

# Web Science & Online Communities

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# The Internet Changes Everything

- “It seems passé today to speak of ‘the Internet revolution.’ In some academic circles, it is positively naïve. But it should not be. The change brought about by the networked information environment is deep. It is structural. It goes to the very foundations of how liberal markets and liberal democracies have coevolved for almost two centuries.”
  - Yochai Benkler, *The Wealth of Networks*



# Outline

- The Web Science Initiative
- Research in the Electronic Learning Communities Group



# What is “Web Science”?

- The interdisciplinary study of the Internet
  - Inter-disciplinarity
  - New ways to work with industry
  - New educational initiatives
  - Fund raising
  - Strategic hiring



# Interdisciplinarity

- Within the College
  - Leads:
    - Interactive Computing:
      - Bruckman, social computing
      - Irfan Essa, computational journalism
    - Computer Science:
      - Milena Mihail, theory
      - Constantine Dovrolis, networking
    - As we grow, we need to stay in touch
  - Collaborators across campus
    - Public Policy (Hans Klein)
    - International Affairs (Mike Best)
    - Management (Nicholas Lurie)
    - ECE (George Riley)



# Working with Industry

- The online communities dissertation, late 1990s
  - No longer viable for one person to do everything
  - Need access to real systems, real data
- Sharing data
  - AOL gets in big trouble for releasing data publicly
  - But can still release anonymized data to researchers
- Student internships to work on research
  - Maintain right to publish?
- Intellectual property challenges
  - New Microsoft model: option set up in advance to buy IP



# Educational Initiatives

- Goal: to make our grads the most sought after by industry
  - “I wanted to write and tell you that while online communities was my favorite class in grad school, I never got a chance to use anything I learned in that class until now. I just recently accepted a job with Amazon.com to work on Askville.com, a fairly young little online community we're trying to grow into a larger, happier online community.”
- What kind of preparation is needed?
  - Google’s answer: two kinds
    - Classic: as rigorous as possible technical training, especially theory
    - Applied: like our Human Centered Computing program
  - Other answers?



# Educational Initiatives

- Initial small steps:
  - HCC PhD area in Social Computing (fall 2007)
  - New courses:
    - Undergrad version of Design of Online Communities (Bruckman, spring 2008)
    - Networks and the WWW (Mihail, fall 2008)
- Longer term:
  - Certificate?
  - Minor?
  - Thread?
    - Or combination of threads?
      - Proposal: Networking + People + Web industry internship -> Web Science certificate
  - Degree program?



# Fund Raising

- NSF Opportunities to Consider
  - Integrative Graduate Education and Research Traineeship (IGERT) program
    - \$3 million over five years to support interdisciplinary graduate studies
  - Cyber-enabled Discovery and Innovation (CDI)
    - Three areas:
      - From data to knowledge
      - Understanding complexity in natural, built, and social systems
      - Building virtual organizations
    - Emphasis on bold, interdisciplinary work
- Industrial Funding?
  - How do we make that happen on a larger scale?



# Strategic Hiring

- Are there key people who would help us take this effort to the next level?
  - Senior hires
  - Junior hires



# User-Generated Content Online

- The World in 1995:
  - The Internet can help individuals become creators, not merely recipients, of content
  - Democratizing force
  - Educational opportunity
- The World in 2000:
  - Lots of commercially published (one to many) content
  - Maybe it's business as usual after all



# The World in 2007

- User-generated content is happening!
  - The Blogosphere
    - As predicted by science fiction writer Orson Scott Card
  - Wikipedia
  - MySpace
  - YouTube
  - Etc.
- The results:
  - Citizen journalists, artists, activists, scientists
  - Gossip, copyright violations, really bad poetry



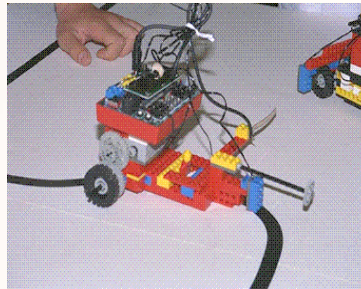
# Outline of the Rest of the Talk

- Why is the Internet an interesting learning environment?
  - Constructionist learning & online communities
  - What is a “community”?
- Electronic Learning Communities (ELC) research:
  - Understanding Wikipedia
  - Science Online
  - GameLog and The Game Ontology Project
  - Splat!
  - Computer-Supported Collaborative Innovation (CSCI)
- Conclusion: designing for educational opportunity



