected to work to fix this? No, I don't think so. Why? Because you, the academics, are trying to get our attention and our money, not vice versa. (posted by a developer, Terra Nova 2006)

The message being conveyed is clearly that developers feel that they are anything but devoid of new ideas; moreover, since they already know what they are doing, as they live it every day, why would they need to rely on academics? In counterpoint, another blogger on the same thread responded rather emphatically that he (as an academic) did not really care if his research had any value for developers, as this was not the primary goal of the research! In fact several authors (Gold, 2005; Sicart, 2004) have expressed concerns over the possibility that by pushing to commercialize university research, market driven influences could corrupt the academic research process and potentially compromise academic credibility (Schott, 2003).

The friction between these groups is not restricted to blogger rants. One academic and games researcher, Constance Steinkuehler, was particularly upset by the tone of industry presenters on an IGDA-sponsored panel at GDC 2004. The title of the session was “Towards Relevant Research: Collaboration 101”. Her summary notes:

This roundtable was somewhat contentious (if not slightly condescending) toward academics, so my notes will be brief (to avoid trouble, since *cough* I'm one of the "slow as molasses" and “useless” academic games researchers the panel repeatedly bashed). ... The discussion started with explaining that little academic research is useful to designers, then explaining why (in a variety of terms), then finally reducing the issue of 'collaboration between academics and industry' to be one of 'academics training students for later work in industry.' I then stopped taking notes. (Steinkuehler, 2004)

She was so obviously upset by what she heard, that at a similar GDC/IGDA panel session the following year, she took the opportunity to make a statement regarding the previous year's GDC panel.

At GDC last year, there was a panel on the relationships (if any) between academics and industry and the conversation devolved into a discussion of the differences and tensions among them, and the academic side of games was inadvertently reduced down to the question 'how can universities better train folks for jobs in the industry.' Well, I don't train people for industry. Rather, I study games. (GDC Panel, 2005)

The unfortunate reality is that these types of statements, however painful, may be the prevailing

underlying sentiment in both the developer and academic communities. This wariness is nicely summarized by Chris Crawford (Crawford, 2003) who states simply that “in the games biz, trust no one.” To be fair, however, it should be noted that there are many high profile industry spokespersons that are very diligent and committed to bridging the gap (Zimmerman, Buchanan, Spector, Buxton among many others).

If there is agreement, it is in the refrain from both groups: “they are not listening”. Industry says “help us we are in need of employees” and academia hears “we need you to be vocational schools.” Academia asks to “collaborate on research” industry hears “give us money”. There is obvious confusion, misperceptions and mistrust. Speaking at GDC Europe 2003, as part of a series of case studies presented at IGDA Academic Day, Robin Hunicke gave one remarkably simple piece of advice “seek first to understand, then to be understood” (Hunicke, 2003).

Clearly there are other differences between the two groups. They are driven by fundamental needs and priorities which can lie at different ends of the spectrum.

Industry

“we want stuff which is useful”

“we need it yesterday”

“we want to own it”

“train people for us”

“money is important”

Academia

“we want stuff which is meaningful”

“so what if it takes longer, if its better”

“lets publish it”

“we should not be vocationally oriented”

“money is important” *(oops)*

Though there are a multitude of obstacles to collaboration, this does not imply that it cannot flourish. There are numerous institutions that have established successful industry-academic collaborations; Carnegie Mellon University, University of California, Massachusetts Institute of Technology; Southern Methodist University, University of Texas are some of the most notable. Each has attracted many prestigious industry partners with diverse research portfolios and significant funding. The IGDA hosts an exemplary archive site of game related conference and workshop information (IGDA, 2006) where details on some of these collaborations can be found. The problem is not that there are no collaborations, merely that we want there to be more of them.

