

History of Computer Game Culture and Technology at UCI

Walt Scacchi, Peter Krapp, Bonnie Nardi, Andre van der Hoek and others
Institute for Virtual Environments and Computer Games

Donald Bren School of Information and Computer Sciences

UCIrvine

September 2017

This document identifies and briefly describes a number of milestone events of Academic interest in the history of computer game culture and technology here at SICS. This history focuses attention to the past 20 years, though may go back even farther.

1970-1990: We have limited insights for what game history transpired at UCI in the 1970-1990s. Early in 1970's, ICS Professor and Computer Graphics pioneer, William Newman, brought three [Imlac PDS-1](#) computer graphic workstations to ICS, which featured [first-generation computer mouse, a five finger chord keyboard](#) (both designed at Stanford Research Institute), and a RAND (pen) tablet user interfaces. The workstations were reportedly used by graduate students and others to play two-player *SpaceWar* and later [Maze War](#), the first interactive computer games with real-time 2D vector graphics display. Later in the 1970's, ICS students played early computer games on text-based computer terminals connected to the UCI PDP-10 mainframe computer, including *Adventure* (also known as [Colossal Cave Adventure](#)).

1998: Dan Frost in ICS Department begins teaching an upper-division undergraduate game development project course. This course continues to this day in evolved form within the current Computer Game Science major in Informatics.

1999: Robert Nideffer in Studio Art Department releases “a patched patch, a hacked email server, and an appropriated Web site” called [Tomb Raider](#) for inclusion in the [CRACKING THE MAZE: Game Plug-ins and Patches as Hacker Art](#), the first online exhibit of computer game patches, modifications, and add-ons.

2000: UCI Studio Art Faculty, Antoinette Lafarge and Robert Nideffer curate the [Shift+Ctrl: Computers, Games, and Art](#) exhibition of game-based artworks at the Beall Center for Art & Technology, the first such exhibition in an art museum. The online exhibition catalog features an article by Antoinette LaFarge, [WinSide Out: An Introduction to the Convergence of Computers, Games, and Art](#).

2000-2003: Walt Scacchi and Mark Ackerman in ICS receive a National Science Foundation research grant to comparatively study computer game modding and other forms of free/open source software development. Two widely cited papers from this study include one that compares modding in [networked game worlds](#) with *Unreal Tournament* and *Unreal Editor* (predecessor to the *Unreal Development Kit*) to other open source software development project, and another focusing on [free/open source game software development](#).

2003: Robert Nideffer, Celia Pearce, and Walt Scacchi establish the [Game Culture & Technology Lab](#) at Calit2, and later also in the School of the Arts. The CGTL hosts its first

research workshop, [Game Grid Innovation Workshop](#), at the Beall Center for Art and Technology, in conjunction with the San Diego Supercomputer Center and Butterfly.net.

2003: Proposal for a BA degree in Game Studies (led by Robert Nideffer, Studio Art), but not approved by the UCI Academic Senate.

2003-2006: Robert Nideffer leads the development and release of [unexceptional.net](#), a unique pervasive game environment involving 2D and 3D user interface clients with procedurally generated content, blogs, applets, geo-located/GPS-based mobile phone game client support, and Java-based game servers, as described in a [companion paper](#).

2004-2006: Andre van der Hoek and Emily Oh Navarro in ICS receive two National Science Foundation grants to support research and development of games for teaching simulated software engineering processes to undergraduates. The role-playing game, [SimSE](#), emerging from this project goes on to win the 2009 Premier Award for Excellence in Engineering Education Courseware.

2004: Robert Nideffer, Antoinette Lafarge, and Celia Pearce curate and produce the [ALT+CTRL: A Festival of Independent and Alternative Games](#) exhibit of game-based artworks at the Beall Center for Art & Technology. Also see [invitation for submissions](#).

2005-2006: Robert Nideffer and Walt Scacchi receive research and development grant from the Discovery Science Center, Santa Ana, CA, to design, develop, and deploy an online informal life science learning environment, called [DinoQuest Online](#) that was designed to integrate and interoperate with a large-scale hands-on science exhibit called [DinoQuest](#). Alex Szeto leads the [programming and in-game artwork](#) development on DQO.

2006: Robert Nideffer, Celia Pearce, and Walt Scacchi organize and host [MASSIVE: A Research Summit on Networked Multiplayer Games](#). This event is sponsored by Blizzard Entertainment, Gamespy, K2Network, Linden Lab, UC Discovery Grant, Calit2, and many others at UCI.

2006: Robert Nideffer and Walt Scacchi funded by UCI Humanities Research Institute to prototype a [domain-independent collaboration environment](#) for [a virtual residency in game culture and technology](#).

