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ONTARIO COLLEGE OF ART AND DESIGN
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screenPerfect: the importance of
accessible technology for artistic use.

Author:

Alex LEITCH

Supervisor:

Dr. Emma WESTECOTT

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for the degree of Masters of Design*

in

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Declaration of Authorship

I, Alex LEITCH, declare that this thesis titled, 'screenPerfect: the importance of accessible technology for artistic use.' and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a master's degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:

Acknowledgements

I wish to express my appreciation of my thesis advisors, Emma Westecott and Simone Jones, without whose generous contribution of time and sensible advice this would be a much weaker paper. I would also like to express gratitude to the Site 3 coLaboratory community, who provided me space to work and a community to work with, and Bento Miso - Dann Toliver, Jennie and Henry Faber expressly - for their technical advice and their help in hosting No Jam 2. I would also like to extend my thanks to Evan of the Digital Futures tech desk for a key tip when I was just starting my research. Hannah Epstein deserves my thanks as well for being a fantastic collaborator.

To my personal support community, many thanks for your patience with me. It's okay, it's done now. Now we can go back to conquering the world.

Abbreviations

CYOA	C hoose Y our O wn A dventure
FiG	F eminists in G ames
DMG	D ames M aking G ames

For Adina, and her unflagging belief in the value of the work...

Chapter 1

Introduction: Researching A Better Toolset

1.1 Research Question

My aptitude for computer technology combined with my artistic environment has resulted in me repairing a lot of machines. Computers need fixing for many reasons, but usually, they need fixing because the people making software have little experience with people whose primary skills are not related to computer use. The developers and their organizations are isolated from the broader population of people who use these devices. This is problematic, especially in the case of the arts.

The arts and the humanities are tasked with producing both North America's culture and its record of its culture. Computers are how we produce this work in 2013, and they are not simple or direct machines. A computer in 2013 is a running compromise between software that works pretty well most of the time and hardware that is generally reliable. To use these tools is a specific skill set. Using them well is as specific as using a paintbrush well. The software developed from that skillset needs to compromise. The number of people for whom computer use will be a delight in and of itself is as limited a group as for any other specialized skill. This is problematic, because art production and artistic project concepts is difficult even without the boundaries raised by software tool challenges. The more limited and specific the skill set required to use contemporary software tools, the more difficult it is to include a diversity of voices in the cultural production of genuinely contemporary work.

When artists are excluded from technology, culture splits on lines of privilege. There are then artists, who make art, and technologists, who make technology but do not

see themselves as particularly creative, or, more to the point, particularly involved in any responsibility for the ideas encoded in their work. Technology is not neutral. It is authored, and where there is authorship, there is a responsibility for ideas. When large groups are left out of communication media, particularly those tasked with producing the language with which culture speaks to itself, there comes a disconnect in our sense of self, and how we are publicly represented.

Video games are the newest of the cultural production engines. A good game, as described by the MDA, first involves engaging mechanics – the loop systems of reward and scoring – then graphics to create a world, then sound to fill out that world. The controls are weighted this way and that, but the most profitable games - referred to as AAA or triple-A properties - are presently power fantasies. There are other fantasies out there than the ones at the end of a gun.

The value of a broad range of voices in any cultural practice should be self-evident, but video games are presently unique in their high-level uniformity. Unlike any other discipline, the basic tools for games tend to be expensive, and the toolsets that exist to generate games support specific mechanics in similar-seeming worlds. This means that art games are unfairly compared to commercial games produced with the same media. The commercial games set the ground of the conversation, which denies the subjectivity of the producer of the second-stage tools. These producers - developers and game designers - are disappeared into the system, their work only revealed by which elements an artist can or cannot subvert. This is problematic, as the second-stage producer in large part controls what the final creative director can make happen. Without cooperative tools, it is challenging to make new things.

The hardware restrictions of new games are less than advertised. While Moore's Law is slowing down, reducing the expected increase in brute speed of linear processes in central processing units, input devices are thriving. The new research in games is no longer how to get the best graphics, but rather in how to get the most interesting experience for the investment.

The problem of interesting experiences is not trivial. Video games offer an economically advantageous distraction engine, a way to enact an artificial life. Allowing a diverse range of voices easy access to portray their own games, their own alternate or idealized modes of being, is a way of making those voices more real, of offering an alternate human experience to the "asshole simulator" [?] issell genres manufactured at much higher budgets.

My research question is to ask how to make some of those tools accessible, for people who do not want to make conventional digital games. I am basing my research on the

Twine engine, popular for authoring branching text narratives, and adding an element of irony by including video, to make a video——game. This is an exploration of what a good creative tool can be, how is it different from a bad tool or an inaccessible tool.

My secondary research questions address why is it important to produce polyphony of artistic experience, and how to encourage more diverse voices in this new area of cultural production. How does working collaboratively affect tool development, and what alternate paths to learning are provided by this style of work? What are the underlying assumptions that should be included in code? What ways of working are most reproducible? Is code itself a creative practice, and how can that creative practice be described?

