



GAMES, PASSION, AND “HIGHER” EDUCATION

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Higher Education in Crisis

Colleges and universities have addressed undergraduate education in different ways (Cole 2009). One way is to offer undergraduate students “mini” versions (called “majors”) of what they offer graduate students. Faculty members teach undergraduates a scaled down version of their disciplinary specialty.

A second approach offers undergraduates “big ideas” from the history of thought in Western and other civilizations. This is a Liberal Arts approach. In most cases, these big ideas are cut off from any real world applications or projects.

A third approach is to make undergraduate educational relevant to the future work lives of students. Indeed, the largest major on many campuses today is business (Hacker & Dreifus 2010). And, of course, many community colleges and for-profit colleges engage primarily in vocational education.

Today there is yet another approach, one which, if not really new, is fast becoming more prevalent (Brandon 2010). In this approach a college offers students exciting social interactions (often beer and bodies) and an environment full of amenities (good food and recreation facilities). In an effort to obtain full paying students and retain them, academic work is dumbed down and becomes a secondary concern to social interaction. College becomes camp.

There are several paradoxes at the heart of colleges and universities today (Hacker & Dreifus 2010; Menand 2010). Our society has decided to make college a goal for all who want it. We have decided that college is a matter of social justice, since college graduates earn significantly more than do high school graduates across a lifetime. In the past, we backed this goal up with public colleges and universities that were free or inexpensive. Now, however, even many public colleges—let alone private ones—are expensive enough that many students cannot attend them. Other students leave college with mountains of debt.

Another paradox at the heart of colleges and universities is that though they were meant to be “off market” institutions, they are now heavily market-driven (Nussbaum 2010). Today, colleges and universities, with less public support and more competition, have to make money on tuition, new and expanded programs, grants, e-learning, and gifts. There is a push for research that leads to money in the short run, not research that leads to knowledge in the long run. For proponents of free markets this all seems to the good. Why not let the market decide which academic areas, research, and faculty should survive (because they make money) and which should not (because they do not)? Why should any college keep money losing fields or faculty whose research cannot garner grants?

The answer is—or has been in the past—the same answer as to why we should keep biological diversity around even if we cannot make money on small owls and rare snakes. Diversity—including the stuff that seems useless—is a storage-house of possibilities for the

future. We cannot know now in the short run what ideas or species may be found crucial in the future in the long run.

No one can tell a student for sure what will be relevant or irrelevant, important or unimportant in the future, the future the student will live in. On yesterday's model of colleges and universities, students were expected to expose themselves to various ideas and influences and take the risk of being bored or wasting their time in search of what would eventually inspire them to become deep people. Since no one can tell what is relevant or irrelevant, important or unimportant in the long run, markets cannot do so. They can, at best, tell us what is working in the short run. But that may not be good enough for the survival of human society in our complex, high-risk, global world.

The final paradox I want to discuss is one general to all levels of schooling, K-16. It is common today to argue that schools and colleges ought to prepare students for jobs. The problem is that in developed societies like the United States 3/5th of all the jobs are (often poorly paid) service work (Reich 1992, 2007). So, if the purpose of school is to prepare young people for jobs, then, the purpose of schools is to prepare 3/5th of their students for bad jobs (Wal-Mart is the biggest employer in the United States). Few teachers with a social conscience really want this to be the goal of their life work, even if they want cheap stories and cheerful service workers.

The argument that schooling should be assessed by its role as job preparation is a moral non-starter. It is a social non-starter, as well, since it is dangerous for a society to leave

3/5th of its citizens seeking dignity and participation in civil life via the skills needed for poorly paid and poorly respected jobs.

There is ample evidence that the greater the degree of inequality (in terms of wealth or status) in a society, the greater the social problems that society has (Marmot 2004; Wilkenson & Pickett 2010). Problems like poor health, less wellbeing, more anxiety, higher crime, obesity, poor schools, and a lack of social trust (“social capital”) are worse in societies with higher degrees of inequality. These problems affect everyone, rich and poor, in highly unequal societies. For example, even better off people—even the richest ones—have less good health on average in a highly unequal society than they do in ones with less inequality. Today, the United States leads the developed world in inequality and, thus, too, in health problems and other social problems. Inequality in the United States today is as bad as it was in the “Robber Baron” era of the 1890’s.