2006-7: start of the first First-Year Integrated Program (FIP) as University Studies 12ABC, under the auspices of DUE, on "Computer Games as Art, Culture, and Technology", taught for three years by Dan Frost, Peter Krapp (Film&Media Studies) and Bill Tomlinson (Informatics).

2007: The University of California Discovery Grant Program supports exhibition of computer game projects from UC Irvine, Riverside, Santa Cruz and San Diego campuses at the *2007 Game Developers Conference*. [UCI exhibits](#) the *DinoQuest Online* life science learning game environment developed for the Discovery Science Center in Santa Ana, CA.

2007: The UC Irvine Libraries acquire a virtual island in *Second Life*, with several UCI buildings and spaces for teaching.

2007: Calit2 hosts a workshop on [Web 3.0: The Next Transformation of the Internet Experience](#), which forecasts that over the next 5-10 years, that online computer games and augmented virtual reality will become dominant forces in Internet usage and online user interaction. Speakers include game industry pioneer, [David Perry](#), [Mats Johansson](#) CEO of EON Reality, Bill Tomlinson and Walt Scacchi.

2007: Robert Nideffer develops and releases an eBook titled, [The Grinch Who Stole Office](#) that incorporates three games (Debt Downer, Love Bombs, and Pulling for Peace) that mediate the interactive story.

2007-08: The student-run [Video Game Development Club](#) is established, followed soon after with an ongoing series of student-run [game development competitions](#) (aka, game jams), and still going today.

2007-2009: Digital Industry Promotion Agency, Daegu, South Korea provides \$1.2M grant for research in heterogeneous game networks and [advanced tools/techniques for developing multi-player games](#) (Principal Investigator, Walt Scacchi, Co-Investigator, Robert Nideffer).

2007-2009: Intel Corporation provides research grants for development and demonstration future concepts in game-based virtual worlds, with application in [semiconductor fabrication operations](#). (Principal Investigator Walt Scacchi). Another project produces and releases a [demo reel](#) (.swf download, requires Flash support) for a prototype future (“2010+”) virtual world that features integrated online and (auto)mobile VW clients, online dating avatars, personalized avatar-based advertisement delivery, reconciliation and deception detection in live online chat and chat transcript/blog postings.

2007-2011: Robert Nideffer and Alex Szeto produce and release a Flash-based game, [WTF?](#) as a 2D, side-scrolling, 10 level parody of *World of Warcraft*, that also includes a game modding kit called [WTF?! \(video demo\)](#). The WTF? release includes an optional set of [add-on modifications for World of Warcraft](#). Hundreds of thousands downloads of WTF? have since been recorded.

2008-2012: Dan Frost (Principal Investigator), Amelia Regan, and Bill Tomlinson in Informatics receive National Science Foundation grant to link Native Culture to Computer Game Culture through the American Indian Summer Institute in Computer Science based at UCI.

2008: Bonnie Nardi (Informatics) and Celia Pearce (Georgia Tech) host the NSF Workshop on [Productive Play: The Convergence of Play and Labor in Online Games and Virtual Worlds](#), which produced a set of research papers that appeared in a special issue of the online journal, [Artifact](#).

2008-2012: UCI receives \$3M research grant from National Science Foundation to investigate [game-based virtual worlds as decentralized virtual activity systems](#) (Principal Investigator, Walt Scacchi, Co-Investigators, Alfred Kobsa, Cristina Lopes, Gloria Mark, Bonnie Nardi, David Redmiles, Richard Taylor).

2008-current: Informatics Professor Cristina Lopes contributes to the open source software-based [Open Simulator](#) project, a virtual world development platform comparable to and

interoperable with *Second Life*. She extends OpenSim to support [hypergrids](#), extensible virtual worlds that can be composed into large-scale, networked virtual worlds. Her software development efforts are responsible for the production and release of the [Diva distribution](#) of OpenSim, which is freely available for download and installation on networked personal computers. She also serves as co-organizer for the *OpenSimulator Community Conference* in [2013](#), [2014](#), and [2015](#). Her contributions are recognized with the [Antonio Pizzigati Prize in 2016](#).

2009: [UC Irvine establishes](#) an interdisciplinary research [Center for Computer Games and Virtual Worlds](#). In 2013, the Center becomes the [Institute for Virtual Environments and Computer Games](#), directed by Computer Science Prof. Magda El Zarki, as an organized research institute of the University of California. By 2015, [more than 50 UCI faculty across campus](#) have become affiliated with the IVECG, thereby making IVECG one of the largest organized research units at UCI.

