Deepening the Chasm: Web 2.0, Gaming, and Course Management Systems

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Abstract

Web 2.0 has emerged into a large, growing, and developing world of content and platforms. Gaming has rapidly expanded into a global industry. In contrast course management systems have developed along very different lines. We examine ways for the CMS to connect with these two worlds, outlining areas for possible development: increased hyperlinking, internal platforms and instances, and extruded applications. Additionally we consider ways by which the CMS can learn strategically and conceptually from Web 2.0 and gaming.

Keywords: Web 2.0; gaming, course management systems, learning management systems, virtual learning environments, social media

Introduction: three worlds

During the past decade, a gap has appeared between higher education and the rest of the digital world. While academia has moved a great deal of content and activity into course management systems, the World Wide Web has developed a new architecture, usually dubbed "Web 2.0." Around this time computer gaming has grown into a vital, global industry. Course management system(s) (CMS) have supported a very different world of computer-mediated communication, and nearly a decade of institutional and individual practice has deepened the difference. We argue that CMS are going to make some efforts to cross that chasm in the near future, but the overall gap is likely to persist.

We can glimpse the chasm's current depths by outlining these two recent cybercultural movements. First, at this point in the World Wide Web's existence, the quantitative successes of Web 2.0 are well-known. The blogosphere continues to double in size, now aiming for 100 million active blogs. The wiki world booms, from the rise of Google's wiki platform (Google Docs) to Wikipedia's steady expansion (2,389,339 articles in English, as of this writing). Podcasting also grows. According to one measure, 18.5 million people listened to podcasts in 2007, an amount likely to break 30 million by the end of this year. Web 2.0-based social networking projects proliferate in size and number. Facebook supports roughly 33 million American users, with just about 8 million in Britain. MySpace is comparable in size and market location; meanwhile, other platforms each pick up millions of users in other countries around the world: CyWorld, Hi5, Orkut, Beebo, SkyBlog. RSS feeds can be detected on most news sites and blogs. Diversity of user base and content is enormous (Pew 2005, Dash 2006).

Educational users of Web 2.0 have ridden this overall growth wave. Teachers, students, and support staff from K-16 have created content and communities through blogs, wikis, podcasts, and many other platforms. An edublogger community has arisen. Scholarly articles and books about teaching with Web 2.0 have seen print, while conference presentations and online publications are commonplace (Yancey 2004, Downes 2005). Pedagogical forms have developed for years, from profcasting (Campbell 2005, Educause Learning Initiative 2005) to courseblogging, wiki-based or –inspired collaborative writing (Lamb 2004, Benkler 2005) to Latin wiki encyclopedias (Alexander 2006). For examples one may consult one listing at the Academic Commons, or the Academic Blogs wiki. Public intellectuals have used blogs and podcasts as media for communicating with a world audience. For example, the conservative political blog Instapundit is one of the most widely read blogs in the world, and authored by a law professor. Juan Cole writes *Informed Comment* as a Middle Eastern scholar at the University of Michigan. .

Second, computer gaming has taken off in parallel with Web 2.0. The gaming industry has been comparable in size to the movie industry for several years. Gaming platforms are diverse, including laptops, handhelds (Xbox, Nintendo), mobile phones, mobile devices (GameBoy, PlayStation Portable), extended systems (Dance Dance Revolution), and newer devices (Wii). Game genres have diversified, from casual games to massively multiplayer online games (MMOs or MMOGs), platform-jumpers to flight simulators (Wolf 2002, Newman 2004). Game player demographics have moved beyond the old stereotypes of teenage boys. And game content is all over the map, from war games to card games, literary games to religious ones. That content is increasingly produced by players, who report on their experiences, offer suggestions for players and designers, create fiction either by or using games themselves (Jenkins 2006).

As with Web 2.0, gaming has been picked up by education, most notably in the wake of James Paul Gee's landmark book (Gee 2003). Games have emerged as learning objects, pedagogically aimed content containers (Prensky 2001, Shaffer 2007). Educators have taught with off-the-shelf games (for example, Civilization), modifying or "modding" pre-existing games (MIT's Revolution, or the Arden project; see also the Arden's project lead's self-criticism). Educators also make games from scratch (UNC's Econ 201 game) (Bryant 2007). As objects for research and curricula, games have been the center of a new field, game studies, which now features scholarly conferences and books (Brenna 2005, Dagger 2007). Moreover, following Gee's lead, educators have been considering what pedagogical lessons can be learned by games and their successes (Gee, n.d., Mayo 2005).