1.2 Initial Approach

My initial approach and research method to this work is based on the Agile Manifesto, a software development methodology that opposes siloed, top-down software development. I have paired Agile development with the work of Helene Cixous, whose “Laugh of the Medusa” provided a template for *écriture féminine*, an argument for women writing of their own experience in order to be made visible. I have also examined works such as Vera Frenkel’s *String Games* and some of the history of conceptual video art within Canada.

This work is related to various texts of feminist and woman-oriented cybertheory that have appeared in the years since: Haraway’s Cyborg Manifesto, TIQQUN’s Preliminary Materials Towards A Theory of the Young-Girl. All of these are academic constructions of femininity as it is seen in relation to technology: they are feminist in the formal sense of the word. There are other senses of the term, which I will not be examining within the paper. Rather than expressing this work in context with Cixous as *écriture féminine*, I will be using Cixous as a reference for the idea of the alien perspective as a perspective of resistance within a means of expression controlled by a neutral-to-hostile majority perspective.

This approach addresses women as an alien construct to the more conventional world of technology, which has been recently associated with a masculinist performance that is unnecessary for the pure structure of good rules and the development, through that, of good software.

My initial approach is to pair with an artist who had a game idea, take that idea, and then make it reproducible. Reproduction is, after all, the province of cyborgs: we control our biological systems, and in doing so, we have conquered what was once a hard-built

destiny. By making the consequences of biological sex into a more pliant construct of gender, we have transformed what we must be to what we might be.

This work has been difficult, but I believe it to be important, not so much for the software itself - a proof of concept - but because it is important to provide software that permits people to access new technology. I am not alone in thinking this. The Arduino project, a microcontroller designed to make electronics more accessible to artists, and the Processing project, a simplified version of Java intended to improve the experience of scripting visual effects for artists, are both dedicated to the same ideals. Underlying both projects, as well as the broader Maker movement, is an ideal of participation in one's own work.

Put simply, people who write code, particularly using the Agile methodology, are engaging in creative practice themselves, and they then display that creative practice through the artists who repurpose their work. This is a different design pattern than technology conventionally pursues, where the work is designed in isolation and released. I am using the Agile method to develop software because it does not require that one knows what the end shape of the software will be in order to pursue the end goal. Agile requires instead that developers pursue goals in sight, always keeping their development loose enough that they can repurpose their work without much effort, and it is ideal for working with artists.

What might be is a developmental model for software that permits transition in scope from the singular, minimum-viable-product model, to a model that builds on itself until complete. A small, perfect thing that does one thing very well, which permits artists to pair their own practice with a software built expressly to make their lives easier, for not too much money. This is important, because my initial approach assumes artists to be undercompensated for their work. Although artists are the central agents of production of all the cultural capital - the invisible value - of the culture industry, they are not the prime beneficiaries of the financial system that backs, stores, and distributes that capital. Therefore, software for artists needs to be inexpensive, and set up to be almost trivially easy to use. This reserves the value of scarcity to the ability of the artist, rather than applying the majority value to the role of the engineer. This kind of invisibility is the invisibility of good management, of any type of good administration. Like housekeeping, code recedes until something goes wrong.

To test this idea, I have approached people to produce video—games with the screenPerfect software in the context of a voluntary game jam – a type of collaborative space where participants work with digital tools to generate new, raw games in a limited window – and then compiling the results into an arcade machine for presentation.

1.3 Structure of the Remainder of this Document

1.3.1 Chapters

The remainder of this document is structured as follows. Chapter 2 covers various methods used in my research to examine the conceptual importance of accessible-technology artist tools, including the Agile Manifesto. Chapter 2 also sets out the restrictions and main theoretical texts that underly my premise of what constitutes an accessible tool. It also addresses a list of tools used to produce the thesis proper, including git revisions, LaTeX, and their shortcomings.

Chapter 3 addresses theoretical documents, and how they relate to the process of crafting solid software from an artistic/conceptual work perspective. This is where I have placed works by Cixous as well as an examination of Galloway's essays on gaming as algorithmic culture. I will also delimit which texts I consider useful for this work, and how to ground a video—game in the broader context of recent Canadian art history, including the work of Vera Frenkel.

Chapter 4, Design Research, is the chapter where I work through the process of developing the game engine with reference to the benefits of open, closed, and ideologically-driven software. There is some strategic foresighting here through Doctorow's *Pirate Cinema*, the text I have used as a *How Might We* for what a collaborative theatre might be. I have also included reference to the Brechtian active audience, which is useful for gaming. Chapter 4 also contains the bulk of my research on collaborative practice within communities.

Chapter 5, *The Trouble With Amateur*, addresses some of the questions raised by Galloway in his *Gaming: Essays on a Algorithmic Culture*, which includes an examination of why games built in resistance to gaming tropes are largely unsuccessful and unpopular to play. This chapter is also where I will examine some of the problems of making free content easier to provide to the internet, which includes an economic examination of how the value curve of creative practice goes flat as accessibility increases.

Chapter 6 is my conclusion, a restatement of my arguments, and the source of some optimism.