2009: *Laguna Beach Museum of Art* hosts a large exhibition, [WOW: Emergent Media Phenomenon](#), focusing on game-based artworks inspired by *World of Warcraft*, featuring UCI artists [Antoinette LaFarge](#), [Robert Nideffer](#) and [Robert Nideffer and Alex Szeto](#). Works by LaFarge and Nideffer-Szeto are also exhibited at the *Gallery@Calit2* at UC San Diego as part of the art installation, [Scalable Relation—Playing the World\(s\)](#).

2009-2015: Multiple grants for R&D of computer games, game-based virtual worlds, or game development technologies from sponsors including Blizzard Entertainment, Digital Industry Promotion Agency (Daegu, Korea), National Science Foundation, Naval Postgraduate School, and Northrop-Grumman Interactive Systems.

- Sample project: Robert Nideffer and Alex Szeto produce and release [SPEW!](#), a prototype world simulation environment with [multiple game parodies](#) that appropriate real-time data from sources including CIA World Factbook, World Health Organization, New York Stock Exchange, traffic, weather, Twitter feeds and more to externally drive game play situations and user experiences ([video demo](#)).
- Sample project: [Garnet Hertz](#) leads development of the first drivable, [Augmented Reality driving game arcade machine](#), based on the [Out Run arcade game](#).
- Sample project: Walt Scacchi, Craig Brown and Kari Nies develop an open source, [game-based virtual worlds for military command and control applications](#) based on the *Texas HoldEm* card game.

2009-present: David Theo Goldberg and Mimi Ito (Informatics) at the UCI Humanities Research Institute receive ongoing funding from the MacArthur Foundation to create and host a national program for research and educational development focused on [digital media and connected learning](#), which includes [understanding the roles of computer games](#) in and out of the classroom for young/teen learners. The [Connected Learning Agenda for Research and Design](#) (2013) is one of many foundational results from these efforts, as is the game studies report on [Crafting the Metagame: Connected Learning in the Starcraft II Community](#) by Yong Ming Kow (CityUHK/Informatics), Tim Young (Connected Camps/Informatics), and Katie Salen Tekbinas (DePaul).

2010: Bonnie Nardi in Informatics publishes, [My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft](#), one of the first ethnographic studies of the play of human

culture and socialization in a persistent, massively multi-player online role-playing game (MMORPG).

2010: UC Irvine hosts an NSF-funded Workshop on [The Future of Research in Computer Games and Virtual Worlds](#) (Principal Investigator: Magda El Zarki, CoPI: Walt Scacchi; Final Report Cover Art: Alex Szeto).

2010: Bonnie Nardi, Walt Scacchi and other Informatics faculty are called out in a [press statement](#) by Sen. Tom Coburn (R, OK) alleging that UCI had squandered \$3M in federal research funds to play *World of Warcraft*. A series of published exchanges ([here](#) and [here](#)) make clear that different research projects at UCI were studying different kinds of game-based virtual worlds with many different corporate, government, and academic research partners as new organizational forms for workplace studies. And no, UCI faculty did not receive, squander, or spend \$3M to play *World of Warcraft*.

2011: Donald Bren School of Information and Computer Science establishes an undergraduate B.S. Degree program in [Computer Game Science](#), formulated by Magda El Zarki, Dan Frost, Walt Scacchi and others, which currently enrolls approximately 250 degree majors, the largest undergraduate game development program in the U.S., and is today the second largest undergraduate degree program in the SICS.

2011: SICS opens the Computer Game Science Laboratory in the entry atrium at Bren Hall (DBH1412), dedicated to support independent game research and development projects that involve undergraduate students, with computing resources provided by Walt Scacchi, Magda El Zarki, ICS Dean Hal Stern, Calit2 and other industry partners.

2011: Dan Frost and Walt Scacchi help establish and organize the *IEEE Intercollegiate Computer Game Showcase*, a regional event sponsored by the Orange County section of the IEEE, featuring student developed games from a dozen different universities and college-based game jams in Southern California. UCI has hosted this Showcase in [2013](#) and 2016 ([sample game videos](#)).

2011-2013: The UCI student club, *Fighting Gamers@UCI*, hosts the *SoCal Regionals* in [2011](#) and again in [2013](#), both large-scale computer fighting game eSports competition events, that each brought in more than 1000 local and international community participants to play in the competitions.

2011-2014: *San Francisco Symphony* funds the research, development and deployment of an informal classical music learning game environment, called [SFSKids.org](#) (requires Flash) predicated on [emerging concepts in Science, Technology, Engineering, Art and Mathematics](#) (STEAM), along with a companion [guidebook for parents and teachers](#) (Walt Scacchi, Principal Investigator).