To these two waves of extensive innovation, higher education has largely been immune, at least in terms of course management systems. The leading such platforms – Blackboard and Blackboard-owned WebCT – are clearly different creatures. They have nothing to do with gaming, of course. They tend to have (literally) radically different architectures, when compared with Web 2.0 platforms. The latter are deeply social platforms, while the former are carefully restricted in population to a single class (not course) population. Web 2.0 enjoys distributed conversations, where ideas, commentary, and controversy cut across numerous sites (multiple blog posts and comments), or occur within them (wiki pages). CMS, in contrast, block incoming traffic. Even their look and feel is different, with Blackboard's interface resembling commercial training platforms, such as IBM's LearningSpace, rather than the fluid microcontent arrays presented by MySpace or Digg.

Is it possible that CMS will become more like Web 2.0? One way of answering that question is to examine how CMS approach Web 2.0 in the present, and extrapolating from that. A second way is to consider the strengths of CMS for higher education, and to see how they can be expanded to cover what they currently miss.

Crossing the chasm

It is difficult to separate most things within the Web. Hyperlinking can connect objects, so long as they are not protected by redirects. So while links into a Blackboard class fail, resolving into that campus' gateway page, links out can hail the strangest Web 2.0 content. To the extent that they privilege document sharing (uploaded syllabi, e-Reserves, uploaded readings) CMS deemphasize the open Web, from an interface or user experience angle. Yet from a deeper sense, nothing within CMS architecture prevents an instructor from linking to a blog post, or a student from adding a link to a relevant Wikipedia entry from a discussion thread. Similarly, very little blocks embedding YouTube or other such media content, once all CMS support that use of Javascript and DHTML-calling Flash files. In this sense hyperlinks can cross the Web 2.0-CMS divide with ease. It is not a matter for technology, but individual practice. It is possible, therefore, that the entire world of CMS-housed classes will, in the near future, expand their hypertextual outreach to Web 2.0.

There are also CMS versions of Web 2.0 platforms. Blackboard and third-party developers have produced wiki and blog plugins, as have members of the Moodle development community. Given the open source nature of Sakai, it is not unreasonable to expect similar additions there. These silo Web 2.0 versions seem strange, compared with that Web's well-known openness. But they do resonate with some forms of Web 2.0 in the wild, such as LiveJournal blog posts and Flickr images inaccessible to the world, save for a white-listed audience. In fact most Web 2.0 platforms now offer different levels of privacy and access, affordances which connect with the granular permissions CMS developments seek. This architectural connection may expand over time, especially given the relative ease of developing

versions of applications already in widespread use, and often in open source: tag clouds generators and visualizations, RSS readers.

A third level of CMS-Web 2.0 connection can be glimpsed in recent experiments with what we can call "extruded services." These are tools by which CMS users can publish microcontent to the open Web. Perhaps the best example of such services is Blackboard's Scholar.com. This social bookmarking site has much in common with older projects, such as Del.icio.us (now owned by Yahoo), CiteULike, or Connotea (Lomas 2005, Hammond, Hannay, Lund, Scott 2005). Users upload annotated links to interesting resources, and can choose to make these available to other users. What differentiates Scholar.com from silo-ized wikis and blogs is that users can extrude this content out of Blackboard and into the entire Web. As with del.icio.us, one can restrict access to some, none, or all of one's bookmarks. But one must be working from a Blackboard campus to use this service. If Scholar.com is deemed a success by Blackboard, perhaps we shall see other "extruded" services, such as platforms for blogging or podcasting out of the campus-bound class space.

Discussing such bridges between CMS and Web 2.0 begs a bigger question: why do institutions not simply leave CMS behind and embrace this new Web? Assuming rational choice as an explanation, we should rehearse what institutions of higher education gain from decidedly occupying one side of the chasm between Web 2.0 and CMS.

