

Dennis Ludvino

postScript writing in the Late Age of Print

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**scrimp** (skrĭmp) ▶ *v.* To economize severely. [Perh. of Scand. orig.] — **scrimp'er** *n.*

**scrim·shaw** (skrĭm'shō') ▶ *n., pl. -shaw* or **-shaws** **1.** The art of carving on whalebone or whale ivory. **2.** An article made in this way. [?]

**scrip**<sup>1</sup> (skrĭp) ▶ *n.* Paper money issued for temporary emergency use. [Poss. < SCRIPT.]

**scrip**<sup>2</sup> (skrĭp) ▶ *n.* A provisional certificate entitling the holder to a fractional share of stock or of other property. [< *subscription receipt*, receipt for a portion of a loan.]

**script** (skrĭpt) ▶ *n.* **1a.** Handwriting. **b.** A style of writing in cursive. **2.** The text of a play, broadcast, or movie. **3. Comp. Sci.** A simple program, esp. in an application's proprietary language. ▶ *v.* To prepare (a text) for filming or broadcasting. [< Lat. *scriptum*.] — **script'writ'er** *n.* — **script'writ'ing** *n.*

**Scrip·ture** (skrĭp'chər) ▶ *n.* **1a.** A sacred writing or book. **b.** A passage from such a writing or book. **2.** often **Scriptures** The Bible. **3. scripture** An authoritative statement. [< Lat. *scriptūra*, writing.] — **Scrip'tur·al**, **scrip'tur·al** *adj.*

**scriv·en·er** (skrĭv'ə-nər, skrĭv'nər) ▶ *n.* A scribe or author. [< OFr. *escrirein*.]

**scrod** (skrōd) ▶ *n., pl. scrod.* A young cod or haddock. [Poss. < obsolete Du. *schrood*, *shrod*.]

**scroll** (skroʊl) ▶ *n.* **1.** A roll, as of papyrus, used esp. for writing a document. **2.** Ornamentation



This thesis is submitted in partial fulfillment of the requirements for the degree of Master of Fine Arts in Design, and approved by the MFA Design Review Board of the Massachusetts College of Art and Design in Boston, Massachusetts.

May 2010

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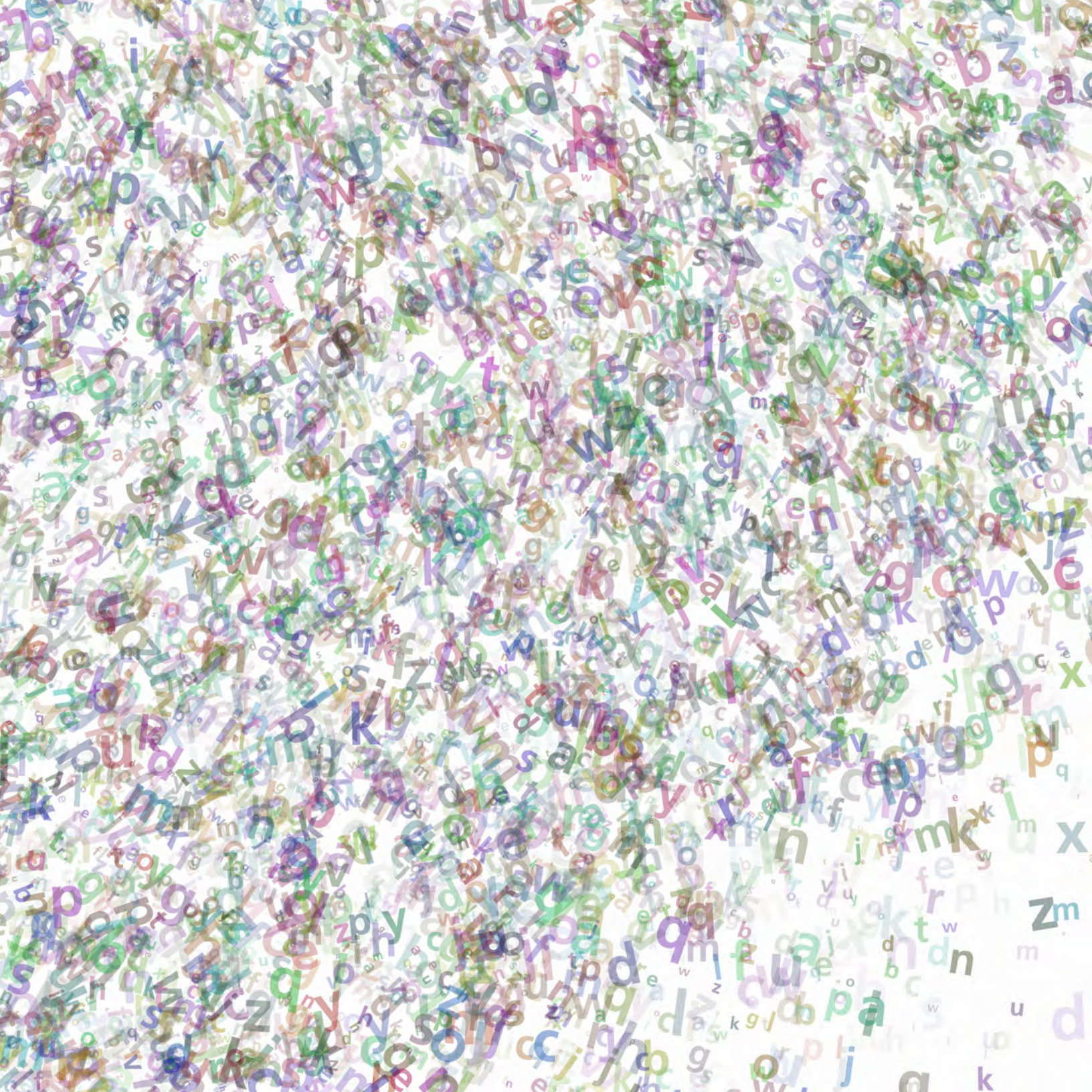
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# postScript:

Writing in the Late Age of Print

d e c n i s / u d v i n o

b

© 2010 Dennis Ludvino | Feel free to borrow, steal, or completely disregard any part of this book



None of this work would have been possible without the tireless dedication of my mentors, professors, advisors, and peers at the Dynamic Media Institute at MassArt. The last three years have been pure joy and I am immensely grateful for all I have learned. Thanks to Jan Kubasiewicz for telling me when my ideas were *fantastic*, and, more importantly, when they weren't. I'd like to especially thank my advisors Gunta Kaza and Joe Quackenbush for their endless support.

. . . but mostly, to Krista: "And the tree was happy."