# Constructionist Learning

- Pedagogy:
  - Piaget's constructivism
  - Papert's constructionism
    - Learning by working on personally meaningful projects
- Examples:
  - Logo
  - Microworlds





# Constructionist Online Communities

- People creating something together online
  - Stricter sense: artifact
  - Looser sense: shared understanding
- Community provides both motivation and support:
  - Technical support
  - Emotional support
  - Role models
  - An appreciative audience



# What is a “Community” Anyway?

- What is a “community” has always been hotly debated (Schnore 1967)
- Cognitive science can help
  - Community is a category
  - Prototype based

Bruckman, “A New Perspective on ‘Community’ and its Implications for Computer-Mediated Communication Systems”, CHI 2006 WIP

# Rosch's Prototype-Based Theory of Categories



- Categories have a set of “best members” (prototypes)
- Members of a category often have degrees of membership
  - Example: a robin is a better example of a bird than an emu or penguin
- Categories can have fuzzy boundaries

# “Community” as a Prototype-Based Category

- What are our prototypes for “community”?
  - Idealized 1950s America that never existed
- “Pundits worry that virtual community may not truly be community. These worriers are confusing the pastoralist myth of community for reality. Community ties are already geographically dispersed, sparsely knit, connected heavily by telecommunications (phone and fax), and specialized in content.” (Wellman & Gulia, 1999)
  - In other words, our common prototypes are idealized



# New Salient Questions

- What are our prototypes?
  - Possible prototypes for a learning community:
    - Traditional schooling
    - Scouting
    - Samba schools
    - Tailors in West Africa
- What are the key characteristics of those prototypes?
  - How can we learn from them?
  - What features of each should we keep?



# Understanding Wikipedia

- How many people have ever used the Wikipedia?
- How many people have ever edited the Wikipedia?
  - Did you learn something while you were doing it?
- “The problem with Wikipedia is that it only works in practice. In theory, it can never work.” (*New York Times*, 4/23/07)

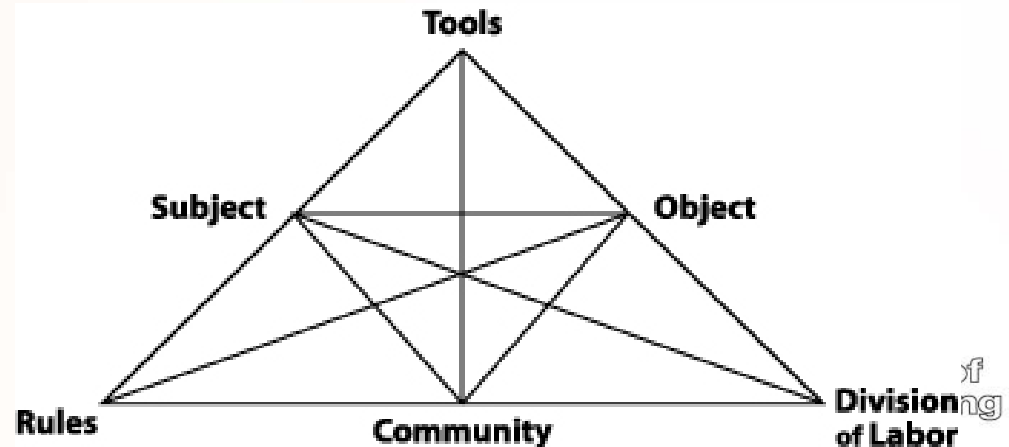


# What Makes Wikis Unique?

- Fits constructionist paradigm:
  - Low barrier to entry
  - Easy learning curve
  - No ceiling
- Extremely light weight
  - Small differences in accessibility change user behavior
    - Example: salary database
- Collaboration on a large-scale
  - Doesn't work with 14 people in "The Bakeoff" (Gladwell 05)
- Open Source and Open Content are different
  - Open source has more centralized authority

# Becoming Wikipedian: Transformation of Participation

- Interviews with 21 “Wikipedians”
- Becoming a part of Wikipedia is a process of:
  - Legitimate peripheral participation (Lave & Wenger), in a
  - Knowledge-building community (Scardamalia & Bereiter)
- Andrea Forte, Susan Bryant et. al. (Group 2005)



# Power and Authority on Wikipedia

- It is NOT a free for all
  - How it really works matters
- Interview study with 11 people in administrative roles on Wikipedia
  - Nature of power and authority
  - How conflicts are resolved

Brett Favre: Profootballreference.com lists Favre as having 8224 career passing attempts, while the official Packers website and NFL.com list him as having 8223. An edit war ensues over the 1 attempt leading to an editor getting indefinitely banned. Sockpuppeting followed, including "aging" accounts to circumvent semi-protection. All over 1 passing attempt... In a 16 year hall of fame career. His name is still spelled weird.