To begin with, it is clear that Moodle and Blackboard afford easy entrance into the digital world for large numbers of faculty. The relatively low bar of entry needed to start up a CMS course – uploading a single document, student population automatically pre-populated – means that many more instructors will move into that environment than would, say, begin editing digital video, or creating three-dimension content in even the easiest tools (Sketchup, Second Life). This represents a necessary first step for many teachers, and can represent a major victory for campus IT departments. Also appealing to the faculty mind is that CMS are clearly academic products. They are not repurposed social tools, but clearly targeted applications aimed at specific users. Their architecture suggests the physical classroom, with its emphasis on a single section, and the door closed to the world, as it were. Additionally, CMS ease worries about copyright, since by using them instructors can claim digital fair use protection under the TEACH Act. In essence TEACH allows instructors to digitally reproduce old classroom copyright tactics, such as wheeling in a VCR and monitor to show a brief clip which noone else can see. Lastly, the persistence of user interface elements over time surely reassures users who might be made nervous by Web 2.0's frantic development pace, where, as Tim O'Reilly teaches us, everything is in beta (O'Reilly 2005).

From a campus IT perspective, leading CMS offer still further advantages. A developer's community is present in both open source and commercial venues, offering both new features which might be passed on to users, and the opportunity to contribute. Sticking with an already-established CMS avoids potentially huge switching costs, even if prices (license fees or coder salaries) go up, while leveraging already sunk costs. Moreover, running a local CMS instance allows a measure of local control, not afforded by third-party hosts, be they as durable-looking as Google or new as BigThink.

The previously-mentioned CMS-Web 2.0 bridges can realize some of these virtues. For example, the popularity of differential privacy settings could be considered as good faith for TEACH-defended fair use. More subtly, the continued growth of Web 2.0 means faculty are increasingly familiar with its style and strategies. Amazon.com, for example, uses tag clouds and supports blogs. The growing numbers of academic public intellectuals working by blog or podcast means a growing familiarity with those platforms on the part of their colleagues. Similarly, discomfort reduction increases chances for instructors to take advantage of Web 2.0's very CMS-like low bar to entry for making digital content.

And yet, until this chasm between CMS and Web 2.0 is bridged, so much is lost. Digital content housed in CMS never has a chance at reaching wider audiences through Web 2.0's network effects (think viral videos, where viewership rockets up as people spread news about them via words of mouth, or the influence of leading bloggers). Nor can such content be picked up later on through the "long tail" effect (Anderson 2008). While faculty members may have various good reasons for not wanting such global audiences for their content, placing it in a silo means that opportunity is foreclosed. The same is true when content is not spidered by classic search engines (Google, Yahoo), nor by emergent social search services (Technorati, Google Blogsearch, Podzinger). The public sphere does not reap the benefit of

academic work in this way.

Pedagogical opportunities are also lost. For example, users working through Web 2.0 content learn strategies for following and participating in distributed conversations. They might not be good strategies, but everyone who has commented on someone else's Facebook or followed personal stories through multiple LiveJournals has nonetheless learned strategies for finding and assessing information (Himmer 2004). Without participating in that world, faculty and librarians cannot teach better ways of navigating it. The large questions of literacy in a participatory media age are unaddressed when silos block that very participation.

A developmental separation also occurs. The frantic pace of Web 2.0 service development means, among other things, an innovation bounty. The sheer number and diversity of projects is difficult to keep up with, but provides a steady stream of potentially useful tools, as even a casual glance at the large volume of content in Emily Chung's eHub site or TechCrunch. CMS development simply doesn't keep pace. Similarly the energetic development of data mashups (Yee 2008) offers a variety of learning opportunities, not to mention production possibilities. Yes, students and instructors can point to mashups from within a Moodle wiki, but they cannot participate in making one from there, and will work at one remove from that world so long as they inhabit classic CMS. The more efforts made to open out to Web 2.0 from CMS, the greater the likelihood of mobilizing these energies.

Playing across another divide

We can now return to the theme of gaming, and by means of an example. Consider the Dutch game, Wadlandis. Play concerns the search for one Professor Plug, an environmental scientist working on mitigating global warming, but mysteriously lost to the world (thanks to Todd Bryant for the reference). Launched by the Hier initiative, Wadlandis is a hybrid game. It consists largely of browser-based content, but viewable only through Google Earth. One navigates between two windows, one spatial and the other cartographic, trying to solve this mystery. …

On the face of it this game is as far removed from the CMS world as possible. It's the product of an interaction between a nonprofit and a giant corporation, rather than academic content hosted by a smaller software vendor. Content is accessible to the entire world of PC users, and requires literacy in gaming, which CMS do not make available, nor teach. Despite featuring an academic character and intellectual content, Wadlandis is not associated with a class or campus. No institutional registration is required (unless one counts running Google Earth as a form of registration).