1.3.2 Appendices

Appendix A is my annotated literature review.

Appendix B is a compilation of github commit comments over the course of the writing of the game, which detail the direction of how someone reasonably confident with computers and programming learns a new language.

Appendix C is the code record of screenPerfect proper.

Appendix D is a list of the games made to date with screenPerfect and their installation sites, along with links to where they might be found for future installation.

Chapter 2

Literature Review and the State of the Art

2.1 Literature Review

2.1.1 Theoretical and Academic Scaffold Works

2.1.2 Pragmatic Reference Works

2.1.3 Software List

Chapter 3

Critical Theory and Software Design

3.1 Main Section 1

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Chapter 4

Industry Engagement and Design Research: Community Collaboration in Software Development

4.1 Main Section 1

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Chapter 5

Complications and Problems

5.1 Problems and Complications

In this section, I address issues with the format of ScreenPerfect games. I also address the problems of accessibility in tools, including the issue of avocational versus vocational creative practice.

5.1.1 Problems with CYOA as a format

* People want the full achievement * There is a huge pressure on creators for consistency in order to bring out catharsis and etc. * This is super tough in a CYOA because by definition, it's not a one-playthrough thing with accomplishments.

5.1.2 Avocational Work versus Professionalisation

* We currently live in a money-based system and need to earn it via our work. * The easier it is to make a game, does this reduce the perceived value of the game itself * Puts weight on the object that distributes the experience.

5.2 Good Branching is Expensive and Difficult

Chapter 6

Conclusion

6.1 Conclusion

The work that has gone into the production and release of screenPerfect is not inconsiderable. As a creative project based in grounded theory and reflective practice, code is a tricky thing to pin down; it must be declarative, yet reveals the internal architecture of the people who write it. To write code is to be a craftsperson, and to be a craftsperson is to reveal some of yourself with every stroke of the plane. The tools themselves, though, are a concern. Programming solo is as rewarding as any other solitary occupation, yet it leaves many loose ends. An excellent piece of software is likely to require input from a wide array of specialists in graphic design, interface development, and logic. There is an inevitability to induced flaws - bugs - that cause the program to fail. Once complete, it is likely that finished software will fall out of fashion; the unfinished symphony of the 21st century. There is no way to call a piece of writing finished, because another word can always be added or cut loose - the best that can be managed is a date of publication. Similarly, code is subject to scope creep. It is not a silkscreen, once pulled and forever finished. It is not a painting, which, dried and delivered, is safe until the conservators come for it. Code lives, like writing, in context and within an ecosystem. Unlike writing, code answers to its context; without the machines to whom it speaks, it is without consequence. Within those machines, it may have a concrete effect on the world around it, and for that reason it continues to be valued; this is the craftsmanship that, unlike art, continues to make a living. Code cannot be set aside; although it will work as intended, it will break without permission. To code is to attempt to write a coherent world into being, to attempt to factor in all the diverse chances within. In Cixous' Laugh of the Medusa, she expresses that to be considered real, women must write for themselves. In my thesis, I have extended this to the world of code; one must

write after one's own interests, because to take only that work which is assigned is to fall behind. Writing a projection/presentation/game system that emphasizes privacy has been work designed to address the problem of what, exactly, a game is, or what is a valuable piece of work. Most systems are designed to be public, to emphasize content or possibly advertisements, to be clear. Though functional, screenPerfect is not designed to do any of these things. Instead, this is software that disappears. It does not care what your content is, or to whom you're serving it, or where. The emphasis is on allowing your audience to experience things as quickly and easily as possible. Works produced using screenPerfect can be displayed anywhere in the privileged world; anywhere a series of android/iDevices and a single server can be set up, to create a collaborative experience. This is designed to serve video first, and then to move through static content, sound, any experience in almost any context. This emphasis on experiences that are not solo, or hidden away inside a computer lab or a movie theatre, moves the interaction sphere firmly back to the real world. The display of the video-art and collaborative gameplay made possible through screenPerfect can be anywhere at all, and indeed works best at night, outdoors, in temporary installations. These are the new/old/new exhibits, the unmissable one-time-only parties, the experience that happens in a hard to access place but leaves no marks for future visitors to interpret. Collaborative spaces are difficult to build, and mass streaming technology is impossible to privatize; therefore, screenPerfect allows the possibility of being entirely removed from the cloud; no-one can see these videos except the people present at the time, and no-one can quite comprehend the overwhelming inputs outside the event. The practical uses for a one-time event control with local servers are fairly obvious. The first application is for large-scale events, such as Alternate Reality Games, which may need a totally private communication channel for players, which would be difficult to pirate or resell. The next is to move those ARGs to spaces like Yonge-Dundas square, where monitors could be tuned to a local-only website to extend the reach of the experience, which is in real time. By providing such spaces to interact with, an artist can redefine the scale of their video work; it no longer lives in a laptop or a theatre, but outside, and controllable from within the crowd at the base of the display. If this were an open connection, such a permission might prove challenging; access to the open internet invariably brings up privacy concerns. Therefore, screenPerfect is limited in context. It will allow access to the screenPerfect presentation application, and what that application can display is pre-set by the artist. Therefore, although a crowd of dozens could control what is going on at any given time, only a pre-set group of experiences (videos, still objects) can be shared. This saves on public embarrassment, and minimizes the staff required to support any given screenPerfect installation. The reflective portion of this research has been to address the question of use and pragmatism, as well as what constitutes research within an artistic context. The answer is difficult to quantify; research is pursuing a read, book-learning, critical

