

Technological Innovations in Social Storytelling with Sequential Art

The Infinite Canvas 2.0

Ben Serrette

Table of Contents

- Title 1
 - Project Title..... 1
 - Design Name..... 1
- Name 1
- Introduction..... 2
 - Summary..... 2
 - Problem Space 2
 - Importance and User base..... 3
 - The Design 4
- Approach and Methodology 6
- Literature Research 8
 - Overview..... 8
 - Understanding Comics..... 8
 - Reinventing Comics..... 9
 - Anatomy of a Successful Social Network 10
 - Summary.....11
- Research 12
 - Exemplar Research 12
 - “Infinite Canvas Engines” 12
 - Collaborative Art Systems 15
 - Social Art Systems 18
 - Online Art Programs 21
 - Comic Jams..... 24
- User Research 26
 - Post-it Study..... 26
 - Survey 30
- Design Research..... 31
 - Sketching..... 31
 - Brainstorming 35
 - Alternate Reality Discussion..... 36
- Analysis, Insights, Discussion, and Contribution 36
- Design Process 39

Conceptual Development.....	39
Prototyping.....	39
Introduction.....	39
Iteration 1	40
Iteration 2	41
Iteration 3	42
Iteration 4	42
Iteration 5	43
Final Design	44
Summary	44
The Infinite Canvas – The Viewer	46
The Grab and Drag navigation.....	47
The Trails	48
Disappearing/Sliding Frames.....	48
Timeline and Choosing Options	50
Logo	52
Adding Panel.....	52
Artist, Date, and Time.....	54
Tags	54
Ratings	55
Comments	55
Login.....	56
User Profile.....	56
Shared Paths.....	57
Strategy	59
Conclusions.....	61
Acknowledgements.....	62
Biography.....	63
References.....	64
Appendix A.....	65
Appendix B.....	66

Title**Project Title**

Technological Innovations in Social Storytelling with Sequential Art

Design Name

Infinite Canvas 2.0

Name

Ben Serrette

Introduction

Summary

Comics, as most people think about them, have been around since the late 1700s. They range from short political cartoons to super hero comic books to graphic novels.

Comics is, however, a much more diverse medium. Influential comic book writer and artist Will Eisner defined comics as “sequential art.”(Eisner, 1985) Scott McCloud, a highly respected comic theorist, expands this with his own definition of “juxtaposed pictorial and other images in deliberate sequence.” (McCloud, 1994) Under these definitions, the word “comics” can be applied to early cave paintings and medieval tapestries.

The most recent format for comics is the webcomic. Webcomics are, as the name implies, comics that are posted on the web. While webcomics can be traced back to Usenet, they became popular in the late 1990s with the start of such comics as Penny Arcade and PVP.

Until recently, comics were confined to the physical dimensions of the medium that the comic is created in. In 1999, McCloud introduced the concept of what is commonly known as the infinite canvas. (McCloud, 2000) Computer screens could be thought of as windows that could be used to view a comic, allowing panels to be placed in any direction and made in any size, only limited by the creator’s imagination. Comics could be virtually limitless.

Unfortunately, with the exception of a few experimental comics, the infinite canvas never took off. McCloud attributes this to both technical and mental limitations. At the time, screen sizes were limited, broadband access was rare and expensive, user mental models were still stuck in “Web 1.0” where pages were static and literally used as pages, linking to other pages.

Webcomics utilized this “page paradigm” and more or less remediated comic books and comic strips onto the web. Aside from the few “mad scientist experiments,” web comics did not take advantage of their new medium and the infinite canvas was forgotten.

Today, we are in the midst of Web 2.0. Web 2.0 is defined by dynamic sites, social media, and rich Internet applications. There is no reason that the infinite canvas cannot take advantage of these traits and become a rich, dynamic, social experience. It could be resurrected as an Infinite Canvas 2.0 (IC 2.0), if you will.

Problem Space

Webcomics have been around for about two decades now. Most of these comics are simple remediations of physical comic books and newspaper comics. They are drawn and written in the same format and posted onto a web page for readers to view. It is rare that these comics take full advantage of their new medium – the Internet.

Scott McCloud is a leading comic theorist. Since comics moved to the Web, he has heralded the computer’s potential as a new format, not just a new location, for comics. In his 1999 book Reinventing Comics, he discussed various ways that comic creators and readers could take

advantage of this new medium. One of the ideas he proposed was to become known as “the infinite canvas.”

The idea behind the infinite canvas was that the computer monitor could be viewed as a window to a much larger space. Traditionally, comics were limited to the medium upon which they were drawn, be this newspaper, comic book pages, or cave walls. Computers offer a virtually unlimited canvas for comic creators to take advantage of. Creators would no longer be confined to the physical dimensions of a piece of paper. The only limits are the power of the computer and the knowledge of the people who build and program them.

Unfortunately, this idea never took hold for various reasons. Probably the most important reasons for its initial failure were: 1) computers in early 2000 were not designed for such purposes and 2) many creators dismissed the idea as a gimmicky and did not develop their comics to fit such a revolutionary format.

The most common critique of the whole infinite canvas mindset—and of me, the dork who coined the term—is that it's nothing but a gimmick that's past its time, and that it doesn't fit with the culture, technology, and economy of the Web as it is. Browsers aren't built for this sort of thing, there's limited interest in long-form comics of any kind, readers want their formats simple, etc...

Scott McCloud (McCloud, 2009)

It is now 10 years after McCloud introduced the idea in Reinventing Comics. The state of the web is not as it was in early 2000. The pre-2004 state of the World Wide Web is referred to as “Web 1.0”. It was static and content was uploaded by the Authors of sites. The current state of the Web is referred to as “Web 2.0”. Web 2.0 is dynamic. Content is changing all the time with the contributions of users.

Just because the infinite canvas failed using Web 1.0, there is no reason not to try again with Web 2.0. This is the problem space. I intend to reinvent the infinite canvas by applying Web 2.0 techniques – primarily by making it a social app, rather than a static creation dependant on a single creator.

Importance and User base

Wikipedia brought encyclopedic information into a new age by allowing anyone to contribute. There are billions of people in this world, each with differing knowledge that others could benefit from. Wikipedia allows people to contribute their information into a larger pool of information. Because this enormous vat of information is public, billions of people can learn from each other, unhindered by geography, age, language, or nationality. This leads to a (debatably) better educated human race.

While probably not as important as Wikipedia, the infinite canvas has the potential to bring comics into the same new age. It is doubtful that the infinite canvas will change the world at large, but there is no reason to think that it could not change the world of comics. If it succeeds, the infinite canvas could be the next stage in comic production, making a leap forward not unlike the move from carved walls to paper and from newspaper to comic books.

That's not to say that the infinite canvas could not change the world. Since sequential art was first painted on cave walls, it has had the potential to change the world. Crude drawings eventually led to writing. Political cartoons have instigated revolutions. Superhero comic books have created multi-million dollar movie franchises.

Of course, the changes resulting from instituting the infinite canvas would likely be far less revolutionary to the human race. More likely, the largest impact would be to teenagers, college students, and others who currently read normal webcomics. To a lesser extent, the comic industry as a whole would be affected. The change would be akin to that of monthly comic books begetting graphic novels.

A social app, as I am proposing, may have a farther reaching impact. This type of social, creative collaboration may draw in other Internet users who are interested in, but not excited about, comics. This has the potential of attracting a whole new reader base to comics as a whole.

The Design

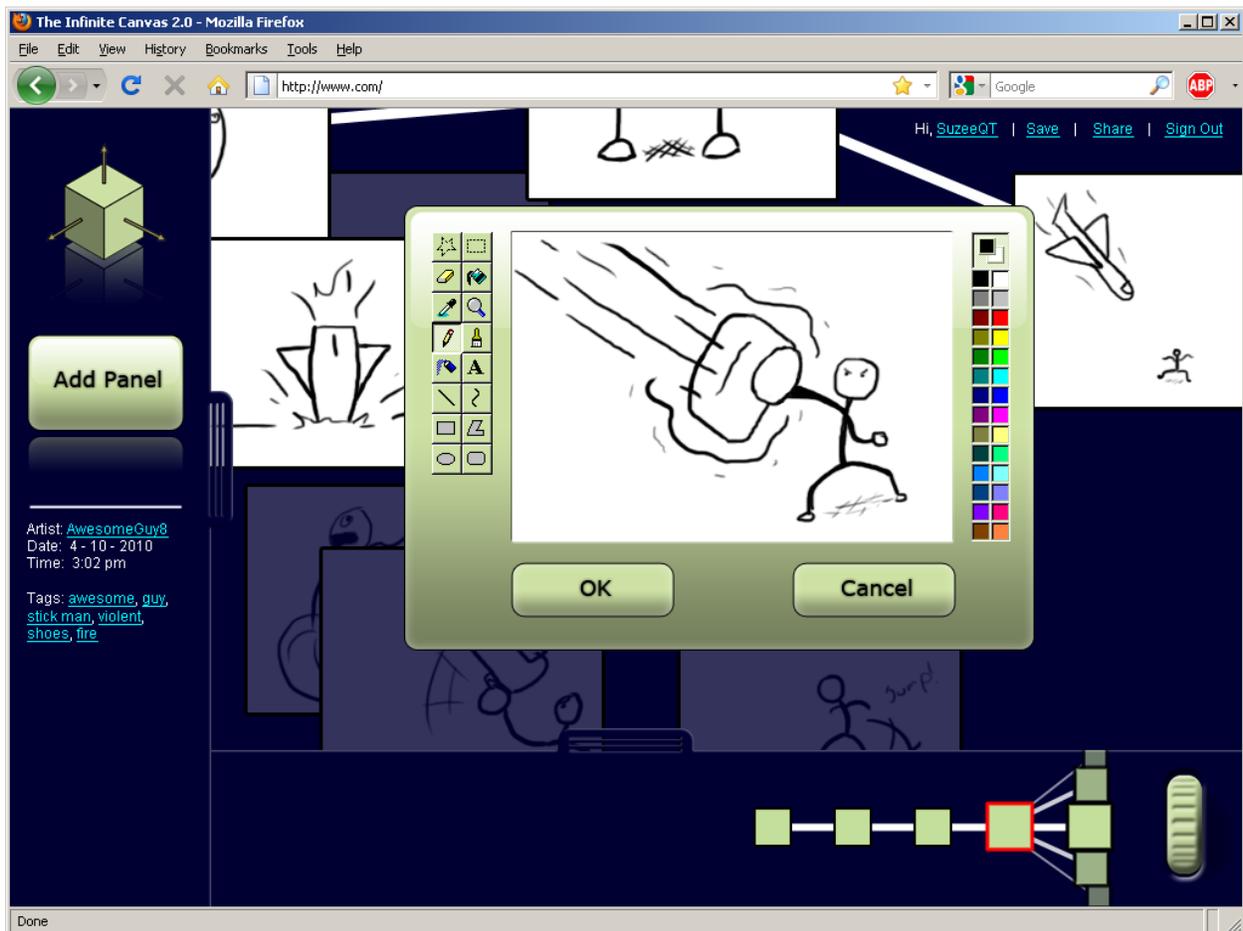


Figure 1- The Infinite Canvas 2.0 Prototype Mock-up

Long form comics, such as graphic novels, are generally created by a very small group of people – perhaps just a writer, penciler, inker, and colorist. The infinite canvas was originally intended

for long form storytelling. In theory, it would allow the creators to utilize an unconstrained panel layout as an additional storytelling device.

As stated previously, the infinite canvas never became popular because of technical limitations of Web 1.0 and the mental model of its users. It was difficult for creators to utilize the infinite canvas and it was difficult for the users to read comics created on the infinite canvas. Additionally, creators were expected to create often and readers were expected to read only. Any additional contribution by readers took the form of message boards and fan fiction.

With the advent of Web 2.0, it became expected that users be able to participate and contribute content to web sites. News stories and blog posts provided comment fields and social networking sites allowed users to post their own content and interact with other users, not just the creator. With a new technology available to users with new mental models, there is no reason that the infinite canvas can't be resurrected in this new environment.

Infinite Canvas 2.0 allows users and readers to become the creators of an ever evolving story. Users can create new stories by branching off of the current story at any point in the comic. Any user can participate as briefly or as deeply as they choose. New users can participate quickly by anonymously adding a single panel using online drawing tools. Returning users may choose to register for an account which would allow them to upload drawings created using external programs like Photoshop. The important thing is that users are all contributing to an ever expanding story branching into an infinite number of directions – both spatially and temporally.

Readers could start at the very beginning or be dropped in at a random location in the vast pool of panels. Because creators can branch off their stories at any point, readers are able to follow any branch they choose – much like a 'choose your own adventure' book – or follow a predetermined path that a creator or friend has shared. As with other social networking sites, readers are also encouraged to provide feedback in the form of comments and a rating system which would help determine the default path proposed to them.

Using this system, anyone – readers and creators, both amateur and professional – can take advantage of the infinite canvas.

Approach and Methodology

I have been reading comics since I was young. As I got older, I began making my own comics. I consistently tried to push myself and make each comic better than the one before. Of course the art gets better with each installment, but what interested me more than the art itself was the story telling devices that the art provided.

I've also been interested in computers and technology since I was young. As I got older, I learned about the Internet. At an early age I realized the creative potential that lied within the Internet, so I learned how to program and build websites.

At some point it dawned on me that comics had a place on the web. There were hundreds and hundreds of web comics out there. Almost all of them used the web for nothing more than a self-publishing platform. No one really understood that besides the potential for a worldwide audience, the web offered so many new story telling devices.

When I discovered Scott McCloud's rantings about digital comic revolutions and the infinite canvas, I was blown away. There was someone else out there who understood the potential that the web offers to comics. It wasn't only me that realized that comics could be made for the web rather than simply hosted on it.

Of course, I didn't discover any of this until years after Reinventing Comics was originally published. By then, it was old news that had already been dismissed and forgotten. Despite my heralding, the web comics of the day ignored the potential that the web offered. Digital comics were not revolting.

Given the chance to work on a human-computer interaction project for a year on any subject of my choosing, I chose to learn why people didn't utilize the infinite canvas more often. If at all possible, I also wanted to make something to pull the infinite canvas into the forefront of digital comics. If I could build something that makes people understand and use the infinite canvas, then maybe my dream of properly marrying comics and the internet would come true.

So, how do we make this happen?

The first thing I need to do is understand why the infinite canvas is not used as much as it should be in the realm of digital comics. To do this, I needed to do some research on the topic. I read lots of stuff from McCloud, himself. I went to one of his lectures. The reasons behind its failure were fairly straight forward.

Because current technological trends tend to put the end user in charge of content, rather than the editors and creators, I elected to go with a user centered approach. I would build a platform that would accommodate users rather than strictly the creators. Before I could design for users, however, I needed to know if users would even interact with such a concept.

As a programmer, I initially concocted my user studies to provide quantitative feedback. I wanted to know how many people would use the thing. I created a survey for this purpose. I also created my Post-It study.

I quickly realized that while quantitatively, the outlook was good, it was the huge amount of qualitative data that was most important. It wasn't simply enough to understand how many users were interested. The reasons why people were interested mattered more. Learning what it was that users were likely to respond positively to was key.

This led directly to the exemplar research. I looked at similar systems to the one I was designing in an effort to understand what about those systems worked and what parts failed. By incorporating the positive points of other systems into my own, I could more easily build a successful system.

During the design process, I needed to make sure I was including the right parts. Features that were successful in other systems were not necessarily going to be successful in my own. I constructed a prototype and test it extensively. The majority of the design work was done through micro iterations of the prototype.

It is these processes that inform my final design. If I can understand what users need to take advantage of this forgotten technology, then I can build the bridge to that gap. If users use the design then it will bring the infinite canvas back to life and my goal will be achieved.

Literature Research

Overview

Because this topic is essentially an expansion of an idea proposed by Scott McCloud, the primary source of literature research is McCloud's series of books. Additionally, some online articles critiquing this idea were looked at. Due to the social aspect of this project, time was spent researching articles regarding social networks and why they are successful. Other articles about more specific aspects of the project were also looked at.

Understanding Comics

Understanding Comics by Scott McCloud discusses how people perceive comics. In the book, McCloud analyzes various parts of comics to understand what effect each part has on the reader. With a better understanding of the psychological effects that each element has on the human mind, a comic creator can create a more compelling experience for the reader.

This book is written for comic creators and not for designers. In general, the information contained in this book would be more useful for to users of my design, rather than the designer designing it. The topics covered, however, deal with psychological elements that are true for all areas of creative thinking.

That is not to say that some portions of this book are not directly relevant to this project. I found chapters one and three particularly helpful.

Chapter 1: Setting The Record Straight does exactly what it says. It sets the record straight regarding comics. It discusses what comics are and where they came from. Its primary goal is to explain why comics should be looked at as a legitimate subject of study as opposed to super heroes wearing tights.

Seeing where you've been can often give a good idea as to where you're headed, and comics is no different. After defining comics as "juxtaposed pictorial and other images in deliberate sequence" (McCloud, 1994), he goes on to give a brief history of comics that begins with ancient Egyptian paintings. The painting he uses as an example was "painted over thirty-two centuries ago for the tomb of 'Menna,' an ancient Egyptian scribe." (McCloud, 1994)

This painting tells a narrative by juxtaposing pictorial images in a zigzag pattern covering a large wall. By McCloud's definition, this is a comic. This comic shows that comics need not be constrained to a book or newspaper strip. Comics were drawn and took advantage of the canvas (in this case a tomb wall) that the creators were given. This lends credibility to the theory McCloud introduces in his second book that he termed "the infinite canvas." Given an infinite canvas, creators could, in theory, create an infinitely large comic, not confined to the physical dimensions of a wall, comic book, or newspaper strip.

Later in Chapter 3: Blood in the Gutter, McCloud discusses what I would consider to be the most important element of comics: The Panel. Panels are the images that are juxtaposed in deliberate sequence. The gutter is the space between the panels. The thing that fills in the gutter and ties

the panels together in our minds is called termed *closure*.

Ideally, my project would require users to add single panels to the larger comic. With dozens or hundreds of different users adding panels, it may be necessary to normalize the amount of closure required to follow the story. In other words: How do we make sure that two different juxtaposed images by two different creators can be tied together in the minds of readers? This problem is solved in later iterations of my design by adapting a device introduced by McCloud in Reinventing Comics along with the infinite canvas itself.

Reinventing Comics

In Reinventing Comics Scott McCloud discusses several topics which could theoretically revolutionize the comics. The first part of the book primarily discusses ways that the industry as a whole needs to change if comics is to become a true and respected art form. He discusses issues like the current comic industry revenue stream and business model, creator rights, and diversity in character creation. Much of it comes across as snarky, making McCloud seem full of himself because of the success of his previous book.

The second part of the book, while still somewhat arrogant, contains information more closely related to my topic of interest. At the time of its writing, digital comics and web comics, in particular, were relatively new to the scene, not respected by the comic community, and nothing special. Three whole chapters are devoted to comics' digital revolutions.

The more well known of these, and the one that has caused the most controversy and received the most criticism, is the chapter on Digital Delivery. McCloud discusses ways to monetize digital comics. He proposes the idea of micropayments. The idea is that while people may not pay two or three dollars (the current price for a print comic) for an online comic, we now have means (like PayPal) to charge ten or twenty cents for an issue.

The primary problem with this was that McCloud was suggesting that people charge for online comics in an age where news and information is virtually free to the end user. It's not that his theories on monetization are inherently bad, it's just that no one felt the need to trade money for bits, as he puts it. Ultimately, by McCloud's own admission, the idea of micropayments failed.