Wadlandis does illustrate neatly several points about gaming in 2008, which brings it somewhat closer to academe. First, the game's existence points to the diversity in game content – this is hardly a first-person shooter. Indeed, it's very much a political game aimed at social activism. This brings it into the domain of field of study, and perhaps into the American tradition of campus social engagement. Second, it is clearly a pedagogical object. As James Paul Gee and others point out, games teach their content and their play. Wadlandis draws us in by stages of instruction, much as a good instructor does. It reinforces learned skills, and keeps bringing us to the edge of Vygotsky's competence zone. Third, the game draws on a series of literacies, all of which have been deemed of academic interest: map literacy, information literacy (in the ALA sense), close reading, and basic Earth science (Selfe and Hawisher 2007). In an exemplary way, Wadlandis therefore points to connections between computer gaming and higher education.

We can bring gaming into the CMS world through our earlier discussion about intersections between Web 2.0 and CMS. To begin with, note that the game is open to the world. It exists in the wild Web, and could be pointed to from within a Blackboard class, perhaps identified by instructor as a learning object. CMS-hosted content could not play a role within such a game, given content restrictions. In this respect games are removed from CMS, much like Wikipedia or a CD-ROM. The strategies we've outlined for crossing the gap between these worlds – increased hyperlinking, internal versions of external platforms, and extruded services – could help connect CMS to gaming. Perhaps we should not be surprised to see the release of a simple game-authoring plug-in for Moodle. A method for deploying games as e-Reserves within Blackboard is probably more likely to arrive more quickly.
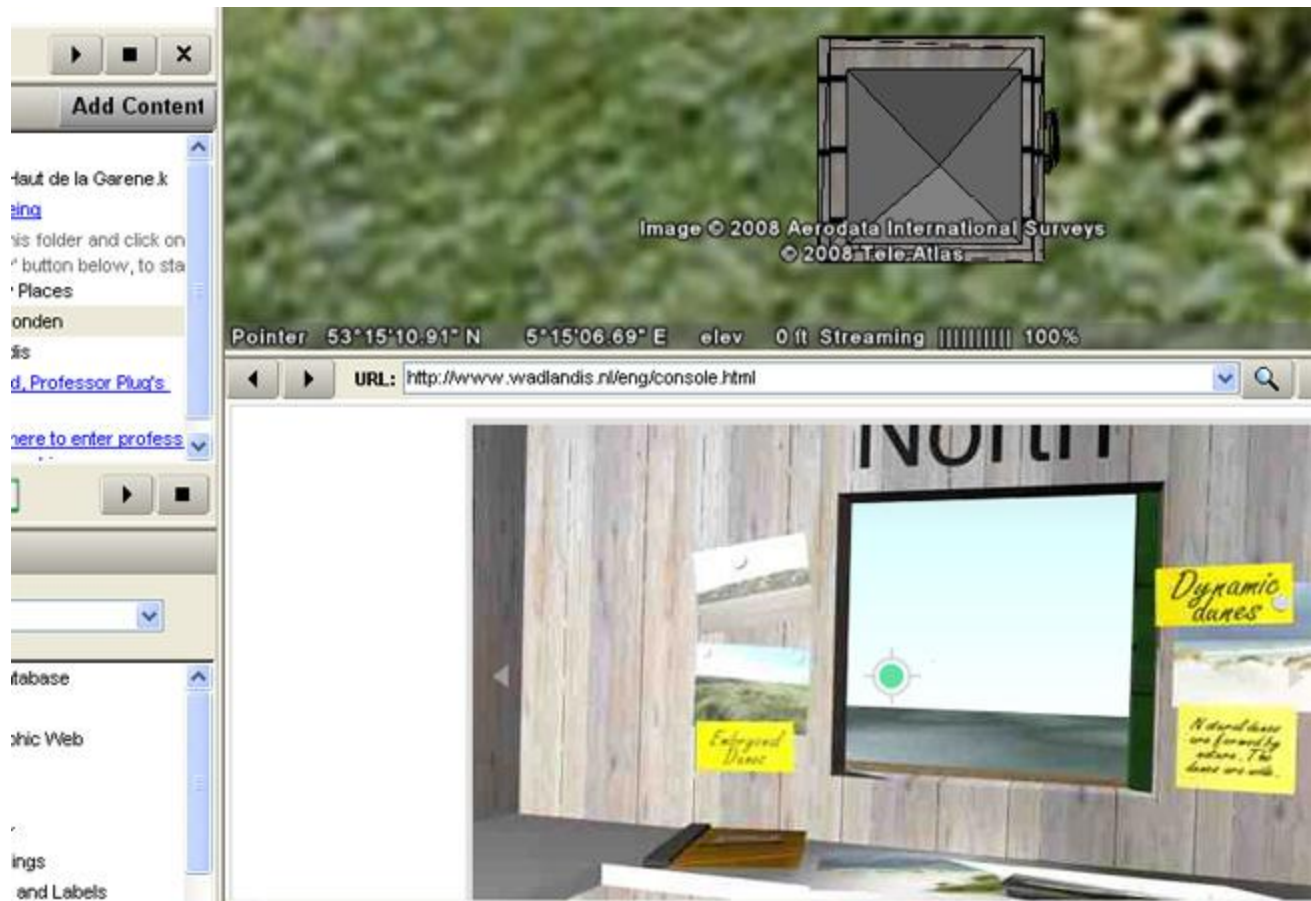
Figure 1. (http://www.wadlandis.nl/ in play, using Google Earth; screenshot by the author)