examination of a practice, as all art is practice. Art is fundamentally blue collar, as is coding; both are works of craftsmanship, both can be helped along by automation, but ultimately, their declaration within a finished state is dependent upon the person who has produced them. The blue-collar trade of art has been sold out by the academy, linked tightly to the idea that thinking about a thing is more valuable than working on a thing oneself. Coders are legendarily difficult to organize, resistant to unions or to the thought that they are themselves labourers.[This part is no good, things start to go really haywire in here.

Alex Leitch, 2013-09-13 3:39 PM] The design of video games is a renewal of old ideals of propaganda and imagination as previously permitted almost exclusively by theatre. Rather than being restricted to[There is a maaaaajor topical break here between art and gaming.

Alex Leitch, 2013-09-13 3:40 PM] watching, an audience can now be, and do, their own experience. The experience is not unmediated, but is a collective participation. This makes some elements more difficult, and others simpler. We can make a world, and make that world better, but the world we make will still be influenced by the things we ourselves have experienced.[How do we make that world?

Alex Leitch, 2013-09-13 3:40 PM] Even the clearest software architecture is still an architecture that must adhere to the mechanics of being human. The newest video games try to dream worlds past being human, and most fall far short. Rather than permitting a wide exploration of possibilities, many possibilities narrow to the point of a gun, to the same forearms for twenty years (twitter). At the heart of screenPerfect is the idea that we can pull away from artificial distance and have instead on-site participation, unique experiences that project real, contemporary art into real, contemporary spaces. We can have events anywhere, and these events can bring anyone together, with even terrible technology. Underlying the architecture of this code is the idea that all the different flavours of classism should be undone with the opportunity to see amazing things, no matter who you are. Space should belong to the people who occupy it most often, not only the people who pay for it at a distance. [Repetitive.

Alex Leitch, 2013-09-13 3:41 PM]Having produced this work, which is fundamentally a software set designed for parties where people are too nervous to interact, has been a tremendous challenge. Learning new programming languages is always a challenge, as is enacting a pragmatic device from the perspective of art theory. There is the concern that these works are not for anything, not for a job or an application or a visible piece of content, a series of products released to do something in the world. Many applications, games and devices are released into the world that simply consume resources for the sake of their own consumption, simply to show that the people involved have the resources

to spend. A new digital toy is frequently out of reach for the vast group of people who depend on their existing technology to work for as long as they can make it do so, and therefore, these tools are designed in the same way as the first university mainframes; they live somewhere else, and can be accessed by even the most unfortunate smartphones, five years out of date and slow. The idea is to permit this sort of advanced media to get to places that I do not expect it to turn up, in places that are specifically not shiny. The idea is to use existing technology to permit exploration, and inversion of the One Laptop Per Child project; use what there is, and then make it greater, rather than interject an external device that will require people to spend resources to use. [Chapter needed on OLPC project and how it relates to the dream of accessible technology, some background from Negroponte and the MIT-classist dream that kids should have this before clean water.

Alex Leitch, 2013-09-13 3:41 PM] Ultimately, this sort of software development is about permission. Permission for people to do what they like in the spaces they need to occupy and use, including the digital space. This is not about developing a single app or a platform that will be easily marketed, but is instead about focusing on the value of the exclusive, the small, the private, the well-built-for-humans space; these spaces are difficult to construct effectively and require more maintenance than the average Toronto garden.[Colloquial tone. Journalistic.

Alex Leitch, 2013-09-13 3:42 PM] This is about exploring the possibilities of a space designed to share an experience through a personal connection. The content of the work itself is designed to unsettle. As an artist, I have long cared about the powers of horror[Chapter contrasting the power of body-horror with the dream of a technological cleanliness that is promoted and misunderstood by the OLPC project; these are concerns that are classist in the way that the genocide of the people who cannot access healthcare is.

It would be interesting to bring Roiphe and the art of the white lady writing into this. As a white lady writing, anyway.