Forte & Bruckman "Scaling Consensus: Increasing Decentralization in Wikipedia Governance" (HICSS 2008)



# Increasing Decentralization

- Policy
  - Creation
    - Main policy creation slowing
    - Moving into WikiProjects
  - Interpretation & enforcement
    - Jimmy --> ArbCom --> Admins
    - ~1300 admins
    - Complicated process
      - Example: British climatologist William Connelley
        - » Broke rules
        - » Penalty from ArbCom: limited to one revert per day
        - » Penalty not enforced by Admins
- Becoming an Admin
  - Differs by language
  - Criteria getting harder

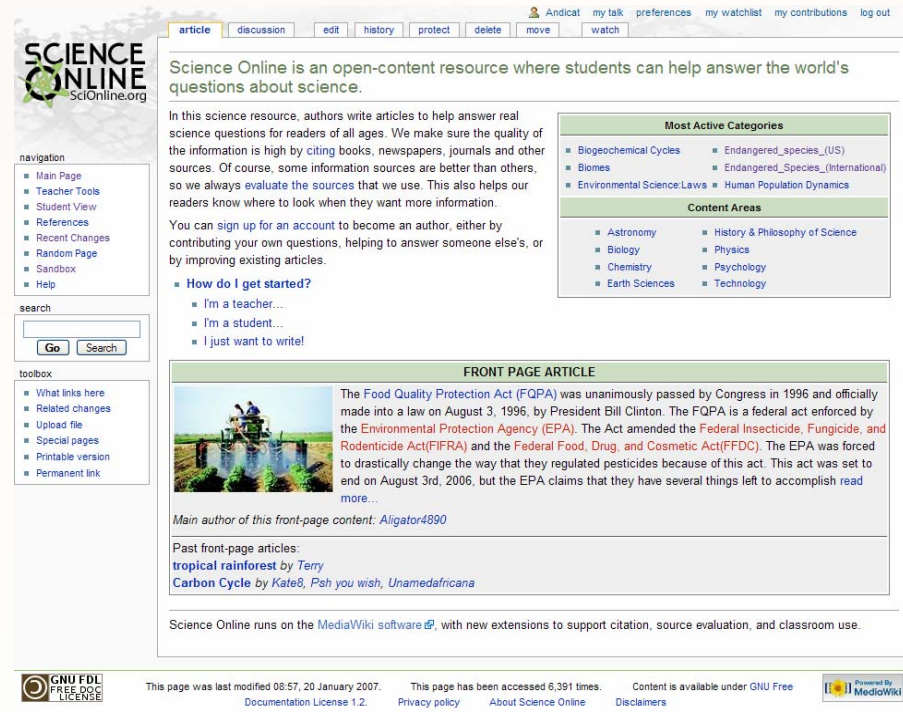


# Decentralization: WikiProjects

- Allow local groups to establish editorial guidelines
  - Example: WikiProject Medicine
    - “Medical Collaboration of the Week”
- Function as small group
- Challenge: lack local enforcement mechanisms
- Decentralization happening as a necessity of scale

# Science Online: Motivation

- What if we created a version of Wikipedia written by high-school students?
  - Focus is on science
- PhD work of Andrea Forte
  - MLIS UT Austin '98



The screenshot shows the Science Online website, an open-content resource for science questions. The page features a navigation sidebar on the left with links like Main Page, Teacher Tools, Student View, References, Recent Changes, Random Page, Sandbox, and Help. The main content area includes a search bar, a toolbox, and a list of most active categories and content areas. A front-page article is highlighted, discussing the Food Quality Protection Act (FQPA) of 1996. The page footer contains GNU FDL license information, access statistics, and a disclaimer.

**SCIENCE ONLINE**  
SciOnline.org

navigation

- Main Page
- Teacher Tools
- Student View
- References
- Recent Changes
- Random Page
- Sandbox
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

article discussion edit history protect delete move watch

Science Online is an open-content resource where students can help answer the world's questions about science.