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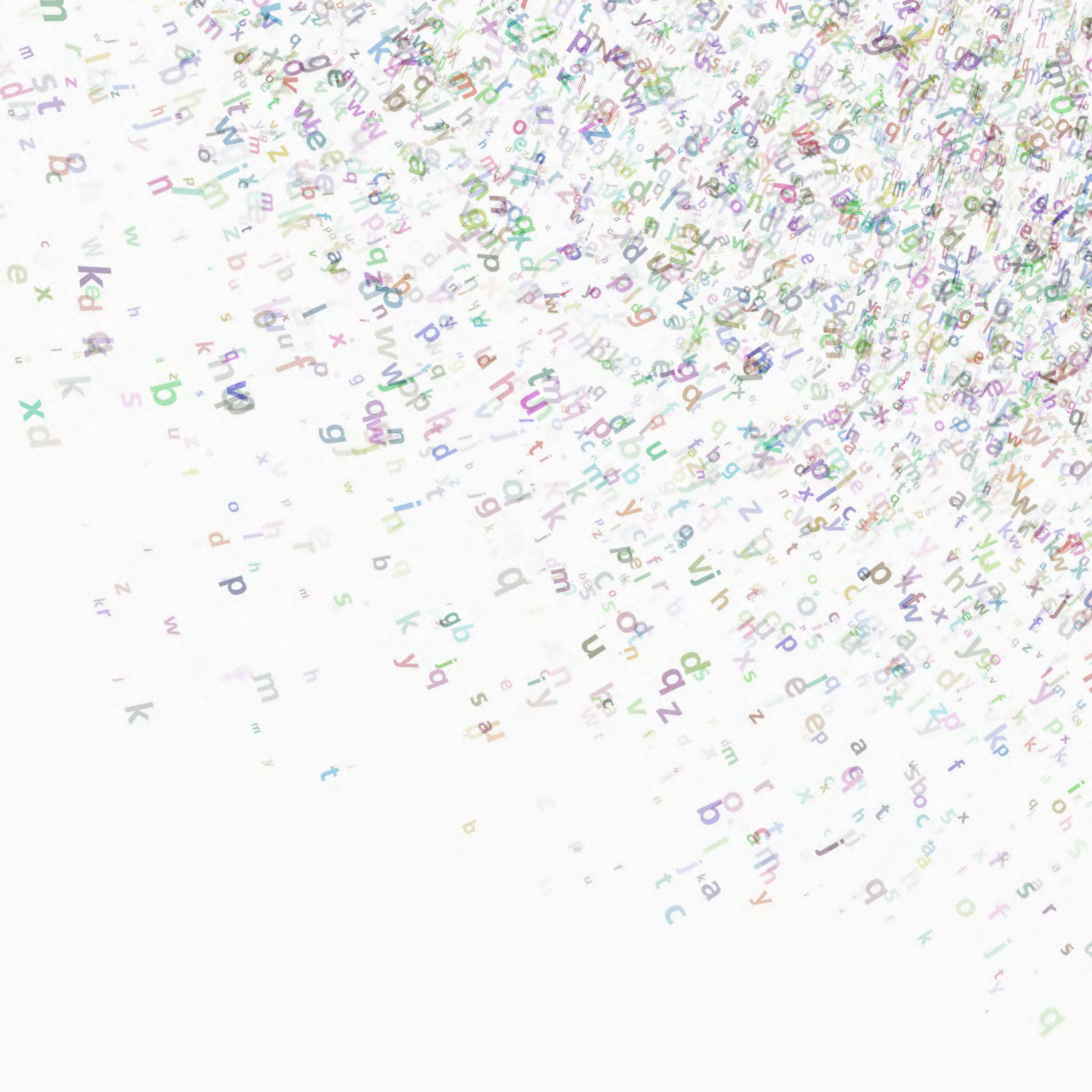
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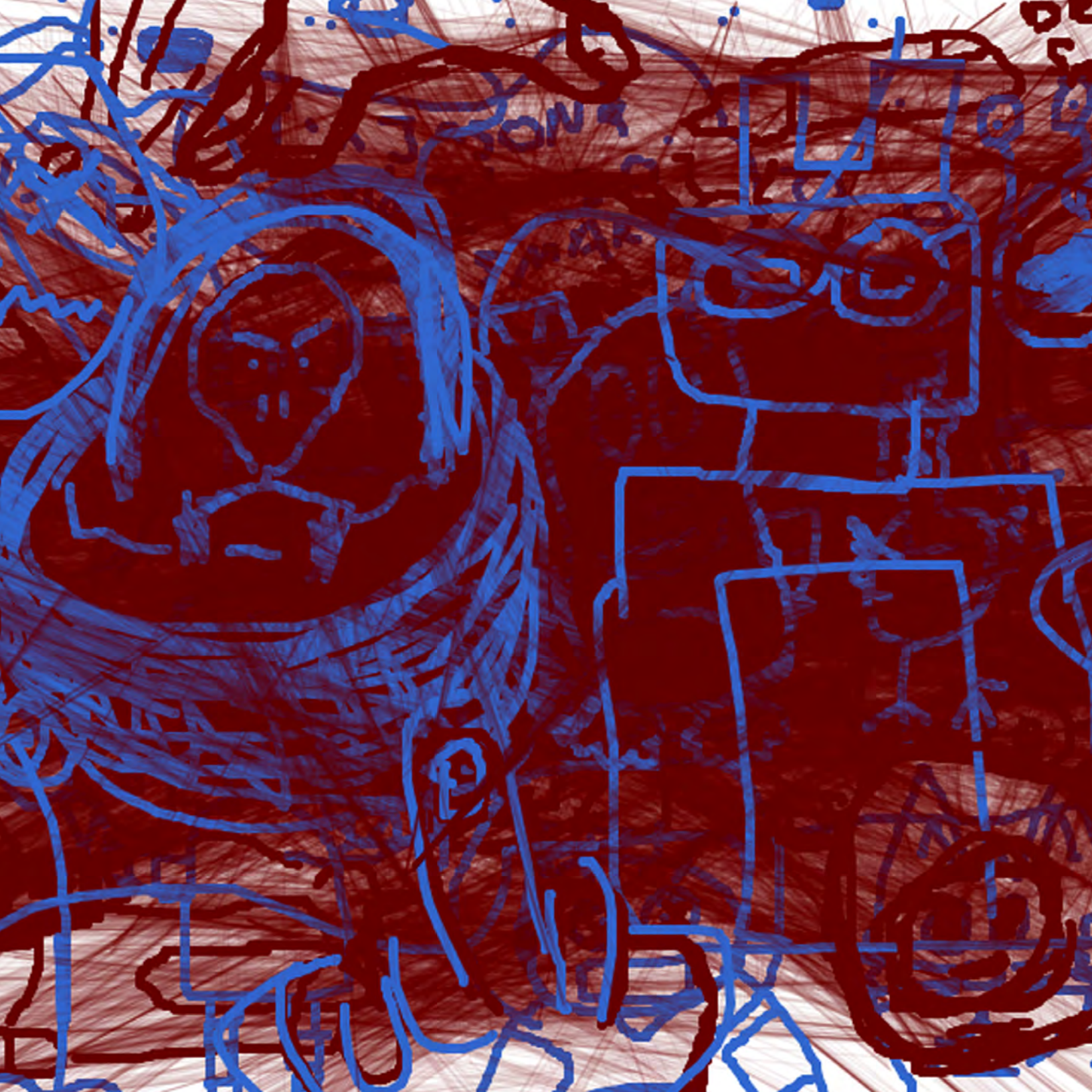






# Introduction









## Abstract

My thesis is an exploration in non-traditional digital writing and mark-making environments. Looking at physical surfaces such as bathroom walls and their virtual counterparts like instant messaging and text messaging, my work straddles two worlds: the virtual and the physical. By conducting a series of experiments studying written forms, multimedia environments, and collaborative writing surfaces, I will expand our definition of the writing space and uncover new methods of communicating.

In *Orality and Literacy*, a seminal text exploring the differences of oral and literate cultures, Walter Ong writes, “[Writing] initiated what print and computers only continue, the reduction of dynamic sound to quiescent space, the separation of the word from the living present, where alone spoken words can exist.” When first written in 1982, on







**Cuneiform tablet** 1920–1840 B.C.



**Bathroom wall** 2009 A.D.

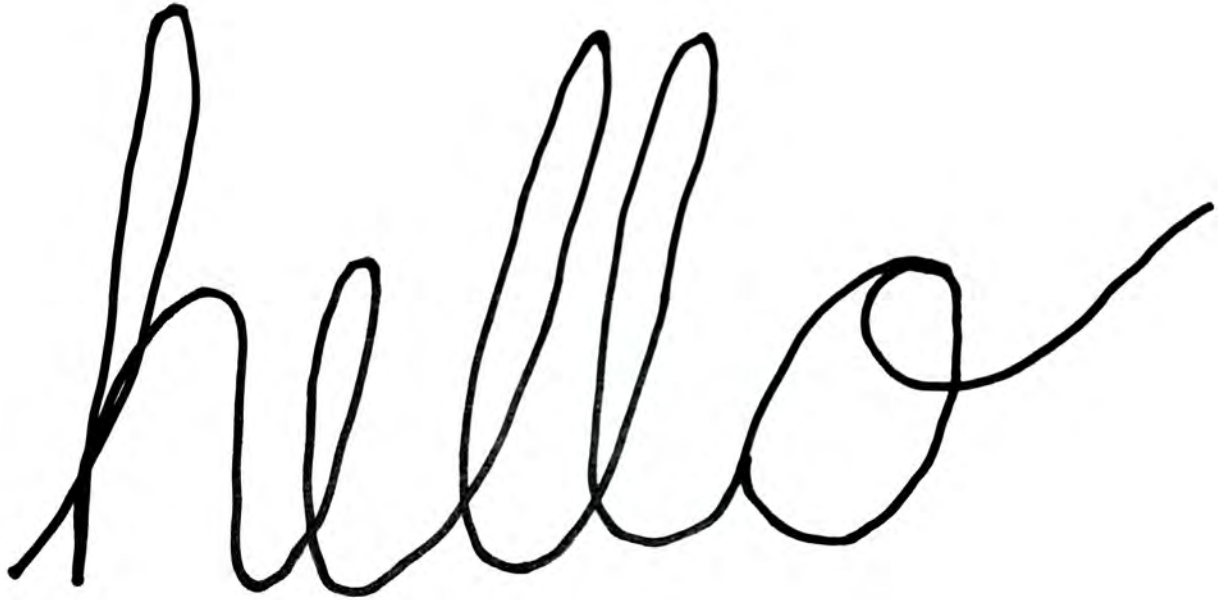
the cusp of the personal computer and many years before the Internet became a cultural staple, this statement was inarguable. Almost thirty years later, however, we have witnessed an emergence of digital technologies that has reshaped our writing environments. The inactive print surface, a characteristic of writing for thousands of years, has suddenly come to life on the computer screen.

The story of writing is marked by many transformations: From cave wall to clay tablets or pen to linotype. None, however, have had such a dramatic impact as the refashioning of communication through digital writing

*Left Page: cave painting 15,000–18,000 B.C., Altamira, Spain*

environments. The digital surface provides an immediate connection to networks of other users. Chat rooms, texting, and instant messaging have blurred the lines between written and oral communication. Web sites like Twitter and Facebook keep us connected with millions of other users at all times. Experimental installations like Mark Hansen and Ben Rubin's *Listening Post* illustrate the potential for an emergence of algorithmic or collective writing. While these examples highlight the vast potential for virtual writing, the rigid structure and constraints of the digital world can significantly decrease the writer's role and control over the writing surface.



A sample of cursive handwriting showing the word "hello" written in a fluid, connected script. The letters are highly stylized and interconnected, with a prominent loop at the end of the word.

*Sample of my handwriting*

The difference is striking when comparing a digital space such as Twitter to an analog space like the writing found on bathroom walls. While the sheer volume and constant presence of users on Twitter is impressive, when we look at the expressive qualities of bathroom wall writing the division is clear. The digital environment is a controlled and structured space. For the most part programmers decide how and where the writing appears. Writers on a bathroom wall, however, are free to make marks: they can draw, write, cross out and edit other writing, use scale, and change colors. There are no rules and no restrictions.

There is no question that the printed word is in a period of decline. Reading and writing on digital devices becomes more commonplace each day and the craft of penmanship is moving into the realm of the letterpress and other obsolete printing technologies. My thesis is a series of experiments studying the various qualities of the virtual word and its future within our culture. I am also interested in examining the space on which we write and its influence on the writing experience. Many scholars and authors will argue that handwriting is dead, however, my thesis illustrates that there is life after print—and it is fascinating.