Alex Leitch, 2013-09-13 3:42 PM], the power of things being slightly not-right to make people deeply, passionately uncomfortable. Therefore, the content of the work and the final setup is designed to confuse. It is built to be difficult to experience all at once, without others with whom to cooperate. This part is less about joy than it is about the different values permitted to different classes of entertainment. At a high level, art can afford to be alienating, and indeed is frequently valued more highly for its power of alienation than for any other thing. This is a distinction made especially true in video games, where the power of “fun” tends to be valued highly for its commercial properties; if a game is not “fun,” all elements of its interactive powers of storytelling cease. This

means that games which are not “fun” are widely called by other names; interactive new media art, for example. screenPerfect is designed to permit the development of games that are not only not necessarily fun, but which may be narratively incomplete, or nonsensical, while still being absorbing. These are games that do not require reading, but permit themselves to be experienced as deeply as a given group of readers wish to experience them. The tool can be perverted; perverse use is built in, with video copyright being at such a premium. It can be used to host experiences in galleries or in warehouses, by people with minimal technical knowledge and little ability to mask their normal online activities. This is a device to let people make maximum use of the devices they already have, to host a dance party on a subway or a massive art tour through a gallery. The demonstration content may be upsetting, but the access permitted is broad. This is about sharing things, for the better.

Chapter 7

Endnotes, References, Works Cited

7.1 Main Section 1

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7.1.2 Subsection 2

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fermentum magna in augue gravida cursus. Cras sed pretium lorem. Pellentesque eget ornare odio. Proin accumsan, massa viverra cursus pharetra, ipsum nisi lobortis velit, a malesuada dolor lorem eu neque.

7.2 Main Section 2

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Appendix A

Agile Manifesto

A.1 Agile Manifesto

Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- * Individuals and interactions over processes and tools
- * Working software over comprehensive documentation
- * Customer collaboration over contract negotiation
- * Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more. © 2001, agilemanifesto.com

A.1.1 What Is Agile?

Agile is an ideal based on a manifesto released at the turn of the century. It is not specific enough to serve as a development framework, but instead serves to structure a way of thinking about software development in collaboration between developers and their user population. The original Agile Manifesto was released in 2001, and has a vast number of signatories to date.

Agile is intended to address the gap between planned software, which is typically fixed at release, and reality, which is that software breaks routinely and needs regular maintenance and iterative upgrades. The manifesto suggests that developers should focus on results over process, software that works over software that's well-documented, collaboration over contract specifics, and responsiveness to change over following a specific plan.

Agile has proven useful for this project because its emphasis on responsiveness and deliverables has ensured that the working software of screenPerfect can move forward to permit more games to be made, rather than locking the software to a concern for itself as an object. This is a valuable way to move through a development process which spares us from needing to commit to a given method, and instead emphasizes results from practice.

This practice must be documented, which is where the code-commit process appears. Agile deprivileges documentation for itself, preferring to include the necessary as the code itself is logged. Therefore, I have chosen to use the Git toolset to retain my version control on both this document itself and the code developed to run the main game engine.

Appendix B

Annotated Literature Review

B.1 Literature Review

<http://kotaku.com/the-weird-escapism-of-life-sims-730629952> Leigh Alexander on aspiring to pay a mortgage in real life, which is important because people won't be able to do that, a lot, in North America.

<http://agilemanifesto.org/principles.html> The Agile Manifesto, which backbones my actual software development style: working software is what counts. Important, as Agile is in direct defiance of corporate control structures.

Maly, T. (2013). We Have Always Coded. Medium.com. <https://medium.com/weird-future/2acc5ba75929> This article investigates gender essentialism from the perspective of biological essentialist arguments frequently used to say women can't or shouldn't code because of various, entirely specious, evolutionary problems. This is an argument that happens on top of a perceived resource scarcity; the scarcity is in this case employment of women in technology, so opportunity.

Fashion article about hegemony of fashion writing and the death of exclusivity, with notes on shows being locked down to resist the blog invasion. <http://thenewinquiry.com/essays/cool-fronthot-mess/> [I need some work on how basic economics works with supply and demand in the absence of a good money supply.

bell hooks. (1992). Is Paris Burning?. Black looks: race and representation (pp. 145-156). Boston, MA: South End Press. bell hooks is always useful in concert with Derrida to explain that you can't actually know what anyone else is actually thinking; having sympathy for other people is not the same as understanding their direct experience. Useful because it underlies a lot of feminist practice. This is an article about exclusivity,

which is an issue of privilege, which is an issue of perceived resource scarcity, in this case access.

Bizzocchi, J. Tanenbaum, J. (2011) Well Read: Applying Close Reading Techniques to Gameplay Experiences. In Well-Played 3.0, Drew Davidson Eds., Etc press www.etc.cmu.edu—well-read-jim-bizzocchi-joshua-tanenbaum Something to explain game design processes in the technical section of the document.

Buxton, W. (2007) Sketching User Experiences: Getting the Design Right and the Right Design. Morgan Kaufmann Publishers. Something to explain user interface design practices in the technical section.

Chun, W. H. (2011). Invisibly Visible; Visibly Invisible and On Sourcery and Source Code. Programmed visions software and memory (pp. 1-54). Cambridge, Mass.: MIT Press. Still need to read this, but the title is pretty relevant to the central research question of my thesis, which is on the value of code and invisibility as a permission.

Cixous, H., Cohen, K., Cohen, P. (1976). The Laugh Of The Medusa. Signs: Journal of Women in Culture and Society, 1(4), 875. Woman must write her own desires into being in order to be seen. This is a paper that reinforces arguments about scarcity of perception, and issues of control, specifically of women and women's opinions.