Even though micropayments failed, the importance of monetizing such endeavors should not be overlooked. McCloud's ideas focused on compensating the artists and creators. In a situation where the comic is created by the users, the experience is the creators' compensation.

The main costs would be accrued by the developers and owners of the system and site. Any revenue (from registration fees to advertising) is dependent primarily on the users. Therefore, strategies for eventually monetizing an online social media system without offending the users must be developed. This is something outside of the immediate scope of this project, however.

The section most relevant to this project is the chapter on Digital Comics. This is where McCloud proposes the idea of an infinite canvas. He repeats some relevant highlights from his previous book, Understanding Comics, that are necessary in understanding why the infinite canvas is so revolutionary, including a short discussion of "what is comics?"

He discusses how comics have always been constrained by the physical dimensions of the media upon which they are created. Even ancient Egyptian paintings, Greek columns, and Mayan deerskins have physical boundaries. While computer monitors do have physical boundaries, web pages do not. If the computer monitor is thought of as a window and not the media itself, then a comic could be created without a physical boundary.

This is the very idea that my project is founded upon. Reinventing Comics was published ten years ago and was not yet aware of the infinite canvas's ultimate failure. He did, however, discuss several current limitations at the time. A lot can happen in ten years, so many of these limitations have been overcome. In those ten years, the usage of the web has changed, as well. My goal is to resurrect the failed infinite canvas into the new decade.

Anatomy of a Successful Social Network

As I found my project moving toward a social app, rather than just a resurrection of the infinite canvas, I found it necessary to research social networks themselves and try to understand why successful social networks were successful. Unfortunately, most searches on this topic resulted in advice on how to make your business successful on social networks and running successful advertising campaigns. That is, until I stumbled upon a blog post by a leading Web 2.0 professional.

Anatomy of a Successful Social Network was written by Jawad Shuaib on his website. As the title implies, it discusses what makes a social network successful. It is important to understand these pieces so that they can be implemented into the final design. With these principles in mind, the design will be more likely to build and retain a decent user base.

Most of what Shuaib writes is related to the average user's mental model. What do people like about social networks? Why do they come back to social networks? What will drive them away? While this article is just a basic overview of these features, observing social networks will prove most of Shuaib's theories true.

"Once a user has invested an hour of their life customizing their profile, they are not likely to leave the site anytime soon." (Shuaib, 2008) In fact, many of the most active users of some social networks are those who spend a great deal of time customizing their profiles. The more options that a user is given to play with, the more time a user will spend playing with them. There must be a balance, however. Too many options will cause users to be overwhelmed and be turned off.

This potential to be overwhelmed also comes in the form of advertising. Putting too many ads will make the site become cluttered and scare away users. The users that do stay around will ignore the ads anyway, so it's not really a smart move to put ads everywhere. "Don't reward their loyalty with spam." (Shuaib, 2008)

While basic these theories may be, they served as a jumping off point. I was able to take these in to consideration as I observed popular social networks and online communities. They were able to help me hone my observations to pick out what was working and what was not.

Summary

The two main pieces of literature relevant to my understanding of the subject are by Scott McCloud. They set up an understanding of what comics truly are and presented the original idea of the infinite canvas. These books serve as the basis for my project.

A third main part took the form of an article on a website. It discussed why some social networks are successful. This article gave me insight with which I was able to critically observe particular social networks to produce further insight to inform my design.

Research

Exemplar Research

“Infinite Canvas Engines”

What it is

An engine is like a framework that takes care of the “infinite” part of the infinite canvas. Creators can use an engine to take care of the coding aspects. If they don’t need to code anything special, they can focus on just the creative parts of the creative process. They can focus primarily on art and writing.

This is one of the biggest problems with the infinite canvas as it is. Many creators are simply not coders or programmers and cannot be bothered with the specific needs that are required to lay out the comics. The use of an engine can reduce the barrier of entry, thus improving the possibility that artists will use the medium.

These exemplars are relevant to this topic of study because my design is essentially a multi-user engine. By looking at current engines, the insights gained will inform my final design. I can look to see what they’re doing right and what can be improved and add these things to my design where necessary.

The following sections briefly discuss several infinite canvas engines which are currently in use.

Microsoft’s Infinite Canvas

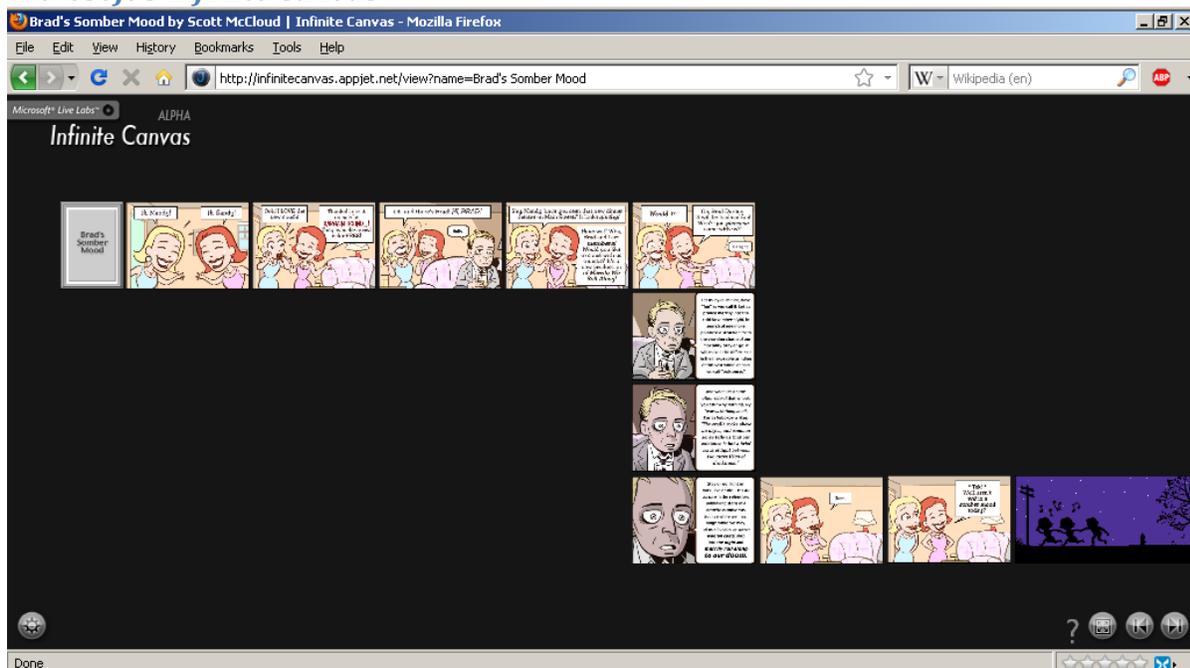


Figure 2- Brad's Somber Mood by Scott McCloud made using Infinite Canvas (<http://infinitecanvas.appjet.net/view?name=Brad%27s%20Somber%20Mood>)

<http://infinitecanvas.appjet.net/>

Infinite Canvas is a side project by Ian Gilman from Microsoft's Live Labs. It allows anyone to create or edit a comic, for free, in a virtual environment based around an infinite canvas. Because the app is still in the Alpha phase of production, there is no user registration and no security, so it's possible for anyone to edit anyone else's comic. On the one hand, this can be great for collaborative comic building. On the other hand, people can easily vandalize and destroy content that other users have spent long hours working on.

The only barrier of entry is that of comic making in general. If a user is able to make a comic, he can use the system to take advantage of the infinite canvas. The system has no registration and no cost associated with it, so anyone can jump in and create a comic. The only technological limitation with this system is that the images are not hosted by the system. All images must be hot linked from other sites, thus requiring some other hosting cost to the user.

The interface is a wonderful exemplar for a comic viewer. The interactions make the comics easy to read and eliminate the "scrolling problem." In the past, comics on the infinite canvas require a great deal of scrolling, both vertically and horizontally. This made navigation difficult and annoying for readers. Infinite Canvas's interface offers several features which make navigation easy.

Instead of using scroll bars, Infinite Canvas uses a "grab and drag" interface, much like Google Maps or Adobe Reader. A user "grabs" the background by clicking on it and can drag it around the screen to expose different parts of the screen. This interaction could be improved by using a "hand" cursor icon instead of a pointer. The open/closed grabbing hand cursor icon seems to be a standard visual cue when representing this type of interaction.

A zoomable interface is implemented to allow readers to view as much or as little of the comic as the reader wishes. The entire comic can be viewed at once by zooming all the way out. To read text or view smaller details, the user can zoom into each panel closely. This allows the user to move around the comic very quickly, requiring virtually no scrolling, or grabbing, at all. The only drawback is that zooming is only done via the scroll wheel, so users without a scroll wheel are out of luck.

The reader can also click a specific panel to put that specific panel into focus. By bringing a specific panel into focus, the system will automatically zoom into that panel and bring it into the center of the screen. Additionally, if the panel in focus is clicked, the system will bring the next panel in the sequence into focus. This all makes it very easy and quick to navigate and read a comic, as it only requires a single click to move from one panel to the next.

Visually, the design is very simple which reinforces the infinite canvas's purpose of keeping the reader in the story by reducing the number of breaks and distractions. The background is black, which gives the impression that the comic is floating in the dark vacuum of space. Apart from the logo in the top left, the only buttons on the interface are small, semi-transparent buttons which are easily ignored and do not detract from the reading experience. Menus are completely unnecessary for the reading process and are only used for editing and creating the comics.

In short, the Infinite Canvas system is the perfect environment for the creation of comics on the

infinite canvas. If the system was released in a final version with more security and the ability to host images, it could become a space for legitimate comic artists to experiment and produce professional works.

The Tarquin Engine

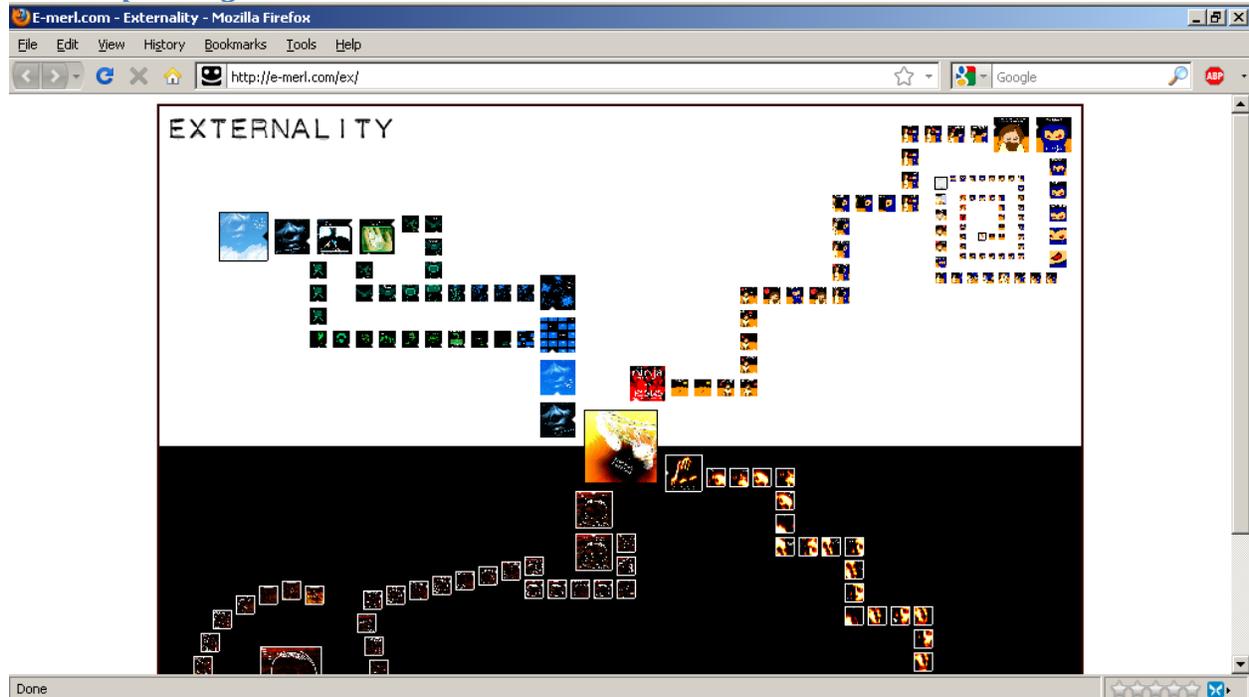


Figure 3 - Externality by Daniel Merlin Goodbrey made using The Tarquin Engine (<http://e-merl.com/ex/>)

<http://www.webcomicsnation.com/tarquin/>

The Tarquin Engine is an engine created using Adobe Flash. It costs \$19.95 for a template FLA file and detailed instructions. While the engine offers more customization and options, there is a larger barrier for entry. Many people on the Internet prefer not to purchase software without being able to test drive it first. Additionally, this sort of purchase cannot be used without an existing knowledge of Flash.

Unlike the Infinite Canvas system described above, The Tarquin Engine requires a great deal more technical knowledge. The purchase includes a template Flash file which can be edited by the creator. To edit it, the user must own and be familiar with Adobe Flash. Therefore, in addition to his creative skills (writing and art), the creator must have technical ability. Focus has shifted away from the comic creation, to the engine modification. This is not an entirely bad thing, however. Because access has been given to the engine itself, users can build upon it and create different interactions from it.

Even without modifying the engine, it supports some features which Infinite Canvas lacks. Specifically, it allows comics to branch off into many directions. Branching offers creators an additional story telling device. It can offer alternate endings or have the story focus on several events occurring concurrently.

Besides the technical knowledge required to create the comic, it must be hosted on the creator's website. Because comics made with the Tarquin Engine result in a Flash file, the creator's site must support embedding Flash files. While the Infinite Canvas system requires images to be hosted externally, creators can use sites like Photobucket to host images. The Flash files cannot be hosted on most image uploading sites, and must be hosted on specialty sites like Newgrounds, or a website controlled by the creator himself.

If a creator has the technical prowess needed to work with it, the Tarquin Engine provides many possibilities. In general, however, it's not practical for widespread use. It requires too much effort which could otherwise be used for more creative and traditional pursuits.

Collaborative Art Systems

What is it?

Collaborative Art systems are websites that feature large canvases on which many users can draw at the same time. These systems show that users are capable of collaborating on massive artistic works.

These systems are not intended to exemplify story telling on an infinite canvas. Instead, these systems address one of the main issues for my project – the social aspect. Both of the systems support many users, yet only allow users to work on a small portion of the whole work. Users will often have to work together to make any intelligible work when viewed from a smaller zoom. Because there are many instances of intelligible works, it proves that many users are capable of collaborating in such a manner.

WebCanvas

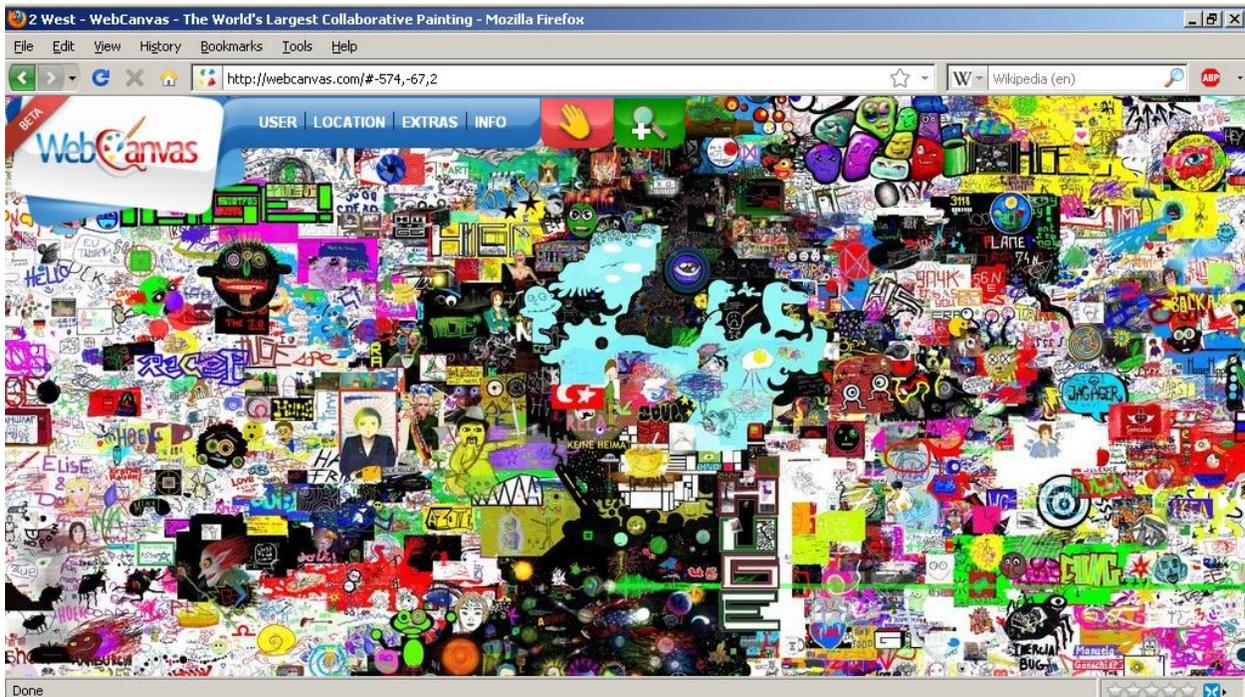


Figure 4- Screenshot of Webcanvas.com

<http://webcanvas.com>

Web Canvas is a massive collaborative art site. Its slogan is “The World’s Largest Collaborative Painting.” While there may be larger paintings on the web, I certainly don’t know of any. It was started as early as February 2008. Currently, there are 100 registered users. The total number of users cannot be counted so easily, however. Besides the registered users, the system supports anonymous contribution.

The interactions featured in Web Canvas are all very interesting and contribute a great deal to the idea of a social infinite canvas.

The main feature is, in fact, an infinite canvas. The canvas is so large, in fact, that areas of the canvas are given X, Y and latitude/longitude coordinates so that users are able to bookmark and quickly find previous works and continue or contribute to them. A community has grown around this system and various projects are undertaken by participants. Because the canvas is so large, it would be impossible for multiple users to contribute to a specific project without the coordinate system.

For example, a project highlighted in the site’s news section called Harlem City. It is located at 400W, 50N. The web address for this location is <http://webcanvas.com/#-152000,-15000,2>. This implies that the project is located 152,000 pixels to the left and 15,000 pixels to the top of the origin (the origin being the spot that the site loads by default at 0, 0). Without the ability to bookmark a location, there would be very little chance for people to find this location and collaborate on it.

Another important feature is the registration ability. Users are allowed to use the system anonymously. This lowers the barrier of entry significantly. If a user enjoys playing with the system and participating in the community, he may register and log in. Registration gives the user other options. For example, registered users can actually upload their own images in addition to using the simple drawing tools that are provided. Users are also able to take advantage of the message boards to coordinate projects and discuss the system as a whole.

An interesting insight gained by looking at Web Canvas is that the vast majority of drawings occur relatively close to the center of the canvas. I would imagine this is because some people who stumble upon the application are curious and take advantage of the anonymous contribution before fully exploring the infinite canvas provided. By loading the site, the default location is in the middle and casual users have little incentive to explore before participating.

The only thing that Web Canvas lacks in respect to my topic of study is the story telling element. While it is, theoretically, possible to create a comic that would take advantage of the system's infinite canvas, there is nothing built in. The purpose of the system is as a collaborative painting, not a collaborative story telling device. It does well what it is supposed to do, and there are many elements and interactions that can be very useful in my final design.

