

Practice-led Research: Examples from Artists Working with Technology

Cynthia Lawson

lawsonc@newschool.edu

Parsons The New School for Design

2 W. 13th St. Room 913

New York, NY 10011

Abstract

This paper explores how approaching technology from an artistic lens can result in unexpected and innovative applications, and how this process towards innovation constitutes “research”. The paper is contextualized within the larger field of media art which is one filled with examples of how art can be considered research. There are myriad examples of media artists developing code-based artworks that then inform actual products or even commercial applications – a process which points to media art as a method of research and development.

Through examples of works from well-known artists and designers as well as from graduate students in design and technology, this paper looks at student thesis projects, the process and artist methods via which students were working, and their contributions to their fields of inquiry. Projects mentioned are diverse and include GPS-enabled furniture, artist software, gaming platforms and social media applications. In all cases, the paper argues that innovation was reached *because* the artists stayed clear of real-world constraints, and makes a case for academia, and the field of media art, as the perfect place to position art as research.

KEYWORDS: design, art, technology, education, innovation, research

Introduction

Research is traditionally defined as “careful, systematic study and investigation in some field of knowledge” (Gurlanik, 1983). This paper specifically addresses practice-led research (Haseman, 2006), distinct from traditional qualitative and quantitative research. All examples discussed happen through the making of code, design products, and artworks. How new the knowledge produced is determines the work’s level of innovation. The overuse of the term “practice-based research” can water down the value an artist and designer can bring to a field, so the examples here presented are analyzed through Haseman’s outline of practice-led research (2006). First, the examples noted did not start with a problem. Instead, it was through an exploration, understanding, and at times years of practice, of the artists’ field, that they found their research interest. Second, each of the examples here presented were not an experiment that led to qualitative or quantitative research. It is the code, the object, the software, the installation that is the research artifact.

Research through making is often only made explicit within the context of academia, in which creative practitioners who want to succeed in a world of tenure and peer review must

appropriate this term. It is very rare to find an artist statement of a non-academic artist who uses the word research. This paper assumes that research can happen even if not made explicit. What does need to be ensured is that, for the research to be considered a *contribution* and even *innovation* in a field, it must have been shared with an appropriate community of practice.

Within academia, technology historically has been housed in engineering and computer science schools, which focus on its science and practice. On the theory side, it is often within humanities and science, technology, and society (STS) programs tackling historical and theoretical framings. The flourishing of the field of media art and its teaching in academia has caused technology to also now be taught within the context of art and design programs, in which it is no longer rare to see a computer programming or basic electronics class offered. Physical computing is an example of a recent field started at New York University's Interactive Telecommunications Program (ITP). ("Interactive Telecommunications Program", 2012) Although it is unclear as to who actually started the field, and coined the term, Dan O'Sullivan and Tom Igoe's book "Physical Computing" refers to Red Burns (founder of ITP) as its "godmother" and Geoff Smith the "godfather" (2004, p. iii). A recent email interview with Dan O'Sullivan confirmed that he taught the first physical computing course (O'Sullivan, 2012), which was designed for students of very diverse academic backgrounds to learn the basics of electronics and programming so as to imagine new ways of interacting with the world. It is now a field that has grown and impacted myriad media art programs internationally. For many, including this author's paper, physical computing has created a bridge from engineering into the arts. Furthermore, the entertainment industry is thrilled by the potential of physical computing. Though perhaps not explicitly (and impossible to determine if they would have arrived at this level of interactivity without the academic framing) stores, museums, bars, and other commercial enterprises etc. are more and more engaging with their users, shoppers, and visitors in physically interactive ways. Installations that were before only seen at hands-on science museums such as the Exploratorium in San Francisco are now being used to showcase products, entertainment, and even knowledge (in the case of museums.) Whatever the chicken-or-egg order of this industry, physical computing has demonstrated that if you put basic technologies in the hands of diverse groups of people from non-technological backgrounds, and encourage them to play, you will often get cutting-edge applications.

This idea that artists are the ones who can push the boundaries of a technology is precisely the driver behind programs like the Xerox PARC artist-in-residence program. The book that describes this program is called *Art and Innovation – creating that exact pairing for which this paper argues*. "The idea behind PARC was simple: if you put creative people in a hothouse setting, innovation will naturally emerge." (Brown, 1999, p. xi). And like the PARC program there are many other examples of partnerships between technology companies and academic institutions that revolve around this idea of innovation through collaboration. For many years, for example, the Palo Alto-based Interval Research Corporation ran a fellowship at ITP during which recent alumni could stay on campus researching new technologies that related to Interval's work (O'Sullivan and Igoe, 2004). One exemplary project that came out of that fellowship is MacArthur Foundation Fellow's Camille Utterback's and Romy Achituv's *Text Rain*, an interactive text-based installation (see Figure 1). Utterback now holds a U.S. patent for the motion tracking system that drove that installation (Utterback, 2012).