PROLOGUE

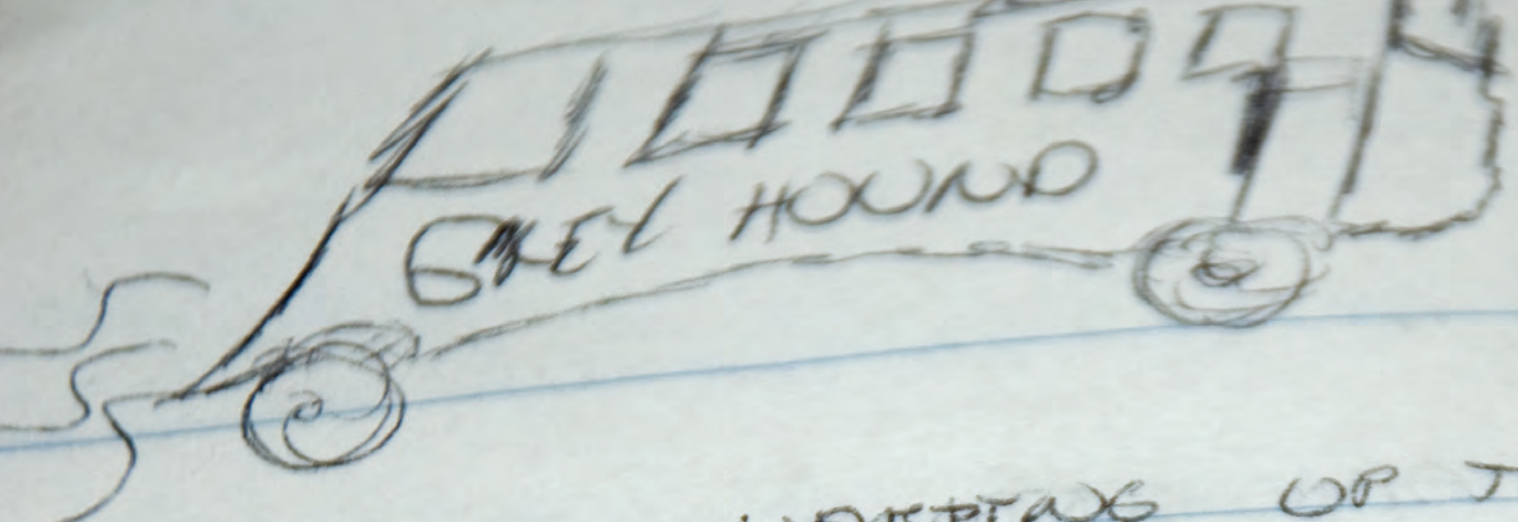
# On the Road

“Our battered suitcases were piled on the sidewalk again; we had longer ways to go. But no matter, the road is life.”

Jack Kerouac

Somewhere in the mid-west a man in his early thirty's got on the bus. It was hot, maybe a hundred degrees, and there were only a few empty seats left. As he hunkered into the spot next to me, I courteously squished as far against the window as possible. Why couldn't he pick another seat? I thought to myself. It had been a couple of weeks since I last bathed and I ran out of deodorant in Las Vegas. After a couple of towns worth of silence, Dave introduced himself.





6 COLLECT, WAKING UP TOO  
10 FOR A COOL MORNING HINT  
10 THE BLISTERING AFTERNOON  
OF THE BATHROOM I SAW MA  
WAS THIS GREAT, BUT DIDN  
10 WANTED OUT OF THIS



*Journal I kept while on the road*

He asked me what I was doing on a bus in the middle of nowhere. I told him that was going home to Boston. For the past month I had been traveling across the country with two friends. We wanted to see everything: mystical cave dwellings in Colorado, beautiful red rocks of Utah, and even the dingy strip clubs in Tijuana (this I would not recommend). After running out of money in Fresno, California I hopped on a bus headed back

*Left page: journal detail*

east—a much less romantic ending than I had originally envisioned.

Unlike most of our peers from high school we had no plans. There were no scholarships, no colleges waiting, not even a vague sense of direction on our part. I was in Community College majoring in Criminal Justice, but I had no idea why—I just was. We had nothing to lose. So after saving some money from our jobs waiting tables, we packed up the car and headed out.

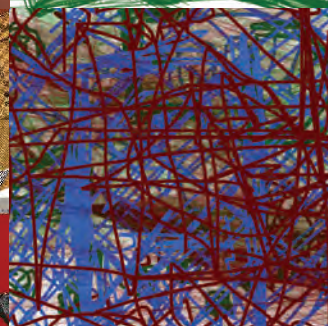
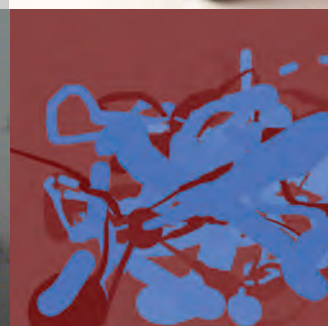
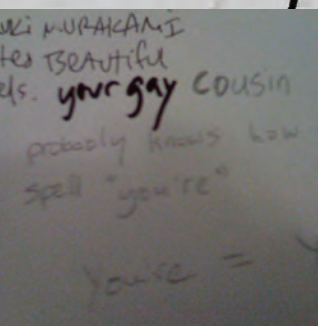
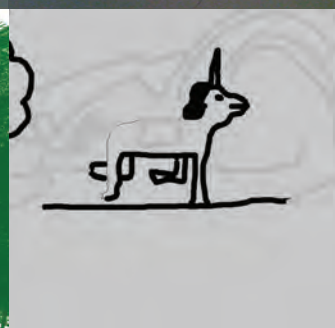
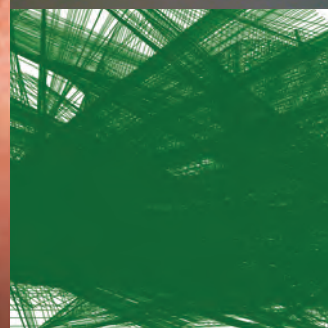
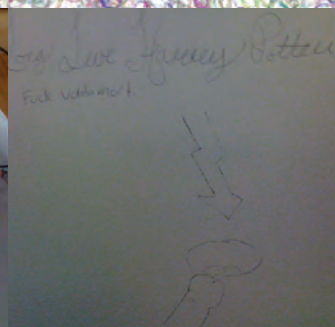
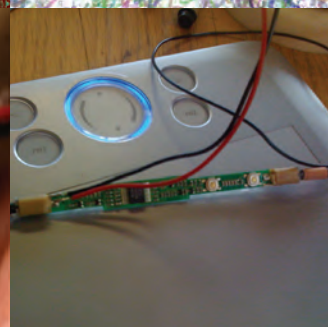
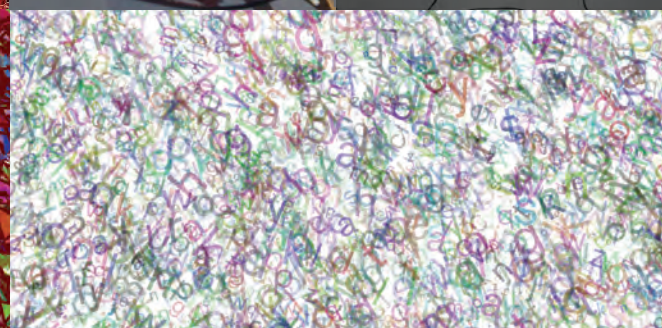
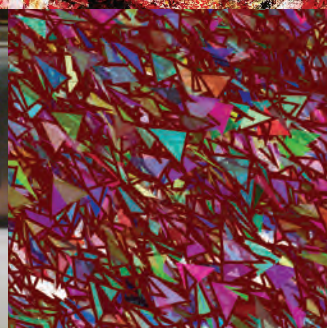
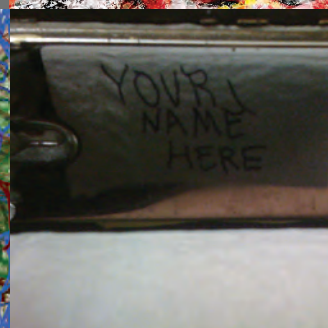
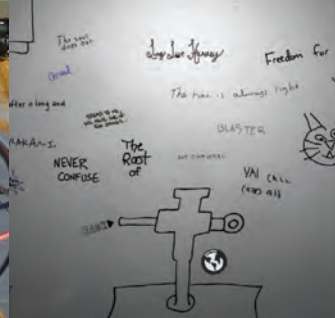
After hearing my story Dave said, “It’s kind of like Jack Kerouac.”

“Who?” I said.

“You know, Jack Kerouac, the beatnik. He wrote *On The Road*. Your story reminds me of that novel.”

Two days later I arrived home and immediately looked up Jack Kerouac. It turns out he grew up in Lowell, the same city where my mother was raised and where I was born. A friend’s stepfather knew him in high school. How could this be possible? I asked myself. A random man on a bus in the mid-west tells me about an author who grew up in the town next to mine? I went to the library and picked up *Dharma Bums*, the only Kerouac title available and read it in a couple of days. Soon after, I transferred to UMass, became a literature major, and started writing.





## INTRODUCTION

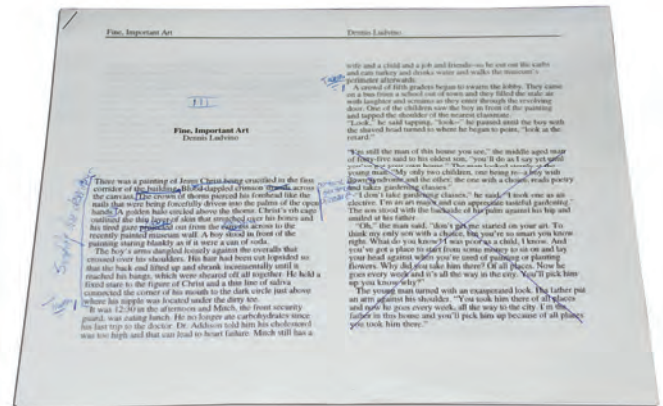
# In-between

My interest in writing started with undergraduate essays on Shakespeare, the modernists, and the mythical qualities of Robert Penn Warren's *Audubon: A Vision*. Then I began emulating the stories of Raymond Carver and Anton Chekhov. Everyday I wrote something new in my notebook and before long I completed a few stories. I joined a group of writers that met regularly for critiques. After months of sharing our stories and poems, we decided to create a literary magazine—a home for unpublished writers like ourselves. I found myself immediately engrossed in the visual qualities of the publication and the synthesis of graphic design and written communication. The path that started with writing has extended into the exploration of digital media—its new writing tools and spaces—and its influence on written communication.