It has been persuasively argued (Wilkenson & Pickett 2010) that the root problem that high inequality causes, the one that helps cause all the other problems, is that in highly unequal societies people judge their status and worth by other people’s views of them (which in the United States are primarily based on wealth and power). Many people feel that they do not really count, are not “worthy”, and that what they say and do does not really contribute to society. The society becomes full of anxiety and a lack of trust, which harms everyone. A school system that just prepares students for jobs in a highly unequal society can only make the situation worse. For a functioning civil society, schools and colleges must make people feel not just that they count, but actually count. This is not a

function that markets in developed societies, societies now often based on short-term gain (and stock prices), can serve.

Nearly everyone agrees that colleges and universities are in crisis, though they disagree what to do about it (Arum & Roska 2011; Kamenetz 2010; Taylor 2010; Schrecker 2010; Tuchman 2009). Each proposed solution stems from the proposer's values and goals in regard to institutions of higher education, goals which are today often about survival and financial success in highly competitive markets (and one where for-profit colleges like the University of Phoenix have hundreds of thousands of students). In this paper, I will not propose a solution directly. Rather I will discuss how "education" is now working in the world outside of schools and formal institutions. I will argue that today's "out of school" learning potentially holds out new paradigms for the reform of colleges and universities should they want to contribute to society beyond being credentialing agents for a job market replete with bad jobs.

A New Formation for Learning

Because massive amounts of effort devoted to school reform have not translated into widespread success, there has been, over the last decade, a great deal of interest in learning out of school. As part of the digital transformation of popular culture, new paradigms for learning have arisen (Gee 2004; Gee & Hayes 2010). There is widespread interest in how some of these new popular-culture paradigms might be used to transform learning in libraries, community centers, museums, schools, and colleges without destroying their

inherent properties, properties that are often at variance with “business as usual” in our schools and colleges (Gee & Hayes 2011).

I want briefly to characterize one new paradigm in the “school of popular culture”. This paradigm has no name and is in no respect standardized across different instances. Rather, different instances of the paradigm constitute at best a “family” of cases with “family resemblances”, but not identity. I will call the paradigm the “Game/Affinity Paradigm” (GAP for short). My examples from the GAP family involve games, but there are similar paradigms that use other forms of media than games (Gee 2004). What is needed for instantiating the GAP—and what a game supplies—is a well-designed, well-mentored problem solving space.

Examples of the GAP raise important issues about access to learning and mastery in 21st century societies in our global world. Good examples of the GAP create, in some cases, stiff competition for formal institutions of learning and even for the credentialed experts who come from them and inhabit them. In some cases, instances of GAP are offering young people 21st Century skills of the type sometimes not even on offer in our schools. Who does and does not have access to such skills out of school becomes a crucial equity question. In my own view, the GAP can be brought into such formal institutions, without losing its true power, only at the price of true and deep paradigm change in those institutions. This is a level of transformation that is extremely difficult given the massive amounts of inertia in our traditional schools and colleges.

Let's look at some examples of GAP. Consider first, then, the highly popular commercial entertainment game *Portal* (there is currently a *Portal1* and a *Portal2*). In *Portal* the player has a "portal gun". The portal gun can make a blue portal and an orange one. If the player's character enters one of the portals, she (the player's avatar in the first game is a female) comes out the other. The player must use the portals to escape from complicated laboratory rooms that in the first game were designed by a robot that said she (yes, she was a she) wanted to test the player's intelligence, but, in fact, wanted to kill the player (player's character).

The portals and the virtual world they are in obey certain laws of physics. The player must come to understand this physics well enough to solve various problems that constitute obstacles in the way of escape. For example, the portals obey the law of conservation of momentum and the player must respect and use this fact in order to solve certain problems in the game.

Portal is not about learning physics, but the player must come to a tacit, embodied understanding of the physics of the portals and the virtual world they operate within. I say "embodied" here because in games players often have avatars whose bodies they control. These avatars become "surrogate bodies" in surprisingly powerful ways.