Figure 1 - Documentation of “Text Rain” by Camille Utterback and Romy Achituv

A more recent example is “Seven on Seven”, a yearly event started by members of the board of NY-based arts and technology organization, Rhizome. The event in 2011 was sponsored by technology corporation AOL’s artist program, and “paired seven leading artists with seven game-changing technologists in teams of two, and challenged them to develop something new—be it an application, social media, artwork, product, or whatever they imagine—over the course of a single day.” (“Seven on seven”, 2011) In her 2011 opening remarks, Maureen Sullivan from AOL very clearly states the reason a company such as hers would want to be involved in such a partnership. “Rhizome’s mission to support emerging artistic practices engaged with technology is a mission that we share at AOL. We’ve been focused in the past year, on supporting and amplifying creativity as we reinvent our company and our brand.” (Rhizome, 2011)

How artists play with technology spans from the aesthetic to critical design. In the first category is Argentinean artist Leo Núñez who creates interactive electronics-based artworks in which the technology driving the work is transparent for the user. In “Game of Life” (see Figure 2) he works with the aesthetics of electronics (the wires, the circuits, etc) and carefully positions them for a visual, as well as interactive, effect (Núñez, 2012).



Figure 2 - Documentation of “Game of Life” by Leo Núñez

Internationally renowned collaborative team Dunne and Raby exemplify the second approach. In *GPS Table*, shown in Figure 3, the designer team embeds a common-looking wooden table with an LCD screen. The table also has a GPS locator displays its location, in longitude and latitude on the LCD screen. If the GPS is unable to connect with a satellite, the screen displays “Lost.” Dunne and Raby tested this design by giving it to families to live with it. The response was much more emotional than they had expected, with people feeling true concern, and almost anxiety, if and when the table expressed being lost (Dunne, 2008). These types of experiments undoubtedly fall into practice-led research. It is through the design, production, and testing of an object, that Dunne & Raby are asking questions about humans and technology. “We devised and made eight prototype objects to investigate peoples' attitudes to and experiences of electromagnetic fields in the home, and placed them with volunteers. The objects are designed to elicit stories about the secret life of electronic objects -- both factual and imagined. They are purposely diagrammatic and vaguely familiar. They are open-ended enough to prompt stories but not so open as to bewilder.” (Dunne & Raby, 2012)



Figure 3 - Documentation of “GPS Table” by Dunne and Raby

Another important practice to keep in mind is the one of artists developing tools for themselves and other artists. Such is the case of Ben Fry and Casey Reas who initiated *Processing*, and Zach Lieberman, Theodore Watson, and Arturo Castro who co-developed *openFrameworks*, both programming environments, and which are frequently the starting point for artists and designers interested in coding. Fry and Reas’ approach was to build a platform that would flatten the learning curve for artists interested in coding. And because they did this, while committing to an open source platform, what has resulted is not just a tool, but a global community of like-minded individuals who are coding creative projects, as well as expanding the platform itself by developing libraries and tutorials. Matt Cutts, head of Google’s webspam team, recently tweeted, “The ability to write code is pretty much a super power in today’s society.” (Cutts, 2012) This is a sentiment shared by many, and which point to Casey and Reas’ project as one of the most influential contributions to the media arts field. With thousands of university courses teaching these tools to their students, the impact each of them has had is unquantifiable. Often keynote speakers at conferences, and recipients of awards for their contributions to the field, the excellence for which all of these creators are known can be equated to the excellence received by prominent scholars in any other research field.

In addition to developing these tools, Fry, Reas, and Lieberman are also known for many other individual and collaborative projects and contributions (and are, therefore, active as artists, not just coders developing shared platforms). Fry’s doctoral work at MIT’s Media Lab in information visualization is still considered seminal, and his work “Valence” even appeared in the Hollywood film *Minority Report* – used to demonstrate how Tom Cruise’s character is navigating through futuristic interfaces (Fry, 2012).