At a broader, more conceptual level, we can imagine what CMS could learn from gaming. If games are digital teaching objects, can we redesign course management systems that draw on their pedagogy? Bear in mind that games are increasingly social, not so much player-versus-machine but player against player (competitive), and players with players (collaborative). Indeed, games are often combinations of these three forms.   Imagine, then, at a basic level, a student being able to examine another student's or staff member's profile to see what skills they have attained (and chosen to reveal), or what e-Reserves they've experienced. Such a user might think of themselves competing with classmates, in ancient academic style, or looking for collaborators to boost their own learning.

Consider, too, the just-in-time teaching games perform. Games often have tutorials, help files, or hints available within the program. Such content is also increasingly available on the Web. Could we design a CMS which lets us experience learning content apart from courses? Libraries, research centers, writing centers, and other class-parallel programs could provide some of this content, as could digitized presentations from visiting speakers or final class performances (recitals, films, theses). Students, staff, and faculty could use such a new CMS to find and access smaller content chunks on demand. Making such content available in new, cross-purpose ways might activate long tail effects. It could also decouple learning from courses. It is not a technological leap to conceive of ready-to-launch cross-disciplinary tutorials accessible to a general population, but a philosophical one.

We can take the gaming-CMS intersection still further. At a strategic level, what does a campus CMS implementation look like if we think of it as a game? Could we envision massively multiplayer Blackboard, with fluid interactions among "players", just in time learning, shared content creation, and many different ongoing learning quests? In a real sense campuses support all of these functions already, but in other venues: offline, on off-campus platforms, by informal learning, study groups, ad hoc conversations. Insofar as CMS aim to be major academic platforms for campus life, they could take this approach to increase their utility and impact. Put another way, how do we make the CMS-mediated academic

experience one to which learners return, as they find games "sticky" or "addictive"? (Salen and Zimmerman 2003, Koster 2004) We could be inspired by the creation of the classic Web 2.0 project Flickr, whose design emerged from a social game (Graham 2006). Such a conceptual rethinking of the CMS could very well lead to a very different enterprise-level application.

Summary

Web 2.0 and gaming constitute different worlds apart from CMS, based on very distinct information architectures, cultures, expectations, and practices. Connections with CMS are possible at the object level: increased linking to Web 2.0 and gaming content from within courseware, platforms replicated with CMS, games as learning objects. At another strategic level, the successes of Web 2.0 and gaming offer new ways of thinking about CMS as social enterprises, playful areas, and more effective venues for the productive intersection of academia with technology.

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