It would be fair to say that even if a player gains some tacit embodied understanding or "feel" for certain principles of physics by playing *Portal*, the player is not learning and need not learn any physics in the sense of being able to articulate (speak and write) knowledge

in physics. However, this comment only applies if we view *Portal* solely as a game or a piece of software. However, some players become inspired by *Portal* to join with others on the Internet in what I will later call “passionate affinity spaces”, but for the time being will call “interest-driven sites”. In such spaces they articulate the physics behind *Portal*, discuss how the principles of physics the game uses can be used strategically in game play, and even use software to make their own *Portal*-like games that work somewhat differently than the “official” *Portal* games.

For example, some *Portal* players have made a wiki to explicate the physics behind *Portal*.

Here is one entry:

The portals create a visual and physical connection between two different locations in [3D space](#). Portal ends are restricted to planar surfaces, but if the portal ends are on nonparallel planes, bizarre twists in geometry and gravity can occur as the player character is immediately reoriented to be upright with respect to gravity after leaving a portal end. An important aspect of the game's physics is "momentum redirection". Objects retain the magnitude of their [momentum](#) as they pass through the portals but in a direction relative to the surface the exit portal is on. This allows the player character to launch objects, or even herself, over great distances, both vertically and horizontally, a maneuver referred to as "flinging" by Valve.

http://en.wikipedia.org/wiki/Portal_%28video_game%29

This is, of course, articulated knowledge, not just tacit knowledge. However, the two are complimentary in science learning. Tacit embodied understanding can give “situated meanings” (meanings based on images, actions, goals, and experience, not just verbal definitions) to the articulated words. Situated meanings are the deepest sort of meanings, because such situated meanings allow people to understand complex language well enough to be able to solve problems in a domain and not just retain information for tests. Indeed, situated meanings are so important to learning that Valve, the company that makes *Portal*, has released the full *Portal* engine so that science educators can use it for science learning more directly.

So players can, if they wish, can join an interest-driven site, and work together to discuss the physics of *Portal*. They can redesign the game (“mod it”) and, thus, too, learn highly technical design skills and how the physics of game worlds work in general. What this means is that if we want to know what sort of learning goes on in and around *Portal*, we must look not just at the game, but at both the game and any and all of its accompanying interest-driven sites. A game and any of its associated interest-driven sites interact with each other to create learning and change over time. So the unit of learning here is “game + interest-driven site”. Later I will call certain sorts of interest-driven sites “passionate affinity spaces”, and, thus, we have the “Game/Affinity Paradigm” (GAP).

It is interesting to note that Valve used the following text to advertize the first *Portal* game:

The game is designed to change the way players approach, manipulate, and surmise the possibilities in a given environment.

<http://orange.half-life2.com/portal.html>

What this means is that the game gives the player a new tool—the portal gun—and learning to use this tool lets the player see the world in a new way and to “surmise” new possibilities for solving problems. I myself cannot imagine a better “vision statement” for an educational institution in our highly complex, fast changing, high-risk global world. We need to wonder why an ad for a popular-culture entertainment product has a better educational vision than many of our schools and colleges.

I have used *Portal* as just one characteristic example of how people can go from games to interest-driven sites and back and forth again and again in a learning process. There are innumerable other examples. For example, consider *the Sims*, the best selling series of games in history. *The Sims* is a set of games where players build families and communities. They can buy houses, clothes, and furniture in stores or they can make them with design tools that come with the game or by using other tools like *Adobe Photoshop*. They can also create albums with pictures of their “Sims” (their artificial people) accompanied by text.

Some players leave the game to join interest-driven sites where they specialize in designing landscapes, houses, clothes, or furniture which they then share with (or sell to) other players to use in their games. They also give each other challenges to play the game in a

certain way (Gee & Hayes 2010). For example, one player who called herself “Yamx” gave other players the following challenge on an interest-driven site devoted to *the Sims*:

Sims 2: Nickel and Dimed Challenge

This challenge was inspired by, and is named for, the book *Nickel and Dimed* by Barbara Ehrenreich (which has nothing whatsoever to do with Sims, but is nevertheless highly recommended). The idea is to mimic, as closely as possible, the life of an unskilled single mother trying to make ends meet for herself and her kids.

The Goal:

Raising your kids successfully until they're old enough to take care of themselves. If you can get all children to adult age without anyone dying or being taken away by the social worker, you've made it.