Recently, I was reading a review for a hi-tech pen that records handwriting and was struck by one of the reviewer's remarks: "This doesn't offer anything enticing or ground-breaking for people who don't use a pen and paper on a regular basis." People who don't use a pen and paper on a regular basis? My first reaction was to cast this aside as the naïve ramblings of an overly zealous tech-enthusiast. Then I realized that I was reading the review on a computer screen and, in fact, I don't even use a pen and paper on a regular basis. I may scratch a few quick notes or make a couple of comments in my sketchbook, but any significant writing is done on my computer. When did this happen?

Written communication is in the throws of a tipping point and, if history repeats itself, it won't be long before the pen and paper are left behind with the ranks of numerous other obsolete writing tools. The screen is our surface, the pixel our ink, and keyboard and mouse our pen. In her essay "From Pencils to Pixels: The Stages of Literacy Technologies," Denise Baron writes, "...we often lose sight of writing as a technology, until, that is, a new technology like the computer comes along and we are thrown into excitement and confusion as we try it on, try it out, reject it, and then adapt it to our lives—and of course, adapt our lives to



*Typed draft of early story*

it" (Baron 37). When a new writing technology appears (or any new technology for that matter), as Ms. Baron points out, there is a transitional phase where the two technologies are used in conjunction. Jay David Bolter refers to this period as the late age of print. My thesis lies somewhere in the middle of this transition. Sandwiched between the digital methods of the future and the handwritten marks of our past.

Over the course of its long history, numerous technological advances have influenced writing. The heavy clay and stone tablets gave way to the more convenient papyrus rolls. Etching tools became pen and ink and eventually the metal



castes of the letterpress. More recently, however, new digital tools and writing spaces are altering our relationship with written communication.

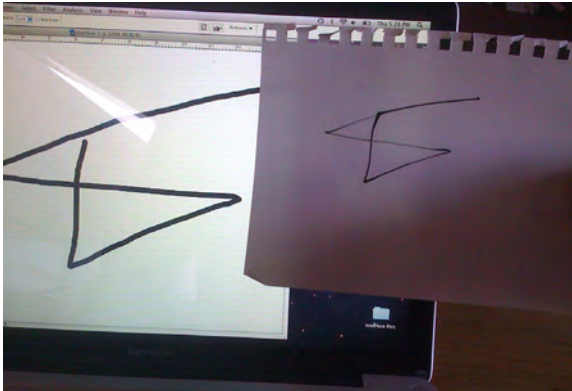
Technological advancements in the realm of computing, networks, and the availability of high speed internet connections paved the way for new virtual writing to usurp our handwritten past. New digital writing environments like Twitter, instant messaging, and Facebook have ushered us into a new era of immediacy. Time and geographic location are now inconsequential to written communication (so long as there is a computer and internet connection). Despite the positive gains from these new technologies, overly structured digital environments have become barriers separating the writer and the writing space.

One of my studio projects at DMI catalogs the writing found on bathroom walls. Bathroom wall writing provides an interesting counterpoint to digital spaces. While both provide a surface for communication, the writing qualities of both are vastly different. The bathroom wall is an expressive and free environment. An author can write, draw, edit other work, or simply scratch out something they don't like. Different writing implements, sizes, and writing styles create a colorful unique space. Writers have a direct connection to the space: The hand creates a mark and its movement defines the spaces.

Current digital writing spaces, on the other hand, are programmed for uniform communication. For instance, an author of a Twitter post has no control over the physical characteristics of the communication or the space in which it is written. When a message is sent, its physical properties and placement are beyond an author's scope of control. Our influence and connection to writing surfaces has disappeared. The uniformity of typographic forms, for instance, has removed all traces of the unique humanistic qualities of handwritten letter forms. Our fingers type a message, but programmers and designers decide what to do with it.



*Bathroom Writing project*



*The Writing Recorder project*

Over the last couple of years at DMI, I have worked on numerous projects involving writing, mark making, and experimental digital writing spaces. To help organize the work and enhance my explanation of the digital word, my thesis is divided into three sections: virtual, processed, and networked. While there are other properties represented in virtual writing, these mark the core differences between digital and physical mark-making.

In Section A I deal with virtual words. The virtual word is simply a representation or a copy of an original. For example, when we are writing in a word processing program, the actual file we open is a copy of the original. Only when we save that

file do the copy and original briefly meet (Landow). The difference between the two can be boiled down to the physical versus the non-physical. Two of my projects, the *Writing Recorder* and *Message Board*, address this differently. The *Writing Recorder* allows both physical and virtual marks to be made simultaneously. Two identical copies from two different mediums: print and digital. The printed word is saved to the paper, the physical copy, while the digital word is stored in a database, the virtual copy. The second project, *Message Board*, allows only digital mark making. By doing this a new kind of dialog is created. One based on properties that only the virtual word can store—speed, size, and length.

Section B introduces the processed word. To boil-down the complexities of processing in relation to media, I refer to input and output. In traditional writing a pen makes a mark on a piece of paper—the motion of the hand is the input and the mark is the output. Within the digital world, however, inputs and outputs can be remapped to do virtually anything. Two case studies explore the use of writing as an input, *Sound Writing* and the *Dada Machine*. *Sound Writing* is an exploration of using both the gesture of writing and the writing

*Right page: handwritten draft  
of an early story*

~~background~~

Fine, Important Art

He watched the boy who stood in the  
Christ being crucified. Crimson <sup>stains of</sup> blood  
crown of thorns ~~piece~~ was painted into  
ere being driven into ~~his~~ the palms of  
ad been painted above his head. ~~and~~  
t the thin layers of skin that stretch  
<sup>pious</sup> gaze looked out across at the mouse  
oked at it as if staring at a can of  
- ~~division~~ the overalls that crossed  
en cut lopsided so the back end lit



space as a way to provide audio feedback to the writer. In this case, writing is the input and sound the output. The *Dada Machine* deals with typing on a keyboard by remapping all of the keys to alter the writing experience. Instead of a coherent message, the writer is confronted with a chaotic writing space where words, sound, and animation take over.

The final section of my thesis, the networked word, explores how computer networks can be used to create new writing experiences. My Bathroom Wall Writing project doesn't involve writing itself, but it does create a virtual taxonomy of writing collected from bathroom walls. The words are networked together via different shared properties to allow users the ability to navigate through the space. *Collaborative Drawing*, on the other hand, relies solely on a group of people writing and drawing synchronously in the same space. This new space allows users to do what traditional digital writing tools don't—the freedom to completely control the experience. For example, if someone doesn't like a drawing that someone else created, they can simply scribble over it. There are no rules or in other words, the user is not kept at arms length from the space, they are invited in to share in the creation of the space.

Beyond surveying the potential uses of collaborative writing environments, my thesis is an extension of my interest as a writer. Each project provided an opportunity to look at writing from a different angle and uncover new questions. Some are simple programs designed to see how other media elements affect the writing space. Others offer in-depth studies into the nature of collaborative writing spaces and how multiple-authored environments affect communication. While some of my case studies are more successful than others, all of them, when viewed together, show different pieces of the complicated world of digital communication.

In my thesis writing, I intentionally blend two distinct writing formats: narratives and case studies. The narratives illustrate my design process, my relationship to reading and writing, and how that relationship grew into a thesis. The novelist Richard Ford once said that the secondary characters in his novels were present so that the main characters could cast their shadows. Hopefully the narrative sections provide a space for the case studies to cast their shadows—to provide a deeper understanding of my projects and how they relate to me.

This is my thesis. I hope you enjoy it.

CONTEXTUAL HISTORY

## From Plato to PowerPoint

“For Books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul was whose progeny they are; nay they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them.”

*From John Milton's Areopagitica*

It's hard to imagine Plato in a darkened auditorium discussing the philosophic nature of rhetoric while standing beside a brightly lit screen packed with bullet points. If Plato had created a PowerPoint presentation, one slide might go something like this:

### Arguments against writing

- Writing is inhuman
- Destroys memory
- Text is unresponsive (Ong 78)

In *Phaedrus*, Plato's fictional dialog between Phaedrus and Socrates, writing becomes the subject of scrutiny between the two men. At one point in the dialog, Socrates says, "And when they [words] have been once written down they are tumbled about anywhere among those who may or may not understand them, and know not to whom they should reply, to whom not: and, if they are maltreated or abused, they have no parent to protect them; and they cannot protect or defend themselves. (Plato 362)" Plato is referring to written text's inability to explain its own meaning. Once our internal thoughts become external, they are subject to interpretation and misinterpretation, underscoring the fundamental differences between oral and literate cultures.