Drawball

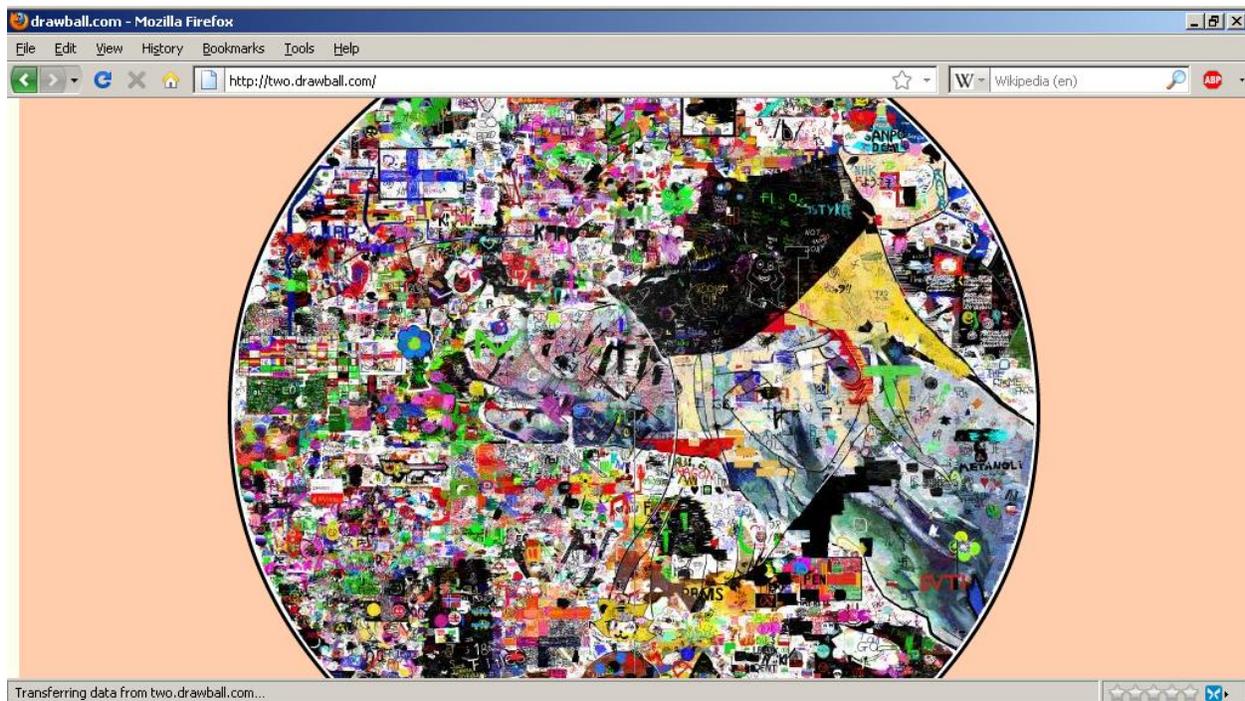


Figure 5- screenshot from Drawball Two

<http://www.drawball.com/>

Drawball is similar to Web Canvas in that it is also a giant collaborative painting system. There are many differences, though, including the purpose, the scale, and the user base.

Drawball's purpose is much different than Web Canvas. While Web Canvas is purposed for

unlimited artistic collaboration, Drawball is more of a game. Users must zoom in as much as possible before being allowed to draw. When zoomed in, there is a very limited space upon which to draw. Furthermore, users have a limited amount of digital ink with which to draw.

Because there is a limited area to draw, users will often be drawing on top of each other. In order to draw anything intelligible on a large scale, users must collaborate in a relatively short time span so that the project will not be overwritten.

The most significant difference is that the canvas is not unlimited as with Web Canvas. The canvas takes the form of two unrelated circular canvases named Drawball One and Drawball Two.

The primary difference between the two Drawballs is that Drawball One requires users to request drawing access. This difference has an interesting effect that echoes the sentiment that anonymous usage lowers the barrier to entry. While Drawball Two is much more cluttered, it tends to have larger, high quality drawings. I believe this is because many anonymous users can descend upon the canvas at once, without wasting time for approval.

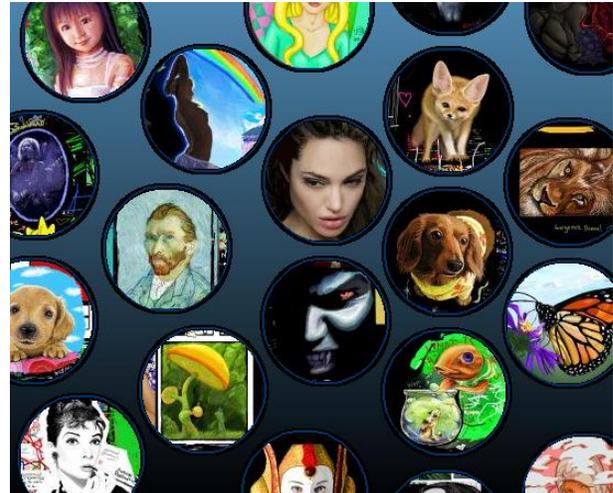


Figure 6- Examples of Drawball drawings from <http://best.drawball.com/>

The user base of Drawball is much different than Web Canvas, as well. Web Canvas has fostered its own community which has evolved around the app. Drawball's primary user base is the Internet group referred to as Anonymous.

Anonymous is interesting in that it is a completely virtual organization. It has an amazing ability to self organize with no defined hierarchy, membership, or leadership. Anonymous can choose a goal, organize, and act upon that goal very quickly. Because of this, Drawball is a prime target for Anonymous. They can jump in, create their project and leave within a very short period of time.

A major insight gained from Drawball is that despite the large risk resulting from the anonymous participation, there is relatively little vandalism. In fact, it is the low barrier of entry resulting from the lack of registration that allows the larger works of art to be created.

Social Art Systems

What is it?

Social Art Systems is a term I use for online art systems that let users share their work, but do not directly support any kind of real time collaboration. These systems typically take advantage of pre existing social media outlets and extends them to support artwork. As with the collaborative art systems discussed above, these systems are not purposed for comics. Some enterprising users, however, could easily utilize the systems to create sequential art.

These systems are great examples of online art programs being used in a social setting. They show the amount of detail that some users are willing to put into their creation using what is available. They also show that some non-artistic people are willing to use these systems. This is an important factor in my design. Regular people and comic people can both use the systems and contribute great things with relative ease.

They also exemplify rich internet art apps. It is possible to create robust drawing and painting programs in a purely online setting. I have more examples of these in a following section.

Graffiti on Facebook



Figure 7- Screenshot from Graffiti's Facebook page.

<http://apps.facebook.com/graffitiwall/>

Since its inception, Facebook has provided a “wall” for users to post short notices to each other. Initially, only text messages were able to be posted. As time went on, users were able to post other content to wall, including images, videos and URLs.

Another early addition to Facebook was the inclusion of Apps. Facebook Apps allowed third party developers to build fun or useful applications on top of Facebook’s social networking foundation. Many apps were simple games or extensions to already available features like “poke.”

The Graffiti Wall application allows users to create small drawings via a Flash interface and post these drawings on someone’s wall. Many people use the app to create simple drawings like stick figures or penises. As users became more familiar with the interface and capabilities of the application, they were able to create artistically superior works.

This application is directly relevant to my topic. Instead of allowing users to draw on each others' profiles, the drawings would be attached to other drawings, forming a sequence of artistic works. With time, users would hopefully be able to create fantastic comics with fantastic art.

Graffiti's actual art application is relatively simple. It offers a limited canvas on which to draw. It features a single round brush with adjustable width and opacity settings. Users can select from about 171 colors. Users are also allowed to undo their last strokes and cancel the drawing entirely.

Using this simple art application, users can create wonderful artistic works with great detail. This tells me that any art applications I install into my design can be simple but will still be used, by capable artists, to great effect. There would be little need to put a great deal of technical effort into an art program if it is unnecessary.

4chan's Oekaki board

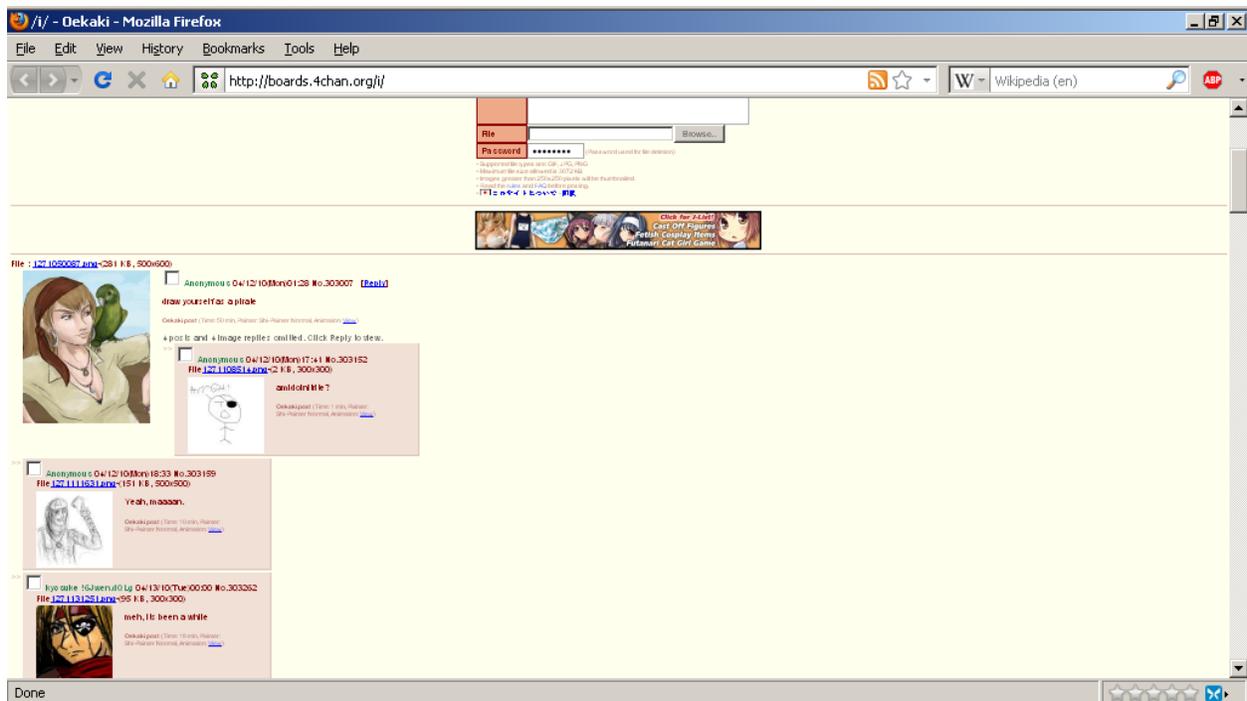


Figure 8- Screenshot from 4chan's Oekaki board

<http://boards.4chan.org/i/>

4chan is one of the largest and most used internet forums. The majority of the site is composed of images boards where users can upload images. One of the boards called “/i/ - Oekaki” provides users with an online art application so that they can create original drawings online in addition to uploading images from their computers.

Like Facebook's Graffiti app, the Oekaki board can produce both crudely drawn penises and masterful works of art. Thanks to 4chan's user base, however, most of the drawings, good and bad, are of indecent material.

The application that Oekaki uses, Shi-Painter is much more robust than Graffiti. It is written in Java and, therefore, requires the Java plug-in for web browsers. This does, however, allow it to support advanced features like layers and Bezier curves that are usually found in desktop applications. These features provide users with more options in their creativity, but thanks to the more complex interface, few users use these features and tend to draw more simplistic pictures.

One important feature is the ability to change the size of the canvas. Users are able to make their canvases fairly large. With a larger canvas, it is easier to draw comics in a single image file. As such, a minority of the images posted do feature multiple panels.

Additionally, because of the image board format, the whole community is able to easily see all new contributions. With Graffiti, users are usually only capable of seeing art drawn by friends, on friends' walls, or featured on Graffiti's homepage. Since everyone can see everyone's drawings on Oekaki, anyone is able to reply to anyone's thread. This lets a user start a thread with a suggested theme with the understanding that others will contribute images to the thread in a similar theme.

While non-existent, this would theoretically allow users to easily create "comic jams." Comic jams are events in which multiple artists are able to contribute to a single comic. Comic jams are discussed further in a different section.

Online Art Programs

What is it?

Online art programs are simply rich internet applications that allow users to create drawings online. Often, these applications resemble simple paint programs such as Microsoft Paint. Sometimes, however, the apps are much more complex offering more advanced features like those found in Photoshop.

The social and collaborative art systems described above all use some sort of online art program. The following examples are of stand-alone art programs not directly associated with any particular system. They were researched in order to prove the technical feasibility of possible designs.



Figure 9- a bowl of fruit from Oekaki



Figure 10- a crudely drawn penis from Oekaki

<InputDraw/>

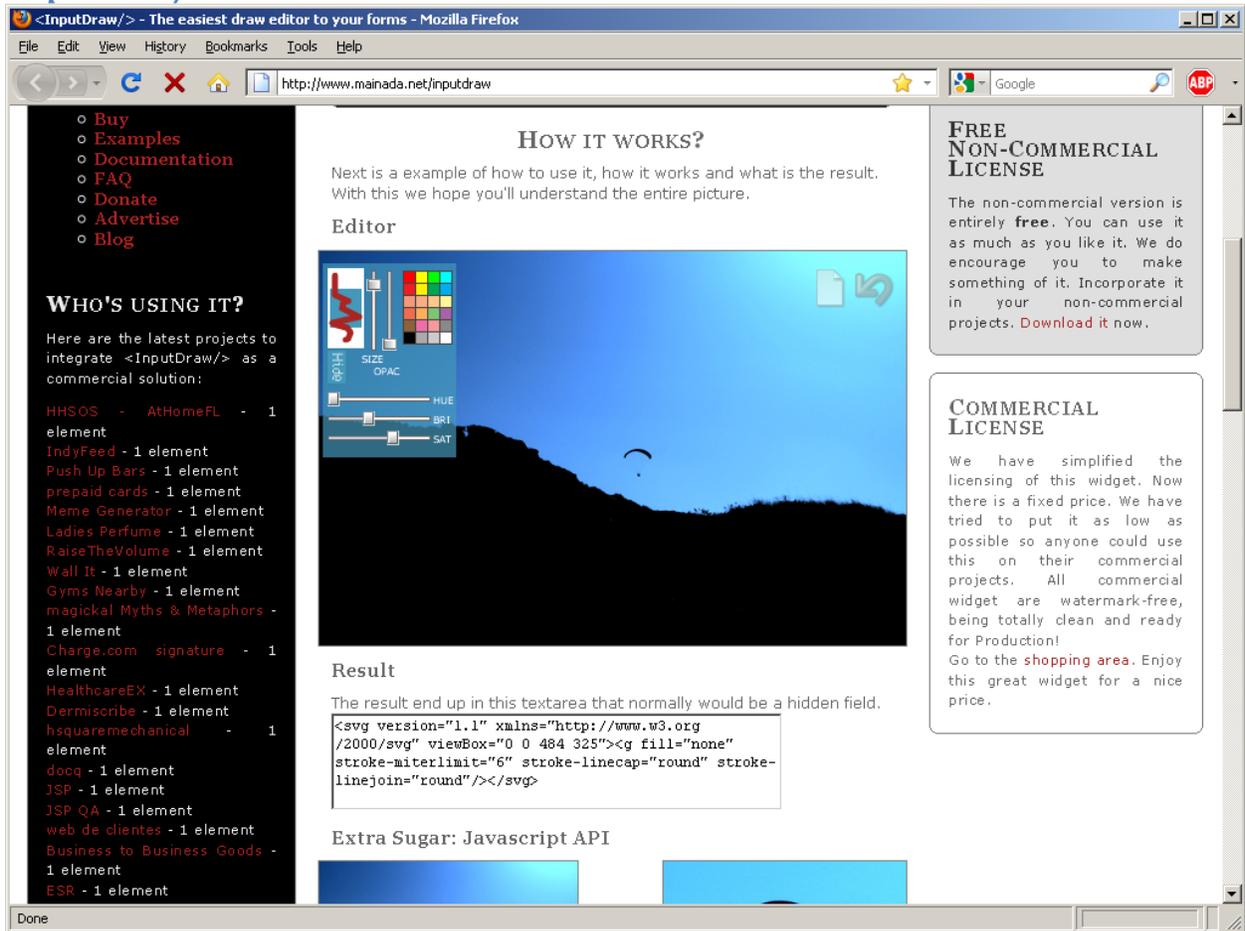


Figure 11- The <InputDraw/> Homepage.

<http://www.mainada.net/inputdraw>

<InputDraw/> is an Adobe Flash based art app. It uses a small bit of javaScript to replace specific tags in a webpage with the application. It is can be used free of charge in a non-commercial environment. For commercial use, it costs 29 Euros.

The app features a simple paintbrush tool as its primary drawing tool. The size, opacity, and color of the paintbrush can be changed with the palette provided. Users can also undo their previous actions or clear the image.

When the user draws in the app, the XML used to generate an SVG file is added to a hidden text field. That text can be saved as an SVG file and used as an image. Unfortunately, SVG files are not a widely used file type, so the generated image would need to be converted into a JPG, GIF, or PNG file if it were to be used online.

Flash Paint App

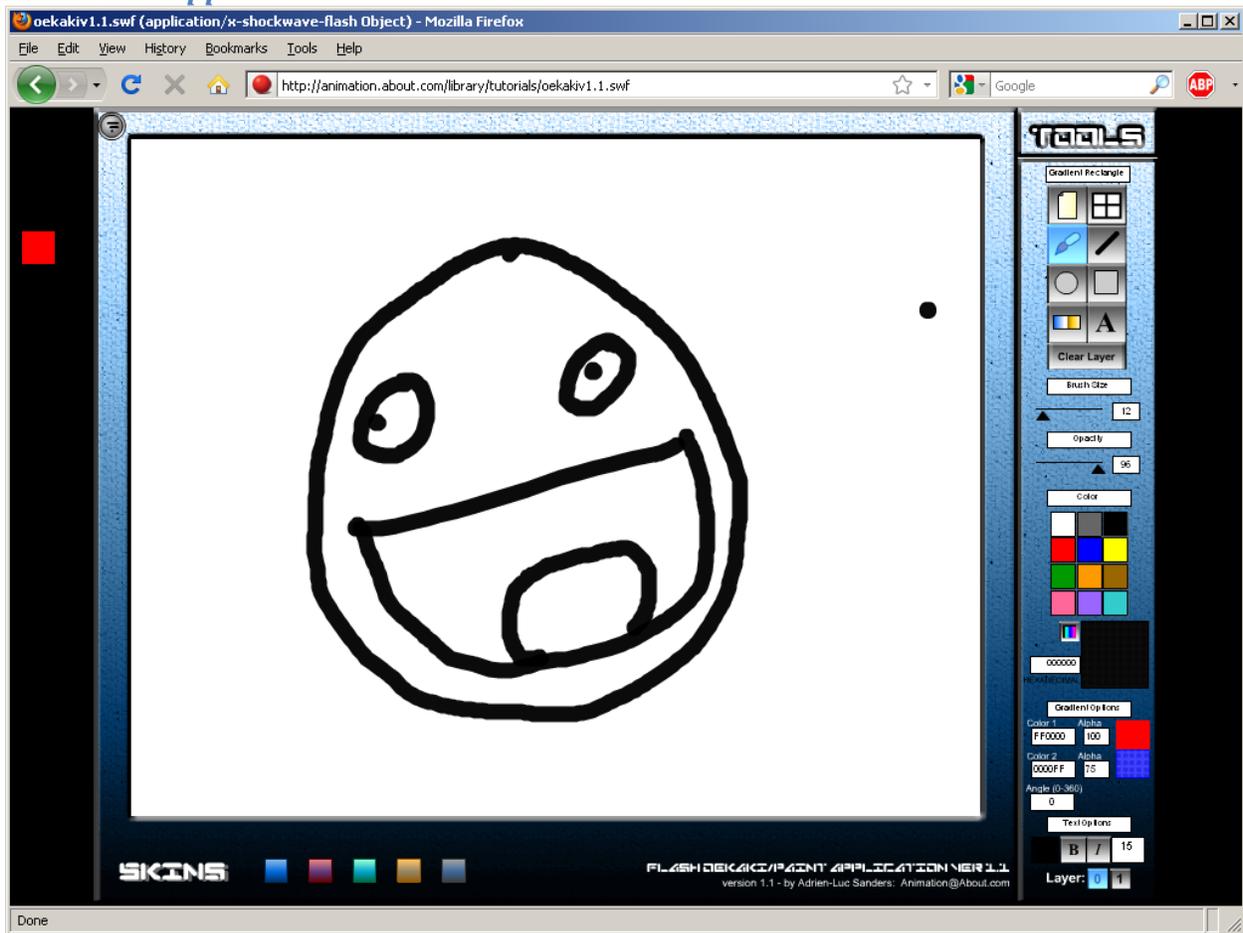


Figure 12- A robust paint app created in Adobe Flash.