In this science resource, authors write articles to help answer real science questions for readers of all ages. We make sure the quality of the information is high by citing books, newspapers, journals and other sources. Of course, some information sources are better than others, so we always evaluate the sources that we use. This also helps our readers know where to look when they want more information.

You can sign up for an account to become an author, either by contributing your own questions, helping to answer someone else's, or by improving existing articles.

■ How do I get started?

- I'm a teacher...
- I'm a student...
- I just want to write!


**Most Active Categories**

- Biogeochemical Cycles
- Biomes
- Environmental Science/Laws
- Endangered species\_(US)
- Endangered\_Species\_(international)
- Human Population Dynamics

**Content Areas**

- Astronomy
- Biology
- Chemistry
- Earth Sciences
- History & Philosophy of Science
- Physics
- Psychology
- Technology

**FRONT PAGE ARTICLE**

The Food Quality Protection Act (FQPA) was unanimously passed by Congress in 1996 and officially made into a law on August 3, 1996, by President Bill Clinton. The FQPA is a federal act enforced by the Environmental Protection Agency (EPA). The Act amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDC). The EPA was forced to drastically change the way that they regulated pesticides because of this act. This act was set to end on August 3rd, 2006, but the EPA claims that they have several things left to accomplish [read more...](#)

Main author of this front-page content: [Aligator4890](#)

Past front-page articles:

- [tropical rainforest](#) by [Terry](#)
- [Carbon Cycle](#) by [Kate8](#), [Psh you wish](#), [Unamedafriicana](#)

Science Online runs on the [MediaWiki](#) software, with new extensions to support citation, source evaluation, and classroom use.

**GNU FDL**  
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Powered By MediaWiki



# Wiki as a Construction Kit

- Constructing text is a powerful learning activity
  - Writing-to-learn  
(Scardamalia and Bereiter, Emig, Britton, etc.)
- We can design environments that support specific writing activities
- Design challenges
  - Support critical citation – media literacy skills
  - Make it fit in the classroom



# Science Online: Pilot Study

- Pilot study (spring 2005)
  - Students in an American government class
  - Write a position paper on a current issue on a wiki
  - Comment on other people's contributions
- Findings:
  - Instructor sees improvement in writing (subjective)
  - Sense of audience motivates students writing
    - Students don't realize work is world readable
    - But awareness of audience of their peers is enough
      - Try to convince students who might not agree with them
        - » Student writing about Title IX wants to make sure "the guys" don't dismiss this in the first two sentences
        - » Student citing CNN realizes this is perceived as a liberal source by some

# Year-Long Classroom Study

- September 2006–May 2007
- Two high-school AP environmental science classes
- Software improvements, based on pilot study findings:
  - Move to MediaWiki software
  - Add support for citations
  - Support for finding one another's work
  - Teacher tools

Source Type	Journal/Magazine Article ▾	
First Author	Flynn	John J.
	<a href="#">more authors</a>	
	<i>last name: Smith</i>	<i>first name: Joe</i>
	<i>or organization: NASA</i>	
Article Title	Whence the Red Panda?	
Article Pages	190	- 199
Journal/Magazine	Molecular Phylogenetics and Evolution	
Year Published	2000	Vol/Issue 17 / 2
URL (if online)	<a href="http://www.sciencedirect.com/science">http://www.sciencedirect.com/science</a>	
	<input type="button" value="Submit"/>	

*Existing journal sources for Flynn:*

[Flynn, John J.. \(2000\). "Whence the Red Panda?" \*Molecular Phylogenetics and Evolution\*. pp. 190-199](#)



# Classroom Appropriation

- Participants
  - Teacher: former scientist (ABD), excited about wiki
  - 19 students
    - Juniors and seniors
    - AP students, not science fanatics
    - 11 female/8 male
- Data Collection
  - ~50 observation days
  - Interviews
  - Pre/post test
  - Wiki artifacts

# Wiki Activity



<i>Names*</i>	<i>Avg. Edits per Week**</i>	<i>Total Edits</i>	<i>Unique Pages Edited***</i>
Reagan	5	97	18
John	6	36	6
Sylvia	7	67	9
Heather	7	221	31
Paige	9	111	13
Ella	13	116	9
Amanda	13	231	18
Jill	14	382	27
Carrie	16	204	13
Ed	17	271	16
Carl	18	72	4
David	18	256	14
Anne	19	194	10
Brian	23	180	8
Larry	26	153	6
Gary	29	234	8
Kelly	30	384	13
Alex	45	404	9
Susan	49	779	16
Avg.	19	231	13
St. Dev.	12	171	7

\* All names have been changed.