<http://forum.thesims3.com/jforum/posts/list/182640.page>

Ehrenreich's 2001 book is about how hard it is to be poor, how much struggle and intelligence it actually takes. Simulating the life of a poor single parent is by no means easy in *the Sims*. The game is a commercial entertainment game and since being poor is not fun, it is hard to live a life of poverty in the game. So Yamx wrote a long “manual” that stated the rules of the challenge and how players could adapt their game play and the technology of the game to better represent a poor life. She and the others had to think carefully about

how the rules of play would work and how *the Sims* as a piece of simulation software worked. They debated these matters as a group and made changes as they were needed. Players who “won” the challenge had to use the album function that comes with *the Sims* to write a sort of graphic novel about the story of their family and how the rules of the game and *the Sims* as technological simulation interacted with that story.

This challenge is not a social studies assignment. The players are doing it for “fun” as part of playing and interacting with each other over a commercial entertainment game.

Nonetheless, they engaged in a good deal of thoughtful reflection of and discussion on poverty and how one could simulate such a life at the level of emotion and not just physical realities in order to gain a real sense of empathy. Indeed, several women wrote to the discussion board that they are or were poor single parents and that this challenge captured their experiences in powerful ways. One woman even said that she was going to keep the challenge to show her child, when the child gets older, what it was like to be a poor single mother and how she managed the struggle.

Again we might wonder why a commercial product leads to better “social studies” than does the curriculum in many of our schools, where social studies being untested is often untaught. This challenge, in the way it combines social studies, technology, and writing is a better “assignment” than many a high school student or college undergraduate ever undertakes. Yet there is no teacher or professor. There is only a “dungeon master” (Yamx) and players who mentor each other.

As another example, consider the game *Foldit*, a game where players can contribute to science (see: <http://fold.it/portal/>). In *Foldit*, players tackle the hard problem of protein folding. Proteins are like small machines in the body that carry out practically all the body's functions. They are made up of chains of amino acids that fold into distinctive 3D shapes. Unfortunately any protein can fold into billions of different shapes. Scientists use super computers to seek to find the optimal fold of a protein (usually its lowest energy state) in order to understand the function of the protein.

Foldit presents players with a model of a protein, the pieces of which they can fold by using a variety of tools. The game scores the player on how good of a fold the player has made. Scores are uploaded to a leaderboard, creating competition between players from all over the world. *Foldit* results have been published in prestigious science journals, including in the leading science journal *Nature* in a paper with thousands of authors, a first for the journal.

In official competitions players have in some cases beaten scientists' super computers in the search for correct protein structures. In 2011, *Foldit* players helped to decipher the structure of the Mason-Pfizer monkey virus (M-PMV) an AIDS-causing monkey virus. While the puzzle was available to play for three weeks, players produced an accurate 3D model of the protein in ten days. As one media source said:

Video-game players have solved a molecular puzzle that stumped scientists for years, and those scientists say the accomplishment could point the way to crowdsourced cures for AIDS and other diseases.

<http://cosmiclog.msnbc.msn.com/news/2011/09/18/7802623>

As in the other two cases we surveyed above, players of *Foldit* can join others to study protein science and make suggestions about how to play the game better or even make the game better for scientific discovery. For example, the players have made a wiki that contains a wealth of scientific information and suggestions for ways to discover optimal folds for proteins. Here is one small text from the wiki; players can follow links to learn more and more about protein science, if they choose:

Amino acids are also the basic units of FoldIt. In the structure of a protein, each amino acid contributes one link in the protein [Backbone](#) and (usually) one [Sidechain](#). The backbone establishes the basic structural aspects of the protein, and the sidechains determine the details of its biological function.

http://foldit.wikia.com/wiki/Amino_Acids

Foldit players can, if they choose, go back and forth between interest-driven sites where they can mentor each other in learning protein science and the game where they can apply what they learn, as well as see how the complex scientific language they have learned actually applies to the world and to problem solving. They can—and some have—become domain experts without any formal degrees or credentials. They can even compete with

credentialed experts. This phenomenon is more general. The combination of games (and other digital forms of learning) and interest-driven sites is producing a world of “Pro-Ams”, people with deep expertise, competitive with credentialed experts, but no “professional” credentials (Anderson 2006; Leadbeater, C. & Miller 2004).