<http://animation.about.com/library/tutorials/bloekakiv1.1.htm>

This example demonstrates just how robust an online drawing app can be. It features layers, fully customizable brush tool, shape tools, a gradient fill, text, and a fancy color picker. It was created in response to an ActionScripting challenge. The only thing that this does not feature is the ability to save what is drawn. More work would be needed to make this suitable for my use.

Flash Painting Program

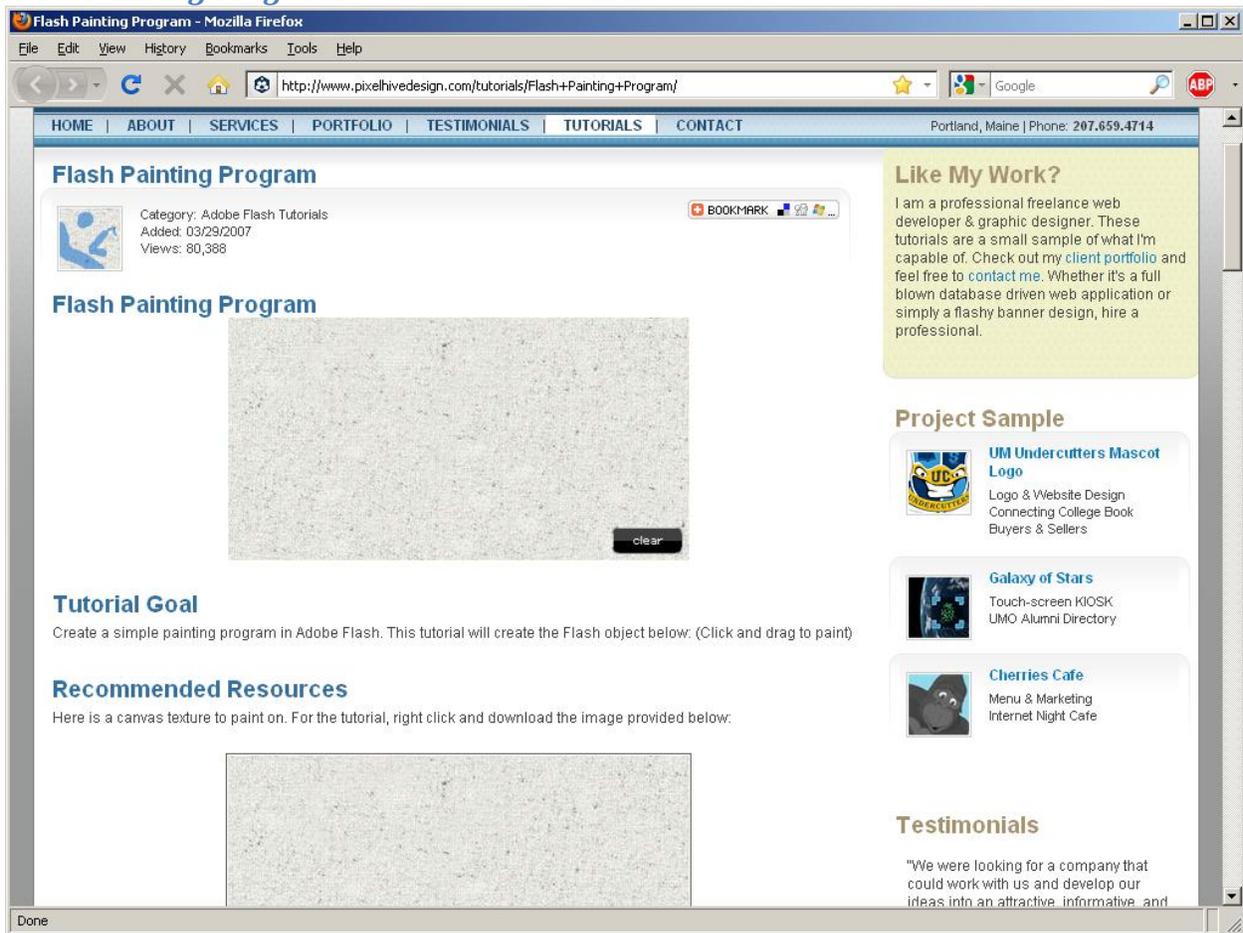


Figure 13-A website featuring a short tutorial on Flash Paint apps.

<http://www.pixelhivedesign.com/tutorials/Flash+Painting+Program/>

This is a short tutorial about making paint applications in Flash. It's rather short and explains in detail the process of making a simple paint application using Adobe Flash. This demonstrates just how easy it is to make one of these apps. Of course, more work and effort would need to take place in order to create something that can be used for this project.

Comic Jams

What is it?

Jessica Abel and Matt Madden call them Jam Comics in Drawing Words and Writing Pictures. "A jam comic is an improvised collaborative comic wherein one person draws a single panel and then passes it on to the next person, whose job it is to draw a new panel that continues the story." (Abel, et al., 2008)

Comic Jams are social events in which a group of artists gather in a single location and collaborate on a single comic. Most often, these comic jams occur in a bar or lounge and take

place over several hours. There are always multiple artists as a comic by a single person would not be considered a jam.

Comic jams are typically organized online, through websites or blogs. The organizer will find a suitable location and announce the time and place. Comic jams are usually open to all but RSVPs are often required to participate. They almost exclusively take place in person so that a single piece of paper is passed around or so that participants can collaborate in real time.

These events are prime examples of social storytelling. While technology is not usually used to produce the actual comics, it is required to organize the events. Few instances of online comic jams can be found and these are not usually as high quality as the results of the live events. Still, the theory that artists are capable of collaborating in large groups is sound.

Below are examples of comic jams that are currently being organized.

Vancouver Comic Jam

<http://community.livejournal.com/vcj>

As the name implies, VCJ takes place in Vancouver, BC in Canada. It has been held (usually) monthly since 2005. It is currently held at The Wallflower Modern Diner and requires that participants be of legal drinking age. Anyone of age is allowed to join. The products of the jams are posted on their Live Journal blog. There were approximately 17 participants in April.

House of Twelve Comic Jam

<http://www.houseoftwelve.com/jam/>

The House of Twelve Comic Jam is held in New York City. It has been held monthly since 2001. All are invited, though it is held at a pub and drinking is encouraged.

Toronto Comic Jam

<http://daltonsharp.com/Torontocomicjam.aspx>

The Toronto Comic Jam was founded in November 1996. It is held monthly. From their website:

Artists meet once a month in a bar to socialize and draw collaborative comics. Books of the work are provided free the following month. This Toronto Star article explains it best. Check out the Resources for other jams, especially the [awesome] Monthly Montreal Comix Jam site.

User Research

Post-it Study

Summary

In order to gauge interest in a social comic creation app, I created a very low fidelity study in the basement of the Informatics East building on the IU Bloomington campus. The study was fairly straight forward in relation to the subject of study. It required participants to use Post-It notes as panels and add drawings to an ever growing comic.

Procedures

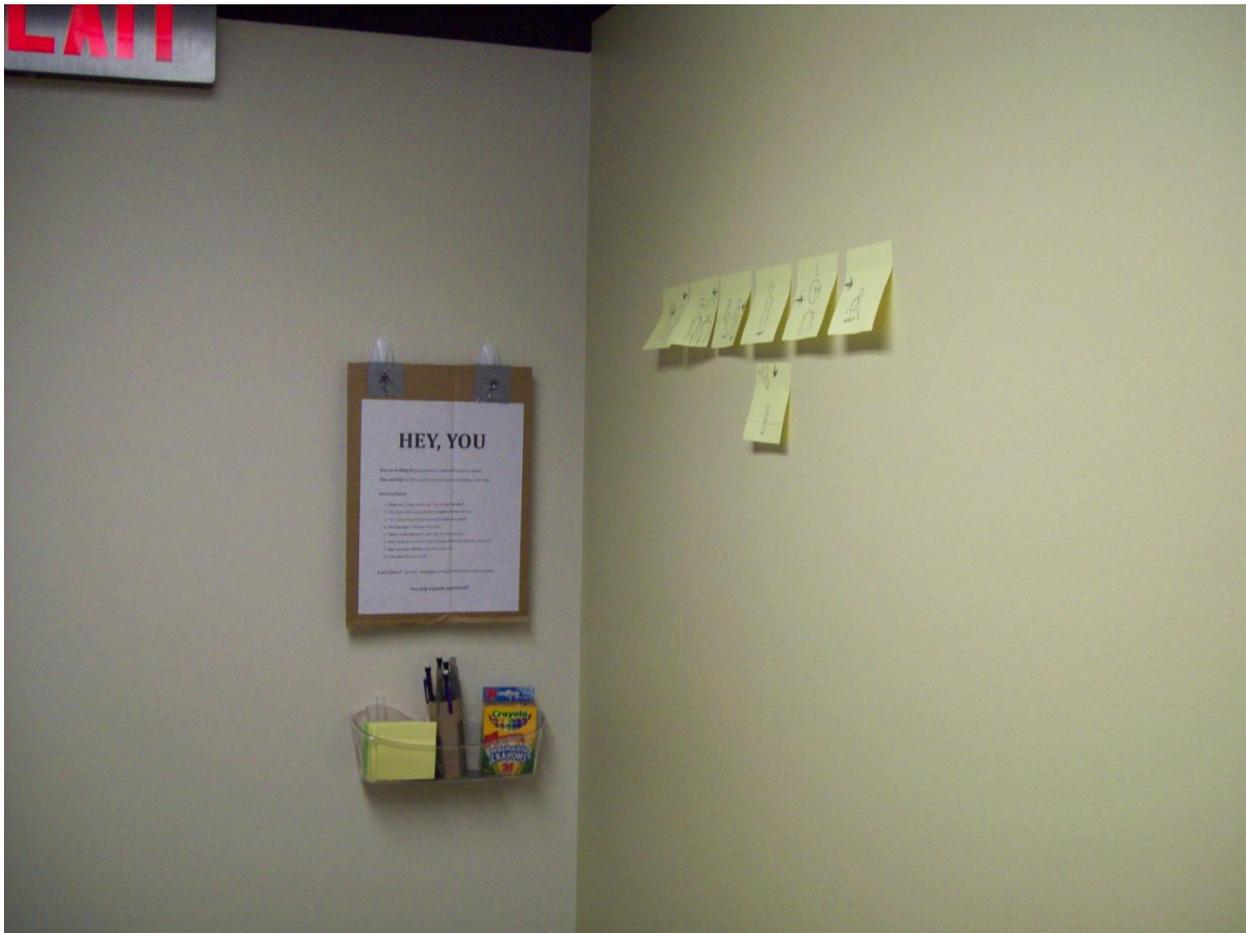


Figure 14- The humble beginnings of the Post-It study.

The study was set up in the basement of the Informatics East building. This location was chosen because it was relatively exclusive, positioned away from random flows of traffic, thus reducing the chance of vandalism. In addition, the traffic that passed by included HCI design students who would respect the study and be more likely, though not certain, to participate in the study. I felt that this potential test user base would reflect the actual user base of the application as they are more creative by nature.

A small hallway in a high-visibility area was commissioned for the study. Potential participants were greeted with a poster with a set of instructions (see Appendix A). A small tray was set up below the poster filled with pens, crayons, pencils and Post-It notes. The poster instructed users to use the provided tools to add panels to the comic on the adjoining wall. Several panels (created by me) were provided as a starting point. This helped to illustrate the instructions in a more concrete manner.

The installation was left relatively unattended for one week. I would check in sporadically to photographically document the progress and interview participants who may be working at the time.

Outcome



Figure 15- The results of the Post-It study.

The study was far more successful than I anticipated. I began with 7 panels as an example for users to follow. By the end of the week, the comic had ballooned to more than 70 panels. Considering the relatively low amount of traffic, a 1000% increase in panel number is quite impressive.

The poster instructed users to print their name and time of participation on the back of the poster

and on the back of their individual panels. Almost no users did this. In fact, very few users read the instructions at all. Most users simply looked at the current usage, deduced the instructions from the current state of the comic and the tools provided, and proceeded accordingly. Thus, most users contributed anonymously.

It became apparent, as the comic grew in size, that users were spending more time devising stories and drawing their panels. Through observation, I learned that many users contributed frequently and it was these users who usually spent more time with the installation.

During impromptu interviews, I learned that these users found the project entertaining. They enjoyed using the installation because it allowed them to easily and quickly contribute to the comic. They enjoyed the ability to create stories and artwork that would be seen by other users and returned frequently to see how other users responded to their panels.

While the number of panels provided a quantitative metric for determining success, I feel that the qualitative results of the interviews proved far more useful information. The enjoyment of the users, and not the number of panels, is the true goal of the project. Because the users did enjoy participating in the study, this proves that the final design should be a success if measured by the same metrics.

Key Insights



Figure 16- Users contributing to the Post-It study.

Besides the high level results, the study has contributed several specific insights that will inform the final design.

The most important insight is the anonymous contribution. The tools were provided and no registration was required to participate in the study. I believe that this significantly low barrier of entry is a major factor in the study's success. Had users been required to provide their own tools, they would not have been bothered with the study at all. Likewise, if the study required participants to go through me before participating, they would probably not have bothered.

Providing this type of anonymous contribution online is a risky endeavor. This would make the system a prime target for internet vandals. My study, however, showed absolutely no vandalism or unsavory activity. Users were more interested in experimenting with new options rather than destroying what was there. I feel that this demonstrates that anonymous usage would be far less likely to be used inappropriately than one would think. Had this type of thing been an issue, I feel that anonymous self regulation would have taken place as well (for instance, random users would remove any offensive material from display).

Simply providing anonymous contribution is not enough. There would be a need to provide these users with the tools necessary to contribute. A key factor was the short amount of time that was required to participate. As said previously, looking for one's own tools would take too much time and so the user would not bother with the system at all. Even if anonymous usage was unavailable, the ability to quickly add new panels is important. Creating panels with external tools and then uploading these images would take too much time and effort for the casual user.

That said, a very small minority of participants did, in fact, take some Post-It notes home and develop a whole series of panels which would be added to the project en masse. This tells me that limiting users to the provided tools would be a mistake. Users should be given an opportunity, if desired, to add panels created with external tools. I feel that frequent users may get tired of using the provided tools in situ. They may be dissuaded from frequent and future participation if they feel too constrained by the system.

A somewhat unrelated insight is that participants did not read, nor were they constrained by, the instructions. Users are smart. They were able to deduce the procedures based on the current state of the comic and the tool box provided. Little actual explanation was needed for users to understand the concept and participate.

Additionally, more creative participants often found ways to push the envelope. Besides branching the stories out into various different directions (a task encouraged by the instructions and the examples), users often experimented with the placement of panels. Notably, one user brought his panels out onto the ceiling. Another created a "worm hole" in the story, causing his character to reappear in a completely different location on the wall and connected his story into another, unrelated story.

This tells me that regardless of what tools and what rules are provided, there are users who will experiment and find new and exciting ways to work inside the parameters while thinking outside the box. One can attempt to design for all these options, but ultimately, it will be the user base that decides what the system will become.

The design should start simply and provide several commonly used tools. Eventually the system will become what the users want it to become regardless of how it was intended. The system's design should evolve continuously based on the users' growing and evolving needs. The idea here is to design a "base case" and let the users decide what additional features are needed as the system expands.

Survey

Summary

I conducted a survey which was intended to gauge interest and potential usage by my target user group – current readers of webcomics. The survey returned no significant results.

Procedures

The survey was created using the Forms feature in Google Docs' spreadsheet application. The survey consisted of 25 questions (see Appendix B). It included questions about comic usage,

social network usage, and general internet usage.

I advertised the survey on several forums attached to popular webcomics, as well as certain other forums which are popular amongst my target user group.

Outcome

Only 13 participants responded. The results were statistically insignificant. This was most likely due to ineffective advertising tactics.

Key insights

Of the 13 respondents, most read both print and online comics, yet none have read a comic that uses the infinite canvas. Very few read comics from their mobile devices. Many have attempted to create their own web comics and most of them have been collaborative efforts. Most users used social networking sites at least once every day. Half of them would rather register than post anonymously.

While statistically insignificant, these results confirm some of my assumptions. I feel that a design promoting social comic creation would be successful among webcomic readers.

Design Research

Sketching

Summary

Sketching was done at each step of the design process. The sketching allowed me to figure out the basic layout and logical structure needed to produce the prototype and final design.

Procedure

I primarily used simple drawing tools to produce my sketches. Tools included a Pentel P205 0.5mm mechanical pencil with Pentel HB Hi Polymer Super 0.5mm lead, blue retractable Sharpie Pen, a box of Crayola washable crayons, and ImagePlus premium multipurpose computer paper.