Deleuze, G., Guattari, F. (1987). Introduction:Rhizome. A thousand plateaus: capitalism and schizophrenia (pp. 3-4). Minneapolis: University of Minnesota Press. Everyone else is doing it [including them]. May as well. I gather they're popular right now.

Deleuze, G. (1992). Postscript on the Societies of Control. October, Winter(59), 3-7. Surveillance culture is bad for people, yet inevitable as it becomes automated. This is an issue of control, which is subverted by taking possession of even a single means of production; to refuse to code is to be illiterate of the systems by which production is governed. To refuse to acknowledge the implicit control of a system is to lie to oneself; if other people have designed the system, the system operates[Alex Leitch, 2013-10-01 2:18 PM There are no complete systems, particularly in computers, because Godel's incompleteness theorem says so. This is a joke that is also true and I am not sure how to cite it, but it holds for most systems of even informal logic, which computers are composed of. This is a purely theoretical way to look at a computer system that is both true and not true; the incompleteness theorem concerns math systems, not people, specifically. You can't test people for their incompleteness. But people are still incomplete. If they weren't incomplete, they wouldn't have religion.] as it is intended. The way out of this is to read the system, then find the gap within it.

Dell, K. (1998). *Contract with the skin: masochism, performance art, and the 1970's*. Minneapolis:University of Minnesota Press. Pain or revulsion is another way to escape a system, which is to make it so dear - dear as in price - that it is difficult to reproduce the work because it costs too much. Abjection, or the ability to pay for something with revulsion, is one of the less efficient but more effective systems of resistance. The liminal space represented by a willingness to publicly maim oneself is reserved for those who do not fit well within a system that relies on completion: broken skin stands in for a refusal to submit to hierarchy. This collapses in various ways over time - it's unlikely that even facial tattoos will keep people out of the workplace for long - but still represents a real way that people refuse to be included in a more perfect/uniform work. This is an article on how masochism, the revealing of the inside, has a recent history in art and what role that sort of display performance contributes to feminism.

Doctorow, C. (2008). *Little Brother*. New York: Tom Doherty Associates. A detailed look at how surveillance culture breaks down social contracts, and a how-to guide on resistance via action disguised as a novel. Also has a variety of excellent, accurate examples of ways to disguise data so that it cannot be confirmed by a rogue authority. Connected to Deleuze on Societies of Control, and specifically addresses homeland security spy tactics.

Doctorow, C. (2012). *Pirate Cinema*. New York: Tom Doherty Associates, LLC. Contains a scene with multiple tiny projectors used to set up a cinema in a park from pockets, which is more or less what the software itself is supposed to do when it runs. The entire book is about resistance to copyright authority. Contains a quite didactic passage on how even hardware control chips do not actually control or prevent smart-enough people from using controlled software, and in doing so, presents a vision of the world where the most privileged are no longer privileged with money alone, but also with knowledge or access, which is a type of prestige - which is a type of magic trick. Concerningly libertarian.

Gleick, J. (2011). *The information: a history, a theory, a flood*. New York: Pantheon Books. A survey text of the history and development of data-centric information technology. Explains a little of the context for how tools like screenperfect can be expected, themselves, to proliferate to the point of uselessness. This is useful because it prevents needing to look up each paper about completeness theories and map-rename signal-to-noise mathematics independently. Signal-to-noise mathematics are important because they provide a way to think about how to privilege information in the learning process, or the internet search process; people passively look up how to find what they need. Downside: The noise often contains trace characters that allow further exploration. Upside: there really isn't that much signal out there, no matter how much noise is happening.

Gram, S. (2013, March 1). Textual Relations: The Young-Girl and the Selfie. Textual Relations. Retrieved April 12, 2013, from <http://text-relations.blogspot.ca/2013/03/the-young-girl-and-selfie.html> Young women's bodies are not only super-powerful, but can be the stereotype vehicles for all of consumer culture. This is important because young women are disproportionately discouraged from tech culture, even as they control the scarcity that is approved sexual relations within North America, a scarcity that cannot be overcome with money alone - you can't buy love, they say. So this is valuable because it is an excellent analysis of how stereotypically correct bodies benefit from fitting into a system of action, which is related to code practice because only stereotypically correct bodies are encouraged to participate. Per masochism, however, there are no correct bodies, only correct images of bodies. Resist the system in a predictable direction, and you become a new format of marketed body, with a new predictability. This predictability can be coded, but the closer one gets to perfect, the harder it becomes to occupy the role while remaining human. This is a deeply misogynist text, but is a perfect text for examining the role of image on the internet, and things which are seen but hard to describe, as code is.

Grosz, E. A. (2008). Chaos, Cosmos, Territory, Architecture. Chaos, territory, art: Deleuze and the framing of the earth (pp. 15-28). New York: Columbia University Press. Technology as sexual performance and definition of space. Not terribly well-realized but more academic than other sources on the same subject. Useful because code is a creative process, and creative processes - per Wilde - are useless ... like peacock feathers, or any other sort of look-at-me performance. Even things which do things are useless.