Figure 4 - Scene from Minority Report depicting Ben Fry's "Valence"

Two Cases

To further investigate how designers play with technology consider two graduate theses from Parsons The New School for Design's MFA in Design and Technology (MFADT). From the Parsons website, MFADT is described as follows. "Today's designer faces two fundamental challenges: the expanding influence of design within society, and the growing role of technology within design. As a terminal degree, the MFA in Design and Technology provides a lively and dynamic environment for students to use design research, process, applied theory, and writing to address these challenges." (Parsons The New School for Design, 2012) The projects that follow were developed in thesis, a yearlong rigorous writing and research, and studio-based project course. Students develop a written paper as well as a project (or series of projects) through which they make an innovative argument at the intersection of art, design, technology, and society. Each student poses a series of design questions they ask through their project. Below are several examples of projects and the questions they were asking.

Not-for-Bots

Kunal D. Patel is an MFADT alumnus from the class of 2010, and now a Senior Interaction Designer at HUGE, Inc. in Brooklyn, New York. His thesis, "Not-for-Bots" is a series of projects that investigate, critique, question, and at times mock, the future of the Internet (Patel, 2012). Patel's final paper is written as a manifesto for "the designers of technology who are shaping the Internet and those that will determine its future." (Patel, 2010, p. 4) The reason the paper is written as a manifesto is because Patel wanted to make explicit the idea that his work was contributing to a field of practitioners. He coded and designed a series of prototypes (such as penultim.it shown in Figure 5), but he felt that his strongest contribution would be to encourage others to take on his methodology, and to consider his projects as case studies. This impetus to think of a platform on which others can build is similar to the before mentioned examples of Processing and openFrameworks – artists and designers making work, not just for themselves, but to encourage others to engage with similar ideas or methods.



Figure 5 - Screenshot from Kunal Patel's "Not for Bots" homepage

Patel followed a common three-part methodology for each of the projects he developed (which is also what he encourages other designers of technology to follow). His first step is "Design for delight", in which he emphasizes the importance of playfulness in design. This, so as to "generate user interest and make them amenable to new experiences." (Patel, 2010, p. 27) Patel believes, as well, that this approach in his visual design conveys a warmth and humanity in his work that is precisely one of the elements he highlights as lacking in the current internet scape. Patel's second method is "Be critical through subversion" (Patel, 2010, p. 28) based on his research that through subversion one can produce clear, and direct, critical commentary on specific software platforms (in his case, Twitter.) Finally "Encourage discourse and experimentation" is precisely what he is aiming for with his work, and which he hopes others will, as well. This intentionality is key in considering these kinds of pursuits both "research" and "innovation." The encouragement of discourse (and thoughtful discourse, explicitly), leads to well-thought research, and the emphasis on experimentation (and particularly one that is grounded and contextualized within a larger review of academic literature and the design field) is likely to lead to innovation.

In an email interview (K. Patel, personal communication, April 17, 2012), when asked how he thinks of his work as research, Patel responded,

Scientifically speaking, I don't think it does, because ultimately I do not have a pass/fail conditional statement for each of my "experiments". Rather, I see it as "research by design" since I'm starting with a thesis statement and creating experiments that explore the statement. I believe that compelling digital products can be designed using human and real-world constraints. Ultimately it's [sic] success as a methodology could be judged by user engagement & adoption of the experiments. However, I'm more interested in offering it as a model for interaction design to generate discussion and inspire other work

He clearly is also pointing to notions of practice-based research which is the framing methodology for this paper. Furthermore, his response affirms that the value of his work is in how others may be inspired or challenged by the project. In this regard, there doesn't (yet) seem to be any documentation to confirm or deny such "success". To a question about innovation, Patel wrote,

I believe the interaction design philosophy of "Not For Bots" is innovative. ...my intention is to open the realm of possibility for interaction design that celebrates human "constraints" as a valid tenets for designing digital products. The body of work are [sic] explorations on this disruptive idea; whose goals

are (1) to prove you can actually design digital products this way, (2) that the experiences created are compelling, and (3) to critique current trends in interaction design.

As far as examples, I think Penultim.it in particular does this - it subverts the expected interaction of URL shorteners - in essence misleading users - but creates an opportunity for indirect sharing and reflection in return.

Patel points to the kinds of behaviors his work elicits as what is innovative. Perhaps then, the most appropriate framing for this kind of thinking would be social innovation? It is not the actual design itself, but the interactions that happen because of it, which are innovative. The final questions were “How do you think an open-ended “artistic” framework influenced Not for Bots? How would your thesis have been different if you were held to client-led constraints?” As is often the case in design, it is the quality of client-driven which distinguishes personal or “fine art” works from “design”.