Outcome

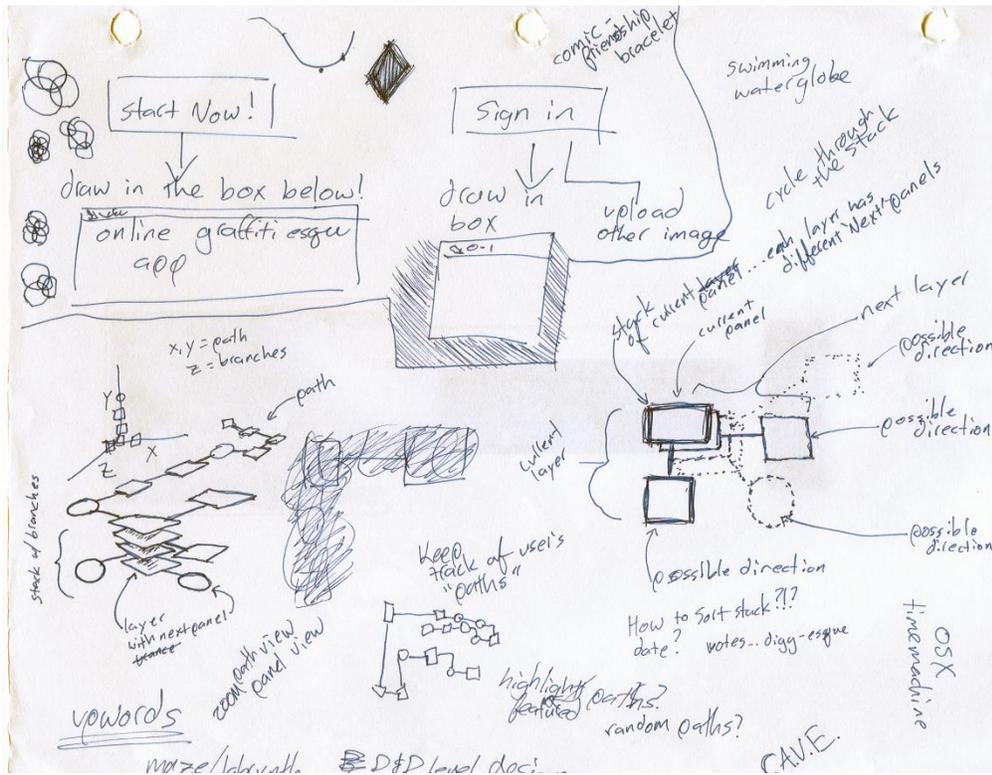


Figure 17- Initial sketching defining the layers metaphor

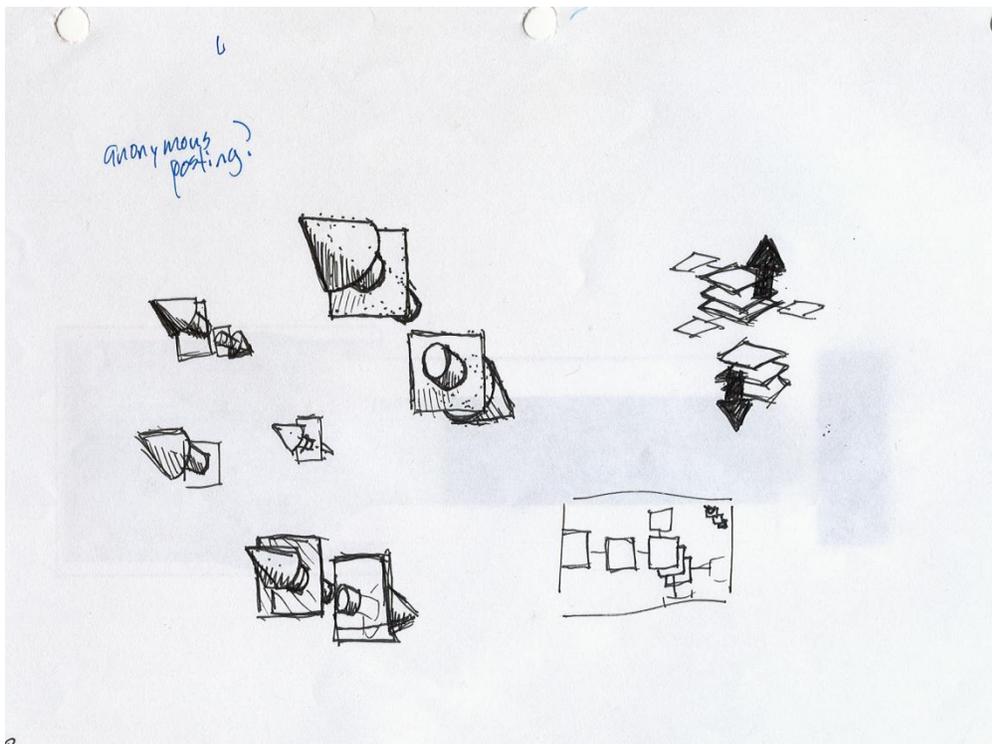


Figure 18- Potential icon designs

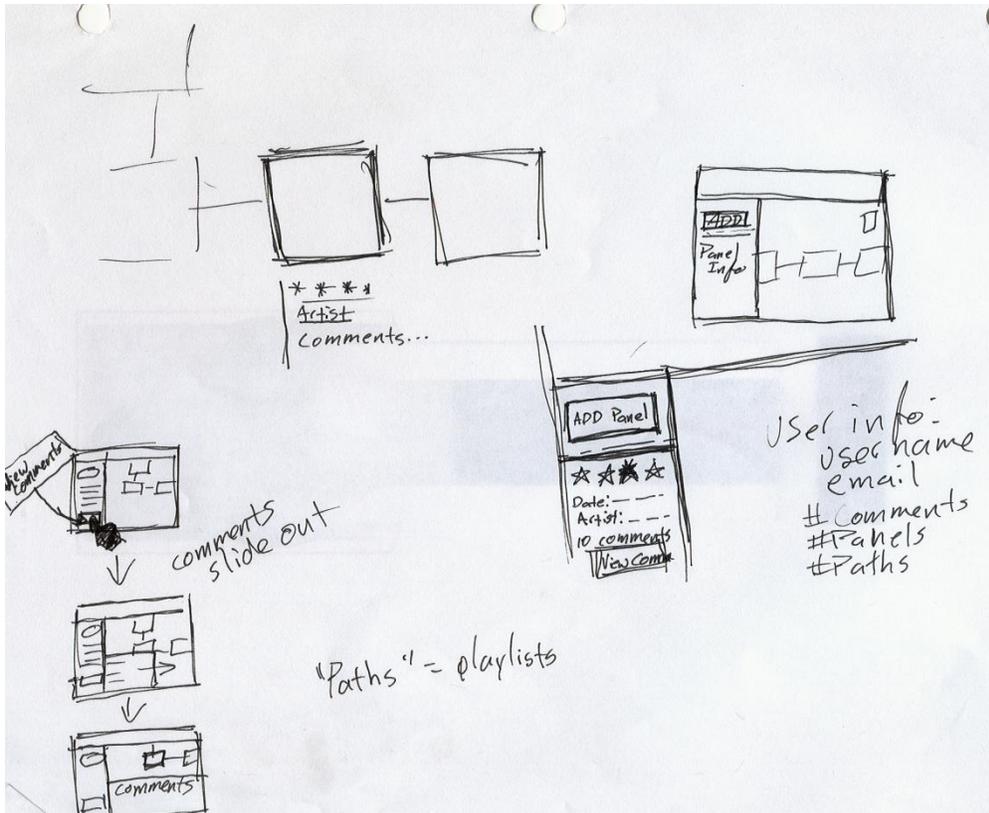


Figure 19- Information layout options

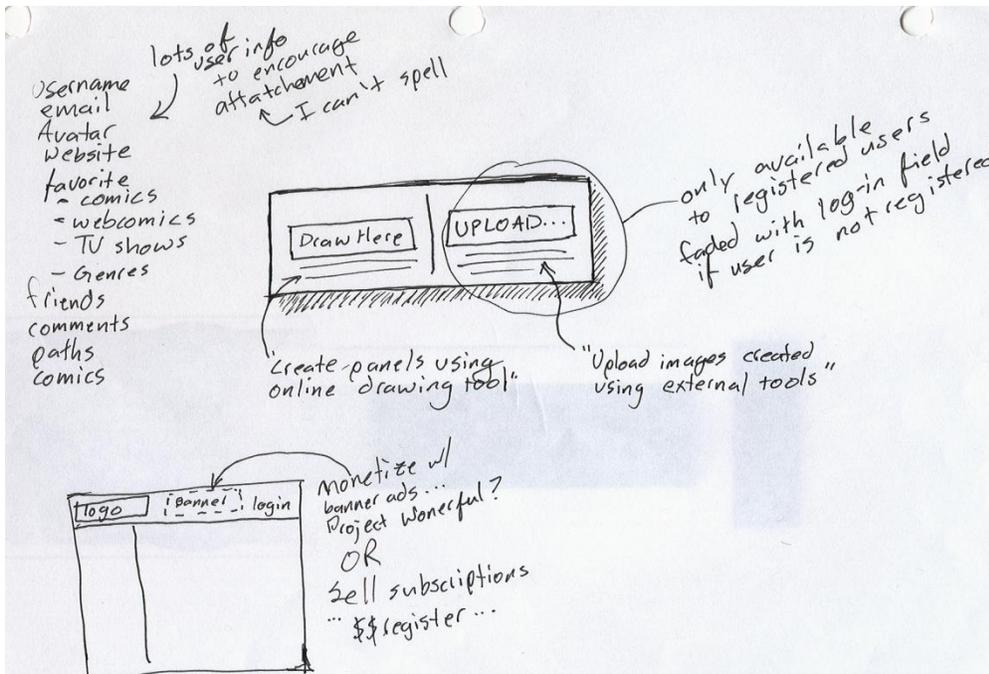


Figure 20- Registration information

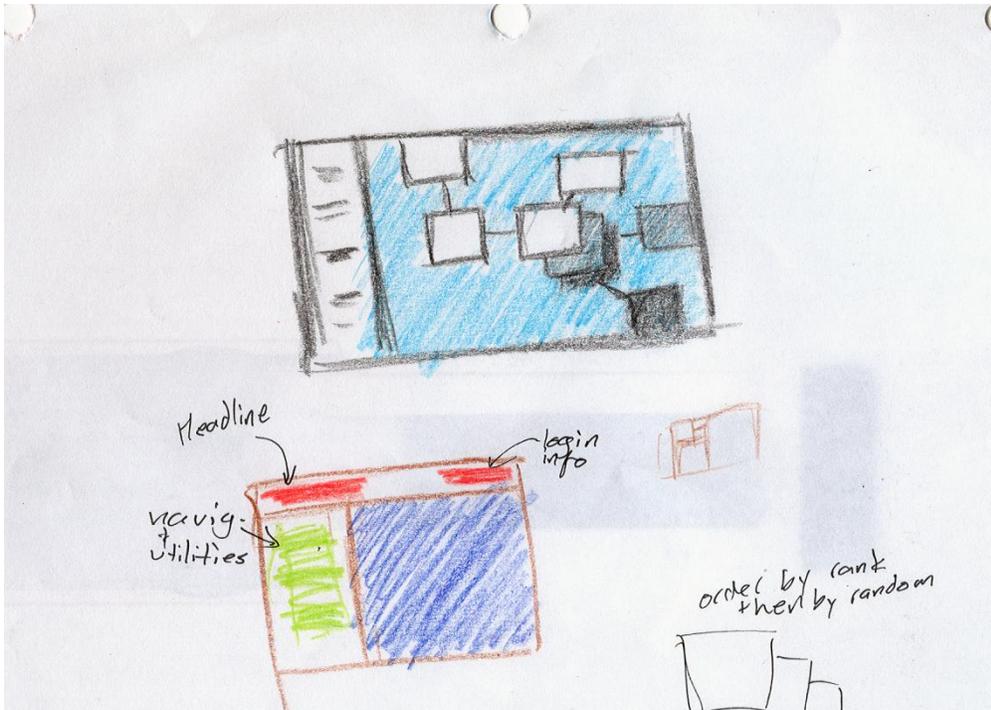


Figure 21- Layout options

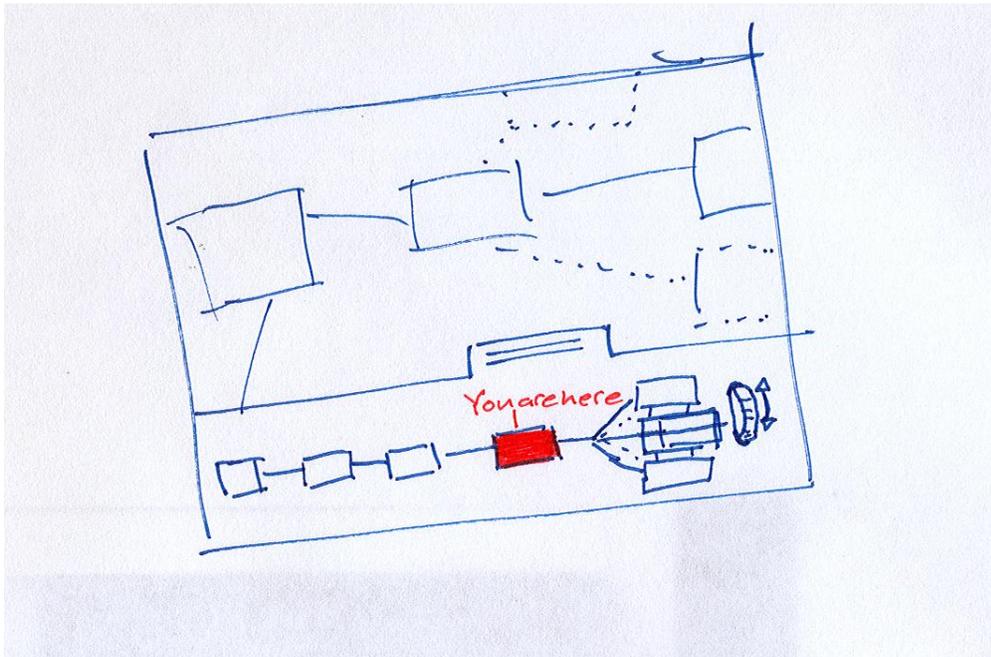


Figure 22- Sketch of the timeline feature

Insights

The insights gained from the sketches were key in determining the 3-frame layout of the app. They were also useful in creating icons which ultimately failed during prototype testing. The

most important thing gained from early sketching was the idea of paths and how they could function in sharing data.

Brainstorming

Summary

I held important brain storming sessions. An early session with Casey Addy resulted in the primary concept which later became the fundamental backbone of my design. A latter session with Binaebi Akah allowed me to overcome a speed bump in key navigational issues. There was a third session with Dane Petersen and Drew McKinney that resulted mostly in confusion.

Procedure

Using a whiteboard and dry-erase markers, my collaborators and I sketched drawings and wrote on the whiteboard to sort out problems.

The brainstorming with Casey also included a sketchbook and pens.

Outcome

The initial brainstorming session with Casey resulted in many of the parts that ended up in the final design. It was early in the process, though, so most of the parts look very different their initial drawings. Some of the features created through this session included the stack metaphor for the options, the saving of paths, sorting problem.

The session with Binaebi resulted in the timeline feature. At the time, I was struggling with a way to display the options. I initially used a stack of layers as the metaphor, but no one understood this. She came up with the idea of using a timeline to represent the story linearly.

The design session with Drew and Dane resulted in my brain exploding. They tried to help solve the problem with the layer metaphor, but ended up looking far too deeply into the problem. Because they didn't understand the idea themselves, they took the project in a completely new direction that completely missed the point of my design. They did make me realize that one main issue was the lack of navigation. At the time, there was no "preview" of the entire story and there was no way to easily navigate between panels from a macro perspective.

Insights

Many of the insights were discussed in the outcome section above. The primary insight was that the stack of options needed to be explained extremely clearly. The fact that the options were thought of as a stack internally didn't matter so much. It was the presentation and metaphor on the client side that needed to be focused on.

Just because the infinite canvas takes advantage of the infinite layout possibilities, the whole systems need not focus on the spatial aspects. Stories occur in time, therefore the story and its options could be laid out in a temporal fashion (a timeline) separately from the actual comic and its spatial layout.

Additionally, there needed to be some kind of overview of the comic, whether that be in the form of a zooming interface, a map, or timeline. Having a navigational system separate from the main comic would not detract from the reading experience, but would actually improve it.

These insights combined resulted directly in the timeline navigational device.

Alternate Reality Discussion

Summary

After the timeline was decided on, I still needed to know how to display the options. I gathered a group of designers and asked each to draw a picture of a timeline with alternate realities.

Procedure

I gathered a group of three fellow designers. I provided them each with a sheet of paper and a writing utensil. I asked each of them to draw a timeline with various events occurring on the timeline. I then asked them to draw an alternate reality deviating from the original timeline at some point. Finally, I asked them draw someone jumping from one reality to another. Upon completion of the drawings, we discussed each drawing as a group.

Outcome

Each participant understood the concept of alternate realities, but drew slightly different variations of the timelines. Their drawings of someone jumping across timelines matched up, though. Additionally, they each had fun with the task, creating completely absurd events on their timelines.

Insights

Through this activity, I learned that people understand the concepts of timelines, alternate timelines, and jumping between them. The timeline interface device had potential, would work well, and be understood by users.

Analysis, Insights, Discussion, and Contribution

There are three main questions that need to be answered in order for my potential design to succeed in its purpose of resurrecting the infinite canvas and making it more mainstream.

1. Are people willing to participate in social story telling?
2. Are people willing to use an infinite canvas?
3. Can these two be combined?

The answer to the first two is a resounding “yes.” Number three is a little more complicated.

The old campfire stories prove that people are definitely willing to participate in social storytelling. People gather around and each tells a part of a story. All of them enjoy the story

being told. And if they don't, they can change it when it's their turn to talk.

Comic jams take this a step further into my direction. Jams show not only that people are willing to participate in social storytelling, but that they do so using comic strips. Like campfire stories, people gather around and tell stories, sequentially, with art. That is exactly what I'm looking for.

Both of these are validated by my Post-It study. That proved that people are willing to take part in social storytelling with art, but also that they can do so without even being together. An asynchronous social storytelling, if you will. And these people are anybody. Comic jams require everyone to be artists, but this study shows that completely unskilled artists will participate, as well.

The Post-It study goes to support the infinite canvas portion, as well. While the wall that was used was anything but infinite, it did show that people were willing to break from the top-down, left-right panel positioning that is typical of comics and that the infinite canvas strives to break.

Of course, the wall was not an infinite canvas, so that might just be speculation. The two infinite canvas engines described in the exemplar research does prove that it is possible for people to do it, and that some do. Of course, that user group is very small. If it weren't, there would be no point to this project.

Broader than the simple engines that allow a single person to create, are the huge collaborative art systems. Webcanvas and Drawball prove that people do use an infinite canvas, even though it isn't for storytelling. Not only does it show that people use infinite canvases, it shows that people collaborate on these infinite canvases. Multiple users are capable of coming together and creating artwork on a huge scale. This leads directly to the third point.

While not used for storytelling, the combination of social media and online artwork does support the third point. Storytelling is not introduced in this combination, probably, because most non-comic artist users don't think of using sequential art to create stories. Even if they do realize it's possible, their lacking art skills may deter them from participating.

The Post-It study once again comes to support an exception. If users see that other users, of equal talent, are using the system to provide sequential art to participate in group storytelling, they are more likely to join in. This is because of peer-pressure, perhaps?

The point is, given the right environment, I believe that people will participate in group storytelling using sequential art on an infinite canvas. The pieces are there. It's just a matter of putting these pieces together and creating the right environment. That is the purpose of my project and the design that will result.

Now that I realized what I needed to do, there were two main questions regarding the design itself.

1. How will people read the comic?
2. How and why will people contribute to the comic?

I decided to focus on the first question for a few reasons. The main reason that the infinite canvas failed in the beginning was that people didn't like to read them due to technological constraints. (McCloud, 2009) Because they took a lot of effort and nobody read them, the artists didn't bother creating them. Since the artist would be taken out of the picture thanks to the social aspect of the solution, I only need to focus on the reading part.

The social aspect itself, which relates to question two, shouldn't be a problem, either. I have enough evidence through testing and research to support that people would be willing to participate. The biggest issue here would be giving the users a reason to participate. If they can't read the comic to see what other people are working on, there would be no reason for them to join in. This goes back to question one.

This is why much of my additional research was done in an effort to solve problems related to reading the comic. The engines described in the exemplar section have many of the basic questions figured out. The main issue making the reading experience enjoyable while catering to such massive amounts of user created content. If I can create that, I will have succeeded in my goal.

Design Process

Conceptual Development

Since I started putting comics onto the web, I've always created them to take advantage of the way websites worked. I would make them tall to take advantage of the vertical scrolling and to hide the punch line below the fold. When I discovered McCloud's infinite canvas, my mind was blown and so I heralded this technology every chance I got. Despite my efforts, however, the infinite canvas is still a much underused comic format that deserves more. Given the chance to spend a year developing a design, I knew that this was the topic that needed to be tackled.