A Window of Opportunity

When the tech bubble burst in 2000, Computer Science (CS) enrollments fell almost immediately. The unfavorable and seemingly unrelenting press coverage about tech worker layoffs and the unrealized promises of the dot-com revolution most likely played a significant

role in dampening enthusiasm for students contemplating a CS education. At GPRC we suffered a continuous five year decline in first year registrations. We currently seem to have stabilized at about 30% of the maximum intake we had achieved. The University of Alberta (the closest

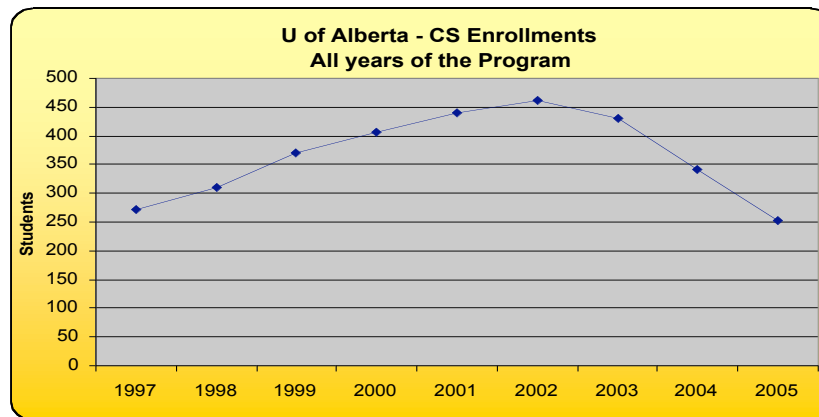
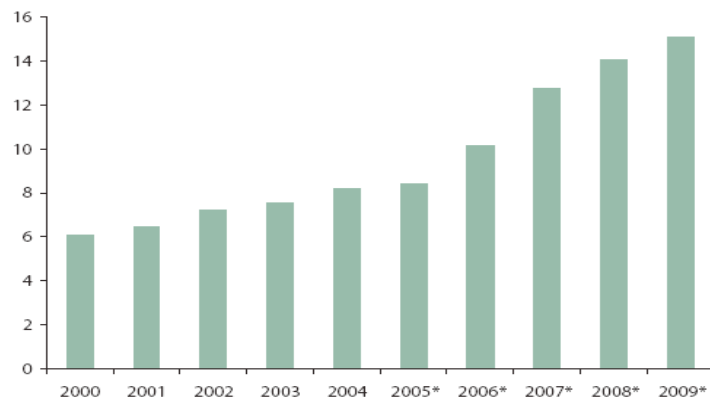


Figure 0: University of Alberta CS Enrollments



Source: Price Waterhouse Coopers, Global Entertainment and Media Outlook: 2005-2009 (Apr. 2004).
Note: *Projected spending.

Figure 3: Observed and Projected US Inflation-adjusted Sales of Entertainment Software (\$Billions, 2004 Dollars)

University to Grande Prairie) has also experienced a decline in CS student registrations, albeit a more moderate one, with registrations currently at 55% of their peak. (Figure 1).

This enrollment pattern is not unique to Alberta as similar trends have been noted across all of Canada and North America (Vegso, 2006), Figure 2.

During the same period of time that universities experienced dramatic declines (2000 to 2005), the video game industry in the US grew their revenues from approximately \$6 billion to nearly \$10.5 billion. Projections are that during the 2006 to 2009 time frame, revenue will continue to grow by approximately 50% and exceed the \$15 billion dollar mark (Crandell & Sidak, 2006), Figure 3.

Increasing revenue generally requires an active product pipeline, which in turn presumes an increasing number of new skilled employees. Unfortunately as this new talent will be drawn from a shrinking pool of available graduates (Electronic Arts, for example, has an internal mandate with a goal of 75% of new hires to be directly from university), industry will find it progressively more difficult to fill these new positions.

These two factors (the declining number of CS graduates and increasing number of available positions) coupled together have the potential to evolve into the “*perfect storm*” scenario, resulting in a serious employment crisis in the computer/video game industry. It should come as no surprise then that in public (and private) dialogs with academia, industry representatives are constantly driven to make comments about “how to better train students” and “how difficult it is to find good people”.

Furthermore, the escalating complexity and sophistication of the game development process also requires potential additions or revisions to existing CS curricula. In a recent survey (Brazell & Kim & Starbuck, 2004), commissioned for the State of Texas, game development companies stated emphatically that they want graduates who have been trained in game studies (83% of 53 responses). While the University of Abertay and Dundee was the first in the world to offer a degree in Game development, this degree stream came about as a direct consequence of requests from industry for better trained CS professionals (Sutherland, 2002).