I am very confident in asserting that Not For Bots would not exist with traditional client-led constraints or outcomes. Not For Bots is about the value of disruption, something clients are naturally afraid of given the potential of alienating users (and losing revenue). It is difficult to convince clients to move forward without precedents and analytics to ensure they are making informed decisions, let alone convince them to intentionally subvert user expectations to craft new experiences. The approach for Not For Bots is diametrically opposed to traditional client mindsets right now, which is where I hope growing the body of work and spreading the message can help change their perceptions over time.

The response confidently supports the premise of this paper, that the qualities highlighted from the project emerged from its open framework without a specific client, nor goal, in mind.

Data

Also from the MFADT's class of 2010 is Zach Gage, who has quickly created a reputation for himself in the game design and media art world in New York City and whose thesis work was entitled “Data.” (Gage, 2010) Data is a collection of six artworks by Gage which explore, what he calls, five discrepancies of how we think about data in a digital world. The first is how we value our data. Here, the point Gage makes is that we often do not realize the value of our data until it is lost. He wonders why we don't have equivalents of photo albums or treasure chests and why we do not spend much time making sure our data is safe. The second discrepancy has to do with remembering online information. He makes the point that we assume that something found online will continue to be there, and rarely have a good enough bookmarking system, or more permanent form of storage, to be able to return to those bits. Gage lists data's temporality as the third discrepancy. He shares the contradiction that “despite our love of search” (and I would add, of accumulating and sharing), “when our own data comes back to haunt us weeks or years after we have shared it, we are upset and surprised.” (Gage, 2010, p. 1) The fourth discrepancy has to do with quality. When popularity is the only metric used in the digital space, have we really achieved a measure of the quality of the information? Finally, Gage brings up the issue of remembering data. He points to convenience as the main reason we enjoy finding our data, instead of thinking about how it could potentially “enrich our lives”. (Gage, 2010, p. 1) During the thesis year, Gage's work truly broke the boundaries of academia. He received critical acclaim, both positive and negative, for his art game *Lose/Lose*, “a video-game with real-life consequences. Each alien in the game is created based on a random file on the player's computer. If the player kills the alien, the file it is based on is deleted. If the player's ship is destroyed, the application itself is deleted.” (Gage, 2009) Despite the warnings on the project's page, it seems that several people downloaded and played the game not knowing they were actually deleting their files. Many, however, did it knowingly, and quickly engaged in debate and

conversation about the point of the project. The project's page covers the questions Gage was pursuing through this work, and which tie to his interests around data. And although not explicit in his statement, it seems that much of the controversy revolved around the ethics of creating such an interaction. No matter what the position described in the over 30,000 pages that result from searching for "Lose/Lose" on Google, what is clear is that through a game, Gage was able to bring discourse, and therefore research, to the game design and larger media art community.