2012: Tom Boellstorff (Anthropology), Bonnie Nardi (Informatics), Celia Pearce (Georgia Tech) and T.L. Taylor (MIT) publish their book, [Ethnography and Virtual Worlds: A Handbook of Method](#), which has become a standard reference in the field of online game studies.

2012-2013: National Science Foundation identifies the UCI approach to game-based advanced manufacturing training in its [report](#) on "...the most important worldwide

accomplishments in converging knowledge and technology, including converging platforms, methods of convergence, societal implications, and governance, in the last ten years.” See pages 232-233 in the [online version](#) of the report, and also the [originating source publication](#), by Walt Scacchi.

2014-2016: UCI Film and Media Program hires Braxton Soderman, while Informatics Department recruits six faculty—Rebecca Black, Josh Tanenbaum, Bonnie Ruberg, Constance Steinkuehler, Kurt Squire, and Aaron Trammell—to conduct research and teach courses in computer game studies, digital media and learning, and/or game development.

2015: Walt Scacchi and colleague Kendra M. Cooper (University of Texas, Dallas) publish their book on [Computer Games and Software Engineering](#), the first book in this emerging area of research, and area of joint expertise at UCI.

2015: *College Magazine* ranks [UCI as number 1 school in the U.S. for gamers](#).

2015: Walt Scacchi testifies at *California State Assembly Committee on Arts, Entertainment, Sports, Tourism and Internet Media* meeting in Los Angeles regarding the [future](#) of computer games in research, education and workforce development at an Assembly informational hearing titled “[California's Video Game Industry: Staying on Top of a Changing Game](#).”

2015: Josh Tanenbaum establishes the [Transformative Play Lab](#) in the School of Information and Computer Sciences to focus on play-oriented studies of computer games, as well as costumes as game controllers, playful fabrication, DIY & Steampunk.

2015: Findings from an experimental study at [Craig Stark's research laboratory](#) (Neurobiology and Behavior) demonstrate the efficacy of sustained 3D video game play as an environmental enrichment that can improve performance on demanding hippocampus-based memory recognition tasks, and are more effective than popular brain games.

2015-2018: UCI Neurologist Steve Cramer funded by the National Institute for Neurological Disorders and Stroke (NINDS) to lead [a nationwide, randomized clinical trial of computer game-based stroke telerehabilitation](#) (Senior Personnel, Walt Scacchi).

2016: UCI Student Affairs establish the [Esports Program](#) and [The UCI Esports Arena](#), the first of their kind at a major research university. The IVECG is identified as one of its leading academic research partner.

2016: UCI ranked one of the top game design schools by *Animation Creation Review* (ACR) in its 2016 Game Design School Rankings. UC Irvine was recognized for its Game Design/Development program in the Donald Bren School of Information and Computer Sciences (ICS). This year, ICS was ranked seventh among the [Top 10 West Coast Game Design Schools](#) and eighth among the [Top 25 Public Game Schools](#). ICS was also ranked 27th among the [Top 50 Schools Nationwide for Game Design](#), which puts ICS in the top 20% of schools considered. These accomplishments were realized within five years since the start of the Computer Game Science degree program at ICS.

2017: Bonnie Nardi in Informatics, with Hamid Ekbia at Indiana University, publish the first

book length treatment of labor and gaming, [*Heteromation and Other Stories of Computing and Capitalism*](#), MIT Press, 2017.

2017: [UCI Magazine](#) publishes its [Winter 2017 issue](#) that features articles on: (a) Tom Boellstorff's research in *Second Life* virtual worlds focusing on Parkinson's patients efforts to experientially overcome their impairments through their online avatars (pp. 25-28); (b) UCI's new eSports Arena, intercollegiate game play and scholarship program (20-27) ; and (c) EE and ICS alumna Laura Wright Teclemariam, now working at the game company, Electronic Arts, describing her efforts to encourage minority women to enter technology and engineering fields (pp. 29-32).

2017: UCI hosts its first eSports Research Symposium in May, organized by Peter Krapp and Walt Scacchi, and sponsored by the UCI Student Affairs and the [Institute for Virtual Environments and Computer Games](#). Featured speakers include: Prof. T.L. Taylor (MIT), Constance Steinkuehler (UCI), Patrick Lemieux (UC Davis) Chris Haskell (Boise State), Michael Practer (Wedbush Securities), and others, including students from the UCI eSports Program and varsity team. The full symposium was broadcast live and archived on [UCI Esports Twitch archive](#).

2017: UCI Esports Arena celebrates its 1st Anniversary in September.