My final example is meant to show that this world of games + interest-driven sites is not for the young alone. And this example will bring us to passionate affinity spaces. This example involves *the Sims* as did one of our earlier examples (Gee & Hayes 2010). Real learning involves passion plus persistence. There is no persistence without passion, since no one would put in thousands of hours of practice for something for which they had no passion. How do people grow passion? We really don't know near enough about passion, but let me tell you a story that shows one route to passion and then to persistence.

“Tabby Lou” (her screen name) is a woman who retired in her late 60's in ill health and became homebound. In the old days that could have been the end of the story: a retired shut-in. However, Tabby Lou's daughter and granddaughters played *the Sims* and she got hooked on playing the game, as well.

One day, one of her granddaughters told Tabby Lou she wanted a purple potty to put into her Sims' houses. The game didn't come with purple potties. You could not buy one in the stores in the game. But what grandmother would disappoint her grandchild? So Tabby Lou decided she just HAD to build one for her. But that meant she had to learn to make digital content for *The Sims* and this at a point in time where one had to master digital

design tools that did not then come in user-friendly versions with the game itself. Tabby Lou had to become a designer and not just a player. How could she do this? She needed help and some good, but complicated, digital tools to work with. This, too, in the old days, could have been the end of the story: no help, no tools, or the tools are too hard to learn on one's own.

However, groups of people exist on the Internet passionately devoted to designing clothes, houses, furniture, landscapes, and stories for *the Sims*. These people offer sophisticated digital 3D design tools and lucid mentoring. They are organized, when they are at their best, in interesting ways: Everyone is accepted in (newbies and experts are there together); there is no age grading (old and young are both there); everyone is helped to achieve mastery if they want it; everyone is allowed to get mentored and to mentor others, to learn and teach; everyone is expected to take a proactive stance towards learning that does not, however, exclude asking for help, but help that never undermines one's proactive stance towards learning.

Tabby Lou used one group's resources and made a purple potty. She had a very happy granddaughter. But her granddaughters today are not just happy, they are proud. Tabby Lou got hooked on the interest-driven site and developed a passion for the site's passion: for design, not just designing purple potties. Today, over 13 million people have downloaded her designs. She has won design awards. People have thanked her for her work over one million times in her guest book on the *The Sims Resource* site. She is internationally known and respected.

Tabby Lou's story gives us a theory of passion, what I call "the purple potty of passion": The passion starts local and small: Tabby Lou is passionate about making a purple potty for her granddaughter. She finds an interest-driven site (that she eventually comes to love) and its tools to realize that passion. The site is organized in such a way that she becomes passionate about the other people on the site and their shared passion (designing for *the Sims*). Energized by these people, wanting to rise on the site and to serve others who are part of it, she persists through thousands of hours of practice with complex digital tools. She becomes a rock star.

Passionate Affinity Spaces

Thus far I have used the term "interest-driven site" for groups of people organized on the Internet around interest in a specific game. In a book I did with Elisabeth Hayes (Gee & Hayes 2010) we studied such sites connected to *the Sims*. Different sites worked in different ways, but many of them were well organized to energize learning. We call a subset of interest-driven sites "passionate affinity spaces" (Gee 2004, 2007a, b).

The concept of a passionate affinity space—"PAS" for short—stresses that the organization of the space (the site and what it links to, including real world spaces and events in some cases) is as important as the organization of the people. Indeed, the interaction between the two is crucial as well. Using the term "group" over-stresses the people at the expense of the structure of the space, and the way the space and people interact.

In earlier work, we have outlined features indicative of a PAS (Gee, 2004; Gee & Hayes, 2010, 2011). However, these features, which we will discuss below, are not absolute. In most cases, a PAS can reflect the “ideal” or prototype to a greater or lesser extent.

There are many different types of affinity spaces on the Internet and out in the real world (Shirky 2008, 2010). Some are inclusive, supportive, and nurturing, while others are not. Passionate affinity spaces and other sorts of interest-driven groups can give people a sense of belonging, but they can also give people a sense of “us” (the insiders) against “them” (the outsiders). People can be cooperative within these spaces, but they can also compete fiercely for status. They can communicate politely and in a friendly fashion or they can engage in hostile and insulting interaction.