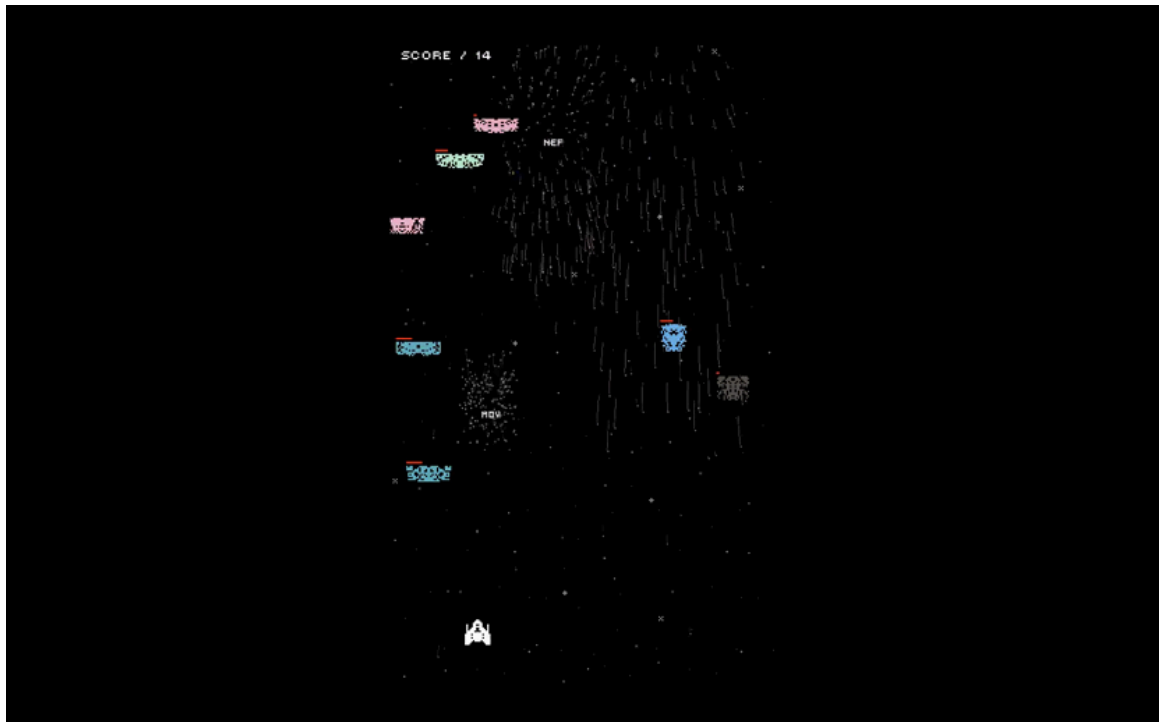


Figure 6 - Screenshot of "Lose/Lose" by Zach Gage

The same questions were emailed to Gage (Z. Gage, personal communication, April 20, 2012 for this paper. To the first, on research, he responded

I think it was more investigation than research. I guess you could argue that they're the same, but research tends to carry connotations of classical experimentation and book reading, and Data wasn't really any of that. Instead it was a loose investigation of the digital space and the things that I find interesting about it. Once the work was produced it shifted into a conversation. Essentially work as invite to conversation.

This response confirms two hypotheses raised in the introduction. The first, that many, if not most, media artists do not really think of themselves as researchers. How Gage talks about what he was doing, is certainly research, though perhaps unintentional. And that is the second hypothesis – that the value of the works can be extracted after-the-fact even if they were not an explicit goal of the artists at the outset. To the question of innovation, he humbly responded

bmmmm. I guess i [sic] would hope that it would be innovative, but it might be too self indulgent to claim that it is for sure.

I tried to position myself in a space that felt under-explored to me. That's one of the reasons why I wanted to specifically interrogate the social internet, and not just the internet in general. I think the most powerful aspect of a social internet is the reach and intensity of it's [sic] memes and rules, and if theres [sic] anything innovative about my work I'd hope that its it's [sic] ability to deliver accessible conceptual art. Although I also think this kind of tactic is becoming a main-stay of social-netart.

Here, Gage's insight broadly addresses the field in which he immersed himself and not necessarily the specifics of one of his projects. Lose/Lose certainly encouraged an innovative type of interaction, in the same way that Patel described innovation with his work penultim.it. When had a video game player ever had to worry that killing the enemy on screen would also delete their actual saved files on their computer? To the final question about the absence of a client, Gage confidently writes

oh my god I [sic] can't imagine the horror of client constraints on a project like that :)

I mean, it doesn't make any money. One of the projects was listed as a virus, and one of the projects is gone because visits cause it to delete itself :)

His final statement is certainly conclusive. In particular his reference to Temporary, a website which disintegrated a bit more each time it received a new visit. Most importantly, it is interesting that Gage assumes that clients would always want money-making projects. Yet, one can imagine many cases in which a client would hire an artist such as himself to create an interactive installation for a corporate lobby, a sales event, or other. Zach Lieberman, mentioned earlier in the paper, certainly has such examples in his artist portfolio.

Conclusions

The paper has outlined many instances of practice-led research by a handful of artists working with technology. Hard to ascertain, however, is the level of innovation reached by each of the examples and practitioners listed, and perhaps only time will tell. The two cases discussed in detail point to the potential outputs of academic programs that encourage students to play with technologies free of client-led constraints. How much of that freedom led to innovation, is impossible to ascertain without a control group or perhaps comparative analysis across disciplines and types of programs.

What is true is that the history of media art is fairly short and therefore most of the examples here presented are already considered seminal in their fields (and, therefore innovative.) What remains to be seen (and perhaps visualized) and therefore truly appreciated is the impact each work and person is having on others. With a tendency to over share without too much care for who (and how many) may be viewing, and using the work, the artists here presented would have a hard time knowing who, exactly, has benefited from their contributions. They are researchers (for the most part unintentionally), yes, but do their fields of inquiry benefit from their work as much as in others which enforce a rigor of non-reinvention and building-upon? Therein lies the challenge for practitioners and researchers working in art and technology.

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