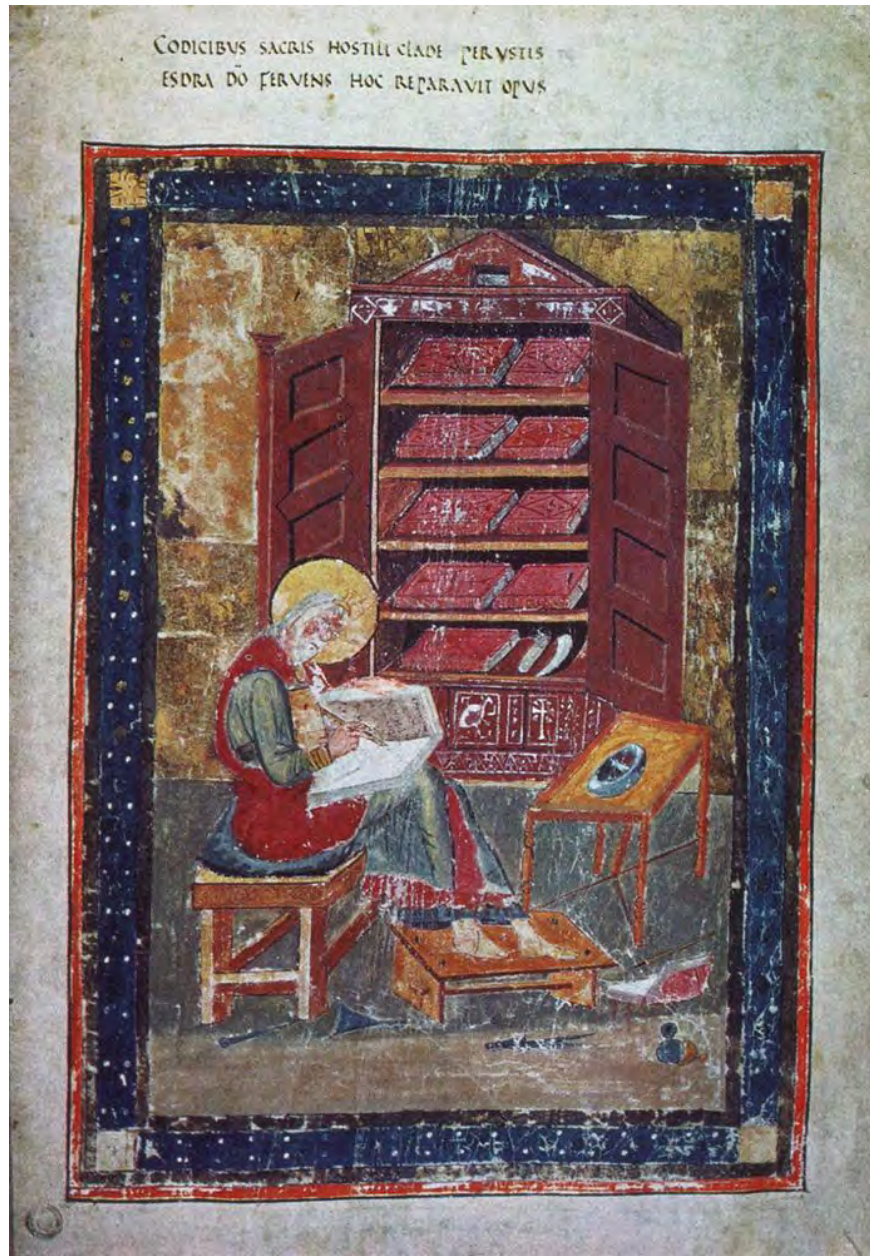
Writing and literacy have, over the last 5,000 years, become fundamentally linked to the human experience and vastly altered our thought processes. The literate mind could not think as it does without the aid of writing. When writing our mind has the time to think and revise. Walter Ong notes, "With writing, the mind is forced

into a slowed-down pattern that affords it the opportunity to interfere with and reorganize its more normal, redundant processes" (Ong 40). Unlike oral discourse, which requires repetition and reiteration, reading and writing is a linear convention. While it hasn't destroyed our memory as described by Plato, writing has become an extension of our subconscious and influenced the creation of a number of powerful communication systems.

Our relationship to the printed word is shaped in part by the various tools used in the writing process. During medieval times scribes hand copied manuscripts—a painstakingly slow and technically challenging process. After the invention of mechanized type, it's not surprising that the first books printed, including Gutenberg's *42-line Bible*, were identical to the handwritten manuscripts. As the tool became more widely accepted, books began taking new shapes and the full potential of the technology was realized. Interestingly, the books of this period (prior to 1501) are referred to as incunabula. The Latin meaning of this word is "swaddle" or "cradle" and points to the developmental period of the media. As personal computing and the Internet are still in their cradle phase, we continue to see direct connections to the analog technologies



CODICIBUS SACRIS HOSTILI CLADE PERVSTIS  
ESRA DŌ FERVENS HOC REPARAVIT OPUS



Codex Amiatinus ms. Amiatino 1 fol. 5 Scribe Erza writing (8th Century).



**Book of Kells (9th Century).** *Illuminated manuscripts flourished before the invention of movable type. But they were time consuming and extremely expensive to produce.*



**Gutenberg's 42 line Bible (1452–1455).** *First European example of movable type. Note the similarity to the illuminated manuscript*

they are replacing. As Ted Nelson, founder of Project Xanadu, says, “Conventional documents simulate paper. Why? Computers should allow us to improve on paper.” While this is true to some extent, many software programs, for better or worse, have already reestablished our writing habits.

In 1984 the first version of PowerPoint, Microsoft’s ubiquitous persuasive technology software, was released. Today, educational institutes, churches, and businesses all rely on the presentation software for written communication—it is even taught in middle and high schools. Ian Parker, author of the essay “Absolute PowerPoint,” writes, “In darkened rooms at industrial plants and ad agencies, at sales pitches and conferences, this is how people are communicating: no paragraphs, no pronouns—the world condensed into a few upbeat slides, with seven or so words on a line, seven or so lines on a slide” (Parker 354). Remarkably, this not only points out PowerPoint’s role within the realm of business communication, but also its influence on our view of written communication in general. While there is less stress on the words, images, video, and sound have a major presence in communication.

PowerPoint is one of many instances of literacy technologies that have reshaped our writing habits. The printing press, for example, ushered us into a new era of literacy. As Warren Chappell, a printing

## “Conventional documents simulate paper. Why? Computers should allow us to improve on paper.”

Ted Nelson

historian, writes, “Within a few decades after [Gutenberg’s] Bible was printed, presses began to produce the grammars and dictionaries that were to be the basic tools for increasing literacy” (Chappell 60). Before mechanized type reading and writing was left to lawyers, doctors, and most of all members of the clergy. McLuhan likened the press to mass production, calling it the first assembly line. By creating accessible books and documents, the printing press fueled our insatiable demand for words and continues to influence new literacy technologies.

In his letter praising the typewriter, Mark Twain wrote, “The machine has several virtues, I believe it will print faster than I can write, one may lean back in his chair and work it. It piles an awful stack of words on one page.” Despite the fact that Mark Twain later gave his typewriter away, it was the first widely used mechanical writing device that changed our writing habits. While not as convenient and portable as a pen or pencil, it changed the physical nature of writing—posture and speed—and foreshadowed the word processing software we are all too familiar with today.

The personal computer flung open the writing program floodgates. Writers of any flavor can find a computer application suited to their particular

craft. Business communication applications like Microsoft’s Word, Excel, and PowerPoint are staples in any office environment. Screenwriters have Final Draft, a program with a tool set specific to their industry. A creative writer might use Dramatica Pro. A review of the program boasts, “This program is stacked with great features and allows you to determine and organize every aspect of your story before you ever begin to write.” While these programs won’t write for you, they attempt, to varying degrees of success, to facilitate different writing processes. Despite all of these professional writing applications, the most interesting advancements in literacy technologies can be found online.

Recently I read an article about a couple who immediately, after exchanging vows at the altar, updated their Twitter and Facebook profiles to reflect the occasion<sup>1</sup>. While this disturbs me on a number of levels, it points to a new cultural phenomenon of online communication. In fact, the Internet has reshaped many traditional writing formats. Blogs have redefined journalism, e-mail and Instant Messaging replaced letters and postcards, and social networking sites provide instant play-by-play updates to our personal lives. The writing surface has become a dynamic and engaging platform for communication.

<sup>1</sup> <http://jezebel.com/5416972/groom-updates-facebook-twitter-from-wedding-altar>





**Hannah Höch**  
*Bürgerliches Brautpaar, c. 1919*

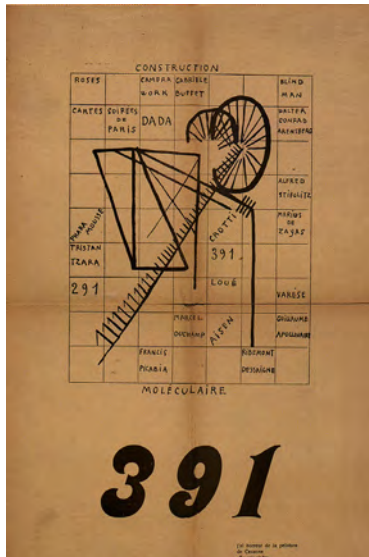


**Hannah Höch**  
*Da Dandy, c. 1919*

Three specific examples of this transformation that have become conventional digital writing tools are instant messaging (IM), Twitter, and Facebook. Because of the instantaneous feedback, IM has taken on aspects typical of conversation—blurring the lines between oral and written communication. As a result, boilerplate phrases made up of acronyms like OMG and LOL are cropping up. Twitter has created a frenetic stream of staccato-like updates, an homage to the telegraph. Twitter has also taken advantage of the emerging use of text as a data source. In an instant we can see the most discussed topics by tagging keywords. Facebook brings a personal

element into a purely digital driven environment creating a new realm of electronic socialization. It is not surprising that each user is provided with a virtual wall to post and receive messages. All of these digital technologies introduce new roles for written communication.

As George Landow points out in his essay “Twenty Minutes Into the Future,” writing in a digital environment relies on various programming codes resulting in a new text he describes as “... virtual, fluid, adaptable, open, capable of being processed, capable of being infinitely duplicated, capable of being moved about rapidly, capable, finally, of being networkable—of being joined



**Francis Picabia**  
*Construction moléculaire*, c. 1919



**Kurt Schwitters**  
*Untitled*, c. 1921–1922



**Raoul Hausmann**  
*Der Kunstreporter*, c. 1919–1920

with other texts.” [Landow 220] Despite the fact it creates no physical record of itself, the digital word opens up a new realm of textual experimentation and interpretation.

The Dada art of the early 20th century began questioning our relationship to the printed word. Much of the concrete poetry reduced letters to abstract sounds. Kurt Schwitters and Guillaume Apollinaire, for instance, departed from typographic conventions to craft their poetry. The collage work of Hannah Höch, mixed abstract letter forms with imagery creating a striking collision of text and image. Dada questioned our relationship to text. The printed page, stagnant in form for centuries, suddenly came to life as

letterforms exploded onto the page. In a digital setting, as Mr. Landow pointed out, text has inherited a host of new properties. Similar to the role of Dada art, contemporary artists are creating experimental installations and performances that expand on our assumptions of text.