This impending shortage of viable employment candidates is beginning to drive larger game companies to rationalize increased spending on educational initiatives. Recently Ubisoft Canada made a \$16 million dollar commitment towards the establishment of Ubisoft Campus. This is collaboration between the company, three universities and at least 6 CEGEPs which will offer both diplomas and post-grad certificates in a variety of areas including: 3D modeling, animation, game design and programming. Ubisoft campus is expecting to train approximately 1500 students and employees over the next 5 years (Tomas, 2005). In a similar move, EA-Canada has recently invested \$2.6 million to fund an employee technical education training program in Montreal (Schachter, 2005). Both of these programs have received additional funding in the form of provincial grants from the government of Quebec.

In the past couple of years EA has been very active in helping to facilitate academic curriculum and collaborations, some notable projects include:

- EA’s \$8 million dollar investment in the new Master’s degree from the Electronic Arts Interactive Entertainment (EAIE) Program at the University of Southern California, 2005
- EA worked with the University of Central Florida to establish a curriculum for its new Masters program in Interactive Entertainment at the Florida Interactive Entertainment Academy (FIEA), 2005. The university, the state and the city have invested over \$10 million dollars for capital expenditures.
- EA has endowed a research chair at the University of Southern California (Warren & Boehm & Gee, 2005).

A Foot in the Door

The stated enrollment decline in CS programs has motivated some institutions to revisit their program offerings (Ficocelli & Gregg, 2005; Warren & Boehm & Gee, 2005; Proposal 2006). The necessity of re-invigorating program enrollment (“more bums in seats”) often provides the initial motivation for exploring options for re-energizing curriculum! One of the standout opportunities (many may disagree) is the introduction of game related courses, diplomas and degree programs. The field has obvious and instant student appeal, has tremendous depth and diversity of content, and, as noted earlier, continues to demonstrate promise for strong long-term economic growth.

Some would argue that that trying to cash in on the game industry’s “cool factor” (Buchanan, 2006) is somewhat mercenary. However, so long as the quality of the education is not compromised, what is wrong with being “cool”? The biggest obstacle for many academics is their concern that by acquiescing to industry, we will be driven to become vocational schools. Many industry luminaries advocate something quite different (Buchanan, 2006 & Spector, 2006). They reason is that in restricting teaching only to what industry currently knows and needs, we will simply be training a group of uninspired copycat developers. They make an even bolder assertion that CS curriculum needs to be broader and more diverse and not narrower and tool-specific.

Although game companies are generally reluctant to provide concrete support for game development programs - the “give us money” assumption (Parberry & Roden & Kazemzadeh, 2005) - the reverse is true when it comes to providing advice. The Texas technology survey (Brazell & Kim & Starbuck, 2004) reported that 86% of industry respondents stated they would be prepared to partner with colleges or universities to help create curricula that would prepare students for entry into the game industry.

In summary, academic institutions are looking at ways to reverse enrollment declines; the game industry is clamoring for trained graduates. Therein lays the potential for common ground. By asking industry representatives to provide meaningful input into the design of game related courses and programs, we can take the first “baby steps” towards more diverse collaborations. Working together to create curriculum requires dialog; dialog builds relationships, and relationships will hopefully engender trust.

Relationship Building

Once we have “broken the ice,” there are numerous simple ways we can nurture a relationship, even if it is still strictly from an educational perspective.

Industry helping faculty:

- delivering guest lectures
- hiring of industry practitioners as part time faculty (visiting Fellows)
- recruitment opportunities
- site visits (tours)
- student projects

- summer jobs/internships
- collaboration on course delivery - electronic discussion groups (include students and industry)
- support contests (best mod, artwork, animation)
- computer game clubs
- mentoring

Being able to interact with game industry professionals not only motivates and excites students; it also provides them with exposure to real world issues and problems. To most students, experience trumps theory, therefore it is gratifying when students hear stories from industry professionals where experience validates classroom rhetoric. These educational activities not only help to build trust, they yield valuable fringe benefits for the students.