Haraway, D. (1987). A Manifesto For Cyborgs: Science, Technology, And Socialist Feminism In The 1980s. Australian Feminist Studies, 2(4), 1-42. Primary text on women restructuring their bodies, invisibly, to take over the world. See also Quinn Norton on IUDs (<http://www.quinnnorton.com/said/?p=404>) - this is useful because women can resist commodification, such as that described by TIQQUN, invisibly. Code is, in Agile practice, shifting from architecture to a sort of cooking; this library and that, all put together in a frame to pursue an idea, rather than to do a specific thing from the outset. This is a text about resisting control systems by allowing oneself to cooperate until there is a space to break free. Frequently, people don't even notice you have.

Haraway, D. (2009). The companion species manifesto: dogs, people and significant otherness. Chicago, Ill.: Prickly Paradigm Press. More Haraway. Now on cancer, not sex. I need to read this but I don't think it will be too useful, except that it articulates that humans, with their tool-use, are not actually special; we are part of a system of mammals. This may be useful elsewhere.

Hunicke, R., LeBlanc, M., Zubek, R. (2004) MDA: A Formal Approach to Game Design and Game Research. sakai.rutgers.edu—hunicke2004.pdf *More on game design techniques for the technical*

Kristeva, J. (1982). Powers of horror: an essay on abjection. New York: Columbia University Press. (<http://www.csus.edu/indiv/o/obriene/art206/readings/kristevaHorrifying>)
things have a power that is more potent than any non-horrifying things could hope to possess. This paper details why that is. It goes very nicely with Cixous and discussions of the IUD, because it is about what happens when barriers truly break down. I think Kristeva's horrors are basically the key to the entire news cycle and Grand Theft Auto to boot. This paper is the original on how revolting things are fascinating but resist being part of a system, unless they're cleaned away and perfect. See above comments on masochism paper; the awesome attraction of the awful.

Krug, Steve (2000) Don't Make Me Think: A Common Sense Approach to Web Usability. Riders Publishers. This is another technical paper for arguing that software design should be totally invisible. Useful because it ties together the systems of control argument - control is implicit, presented as undefeatable, a smooth surface - with the idea that things should be useable, so that people can find their own uses for the tool beyond what is initially intended by the author.

Schafer, T. (1998). Grim Fandango (1.0) [Video Game]. USA:LucasArts. Classic adventure game with minimal interface and a fixed runthrough. One of the last great adventure games. An excellent exercise in game design where the game itself is preset, but the ideas the game displays, including an interest in a subculture that is not much popularly examined (Mexico), and a good narrative. Evidence that narrative is important in gameplay, which is key to the development of screenperfect as a narrative branching tool. Also remarkably and incredibly broken on contemporary systems, as the initial code was rendered directly by processor speed, rather than at a stage or two removed; the game was broken by Moore's Law, which is good evidence for why tools need to be considered unto themselves. The new narratives are temporary. This is a narrative about the temporary; death, and the waiting period before leaving - while being wound up in a longstanding celebration.

Luvaas, B. (2006). Re-producing pop: The aesthetics of ambivalence in a contemporary dance music. *International Journal of Cultural Studies*, 9(6), 167-187. Retrieved April 10, 2013, from the Scholar's Portal database. An interesting look at what ethnographic research can be, and the speed of cultural shift and recycle since the rise of the internet. To be read in concert with various VICE mag articles about cocaine, new york. Used originally in article about Seapunk movement.

Moggridge, Bill (2006). *Designing Interactions*. MIT Press, Cambridge MA. More technical reading about how people interact with software, about how people can control interactions.

Moyer, J. (2012, September 14). Our Band Could Be Your Band: How the Brooklynization of culture killed regional music scenes - Washington City Paper. Washington City Paper - D.C. Arts, News, Food and Living. Retrieved April 22, 2013, from <http://www.washingtoncitypaper.com/articles/43235/our-band-could-be-your-band-how-the-brooklynization-of/>

Cultural uniformity because the internet makes things from different places seem the same, even though they're really not the same. Relates to the Young-Girl article about how if you are one perfect shape, that perfect shape will always sell at least a little, which obfuscates the truly beautiful and interestingly specific evolutions with things which have been data-optimized to be more popular. Popular isn't better, and neither is monoculture, but also no good is the sort of individuality that is itself a sort of monoculture.

Mulvey, L. (1975). Visual Pleasure and Narrative Cinema. *Screen*, 16(3), 6-18. On the male gaze, which is the central gaze in most videogames, particularly first-person shooters. This is important because the male gaze sets how most blockbuster video games are allowed to be perceived. Important because video games, like most software, are mainly compared to cinema, even though they have very little in common with cinema for elements beyond the technical. Core to arguments about how women are seen, which is essential to understand the TIQQUN readings in their slightly tongue-in-cheek misogyny.