As I researched the infinite canvas, I realized that most of the work has already been done by Microsoft's Ian Gilman with his Infinite Canvas project. This depressed me as I didn't know where to go from here.

I went to a talk by Scott McCloud on October 5, 2010. Here he said the magical words: the infinite canvas did not succeed because at the time, people used the internet as a series of interlinked pages and the technology just wasn't there to support it.

What this meant to me was that the infinite canvas failed because of how the internet was being used at the time. That time was 10 years ago during what we now call "Web 1.0". Currently, we use what is termed the Web 2.0. We use social media and rich internet apps. If the infinite canvas was to succeed in modern times, it needed to take advantage of social media and rich internet apps.

I needed to make online comics social.

After some sketching and discussion, I decided on what would become the basis for the final design. People would be able to add their own panels to an infinite comic where each panel would build on the story. The main problem with this was that if thousands of users were working at the same time, how would each of these users' additions be handled? Would the system take just the last one create? Would it take only the first? Why not take them all?

If a thousand people were working on panel B (which would naturally follow panel A) then each of those panels would be put into a stack. There would be B1, B2, B3, B4, etc. Instead of being a completely linear story, it could branch out into different stories. The next problem was how to show all of these options.

Because the infinite canvas depends heavily upon the x and y axes, spreading all of them out over the place would disrupt the layout and confuse readers. I decided to use the z-axis and show all the options on separate layers that the users could cycle through. I did a few more sketches to determine the basic layouts and decided to make a prototype.

Prototyping

Introduction

While the Post-It study could be considered a low fidelity prototype, it used primarily to test a

concept rather than a design. Because my design required complex interactions dealing with a great number of images moving simultaneously and dozens of possible states, I felt that a paper prototype would be too time consuming to make and too clumsy to use.

My first prototype iteration was actually a PowerPoint slide show using hyperlinked slides. I soon came across the same problem as the potential paper prototype. Because of the dozens of possible states, it would take far too long to construct. Additionally, future iterations would need to be created from scratch, again eating valuable time.

I elected to create the main prototype using HTML, CSS and JQuery. JQuery is a JavaScript framework that allowed me to create a dynamic, web browser based prototype relatively quickly. The initial construction did take some time, but, thanks to my experience as a programmer, it was far less tedious and much faster to produce than the PowerPoint version would have been.

An additional benefit of this type of prototype would be rapid iteration construction. Once the foundation was laid out programmatically, it would be relatively simple to reconstruct the presentation layer. Features such as color changes and buttons could easily be put into place requiring little to no time. Additional features could be implemented as the prototype became higher in fidelity so that more complex interactions could be tested.

Iteration 1

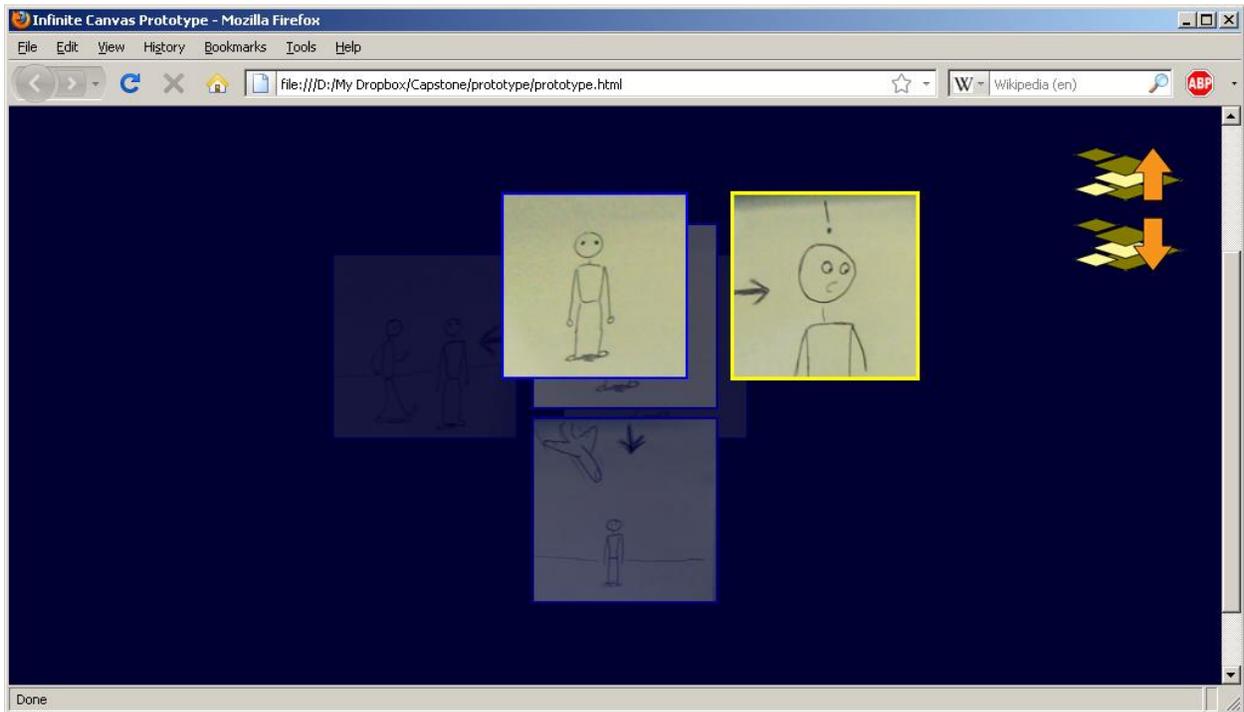


Figure 23- The very first iteration of the prototype

The first iteration was a simple test to see if people understood the layers metaphor that I was trying to use. It offered the most basic of features including the panels and two buttons. Users could use the buttons in the top right corner of the window to cycle through the different layers.

While it functioned properly, users didn't understand the metaphor at all. The buttons' slight animation did help to reinforce what was happening. Overall, however, users couldn't understand the point of the layers since none of the next-panels overlapped.

In order to reinforce the purpose of the layers, I stripped the positional data away from panels, forcing the panels to overlap. The users better understood the purpose of the layers but still responded poorly overall. In other micro-iterations, I experimented with changing the button design, but users still failed to grasp an understanding of the system.

I decided to take a break from testing the layers and focus on other aspects of the overall layout.

Iteration 2

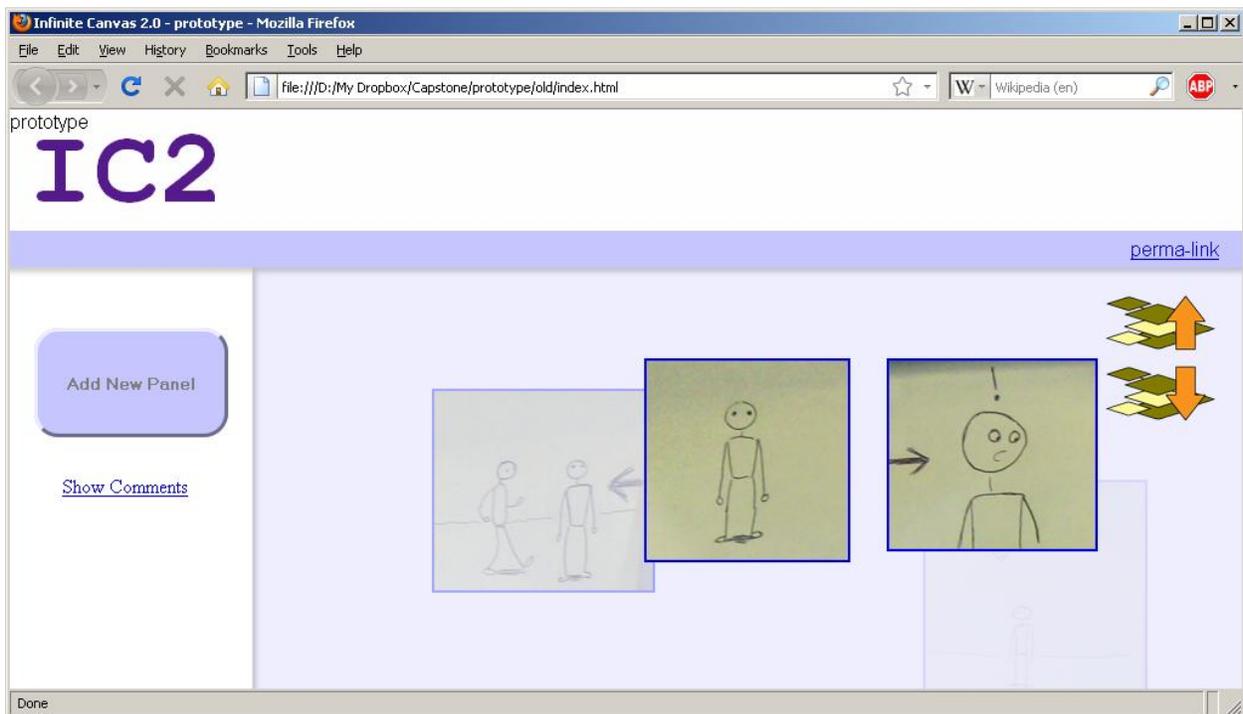


Figure 24- The second major iteration of the prototype

The purpose of this prototype was to experiment with different graphical features of the system. The main differences between this and the previous iterations are the color scheme and the frames.

The social aspects of the system would require more features, such as login functions, comments, and contribution methods. I decided that the use of frames would best serve this purpose. I based both the frame placement and the color scheme on Google Maps. Google Maps is a very usable and popular RIA, so I figured I would copy the best.

Both the frames and the color scheme failed in user tests. The frames served mostly as a distraction to users. They were unable to focus on the content. Additionally the light color scheme was too harsh on their eyes and most stated that they much preferred the dark color

scheme.

Another new feature allowed users to use the mouse scroll wheel to cycle through the options, rather than being forced to use the buttons. This allowed users cycle through options without having to move the mouse around the screen. While users responded very positively to this addition, they were not aware of it until they were informed of its existence.

Iteration 3

The third iteration returned to the dark color scheme. Its primary function was to tackle the frames problem.

Upon first appearance, the user was offered a small round icon in the top left of the screen, in addition to the two buttons at the top right. When clicked, this button revealed the two frames at the top and left of the screen and moved the comic viewer frame over slightly. Clicking the button again hid the frames from view.

Users responded well to this showing/hiding frames feature. They did not understand the small icon, though. This icon was changed to a “page flip” image which animated when mouse hovered over it. By clicking this icon, the animation of the frames’ show/hide mimicked a page being folded down. Users responded well to this change. Some users did mention that this interaction was a bit complex and because it required action on the users’ part, it detracted from the reading experience.

Iteration 4

The next major iteration still focused on the frame situation. This time, the frames would slide out of site after a few seconds, allowing the user to read the comic and take no action to dismiss the frames. The frames could be retrieved and hidden manually by clicking on small tabs that protruded from the edge of the screen.

Another feature new to this iteration was the addition of trails. Trails are simple lines linking two panels together. This reinforced the direction that readers needed to follow from one panel to the next. Users responded positively to this addition. It even enhanced the understanding of the layers metaphor.

Iteration 5

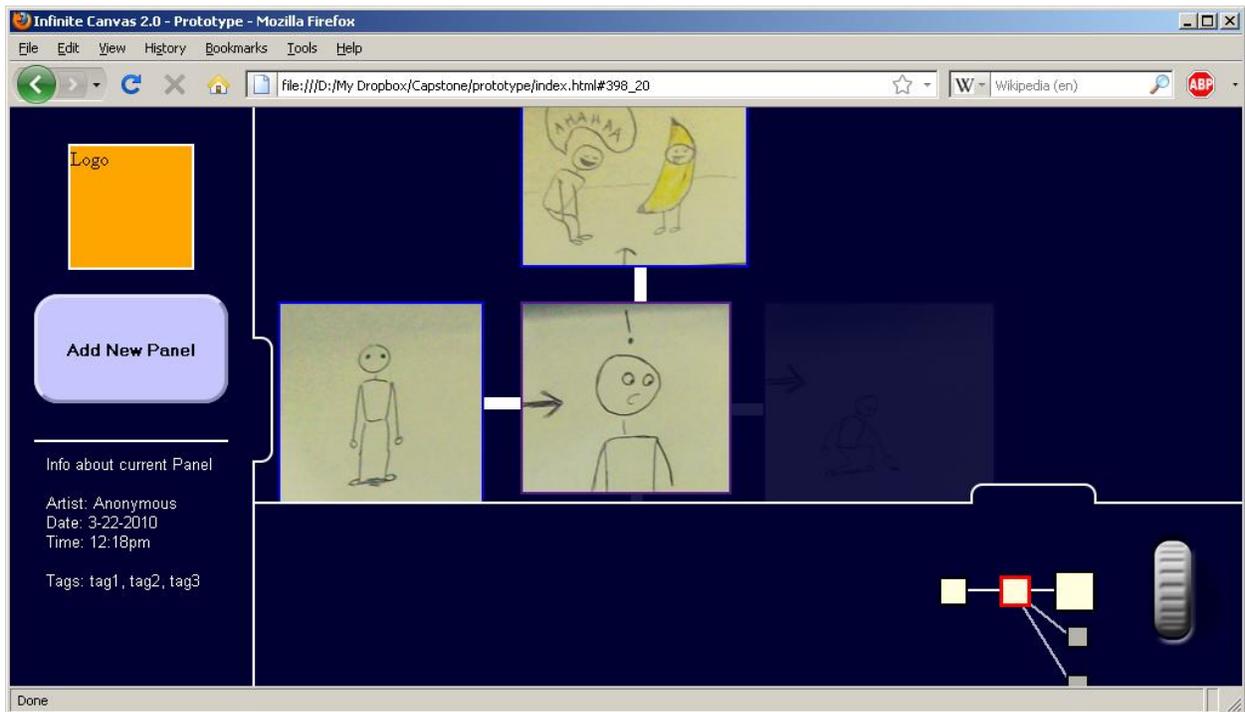


Figure 25- The last major prototype iteration.

After a discussion with Binaebi Akah, I decided to use a timeline metaphor in place of the layers.

This new metaphor allowed the panels in the main viewer area to be laid out flatly, with no indication of where in the stack of panels the user is. The currently selected option is highlighted and in full color, while the other options are simply faded into the background. This allows all the options to maintain their positions in the layout without being obtrusive.

A timeline was placed at the bottom to reinforce the linearity of the story. At the end of the timeline, the options were displayed as branches from the current panel. This reinforced that these options were branches in the story.

This version was very well received by test users. They understood the metaphor relatively well and were easily able to navigate the story. Other features that the users responded well to were kept in place, including the timed sliding frames, the trails between panels and the scroll wheel for changing options.

Some small iterations were made to tweak the interface and refine the usability of the system. This iteration led directly to the final design.

Final Design

Summary

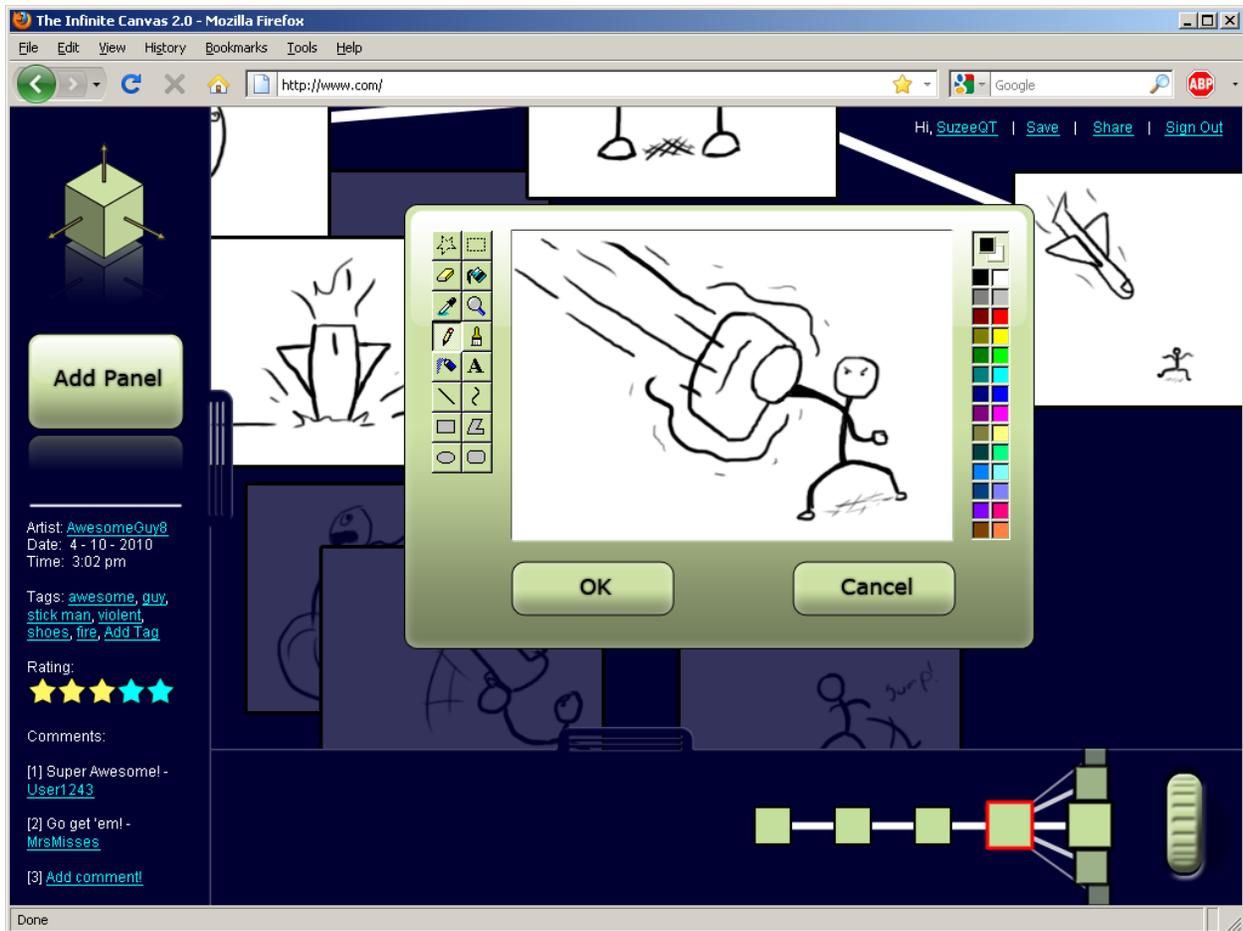


Figure 26- The Final Design

As a whole, the design will essentially be a remediation of my Post-It study. The basic idea is that potentially thousands of people will be able to contribute to a massive online comic. Each user will add to the story by adding a single panel. Users are given an infinite canvas upon which to add their panels in attempt to bring the infinite canvas into a multi-user environment.

The design becomes social through its community contributions. In a way, the simple act of building upon someone else's content makes it social. More transparently, the system requires common social devices, such as tagging and comments, to build a coherent product that will interest both creators and readers.

Public forms of artist-reader interaction is a common occurrence in most webcomics. Artists often create news sections or blogs to communicate current events to readers. Forums and message boards are also often available to readers, resulting in reader-reader interaction. Therefore offering even limited user interaction increases social interactions.

While the social aspect is important, the most important goal of the project is to resurrect the infinite canvas. The only reason that the social aspect is important in this case is because the web is used as a social network rather than a read-only entity. The initial concept failed because of this read-only web that was prevalent between 1993 and 2004. It would have no chance if it was resurrected as a read-only app in a dynamic social web.