Faculty helping industry:

- give honest evaluation of prospective employees (the students)
- provide help/feedback on problems. Smaller companies are certainly more open than larger more established companies (read as ... more internal policies).
- organize student volunteers to support companies with play testing and focus groups
- provide leads on collaborative research proposals

Although building and maintaining industry contacts is hard work and requires considerable time and effort, the return on investment can be rewarding.

We have found that the most effective tool for enabling a cooperative relationship with companies is through personal networking. Friends or alumni who are already working in industry can be ideal agents for establishing initial contacts. Cold calling or walking in the front door is rarely successful (Sutherland, Parberry, Katchabaw, Warren: personal communication). The “top down” approach using traditional business channels, administrator to administrator, has also fared poorly. The “bottom up” approach where requests are made at lower levels “to people who do the actual work” and allowed to percolate upwards has proven significantly more effective at generating cooperatives activities.

It is important to remember who “the people who do the actual work” are, because hopefully they will be our own students. Ultimately, it is important to realize that “relationships start at home”, so although we may each have our own agendas, it is imperative that students benefit from our efforts and that their education is never compromised. Satisfied and well educated students will not only be our future ambassadors, but they may will be potential collaborators one day.

The GPRC Experience

Grande Prairie Regional College (GPRC) is a relatively small (1400 students) college located in the Northwest part of Alberta. The CS group of the Science department currently provides a number of different educational streams for CS students: a two year diploma, two years of university transfer as well as a collaborative four year CSIS degree with Athabasca

University. We are currently in the latter stages of preparing a degree proposal for an in-house B.Sc. in Computer Science: Game Development.

Although a number of faculty members have talked informally for many years about the viability of a game degree, it was only recently (the past two years) that we have begun concerted efforts towards achieving that goal. We view the degree as an avenue by which we can both stimulate CS enrollments and provide quality education for an under serviced segment of the IT industry. We are very confident that we can deliver a successful program, primarily because of the industry relationships and contacts we have developed over the years.

A number of years ago, one of our diploma graduates was able to secure a position with Bioware Corp. and this was our starting point for a number of game related activities. Over the years we leveraged his position within the company to undertake many of the “relationship” activities described above. We have imposed on him to deliver a number of lectures; helped facilitate guest lectures and conference presentations by other programmers and artists; got approval for sites visits and tours; even organized recruitment visits that resulted in both summer-only, as well as full time hires. Although he has since left the company to establish his own, these activities have resulted in several other GPRC alumni being hired at Bioware.

Last year as we became more aggressive with regards to pursuing the degree, we organized a Computer Game Expo as a way of informing the public about the nature of the industry. The not-so-hidden agenda was to use this as a means of gauging student and community response to the concept. We were able to call upon a number of our graduates to come and deliver presentations and we even used their expertise to hold a full day computer gaming competition. The event was so successful that the college and government sponsors literally insisted on this becoming an annual event. The upcoming expo will have approximately 10 of our grads (representing 4 game companies) presenting at the event.

The Game Expo not only excited prospective students about our degree proposal, it also precipitated interest from both federal and provincial regional economic development officers, Industry Canada, a couple of provincial agencies as well as the local chamber of commerce. A joint committee representing numerous parties has since applied for funding to research means to support and grow game industry development in the Peace Region (Northwest Alberta). We anticipate near term submission of at least one applied research proposal with collaboration from a local game company. Finally, there have been two serious inquiries about developing educational and mobile games from agencies in the city and region.

Conclusion

There is no doubt that “the gap” between industry and academia exists and root causes likely stem from misperceptions of what the other group wants or needs. We tend to trust members of our groups simply because we share a common background and framework. Each has their inherent idiosyncrasies and constraints and since most of us have not had the opportunity to experience the other’s domain, we remain ignorant of each others respective needs and motivations.

At this point in time however, we may have a unique window of opportunity to work together on a common cause. Game companies need the personnel; academia needs the students; so let's cooperate to educate! By utilizing our respective strengths we can work together to design and deliver courses and program curricula, which will properly educate and train individuals for the game industry.

By establishing initial grounds for dialogue, there will be ample and sufficient reasons for continued discussions and more expansive relationship building. Once we trust each other and better understand the other's needs and constraints, the opportunities for pursuing more meaningful research collaborations will surely increase. It all takes time and patience, but hopefully not too much time!

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