The following list is the set of features associated with *The Sims* passionate affinity spaces we studied in Gee & Hayes 2010. As we list the features of a PAS, it will become apparent how different schools and colleges are from a PAS. If human learning and growth flourish in passionate affinity spaces, especially nurturing ones, then it is of some concern that school has so few features of such a space.

Features of Passionate Affinity Spaces

1. *A common endeavor for which at least many people in the space have a passion—not race, class, gender, or disability—is primary.* In a PAS, people relate to each other

primarily in terms of common interests, endeavors, goals, or practices—defined around their shared passion—and not primarily in terms of race, gender, age, disability, or social class. These latter variables are backgrounded, though they can be used (or not) strategically by individuals if and when they choose to use them for their own purposes. This feature is particularly enabled and enhanced in virtual affinity spaces (Internet sites) because people can enter these spaces with an identity and name of their own choosing.

What people have a passionate affinity for in a PAS is not first and foremost, at least initially, the other people in the space but the passionate endeavor or interest around which the space is organized. While people may eventually come to value their fellow members as one of the primary reasons for being in the PAS, the shared passion is foregrounded as the reason for being there.

2. *Passionate affinity spaces are not segregated by age.* They involve people of all different ages. Teenage girls and older women, and everyone else in between, interact on *The Sims* sites we studied. There is no assumption that younger people cannot know more than older people or that they do not have things to teach older people. Older people can be beginners; indeed, anyone can begin at any time. Older and younger people judge others by their passion, desire to learn, and growing skills, and not by their age.

3. *Newbies, masters, and everyone else share a common space.* Passionate affinity spaces do not segregate newcomers (“newbies”) from masters. The whole continuum of people from the new to the experienced, from the unskilled to the highly skilled, from the

slightly interested to the addicted, and everything in between, is accommodated in the same space. Different people can pursue different goals within the space, based on their own choices, purposes, and identities. They can mingle with others as they wish, learning from them when and where they choose (even “lurking,”). While passion defines a PAS, not everyone in the space needs to be passionate or fully committed. They must, however, respect the passion that organizes the space. The space will offer them the opportunity, should they wish to take it, to become passionate. The passion is the “attractor” for the space.

4. *Everyone can, if they wish, produce and not just consume.* People who frequent a *Sims* PAS often go there to consume, that is, to get content other fans have created, and that is fine. But the space is organized to allow and encourage anyone to learn to build and design. Tools, tutorials, and mentorship are widely offered. In some game-related passionate affinity spaces, fans create new maps, new scenarios for single-player and multiplayer games, adjust or redesign the technical aspects of a game, create new artwork, and design tutorials for other players. In a PAS people are encouraged (but not forced) to produce and not just to consume; to participate and not just to be a spectator.

Most passionate affinity spaces set high standards for the quality of production. There is rarely “social promotion” or lowered expectations. Indeed, as in other groups of real experts (Bereiter & Scardamalia, 1993), the standards for production typically rise continuously, as individuals innovate, create new tools, and otherwise push the collective bar for achievement.

5. Content is transformed by interaction. The content available in a PAS (e.g., all the *Sims* houses, rooms, furniture, clothes, challenges, and tutorials) is transformed continuously through people's social interactions. This content is not fixed. People comment on and negotiate over content and, indeed, over standards, norms, and values. Most of what can be found in a PAS is a product of not just the designer (and certainly not just the company, e.g., the makers of *The Sims*), but of ongoing social interaction in the group. This is particularly evident in forum discussions around, for example, tutorials, in which people add information, ask questions, and otherwise contribute new information.

6. The development of both specialist and broad, general knowledge is encouraged, and specialist knowledge is pooled. Passionate affinity spaces encourage and enable people to gain and spread both specialist knowledge and broad, general knowledge. People can readily develop and display specialized knowledge in one or more areas, for example, learning how to make meshes in *The Sims* or how to tweak a game's artificial intelligence (AI). At the same time, the space is designed in ways that enable people to gain broader, less-specialized knowledge about many aspects of the passion which they share with a great many others in the space. Thus, for example, a *Sims* player may learn that *Milkshape* is a 3D modeling tool that can be used to mod *Sims* content, though not learn how to use the tool. The player will know who to turn to if she is ever in need of specialist knowledge about *Milkshape*. This fosters the development of people who share knowledge and common ground but who each have something special to offer. To joint endeavors. It also means experts are never cut off from the wider community.