\*\* Avg edits per week is used to control for the fact that some students participated for 10 weeks, some 17, and some 27.

\*\*\* Number includes articles, userpages and talk pages.

- 7 wiki assignments
- Wide range of engagement
- Case: Ed
  - Average in terms of wiki engagement
  - Above average student



# Constructionist Learning at Work



- "NAFTA Coalition" [mindprod.com/money/nafta.html](http://mindprod.com/money/nafta.html)

- "Genetically Engineered Joke" [www.non-gm-farmers.com/news\\_details.asp?ID=2361](http://www.non-gm-farmers.com/news_details.asp?ID=2361)

- "Dolphin, The Issue of the Case" <http://www.hitech-dolphin.com/bottlenose-dolphin-pictures-2.html>

## References

By Author By Reference Type

### Book References

Balassa, Bela (1991). *Comparative Advantage, Trade Policy and Economic Development*. New York: New York University Press.

Cunningham, William and Barbara Woodworth Saigo (2001). *Environmental Science A Global Concern 6th Edition*. New York, NY: McGraw-Hill.

McNeil, Robert (2003). *The Human Web*. W. W. Norton and Co..

### Journal References

Ivanova, Antonina and Manuel Angeles (2006). "Trade and environment issues in APEC" *The Social Science Journal*. pp.629-642. (43)1.

Logan, Marty (2007). "North American Leaders Micro-Managing Environmental Deal" *Inter Press Service News Agency*.

MacKenzie, Debora (2004). "WTO Ruling May Spell End of Farmer's Subsidies" *New Scientist*.

Wendland, Joel (2005). "CAFTA: Free Trade vs. Jobs, Environment, and Health" *Political Affairs Magazine*.

### Web References

Global Exchange. *Free Trade, the Environment, and Biotech*.

Global Exchange. *Free Trade and the Environment*.

Globalization 101. *Environment and Globalization: Introduction*.

Globalization 101. *The Shrimp-Turtle Case in the New WTO Context*.

Categories: Environmental Issues | Environmental Issues Project (100)



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# The Good News

- Constructionism predicts precisely the kind of engagement and learning that we saw when students wrote on the wiki
  - The creation and sharing of a personally meaningful public artifact as a learning activity leads to deep engagement



# The Bad News

- Students learn too deeply
- Students can write collaboratively
- Students can share their work



# Learning “Too Deeply”?

“They’re student-made so there could be a lot more information on the wiki than we actually need to know for the test.” – Sylvia

“The level of thinking that I guess I had them do and work on some of those is probably deeper than the curriculum requires for the assessment.” – Mr. Grant



# Collaboration & Assessment

- Students can write collaboratively
  - Early on:  
*“I can just go back and document how little or how much that person contributed.” – Mr. Grant*
  - End of term:  
“There’s a problem with collaboration and then assigning grades... when you come back to the tried and true method of doing things you don’t have to worry about all that... one person one grade.” – Mr. Grant
- Seven wiki assignments
  - First major assignment was collaborative
  - Mr. Grant changes the rest to be individual



# Sharing or Cheating?

- Students can share their work
  - Teacher repeatedly suggested features to allow for the option of homework turn-in instead of publication
- Need to think more critically about collaboration in traditional academic settings
  - Avoid the ‘paste together and correct the font’ problem



# Proposed Solutions

- Better visualization tools for teachers to assess student contributions
  - We could do more to support existing practices
    - To what extent do we want to?
    - Is there a danger of sublimating the potential of the medium? (Wiki for test preparation.)
- Radical educational reform

# GameLog & The Game Ontology Project



- What is game studies?
  - Classes showing up at more and more schools
    - How do we teach this new field?
- Two tools:
  - GameLog
  - The Game Ontology
- Trials:
  - Fall 2006:
    - Undergrad lecture class, 24 (36) students
    - Mixed grad/undergrad discussion class, 11 (25) students
  - Spring 2007
    - Undergrad lecture class 81 (213) students
- PhD work of José Zagal

# GameLog

Hi jp

[New GameLog](#)  
[Post New Entry](#)  
[View Open GameLogs](#)  
[Preferences](#)  
[Logout](#)

**GameLog** BETA

**FIND A GAMELOG**

... by game ... by platform  
Name of Game Arcade  
[advanced search](#)

**Recent Entries**

**Age of Empires: The Age of Kings (DS)** by jp (Monday 25 September, 2006)

I finished the Japanese campaign and have started on the Mongol. Nothing terribly exciting though the final Japanese mission was extra fun!