*Listening Post*, an installation by Mark Hansen and Ben Rubin, dynamically pulls text from blogs and chat rooms. The text is displayed on various LED screens and read by a simulated computer voice. While this installation gives voice to an abstract concept like computer networks, it also suggests a new type of collective or aggregate writing.

In 2005 Golan Levin teamed up with Dutch poet Jaap Blonk to create *Ursonography*, a multimedia performance of Kurt Schwitters' poem *Ursonate*. By using speech recognition technologies, Levin employed the use of what he called smart titles. As Jaap Blonk read, titles were projected onto a screen based on the sounds the poet created. The text became a visual reinterpretation of the poet's interpretation of Schwitter's work.

The experimental installations and practical examples listed above reinterpret the roles of the written word. Writing traditionally relied on the creator's hand physically etching a mark on a writing surface resulting in a tangible record. The virtual word isn't tied necessarily to any physical connection with the surface. The big question then is—To what extent does the writing surface influence our writing habits? If as John Milton points out in the epigraph that books contain a writer's soul, what happens when there is no body to contain it?

*Following page from left to right:*

**Listening Post**, Mark Hansen  
and Ben Rubin; **Ursonography**,  
Golan Levin and Jaap Blonk;  
**Listening Post**





FOOD  
IRAQ  
MUCH  
HOMO  
FENG  
TAKE  
WOOD  
YAZK  
BELB  
ALOT  
FLOW

UNIT  
SETS  
ANAN  
BILE  
GLUE  
NAME  
MICH  
CARE  
BORT  
FILM

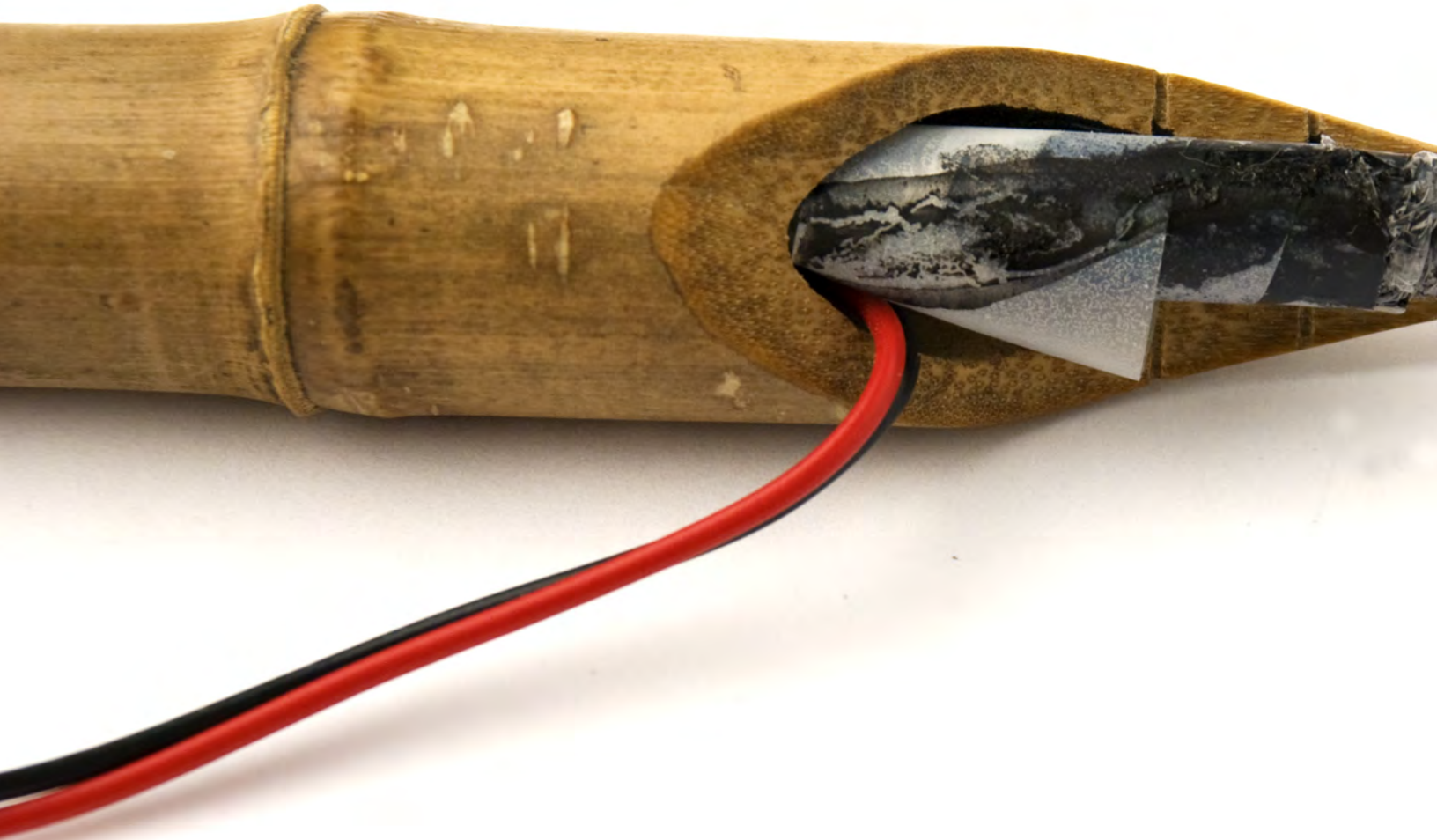
LINK  
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ONCE  
FACH  
YORK  
YOUN  
HIPS  
BOND

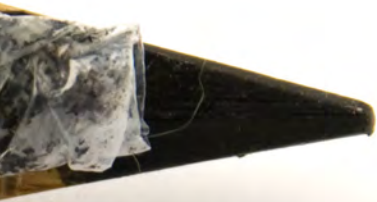


Section A

# The Virtual Word







## CASE STUDY ONE

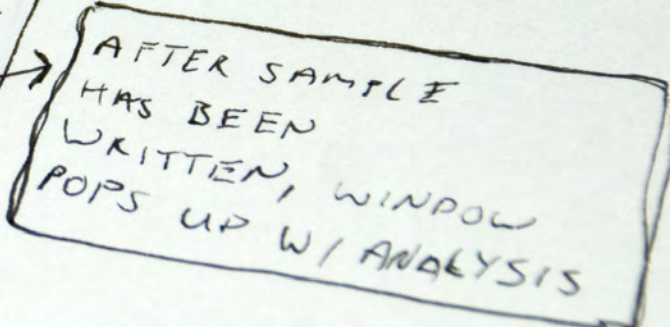
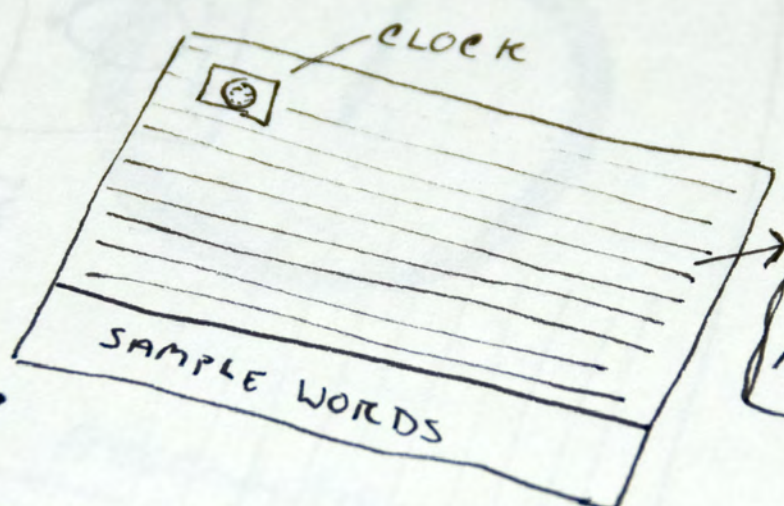
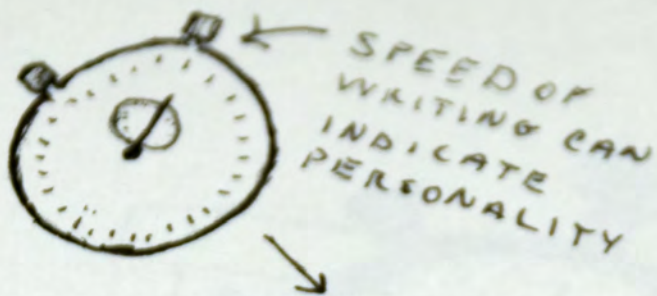
# Writing Recorder

The *Writing Recorder* is a physical device that captures both written and digital marks. As the user writes with the pen, identical marks are made on paper and the computer screen—A line on paper becomes a line on screen. Translating the analog to the digital provides an interesting point of contrast and a moment to study their differences.

- The written mark is fixed. Ink bonds to the page, dries, and, besides fading from age, never changes. There is a definite physical permanence that, unless intentionally destroyed, is timeless.

The digital mark is more complicated. As the physical mark is translated onto the screen, it is simultaneously transcoded into a series of x and y coordinates stored in a database. The marks can then be dynamically hidden or retrieved at any time. Ostensibly, they inherit the properties of

# HANDWRITING tool



How can I get letter speed from Flash  
average x  
page y  
sample sent



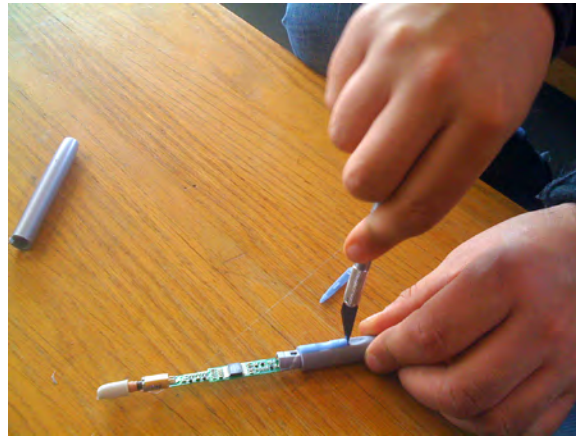
other new media objects and can be manipulated as such.