The actual design – the app – is primarily a comic viewer. Most users are more likely to stop by, read the comic, and move on. Whether they move on to other websites or move on another story in the comic depends on the user. Regardless, the environment that the user is provided determines how much time the user will spend on the comic.

The most design effort has been given to this viewer portion of the design. The most important aspect of this viewer is the ability to show dozens or hundreds of options that a user can take. Reading and writing these options are dependant solely on the viewer's ease of use. Because there would potentially be thousands of users all adding on to a single panel at a single time, it makes sense to allow the story to branch. How easy it is to choose a branch and how easy it is to make a branch will make or break the design.

The ability to add panels and contribute to the story is the second most important feature. This begins the social aspect and thus the sustainability of the app. If users can contribute, they are more likely to stay around, regardless of their level of contribution – some users may stay solely to see how the comic expands and never contribute any panels. A low barrier of entry is important. The easier it is for users to contribute, the more likely it is that they will.

The last issue is enhancing the social aspect. Taking elements from popular social networks can increase the likelihood that users will return. Users need not only be able to share information, but they must be able to share the comic. Sharing the comic externally can increase the number of users not already familiar with the comic. The ability to share full comics in addition to allowing explorability, will allow users to connect with one another.

Combining these things in the proper manner would create an environment that could successfully bring the infinite canvas and digital comics into the forefront of comics. This could be the very thing to push comics into the Digital Revolution that McCloud suggested. The following sections will describe each of the features in the app and the rationale behind them.

The Infinite Canvas - The Viewer

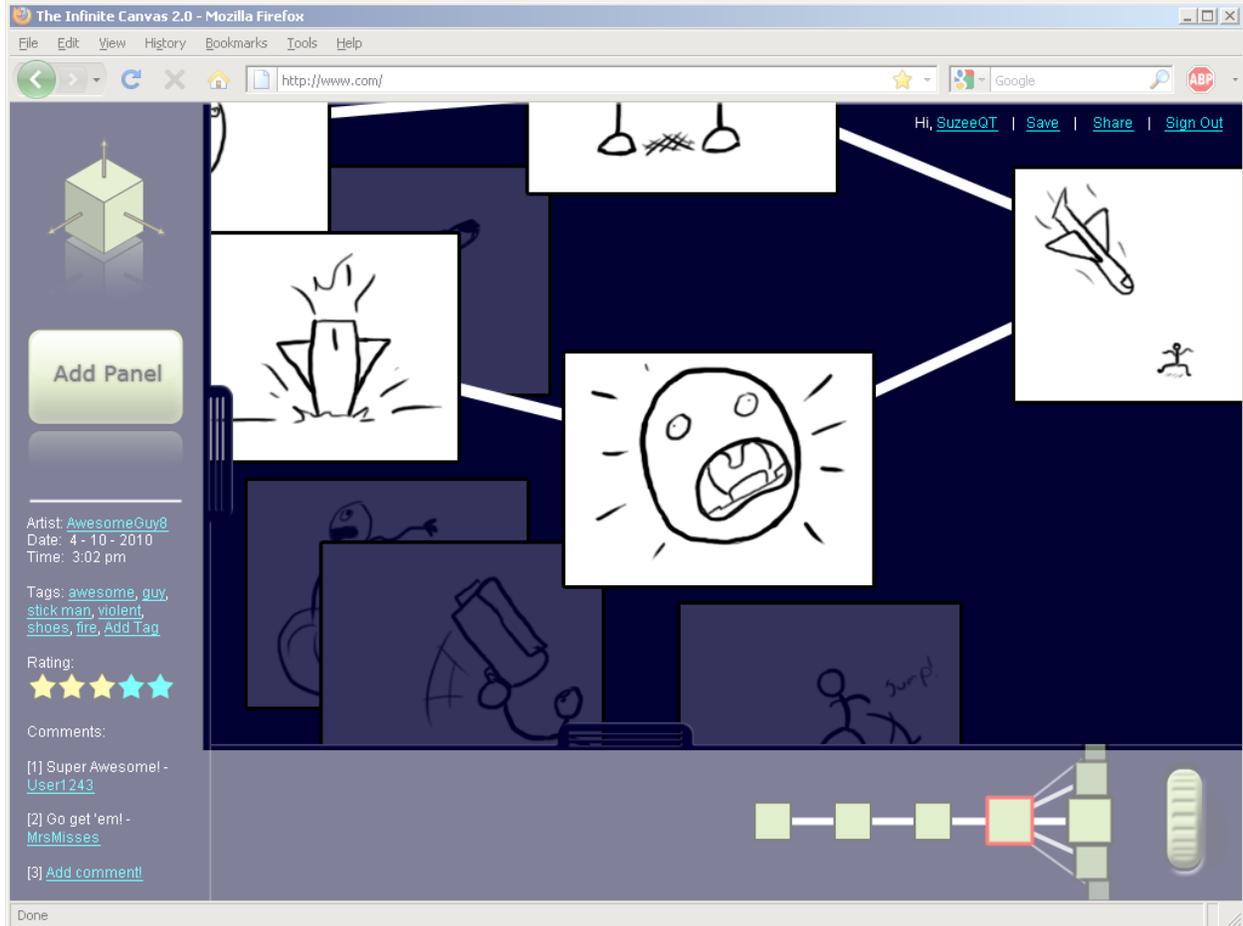


Figure 27- The viewer

Description

The viewer is the most important and largest part of the design.

The viewer fills the entire browser window. The background is dark blue. The panels are all outlined in black borders. Trails connect panels. Portions of the viewer are covered when the side and bottom frames are displayed.

Each panel is a separate image and separate entity. Users are to add single panels at any location on the canvas, thus the viewer needs to support an infinite number of panels stretched into an infinite number of directions.

By default, the panel that is in focus is centered on the screen. The viewer contains all the previous panels in their respective locations, in addition to the default next panel with other potential options faded into the background. The viewer may not display all of the panels in the window and the user may have to navigate to see different parts of the story.

There are no actual controls in the viewer. Users can navigate using various means which are discussed later in more detail. To view other sections of the canvas, the user can grab and drag the canvas around, displaying different parts of the comic. The primary mode of navigation is to click on another panel. This will bring that panel into focus, display its parent panels and the potential next panels.

Rationale

The most important part of the project is to promote the infinite canvas in comic creation. It is impossible to do so without a way to display that infinite canvas to users. If the browser is to be thought of as a window, there needs to be some rich, dynamic application to reinforce this. This is the purpose of the viewer.

One of the reasons behind using an infinite canvas is to reduce the number of breaks that a user experiences while reading the comic. To further this idea, the viewer is made as simple and easily navigable as possible. The background is dark and controls and menus are negligible for this reason.

The solid dark color causes the background to fade away from the user's mind so that he may focus primarily on the comic. During one prototype iteration, I did test a light background inspired by popular apps like Google Maps. Users responded negatively and preferred the dark background. The darkness is easier on the eyes. If the background were a light color, it would be akin to looking into a light bulb which is distracting. The panels should be the light bulbs that the users are focused on.

Navigation controls should be intuitive and require very little explanation. Visual cues such as the cursor icon changing to indicate a link should be enough to communicate the functional area to the user. Any further controls may distract users from the comic. During prototype testing, users actually responded negatively to any icons and I attempted to add in order to easy navigation.

During prototype testing, users consistently wanted to click on the panels to bring them into focus rather than use any alternate method. Additionally, The Infinite Canvas application created by Microsoft Live Labs used a similar method for focusing on a panel. If it ain't broke, why fix it?

The Grab and Drag navigation

Description

When navigating or simply browsing the comic without changing the focus of a panel, the reader can use a type of Grab and Drag navigation. When the mouse cursor is over the background of the viewer – that is, not over a panel – the mouse cursor will take the form of an open hand. By clicking on the background, the user causes the cursor to transform into a closed hand, as if the user has grabbed the back ground.

In fact, this is just what has happened. While the user is holding on to the background, he can drag the whole comic around the viewer, displaying different parts of the comic through the

virtual window. When the mouse click is released, so is the comic.

Rationale

This type of interaction should be familiar to many computer users. It is found in various applications which require the user to navigate a large document.

For example, this grab and drag interaction is found in Adobe Reader and Google Maps. Both of these applications feature the familiar open/closed hand cursor icon to indicate the state of the grab. It is a well established interaction and it would be a mistake to use something different when users already understand it.

The same type of interaction is used in most modern touch devices, like the iPhone and Android based handheld devices. Instead of a changing mouse cursor icon, a simple touch of the screen will grab the page. The user can drag the page or document around the screen by moving their finger.

The Trails

Description

Panels in the viewer area are connected by solid lines that are called “trails”. These are simple lines which offer no purpose other than enhancing readability.

Rationale

McCloud actually suggested such a device while introducing us to the infinite canvas in Reinventing Comics. The idea is to connect each panel with a trail that leads from the last to the next. This way, readers will always know which direction to go despite the panel layout.

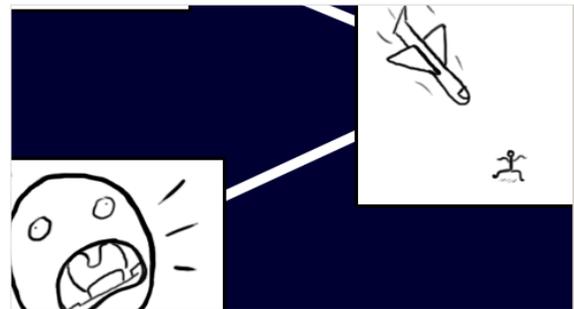


Figure 28- A trail connecting two panels.

Many times, longer comics don't need to bother with connecting the panels physically because the panels are laid out properly and linearly. With such a grand systems as I am proposing, there is no guarantee that users will add panels in a logical location. The trails would be necessary to reduce the breaks in the story. Without them, readers may get confused as to where to look next.

In fact, this was confirmed through the prototype testing. Initial prototypes did not feature trails due to technological limitations. Users were often confused. After the trails were implemented in later iterations, users no longer had problems in understanding the order.

Disappearing/Sliding Frames

Description

In addition to the main viewing area, the application features two main frames on the left hand side and at the bottom of the screen. These frames offer additional features and more navigation options. The left frame contains the application's logo, a large button reading "Add Panel," and additional information about the panel currently in focus including the creator, the time stamp, and tags. The bottom frame contains a timeline that displays the story linearly, not taking into account the panel layout and a scroll wheel icon that is used to cycle through potential next panels.

After a few seconds of browsing the comic, these panels will slide out of view. Small semi-transparent tabs will stick out of the edge of the screen so that the user may reopen the frames to access their contents. These tabs may be clicked while the frames are opened if the user wishes to close the frames manually.



Figure 29- The frame tab

Rationale

Being a rich internet app with many social aspects, the system requires additional features besides the simple reading viewer window. In order to accommodate these additional features, these frames were used.

The main problem with this is that the goal of the infinite canvas is to reduce the breaks in the story. In order to accomplish this, the viewer portion of the system attempts to eliminate as many distractions as possible. The extra frames with the extra options completely defeat this purpose.

When the user first arrives at the application, he is greeted with all available options. As the user takes on the reader roll and begins to get into the story, the options fade away so that the focus can be primarily on the story. According to McCloud's Understanding Comics this should be acceptable. When the user first arrives, he is not yet into the story, so the additional options and distractions cannot pull him out of it. By the time he is into the story, the distractions are gone until the user decides to open them again.

By displaying all the options in the beginning, the user becomes aware of all the options. He becomes aware of a timeline feature at the bottom and of an Add Panel button to the left. According to an eye tracking study, users view web pages in an F shaped pattern. (Nielsen, 2006) To reduce distraction and breakage, it may seem wise to put the left frame on the right side where it will be ignored. By keeping it on the left, however, it reinforces the brand identity and forces people to see the options which they have access to.

The timeline viewer is kept at the bottom because it can be somewhat useful while browsing the comic but should still reduce distraction as much as possible. The same goes for the user information located at the top right. This is very useful information which is displayed all the time in a position of prominence (top), but to keep it from being distracting it is located at the

right of the screen where users are not inclined to focus on.

Timeline and Choosing Options

Description

The lower frame at the bottom of the screen contains a timeline. This timeline displays the panels in the current path of the comic as small squares linked together by a line. This is basically an abstraction that echoes the comic in the viewer. This allows the user to understand their place in the story, rather than the place in the comic layout.

Each panel icon in the timeline is clickable. Clicking an icon will bring the corresponding panel into focus in the viewer and changes the timeline accordingly. The current panel is marked by a bold red outline in the timeline. To the right of the current panel is a branch representing all the options that the reader can choose from. The options are organized in a sort of wheel that can be rotated. The currently highlighted option is at the front of the wheel, and is bigger and bolder than the rest.

To the right of the panel wheel is an icon that resembles the scroll wheel on a mouse. Moving this icon causes the panel wheel to rotate. The actual mouse scroll wheel (or touch pad scroll area) can also rotate the panel wheel.

In the viewer section, all of the potential options that a reader can choose are displayed as panels faded into the background in the location that the artists place them. The currently highlighted option is shown as just another panel in the comic, unfaded and in the foreground. Clicking on one of the faded options in the viewer will highlight that option, bringing it into the foreground and putting the previously highlighted option into the background.

When scrolling the panel wheel in the timeline, the highlighted option will change in both the wheel and in the viewer, allowing the reader to see where in space the panel is located in addition to its place at the end of the timeline. While the options in the viewer are scattered around the viewer in whatever locations that the artist placed them, the options on the panel wheel are organized by a

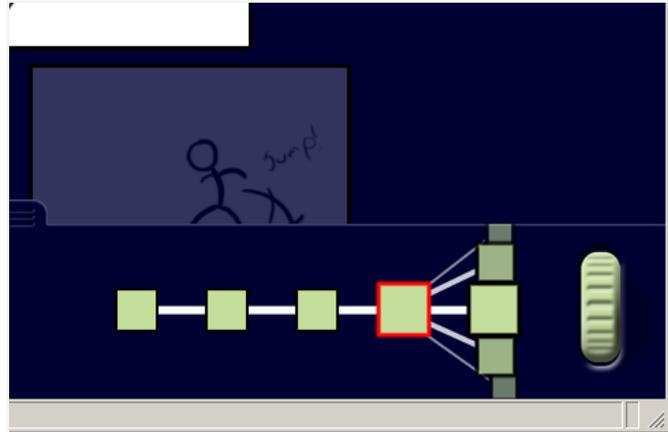


Figure 30-The timeline and the scroll wheel icon

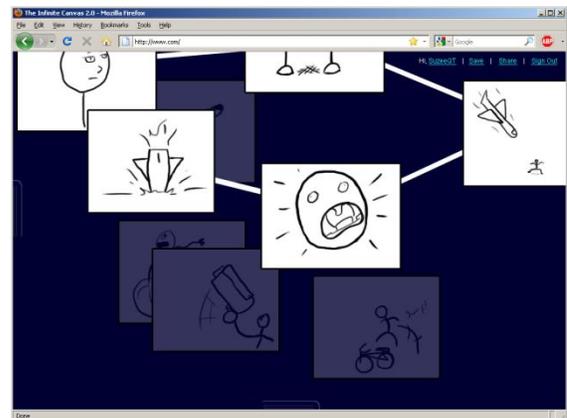


Figure 31-All of the options are faded in the background.

combination of rank, time, and randomness. By organizing the options somewhat randomly, users would be able to experience different stories each time they go through the comic even without using the scroll wheel to choose different options.

Rationale

Because thousands of users could potentially add thousands of panels branching off of a single panel, a device was needed to display the options in a somewhat organized manner. I initially used a layered interface that described the options as a stack of panels in the viewer alone, but this did not effectively communicate the idea of options.

A discussion with Binaebi Akah resulted in the creation of a timeline that described the comic temporally rather than spatially. The main issue was that I was displaying the options only in the viewer. Using a timeline in addition to the viewer would reinforce the temporality of the story. The story happens in time even though the comic is created in space. Describing branches in the story as alternate realities on a timeline seemed to resolve this misunderstanding.

Initially, I used button icons to cycle through the options, but like the layers metaphor, this was unclear (no thanks to my icon building inability). With the introduction of the timeline with a wheel, the up and down buttons were unnecessary. It was only necessary to rotate the wheel of options. Most users have access to a scroll wheel in some form and it only made sense that the scroll wheel be used to rotate the panel wheel.

In addition to the physical scroll wheel of a mouse, a scroll wheel icon was added. This informs the user that a scroll wheel, in some form, can be used to move the panel wheel. This icon can also be used in place of a scroll wheel in the event that a user does not have access to a scroll wheel type device.

By offering the users the option to use a scroll wheel to cycle through the options, there is no real need for any icons or buttons for this operation (unless the user is without a scroll wheel). This allows users to still cycle through the options when the timeline frame has been hidden. If the timeline was hidden, the user would not see the panel wheel rotate, but he would see the options highlight in the viewer, though there would be no indication of where in the “stack” of panels the highlighted option actually is.

One of the things that user testing indicated was that users did not like that the order of the panels in the wheel, and therefore the default highlighted option, was consistent every time. By implementing a sort of randomness to the order, the story would, by default, never be the same. While users could still use the scroll wheel to choose the same options, if the user consistently chose the option highlighted by default, the story would always be random. The randomness would need to be weighed by the rating or some other options, however, so that the reading experience would not be hindered by low-rated, crudely drawn graffiti of male genitalia. The specific algorithm to determine the sort would need to be designed by a programmer with more experience in the area than I currently have.

Logo

Description

The Infinite Canvas 2.0 logo is located in the top left portion of the left frame. The logo is a light green cube with arrows pointing out of all directions. It features a fading reflection of itself directly below it.

Rationale

The logo is based on an icon created by Scott McCloud for representing the infinite canvas on his website. The reflection is used purely to reinforce the Web 2.0 aesthetic.

This is just a place holder logo until a better logo can be created by someone who is not me. Icons and logos have been a weak point in my skill set and this one does not adequately describe the application to new users.

Adding Panel

Description

A large green button reading “Add Panel” is located directly below the logo in the left hand frame. It has the same reflection graphic device as the logo.

This button will allow users to add a new panel to the comic. This new panel will be a branch off of the currently focused panel. Clicking the button will open a dialog box with several options.

The default option is to create a panel online using a simple drawing application. This option will open the drawing application in a dialog box and allow users to draw simple drawings using standard tools common to most paint programs. Some of the tools would include pens/brushes, shapes (like lines and rectangles), erasers, fill buckets, and text. A simple color picker would also be available. While the default size of the drawing canvas would be relatively small, users would have the option to edit the size and shape of the panel.

This online drawing tool would allow users to contribute anonymously without needing to register or log in. Registered users would also have the option to draw online, but would also be able to upload their own drawings created through external applications such as Adobe Photoshop.

Upon completing the drawing or uploading process, the user is instructed to place their newly created panel in the viewer at any location relative to the currently focused panel. While hovering over the background, the mouse cursor changes into a crosshair instead of its usual grab hand. A ghost image of the panel will follow the mouse to aid in placing the panel. Back and Next options are scattered throughout the process to make navigation between steps easy and

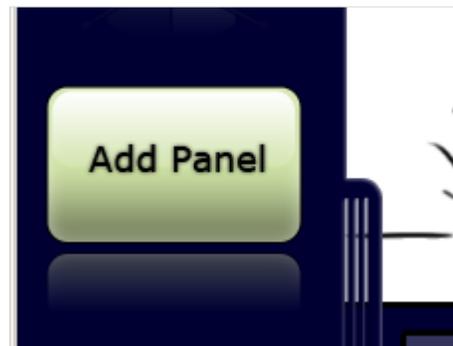


Figure 32- The Add Panel button.

painless.