One Laptop per Child. (n.d.). One Laptop per Child. Retrieved July 3, 2013, from <http://one.laptop.org/> I was thinking about discussing how the OLPC project led to various other tech advances, including the rasPI - it made netbooks happen, then tablets happened. The OLPC was the project that said "wait, things don't need to be faster, they need to be better." Absolute disaster; in the countries it was intended for, it was already superseded by mobile phones. Classic example of condescending outsiders trying to Make A Difference rather than examining difference. Probably too broad a scope for this project.

Orlan: a hybrid body of artworks. (2010). London [u.a.: Routledge. Orlan led to Lady Gaga so directly that she has since sued her. Discussing the liminality and limits of flesh without Orlan's surgeries is a challenge; almost no other artist (burden? Shoot) has gone so far, but this distance is collapsed in film like *Nip—tuck* and the normalization of Hollywood surgery. Related to Kristeva and articles about the mortification of the

flesh for the sake of appearances, which is what I am interested in with the arcade box. Although I want that to be subtly upsetting, not overtly upsetting.

Reines, A., TIQQUN. (2012). Preliminary materials for a theory of the young-girl. Los Angeles, CA: Semiotext(e) The new translation, which includes a feminist preface by Reines about the body of young women and how she almost was sick over the assertions of TIQQUN, which happened about the same time as everyone else was going bananas for Second Life, a game where you make an entirely new body that has since been abandoned by all but the most escapist. TIQQUN accurately observe that people are escaping into their own bodies, not those of the computer screen; the new presentation is that the brain and image on the internet reinforce the physical appearance through the phone, a piece of technology governed by the male gaze.

Stephenson, N. (1995). The diamond age, or, Young lady's illustrated primer. New York: Bantam Books. This is pretty well a perfect piece of fiction about cyborgs and universal education and China as an Oriental-escape paradise. Fun look at a post-scarcity economy that has simultaneously happened and can't happen. This is a book about an alternative resistance to the always-on personal presentation future, where books reflect their users. This is a fantasia, but an appealing one, with a lot to say about the subject of veterans, what abuse looks like from a perspective other than the dominant, and what recovery might look like. The main characters are all female, and all develop in different directions, including one who escapes by using the book to hack out a new life under direct supervision. Contains an unpleasant thesis about the value of personal matriarchal influence on future leadership.

Sternberg, M. (2012). They Bleed Pixels (1.0) [Video Game]. Toronto:SpookySquid Games. Excellent representation of a female lead game character in a genuinely challenging platformer. Useful because it exposes the programmer's preference for difficult-but-rewarding game mechanic loops, along with a conscious choice to show a young woman who has strong personal agency as a hero. A manifesto for better, simpler video games.

Swartz, A. (2013). Aaron Swartz's A programmable Web an unfinished work. San Rafael, Calif.: Morgan Claypool Publishers. The internet doesn't belong to us, but it could, and here are some technical guidelines to pursuing that as a worthy goal. This is the other way to approach technical development; something that should be extended rather than presented as complete in and of itself. Swartz rebels against societies of control by describing systems to expose information at a basic level rather than obfuscate them. This eventually led to his death.

Team Little Angels (2009). *Bayonetta* (1.0) [Video Game]. Japan:Sega. What a hilariously sexist but also perfect meta-narrative of female power while subject to the male gaze. The rudest, most violent fun game released to ever feature a lady protected, literally, by her hair. A game with a strong female lead in the hilariously Kate Beaton “strong female characters” mold, which is problematic in its presentation even as it is simultaneously winking. Has unfortunately fixed gameplay goals, but allows players the reward of working through the game on a basic mechanic of style rather than skill alone. Fun!

Toom, A. (2012). Considering the Artistry and Epistemology of Tacit Knowledge and Knowing. *Educational Theory*, 62, 621-640. Retrieved April 12, 2013, from the Scholar’s Portal database. More technical information on how to design interfaces so that people understand, passively, what they’re supposed to do with it. This is about passive learning, which is how most people learn software: through exposure and experience with previous systems, we understand the language that the developers no longer expose even though help systems. The way of using the software becomes implicit.

Volition Inc. (2011). *Saint’s Row the Third* (1.0) [Video Game]. USA:THQ. This and the followup, *Saint’s Row 4*. Games that took the GTA pattern and subverted it to make a game that is cleverly and strongly and messily about playing video games and the fantasies of those games. *Saint’s Row* is a sandbox video game about playing videogames and what a videogame means at its base. It allows people to play as whatever type of character they like, which exposes the fallacy that videogames are solidly about anything but mechanics; the art and design on top expose the code in their very mutability, but there are no ways to solve the game puzzles except violence. This is entertaining, because rather than being a game about traffic patterns and random mayhem specifically (GTA-V), it is a game about playing games, about false achievements and the ability to do anything at all as long as it’s violent. Also notable because first lead female character is a hacker from the FBI. This is an important plot point. You can also play gay or with the robot AI you rescue ... but not the vice president, who’s a dude. Central to my argument that software development is a second-stage creative practice because with no fixed skins, the game itself is much more exposed.

Appendix C

Game Jam Documentation

This is where the contents of the Google Group gets translated, copied, pasted, and documented.

Bibliography