## Technology

Since I have no technical engineering background, I had to be practical when thinking about hardware. I asked myself What technologies existed that were similar to what I want to do? This project is a cross between a Wacom Tablet and a pen, so I literally stuffed the guts of Wacom stylus into a large bamboo pen.

The most technically challenging aspect of the hardware was altering the behavior of the Wacom stylus. Because the tip of the stylus acts as a button that tells the computer to begin writing, it was clashing with the pen, which also needs to touch the paper to write. The solution was to solder the stylus so the button was always pressed. Whenever the tip was in proximity to the tablet it would draw on screen.

The software is a combination of ActionScript, XML, PHP, and MySQL that work together to translate the pen coordinates, store them, and display them on screen. The ActionScript initially displays and stores the data as a series of x and y coordinates in an array. When the data is told to go to the server, the coordinates are converted into XML and stored in a database.



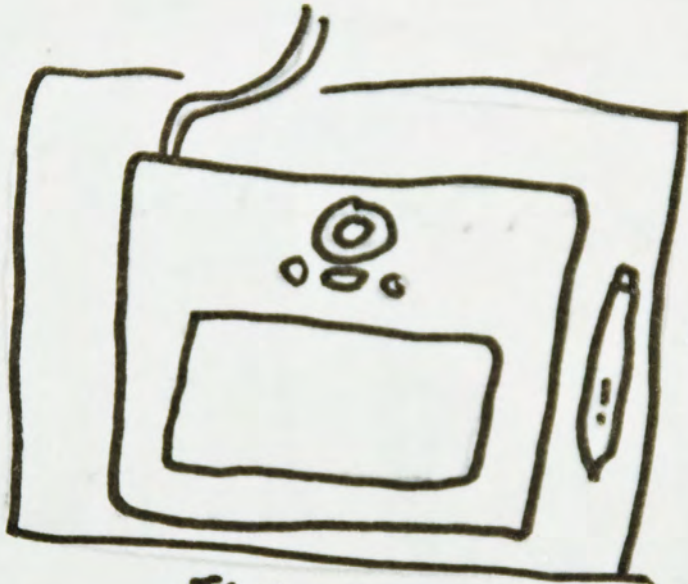
Taking apart the stylus

This project pushed me into the deep end of the programming pool and I was quickly in over my head. The only programming experience I had prior to this was a small amount of ActionScript. I learned how to solve specific issues by working through problems with others (specifically Mike Golembewski) and, because of this, was able to push my programming skills farther than I thought possible.

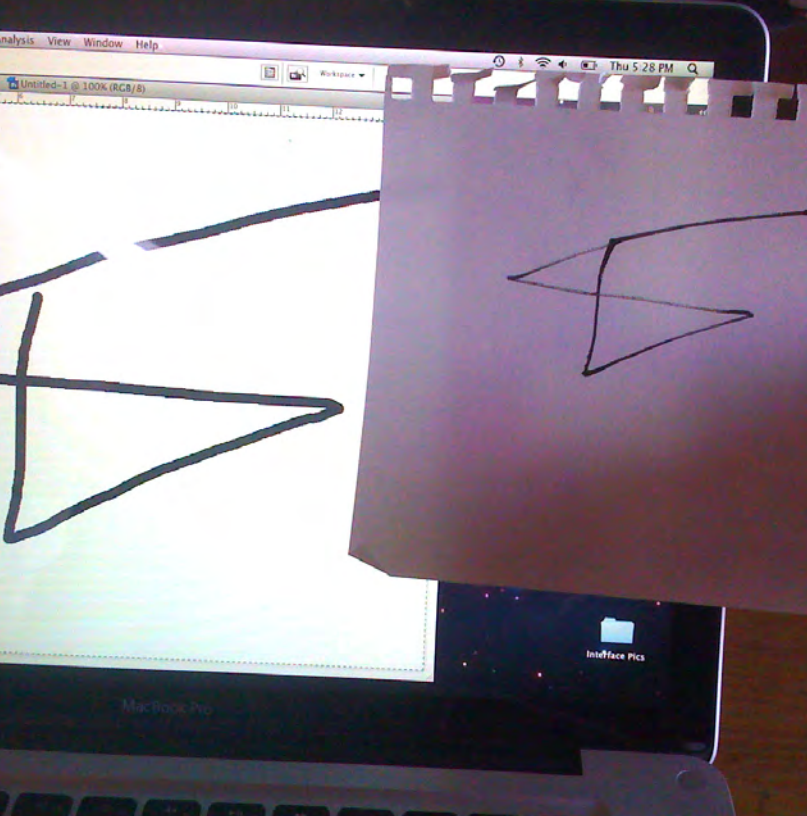
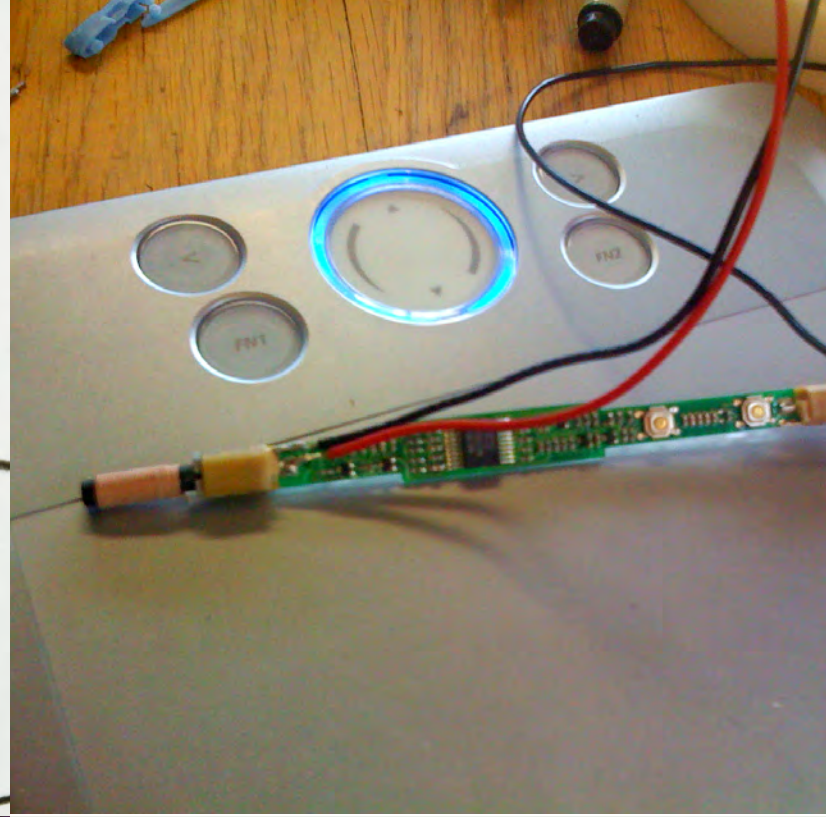
## Process

This project started with a simple assignment. Create a tool that will help your thesis. Initially

*Overleaf: process of creating and use*

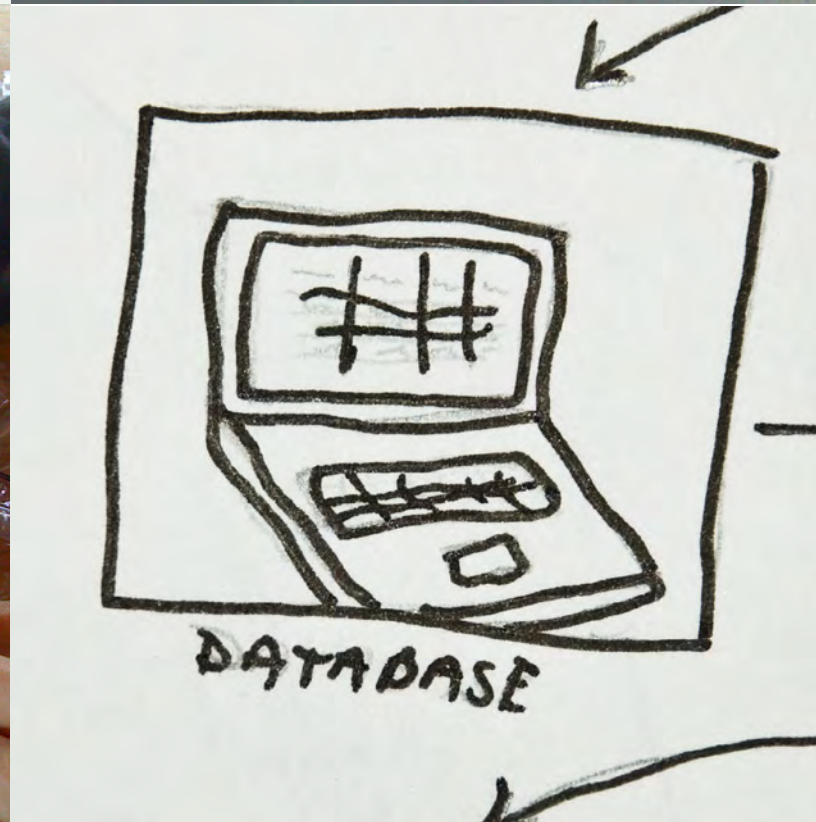
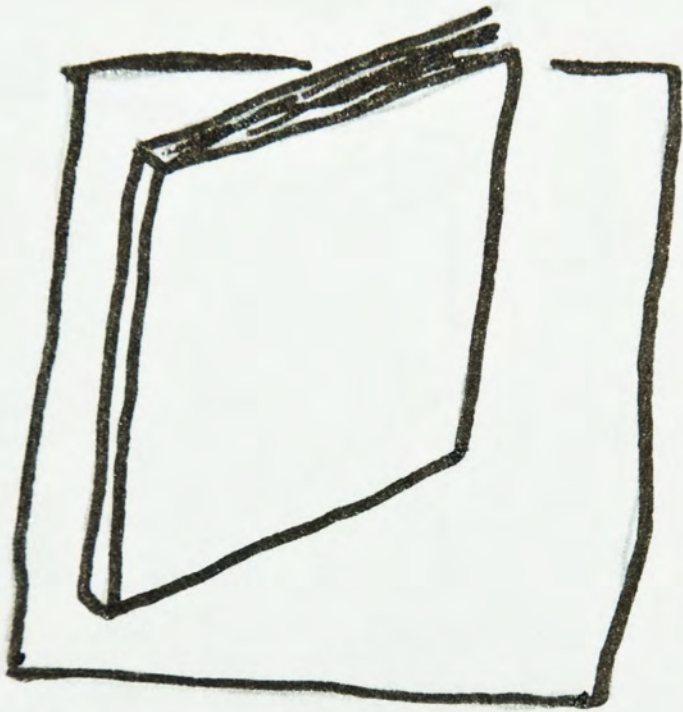