I've slowly been reflecting on some of the fundamental differences between this game and Advance Wars. They're both turn-based strategy games but they are quite different to play. The most important difference, to my eyes, has to do with transparency regarding the units.

In Advance Wars, you generally have a good sense of how tough an opponents units are and what the results of a particular encounter (fight) will be. While there are differences from army to army (and CO to CO), altogether, there isn't that much variability between units. Units might take a little more, or a little less damage, but in the end it works out. This makes it easier for a player to learn how to strategize in this game. An advanced player will make use of the actual variability to gain an extra edge, but it isn't really that necessary.

In Age of Empires, on the other hand, the variability is a LOT higher. There are many more factors involved in determining how a particular fight might go. Not only are there terrain factors, but also special abilities, upgrades that may have been researched, current age, special powers, etc. In an infantry vs. infantry fight, the results are theoretically all over the place. This makes learning this game a lot harder since a lot of the information is no longer transparent to the player, and may also change throughout a particular scenario. (your opponent may research a certain technology that now gives him a 25% advantage).

I've noticed this difference a lot. The game designers also noticed this and included an advisor who tells you, before a fight, how things may go. He uses phrases that are flowery and metaphorical (we will mow them down like fresh grass), but I still feel that the end result is highly variable.

I've noticed that I have a hard time deciding which units to use when, and where. Some units seem to be really susceptible to certain attacks (when I have them, and I'm attacked) but really tough the other way (when I'm trying to take advantage). I haven't been able to figure out if it's because of luck or other factors, but it is rather frustrating!

[read all entries for this GameLog](#) - [add a comment](#)

**Super Mario Sunshine (GC)** by jp (Monday 25 September, 2006)

I've earned 35 shines and progress is definitely slowing down. Things are getting much harder! In fact, last night there was one particular challenge where the hard part wasn't meeting the objective necessary for the shine to appear. The hard part was actually getting

**What is GameLog?**

GameLog hopes to be a site where gamers such as yourself keep track of the games that they are currently playing. A GameLog is basically a record of a game you started playing. If it's open, you still consider yourself to be playing the game. If it's closed, you finished playing the game. (It doesn't matter if you got bored, frustrated, etc.) You can also attach short comments to each of your games or even maintain a diary (with more detailed entries) for that game. Call it a weblog of game playing activity if you will.

[read more](#)

**Recent GameLogs**

- 1: jp's Disaster Report (PS2)
- 2: jp's Age of Empires: The Age of Kings (DS)
- 3: jp's Tapper (Arcade)
- 4: jp's Gol Gol Beckham! Adventure of Soccer Island (GBA)
- 5: jp's Pinball Hall of Fame: The Gottlieb Collection (PS2)

**Recent Comments**

- 1: Test at 2006-09-18 15:20:58
- 2: jp at 2006-09-06 13:13:26
- 3: jp at 2006-07-08 08:52:22
- 4: Sparrow at 2006-07-02 21:51:32
- 5: jp at 2006-06-27 13:44:18

- Online blogging tool for games
  - www.gamelog.cl
  - Multiple, parallel blogs (one per game)
- Helps students:
  - Reflect on their gameplay experience
  - Connect game elements across multiple games
  - Gain insight on how the experience of playing a game changes over time
  - Students find they start noticing things, start playing differently
  - Comment on one another's entries
- Promotes reflection and meta-cognition

# The Game Ontology



The screenshot shows the 'Main Page' of the Game Ontology Wiki. The page has a navigation sidebar on the left with sections: 'navigation' (Main Page, Recent changes, Random page, Help), 'ontology top level' (Interface, Rules, Entity Manipulation, Goals), 'work in progress' (Proposed Entries, Out of Date Entries), 'search' (a search box with 'Go' and 'Search' buttons), and 'toolbox' (What links here, Related changes, Upload file, Special pages, Printable version). The main content area includes a 'Contents [hide]' table of contents with links to sections 1 through 6.1. Below this is the 'Game Ontology Project' section, which contains two paragraphs of text and an '[edit]' link. The first paragraph describes the Game Ontology Project (GOP) as a framework for describing, analyzing, and studying games. The second paragraph describes the GOP's approach to developing a game ontology. Below the text is the 'Top-level elements of the Ontology' section, which includes a link to 'Interface' and another '[edit]' link.