7. Both individual and distributed knowledge are encouraged. A PAS encourages and enables people to gain both individual knowledge (stored in their heads) and the ability to use and contribute to distributed knowledge. Distributed knowledge is the collective knowledge accessible through, in this case, the affinity space, and includes knowledge possessed by people, stored in material on the site (or links to other sites), or in mediating devices such as various tools, artifacts, and technologies to which people can connect or “network” their own individual knowledge. Such distributed knowledge allows people to know and do more than they could on their own. For example, a player who wants to create a new kitchen table for *The Sims* might ask questions on a forum, read tutorials, download modding tools, and analyze tables created by other players. Once the player has created a new table, she may upload it to the site along with instructions for other players. Thus, these spaces encourage and enable people to interact with others and with various mediating devices in such a way that their partial knowledge and skills become part of a bigger and smarter network of people, information, and mediating devices and tools.

Nurturing passionate affinity spaces tend to foster a view of expertise as rooted more in the space itself, or the community that exists in the space, and not in individuals' heads.

“Experts” know their expertise is always partial and limited, and they draw on the knowledge stored in the PAS when they need to supplement their individual knowledge or learn new things. The public display of individual expertise is less important than contributing to the collective knowledge of the space. In less nurturing spaces, individuals place more of a premium on establishing their expertise in relation to other people in the

space, and may vie to lay claim to the possession of unique knowledge or skills. Even nurturing affinity spaces provide opportunities for the recognition of individual achievements and skill, but more in the service of encouraging individual growth and contributions to the collective good.

8. *The use of dispersed knowledge is facilitated.* A PAS encourages and enables people to use dispersed knowledge: knowledge that is not actually on the site itself but can be found at other sites or in other spaces. For example, in some *Sims* passionate affinity spaces, there are many software tools available on site made by the designers of *The Sims*, but there are links to all sorts of other groups, software, and sites that have tools to facilitate building and designing for *The Sims*. In a PAS devoted to the game *Age of Mythology*, as another example, people are linked to sites where they can learn about mythology in general, including mythological facts and systems that go well beyond *Age of Mythology* as a game. When a space provides access to dispersed knowledge, it recognizes the value of local and particular knowledge available in other places and created by other groups, and the necessary limitations of its own knowledge base and resources.

9. *Tacit knowledge is used and honored; explicit knowledge is encouraged.* A PAS encourages, enables, and honors tacit knowledge: knowledge participants have built up in practice, but may not be able to explicate fully in words. For example, designers of *Sims* content typically learn primarily through trial and error, not by memorizing tutorials and manuals. While tutorials (explicit, or codified knowledge) are found in abundance in these spaces, designers rely on personal contact, through forums and messaging, to pass on their

own craft knowledge and tricks of the trade. At the same time, the PAS offers ample incentives for people to learn to articulate their tacit knowledge in words (e.g., when they contribute to a forum thread or engage in group discussion about a shared problem).

10. *There are many different forms and routes to participation.* People can participate in a PAS in many different ways and at many different levels. People can participate peripherally in some respects and centrally in others; patterns can change from day to day or across larger stretches of time. Sometimes people lead and mentor and other times they follow and get mentored.

11. *There are many different routes to status.* A PAS allows people to achieve status, if they want it (and they may not), in many different ways. Different people can be good at different things or gain repute in a number of different ways. For example, in the *Sims* passionate affinity spaces we studied, some people are recognized for their skills as content creators, others for their tutorials, and still others for their roles in creating and managing the spaces themselves.

12. *Leadership is porous and leaders are resources.* Passionate affinity spaces do not have “bosses.” They do have various sorts of leaders, though the boundary between leader and follower is often porous, since members often become leaders and leader often participate as members. Leaders in a PAS, when they are leading, are designers, mentors, resourcers, and enablers of other people’s participation and learning. They do not and cannot order people around or create rigid, unchanging, and impregnable hierarchies.