When the panel has been placed on the canvas, a confirmation box appears to confirm the placement. When the user confirms the panel's placement, the focus automatically switches to the newly created panel. The user is free to add another panel or return to the previous panel using any of the standard navigational devices.

Rationale

To survive in the world of Web 2.0, the Infinite Canvas 2.0 must take advantage of social media, user created content, and rich internet applications. The Add Panel process is IC2.0's main method of achieving this. Users enjoy contributing. By guiding their creative process and making them choose a location for their next panel, we force them to use the infinite canvas. If people learn to use the infinite canvas in a controlled environment, perhaps they would take the techniques and apply them to external projects.



Figure 33- The online drawing application

Regardless of what the users do in future, unrelated projects, the fact is that by using this app, they are using the infinite canvas. If the app succeeds, so does the infinite canvas. I feel that, like Wikipedia, the success of this app hinges on user participation. In order to cultivate user participation, it must be extremely easy to participate but expansive enough that they don't get bored.

Much of this panel addition process is a direct result of my Post-It study.

The Add Panel button is large, green, and located just below the logo, so it is highly visible and, next to the comic itself, should be one of the first things that users see. The size and shape of the button make it obvious and friendly so that users are enticed to contribute. By reading the comic and exploring the site, it should be obvious as to what is going on. When users are ready to contribute, the button is easily found so they should be able to easily understand how to add a panel.

Even when it is hidden with the rest of the left frame's content, the button is always there and always available. It should be obvious to veteran users as well as new and casual users. Everyone should have access to it.

An important insight from the Post-It study was that users wanted to quickly contribute without being forced to waste time with instructions or self-identification. The button is always there, providing quick and easy access to the contribution process. Once started, the process does not require users to register or log in. New and casual users who do not wish to register are quickly given the tools, in the form of the online painting app, to contribute with very little hassle.

Frequent users are given the option to register for an account. Through this account, they can

maintain an identity within the community by having their names attached to their panels. Many users will continue to use the online paint app because it makes it easy and quick to contribute. Other users, however, may outgrow its limitations.

These registered users will be given the ability to upload external images in addition to the online app. Instead of feeling constrained and losing interest, this uploading ability offers a whole new realm of possibilities. It allows users to spend time on their work with external programs like Photoshop. Professional artists can build comics on the infinite canvas while creating their artwork using their familiar creative processes. Other users may wish to work on an entire story offline and upload a whole batch of images at once.

The reason for allowing only registered users to upload content and forcing anonymous users to use the online app is pretty obvious. Using an online art program allows anonymous users to contribute without allowing robots to spam the system with garbage posts or illegal content. Naturally, with enough users, some vandalism and spam would occur regardless, but I feel that a simple self-moderation system would all but eliminate it.

To test the panel adding process, I added this functionality to my prototype. While I did not include an actual paint program, the overall process was the same. Users responded wonderfully to the process. All of the users agreed that the system responded exactly as they expected. I feel that these results indicate that this process would definitely work well.

Artist, Date, and Time

Description

Basic information about the current panel is located in the lower portion of the left frame. The information features the artist of the panel and the date and time that it was created. The artist name is a link to his or her profile page.

Rationale

The information related to the current panel is located in the side bar as opposed to the main viewer. This is again because I do not want to add too much extra info in the main window to distract readers. The information is provided to curious users in case they are interested in that information.

Tags

Description

A list of tags related to the current panel is located on the left side bar. Panels can easily be added by clicking an “add panel” link at the end of the list. Only registered users can tag panels.

Tags allow users to customize their reading experience. When ordering options, the sort algorithm should take into consideration the clicked tag. For example, if a user chooses a tag like “horror,” the default path that the comic would follow would primarily follow a horror story.

Rationale

This is was one of the most requested features during prototype testing. While complaining about the consistent default options, users often suggested having them ordered by genre or some other categorization. The most popular ad versatile categorization system used in many Web 2.0 apps is a tagging system. This allows users to create all kinds of categories in addition to simple genres.

Like many other registration only features, anonymous users cannot tag panels in order to reduce the occurrence of spam and vandalism.

Ratings

Description

Below the tag list is a 5 star rating for the panel. Registered users can give panels a 1 to 5 rating. These ratings are used to aide in ordering the choices. Higher rated panels are more likely to be used as the default panel in the stack of choices.

Rationale

The order of panel options should be fairly random so that readers will never get the same story twice. Readers are more likely to respond to better panels. If the order were truly random, there would be a greater chance that the garbage panels of crudely drawn penises would be the default option. This would probably turn off users. If better panels were rated higher and garbage panels were rated lower, this would not be an issue. Having more attractive panels higher in the stack would improve the reading experience.

Comments

Description

Below the ratings, registered users would be able to leave short comments. These comments would be limited to 200 characters. Comments would be accompanied by the username and the time they were posted.

Rationale

Users in testing did not show much interest in comments. Most social media sites, however, allow users to add comments to the media. Allowing users to add comments could improve the collaborative opportunities for users and strengthen the community.



Figure 34- From top to bottom: Artist, Date, Time, Tags, Rating, Comments

The comment area is limited in size, so the comments should have a length limit in order to prevent overflow. Twitter is a popular social media application that limits posts to 140 characters. This number of characters allows users to add complete thoughts while limiting spam and fluff.

Login

Description

The login information, as well as the Share and Save options, are located in the top right corner of the screen. Unlike the two frames (left and bottom), these options do not slide out of the way. Instead, they fade after a few seconds. They will return to full 100% opacity when a user moves the mouse over them.

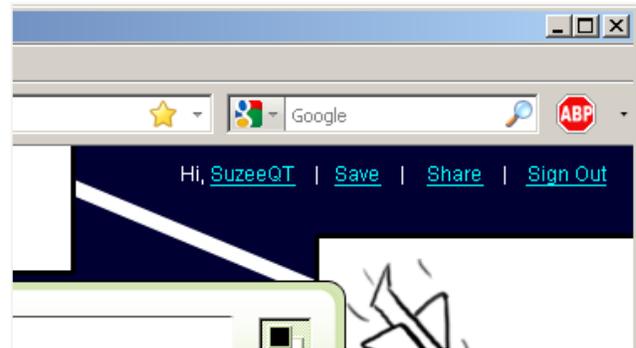


Figure 35- The Login info at the top right corner

When logged in, users will see their username with a link that will take them to their profile. The Save option will appear so that they can save a particular path to their profile and a “favorite path.” The Sign In link will be changed to a Sign Out link.

The Share link will take the user to a small dialog box. Users will be shown a URL that will allow them to link others to that particular path. Additionally, they will be able to email the path to a friend and can add a short message to personalize the email. If a user is logged in, they will also see a “Share with Other Users” option which will act like the email option, except that the link will be sent directly to that selected user, rather than an email address.

Rationale

I feel that saving and sharing paths would be the most used features, especially for read-only users. This is why I’ve elected to place these options at the top right. Additionally, having these links at the top right all the time would encourage users to use the features.

The links fade for the same reason that the two frames slide out of view – to reduce the distractions when reading the comic. I didn’t want to completely hide these options for the reasons mentioned above. With these links featured relatively prominently users will be encouraged to use them and not forget about them.

User Profile

Description

Registered users are given access to a profile. This profile will allow users to add personal information and connect with other users. Examples of potential information would include real name, email address, likes and dislikes, and date of birth. Additional information like the length

of membership and username would also appear on the profile page.

Users are given the option to have a “wall” on their profile where other users may post messages and links. The wall posts can be set to either public or private at either the wall or post levels. Users can also turn off their wall entirely.

Viewing and editing a profile occur on the same page. If a user is viewing his own profile page, each section will have an “edit” link that will allow that user to edit that section. When viewing another user’s profile, this edit option is not available.

In addition to general user info and the contact wall, there will be a list of saved paths. Saved paths will allow any user to view a whole story without having to make the choices required to get to that story.

Rationale

According to Jawad Shuaib, users are more likely to return to a social media site if they’ve been able to customize their account. (Shuaib, 2008)

In this case, they are customizing their profile. Basic information is available simply through the registration process. Other additional information can be added by the user. This information can allow users to find and connect with one another. Connecting with other users is integral to a social network.

The wall is also an important part of the social aspect. It is a communication hub that eliminates the need for special inboxes. Some users wish their account to be private, and so they can set that option. All communication will be between the user and the poster. Additionally, posters can elect to make their posts private so that only the receiver can view them. In general, however, posts are public by default so that conversations can be joined by anyone.

Saving paths will allow users to revisit stories that they find compelling without having to search for the specific options that were required to get that story. Having a list of saved paths allows other users to view stories that the current user has saved. This has the added benefit of allowing a user to construct a specific path based on stories that he has created by adding panels and using this as a way to archive the complete story which they can then send to other users.

Shared Paths

Description

If a user discovers a story of particular interest, he’s able to share that story with others. Clicking the “Share” link at the top right of the screen will bring up a dialog box that will allow users to share that path. There are three options.

The first option is to copy and paste a special URL. This URL can be sent to friends via instant message or posted to blogs. The URL will bring a user to the beginning of the story with the whole path already laid out so that they may read the story without needing to make any choices.

The second option is to send an email. Users can input an email address and a short message. The message is sent along with the URL to the specified email address.

The last option is to send the path to another registered user. Again, a short message can be entered but this time, instead of an email address, the user simply inputs the username. The message and URL are posted to the recipient user's wall.

Rationale

An important piece of a social network is the ability to share content. Sharing promotes interaction between users. If users are able to share their work, they are more likely to create things. This is the primary function of sites like deviantArt. People upload their work so that they can share it with other members and other audiences.

Using a simple URL for content sharing opens up many opportunities. The URL acts as a basis for the other two built in sharing functions – the email and internal sharing. In addition, it allows external outlets to share the content and increase awareness. Bloggers are able to post links to paths and write reviews of stories. Users can submit the links to Digg and other news aggregators. Artists can build their own series of stories or begin running their own comic using the Infinite Canvas 2.0 as a platform and be able to link to the stories and paths that they've created. In short, this allows users to bring their content out of the system and spread it over the web.

The other two sharing functions offer quick, built-in sharing options. The email option makes it easy to send to friends. This would bring in more external traffic, like posting the URL on blogs and such. By using emails, however, there would be no need to create a new blog or submit anywhere else.

The internal sharing mechanism helps to foster a sense of community within the system. It allows users to easily share their contributions with other users. One of the neat things about deviantArt and other content focused communities is that often users will create content specifically for other users. Making an easy way for users to share their content with other users could provide a means to create this sense of community.

Strategy

Deployment would be relatively simple. The front end of the app could be build primarily with JavaScript and CSS. The back end could run on PHP and MySQL. With a handful of good developers, this project could be implemented in a couple of months.

The system is designed to be used by many concurrent users. As such, the implantation should scale well. It needs to work just as well with ten people as it works with thousands. It will start small with a bunch of beta testers, but has the potential to grown rapidly.

This growth will be directly proportional to the amount of advertising put forth. The system is designed to keep users, but, apart from single users sharing single comics to single friends, there is no built in function for gaining users. Advertising would be crucial in the early stages of deployment, as it is with all digital comics.

This advertising should take the form of common banner ads on high traffic pages of other webcomics. Additional steps to increase viral marketing, such as interviews, blog posts, and endorsements should not be overlooked. Initial advertising should be consistent in order to build up a presence. At some point, the app will become popular enough that advertising could be decreased, as the sharing and word-of-mouth will maintain the user influx.

Immediate growth should not be expected. By observing webcomics for over a decade, I've come to realize that it could take years for this project to catch on. Consistency in quality and customer assurance is key in the early stages. If quality content is consistently added, the number of users will increase over time.

As the user base grows, the amount of content will grow. Eventually the costs of maintaining the system will be increased beyond what is available to the owners and administrators. At this time, a more concrete strategy to monetize the system will need to be put into place.

An advertising based revenue model seems like it would be the easiest and most efficient model. Ads could be placed on the home splash screen. Ads could be placed on the sidebars or near the timeline. There is also potential for commercial sponsorship by allowing sponsors to add advertisements to specific story lines.

I believe an ad based model would be the wrong way to go, however. Ads would become intrusive to users and distract readers from being absorbed into the story – the very point of using an infinite canvas as a storytelling mechanism. Unless the ads were very strategically positioned and relevant to user interests, I don't believe they would be effective in bringing in enough revenue anyway.

Unfortunately, I don't have a solution for this. The primary purpose of this application is to raise awareness and resurrect the infinite canvas as a viable creative medium. It is meant to be and enjoyable platform for users to create comics and participate in social storytelling.

If an implantation grows to the point that it will no longer be able to be maintained by its creators, I think that, by itself, would have accomplished its goal. The comic community would undoubtedly become aware of its presence. If the community deemed it important enough, I feel

that it could survive based primarily on the donations of users and sponsors.

At a time when the system can no longer survive financially or technologically, I see no reason that it could not be open sourced. If the code base is there and easily available, other, smaller implementations would arise serving niche purposes well beyond its original life. The project's legacy would be in its children and, hopefully, in the impact to the comic industry as a whole.

Conclusions

I feel that this design adequately fulfills the criteria I've set for it. It allows users to easily read a comic created on the infinite canvas. It allows users to easily contribute to a comic created on the infinite canvas. It allows users to connect with one another. Readers can become creators and creators can take advantage of previously unknown technology. I would say that the design definitely lives up to the title of the project – Technological Innovations in Social Storytelling with Sequential Art.

That said, its success at my ultimate goal – to resurrect the infinite canvas in Web 2.0 – remains to be seen. A clear metric as to its success would be how much people are talking about it. But to gauge this, it would need to be implemented and launched. People would have to be given a chance to use it. That's where we will discover its overall strengths and flaws. "If something's gonna happen, it'll happen out there." (Eberhardt, 1992)

And there will be flaws. No design is perfect. It is good enough for the time being, though. With more time and effort, more of its deficiencies can be enhanced.

For instance, while this design is good at allowing users to interact with the comic, it is not so good at allowing users to interact with one another. It has the most basic of user-to-user communication systems in the form of the profile walls and panel comments. This is one area which should be enhanced.

User to user interaction was not the main goal of this project, however. The goal was allowing users to utilize the infinite canvas, and I feel that it achieves this. In the future, perhaps more can be done to enhance this area as well. More research into zoomable interfaces and comic theory could be taken into account. Naturally, sorting algorithms would have to be researched heavily.

The most important thing is that this design serves as a foundation. If it's successful, then it's one step closer to the digital revolutions that McCloud talks about. (McCloud, 2000) That's what I care about. This could be the start of the future of comics.

Acknowledgements

I would like acknowledge the following people for their part in my accomplishments: Allison Cooke for her continued love and support, Drew McKinney for keeping it real, Binaebi Akah for pushing the design over a major speed bump, Casey Addy for keeping me fit, my family for their emotional and financial support, Eli Blevis for photography rules and making me an honorary Canadian, Charles Page for hunting small furry creatures, all the participants of my Post-It study, the faculty of IU's HCI/d program, all of my HCI/d classmates, Bloomington Hospital for trying to kill me, and all the folks who helped and supported me while I was busy dying.

Biography

Ben Serrette is an immigrant to Bloomington, Indiana from Lafayette, Louisiana. He was born and grew up in Southern Louisiana. He holds a Bachelor of Science in Business Administration with a major in Management of Information Systems from the University of Louisiana at Lafayette. At the time of this writing he is currently attending Indiana University, working towards a Master of Science in HCI/d.

Ben has been actively constructing web content for more than ten years, having worked as a web programmer and web cartoonist. His ultimate goal is to create comics for a living and eventually be invited to speak at the San Diego Comic-Con.

References

- Abel, Jessica and Madden, Matt. 2008.** *Drawing Words & Writing Pictures: A definitive course from concept to comic in 15 lessons.* New York : First Second, 2008. 978-1-59643-131-7.
- Buxton, Bill. 2007.** *Sketching User Experiences.* San Francisco : Diane Cerra, 2007. 978-0-12-374037-3.
- Eberhardt, Thom. 1992.** *Captain Ron.* Touchstone Pictures, 1992.
- Eisner, Will. 1985.** *Comics and Sequential Art.* s.l. : Poorhouse Press, 1985. 0-9614728-1-2.
- Lee, Stan and Buscema, John. 1986.** *How to Draw Comics the Marvel Way.* s.l. : Titan Books Ltd, 1986. 978-0907610663.
- McCloud, Scott. 2006.** *Making Comics: Storytelling Secrets of Comics, Manga and Graphic Novels.* s.l. : Harper Paperbacks, 2006. 978-0060780944.
- . **2000.** *Reinventing Comics: How Imagination and Technology Are Revolutionizing an Art Form.* s.l. : Harper Paperbacks, 2000. 978-0060953508.
- . **2009.** scottmccloud.com. *The Infinite Canvas.*"[Online] February 2009. [Cited: March 26, 2010.] <http://scottmccloud.com/4-inventions/canvas/index.html>.
- . **1994.** *Understanding Comics: The Invisible Art.* s.l. : Harper Paperbacks, 1994. 978-0060976255.
- Motley, Tom and Madden, Matt.** ComicsJam.pdf. *First Second.* [Online] [Cited: April 23, 2010.] <http://www.firstsecondbooks.com/pdf/ComicsJam.pdf>.
- Nielsen, Jakob. 2006.** F-Shaped Pattern For Reading Web Comic. *Jakobb Nielsen's Alertbox.* [Online] April 17, 2006. [Cited: April 20, 2010.] http://www.useit.com/alertbox/reading_pattern.html. 1548-5552.
- Shuaib, Jawad. 2008.** Anatomy of a Successful Social Network. *Jawad on Web 2.0.* [Online] December 18, 2008. [Cited: March 30, 2010.] http://jawadonweb.com/?page_id=892.

Appendix A

HEY, YOU

You are looking at an experiment in collaborative comic creation.

You can help by following the instructions and contributing to the story.

Instructions

- 1) **Read** what's already on the wall. You can **start anywhere!**
- 2) Find a point where you would like to **branch or further** the story.
- 3) Use a sticky note, pencils and crayons to **create a new panel**
- 4) **Put your name** on the back of the sticky.
- 5) **Stick it on the wall** near the panel that you continuing from.
- 6) **Draw an arrow** on your new panel indicating the direction the reader came from.
- 7) **Sign your name and time** on the back of this card.
- 8) **Come back** from time to time.

Can't draw? That's fine! **Stick figures** and speech bubbles are more than acceptable.

Your help is greatly appreciated!!

Appendix B

Webcomics Survey

Thank you for participating in this survey. You may stop participating in this survey at any time. Personal information will only be used by the administer of the survey, will never be given or sold to a third party, and is completely optional.

* Required

Comic Reading Habits

How many PRINT comics do you usually read in a month? *

- None
- 1 - 3
- 4 - 6
- 7 - 10
- 11 - 15
- Other:

How many WEB comics do you usually read in a month? *

- None
- 1 - 3
- 4 - 6
- 7 - 10
- 11 - 15
- Other:

Have you heard of The Infinite Canvas? *

- Yes
- No

Have you ever read an infinite canvas comic?

- Yes
- No

Comic Creation Habits

Have you ever considered creating your own comic? *

- No, never
- Yes, I've thought about it
- Yes, I started a comic, but stopped working on it
- Yes, I currently work on a comic

If you have created a comic, how long have you worked on it?

If you have created a comic, have you ever attempted to use the Infinite Canvas?

- Yes
- No

If your comic is a collaborative effort (different writers, artists, etc), how many people work with you?

- 1
- 2
- 3
- 4
- Other:

Have you ever participated in a "comic jam"?

- Yes
- No

Social Networking Habits

How often do you frequent comic related message boards? *