Game Ontology Wiki

navigation

- Main Page
- Recent changes
- Random page
- Help

ontology top level

- Interface
- Rules
- Entity Manipulation
- Goals

work in progress

- Proposed Entries
- Out of Date Entries

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version

Contents [hide]

- 1 Game Ontology Project
- 2 Top-level elements of the Ontology
  - 2.1 Interface
  - 2.2 Rules
  - 2.3 Entity Manipulation
  - 2.4 Goals
- 3 Getting Started
- 4 Work in Progress
- 5 Publications
  - 5.1 Related Work using the Game Ontology
- 6 People
  - 6.1 Related Projects

Game Ontology Project [edit]

The Game Ontology Project (GOP) is a framework for describing, analyzing and studying games. It is a hierarchy of concepts abstracted from an analysis of many specific games. GOP borrows concepts and methods from prototype theory as well as grounded theory to achieve a framework that is always growing and changing as new games are analyzed or particular research questions are explored.

The Game Ontology Projects approach is to develop a game ontology that identifies the important structural elements of games and the relationships between them, organizing them hierarchically. The use of the term ontology is borrowed from computer science, and refers to the identification and (oftentimes formal) description of entities within a domain. Often, the elements are derived from common game terminology (e.g. level and boss) and then refined by both by abstracting more general concepts and by identifying more precise or specific concepts. An ontology is different than a game taxonomy in that, rather than organizing games by their characteristics or elements, it is the elements themselves that are organized.

This approach is well suited to exploring issues and questions regarding games and gameplay. The GOP provides a framework for exploring, dissecting and understanding the relationships between different game elements. A few examples of research questions we have already begun to explore include: How can we understand interactivity in games?, How is gameplay regulated over the progress of a game?, and What roles does space play within games?. Some of our explorations are also available in the publications area. [edit]

Top-level elements of the Ontology [edit]

Interface [edit]

See all entries in this hierarchy

Rules [edit]

- Classification of structural elements of games, and their inter-relationships
- Wiki-based
  - Contribute examples
  - Contribute new terms
  - Anyone can contribute
  - Knowledge is always evolving
  - Of use to scholars
- Helps students:
  - Use their experience and knowledge to meaningfully contribute to an ongoing games research project
  - Learn and create vocabulary and concepts for understanding games
- Ontology created by Michael Matteas

# Splat!



- GA Computes!
  - NSF Broadening Participation in Computing Alliance led by Mark Guzdial
  - Online community component
- Strategy: meet teens where they already are
- Facebook application
  - Share completed media projects from other sites
    - Flash, Scratch, etc.
  - Peer rating system
  - Contests
    - “How I did it” profiles
- PhD work of Sarita Yardi

# Computer-Supported Collaborative Innovation (CSCI)



- Open-source and open-content work best with a well-defined goal
  - Example: porting UNIX to the PC
  - Example: creating an encyclopedia
- Could these approaches work with a more open-ended goal?
  - Clarifying the goal state is part of the task
- Pilot work: study of animation online
  - How do people collaborate to create animations?
    - Especially on newgrounds.com
    - Found four different collaborative modes:
      - Contest, collection, continuation, collaboration
- Studying how to support new forms of creative collaboration online
- PhD work of Kurt Luther



# Dusting Off My Crystal Ball...

- Amateurs as first-class participants
  - This doesn't eliminate professional content
  - But it raises the bar
- Democratization of content creation
  - Richer variety of views
  - Not filtered by what “sells” or what is “acceptable”
- Shifting privacy awareness & norms
- Business models as a driving force
- Growing online/offline integration
  - The compelling “3D world” is the real one!



# Designing for Educational Opportunity

- The Internet is a natural fit for constructionist learning
  - Support for learning
  - Audience for completed work
- Making this work in real educational settings is a challenge



# Acknowledgments

- ELC students:
  - Betsy DiSalvo, Andrea Forte, Kurt Luther, Sarita Yardi, José Zagal
- ELC sponsors:
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