Obviously there are degrees of flexibility in leadership, and while nurturing spaces foster respect for experts and those with more advanced skills, they tend towards less hierarchy and a view of leadership as “teaching,” with an emphasis on mentoring and providing resources, not necessarily instructing, though this can happen as well.

13. *Roles are reciprocal.* In a PAS people sometimes lead, sometimes follow, sometimes mentor, sometimes get mentored, sometimes teach, sometimes learn, sometimes ask questions, sometimes answer them, sometimes encourage, and sometimes get encouraged. In nurturing spaces, even the highest experts view themselves as always having more to learn, as members of a common endeavor, and not in it only for themselves. They want others to become experts, too.

14. *A view of learning that is individually proactive, but does not exclude help, is encouraged.* Passionate affinity spaces tend to encourage a view of learning where the individual is proactive, self-propelled, engaged with trial and error, and where failure is seen as a path to success. This view of learning does not exclude asking for help, but help from the community is never seen as replacing a person’s responsibility for his or her own learning. Nurturing affinity spaces tend to promote a view of requests for help (when other resources have been exhausted) as a means for enhancing the knowledge base of the space as a whole, as participants engage in collective problem-solving.

15. *People get encouragement from an audience and feedback from peers, though everyone plays both roles at different times.* The norm of a nurturing PAS is to be

supportive and to offer encouragement when someone produces something. This support and encouragement comes from one's "audience," from the people who use or respond to one's production. Indeed, having an audience, let alone a supportive one, is encouraging to most producers. Many *Sims* affinity spaces provide mechanisms for this feedback, such as guest books where people can post messages to content creators.

At the same time, producers get feedback and help (usually also offered in a supportive way) from other creators whom they consider either their peers or people whom they aspire to be like some day. Who counts as a peer changes as one changes and learns new things. Everyone in a PAS may be audience for some people and potential peers for others.

The list above is based on the online *Sims* affinity spaces we have studied. Other passionate affinity spaces have these features as well. The above features are not easy to achieve, in either nurturing or less nurturing versions, and they can deteriorate over time.

The Future of Colleges and Universities

Students will probably always seek to gain prestige by attending high-status colleges and universities like Harvard and Stanford. But in a world replete with e-learning, less high status colleges and universities face intense competition from nearly every quarter.

Anything called a "college" can now offer courses and degrees nearly everywhere. Indeed, high status colleges can and will offer cut-rate, "off brand" versions of their courses and degrees by e-learning so that people can gain some prestige by association with them, but without getting their "real" degrees.

In the world outside formal institutions people are becoming experts without credentials. They are producing and not just consuming; participating and not just spectating. They are solving problems and preparing themselves for future learning. They are engaged in finding and refining their interests and growing passions that lead to persistence and mastery. Often they are also gaining status—a sense of counting and mattering—outside of markets and jobs, jobs which may be dead ends.

Passionate affinity spaces—like many interest-driven sites—often operate by the Pareto Principle (Shirky 2008; Gee & Hayes 2010, 2011): 10-20 percent of the people in the space make 80-90 percent of the contributions and 80-90 percent of the people in the space make 10-20 percent of the contributions. This is both good and bad. It is good because everyone's contribution is captured, counts, and might make an important difference. It is potentially bad because not everyone gets (or wants) to be a top contributor.

What this means—if we consider passionate affinity spaces as the breeding grounds of 21st Century skills and sites for people to gain a sense of worth in a world that gives too few people a sense of worth “on market”—is that we want people to participate in lots of passionate affinity spaces, in some of which they are in the 80-90 percent of lesser contributors, but in one or more of which they are in the 10-20 percent of top producers. It is here that they will have found their true “passion”. So, too, people will then become both broad and deep in the way a classical Liberal Arts education was supposed to ensure.

If there are any colleges and universities that want to take the moral high ground in the face of market forces pushing them to the moral low ground, they will have to get passionate about learning and about creating passionate learners. I am suggesting that colleges—at least some of them—become a large affinity space of many different affinity spaces designed to let all students explore and kindle interests and flame some of them into passions. They may go out of business. And, then, too, they may reinvigorate our frayed public sphere and reinvent the nature of “higher” education. If some do not do it or none can, it will be done “out of school”.

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