TABLET



SCREEN







<input type="checkbox"/>				03	Krista	1236536832604	1236536834936	<!--XML--> <strokePoints><strokePoint><strokeX>30...
<input type="checkbox"/>				04	Krista	1236536837440	12365368398588	<!--XML--> <strokePoints><strokePoint><strokeX>30...
<input type="checkbox"/>				05	Krista	1236536837440	1236536845044	<!--XML--> <strokePoints><strokePoint><strokeX>62...
<input type="checkbox"/>				06	Krista	1236536848084	1236536849995	<!--XML--> <strokePoints><strokePoint><strokeX>63...
<input type="checkbox"/>				07	Krista	1236536848084	12365368855167	<!--XML--> <strokePoints><strokePoint><strokeX>61...
<input type="checkbox"/>				08	Krista	1236536848084	1236536858711	<!--XML--> <strokePoints><strokePoint><strokeX>61...
<input type="checkbox"/>				09	Test	1236537206980	1236537389024	<!--XML--> <strokePoints><strokePoint><strokeX>28...
<input type="checkbox"/>				100	Test	1236537399387	1236537400915	<!--XML--> <strokePoints><strokePoint><strokeX>28...
<input type="checkbox"/>				101	Greg	1236537434142	1236537438337	<!--XML--> <strokePoints><strokePoint><strokeX>28...
<input type="checkbox"/>				102	Greg	1236537434142	1236537441381	<!--XML--> <strokePoints><strokePoint><strokeX>63...
<input type="checkbox"/>				103	Greg	1236537443761	1236537444609	<!--XML--> <strokePoints><strokePoint><strokeX>37...
<input type="checkbox"/>				104	Greg	1236537443761	1236537447833	<!--XML--> <strokePoints><strokePoint><strokeX>63...
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<input type="checkbox"/>				106	Greg	1236537443761	1236537455953	<!--XML--> <strokePoints><strokePoint><strokeX>62...
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<input type="checkbox"/>				112	Greg	1236537443761	1236537480324	<!--XML--> <strokePoints><strokePoint><strokeX>62...
<input type="checkbox"/>				113	Greg	1236537482220	1236537483795	<!--XML--> <strokePoints><strokePoint><strokeX>34...
<input type="checkbox"/>				114	Greg	1236537482220	1236537486891	<!--XML--> <strokePoints><strokePoint><strokeX>63...
<input type="checkbox"/>				115	Greg	1236537489188	1236537490205	<!--XML--> <strokePoints><strokePoint><strokeX>45...
<input type="checkbox"/>				116	Greg	1236537489188	1236537493503	<!--XML--> <strokePoints><strokePoint><strokeX>65...
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<input type="checkbox"/>				118	Greg	1236537489188	1236537511343	<!--XML--> <strokePoints><strokePoint><strokeX>62...
<input type="checkbox"/>				119	Greg	1236537514927	1236537515854	<!--XML--> <strokePoints><strokePoint><strokeX>38...
<input type="checkbox"/>				120	Greg	1236537514927	1236537518926	<!--XML--> <strokePoints><strokePoint><strokeX>62...

#### Database view

I did some sketching about writing. I wanted a tool that could help me compare handwriting and maybe create a fun handwriting analysis program. To accomplish this I needed a tool that could record marks—A *writing recorder*.

The first phase was to figure out a method to create digital marks. To accomplish this I wrote a basic drawing application that detects when

the mouse is pressed. If the mouse is pressed, the program uses the mouse position to draw a line until the button is released. No magic here, but it works. With the drawing application complete the program needed to store and retrieve the digital marks.

The database was the technical crux of this project. Before creating the database and to keep the program as flexible as possible, all of the marks needed to be stored as x and y coordinates. To handle this I created an array that eventually passed all of the information into the MySQL database. Once the database was working, I needed to begin collecting some data to populate the fields.

User testing revealed a number of initial design flaws. I instructed users to write the alphabet one letter at a time. It was immediately obvious that writing with the mouse was not an option. The logical step was to introduce a Wacom tablet. I was surprised at how difficult it was even with the tablet—it restructured the writing process. In traditional writing, our eyes are focused on the pen and paper. With digital writing our eyes are focused on the screen and away from the hand.

This provided an interesting problem to solve. While in the art store, I noticed a wide bamboo

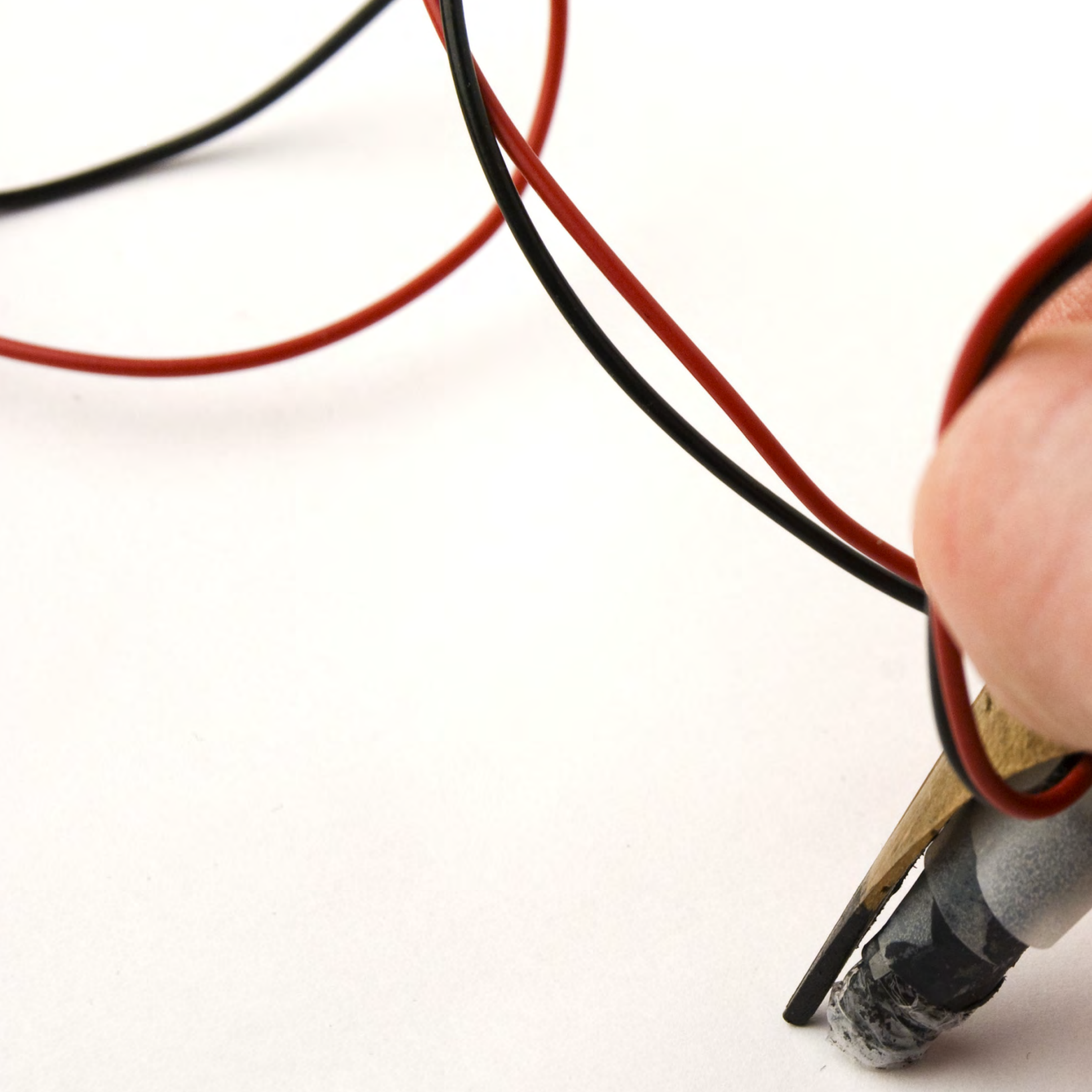
pen. After cutting open the Wacom stylus (this took a considerable effort) and getting some help with the soldering, I was able to stuff the guts of the stylus into the pen. This resulted in an analog/digital drawing hybrid. With a sheet of paper covering the tablet users can write naturally on paper and their marks are translated to the screen. Adding familiar elements like the paper and pen made people more comfortable and confident when using the tool.

This project helped to shape my initial view of literacy technologies and the vast differences between traditional and digital writing. Up to this point I viewed writing in a digital environment as completely separate from handwriting with a pen or pencil. The *writing recorder* opened me up to more experimental processes—it may not be a convenient way to write a novel, but it is a fascinating exploration into the nature of writing.

I set out to create a fun application and through the design process ended up with something that provided the kindling for my entire thesis. More than a tool to help me with my thesis—at the core of the *Writing Recorder* is my thesis.



*Next spreads: examples of output*









HELLO

GOODBYE

HELLO

GOODBYE



A B C D E

K L M N O

U V W X Y

F G H I J

P Q R S T





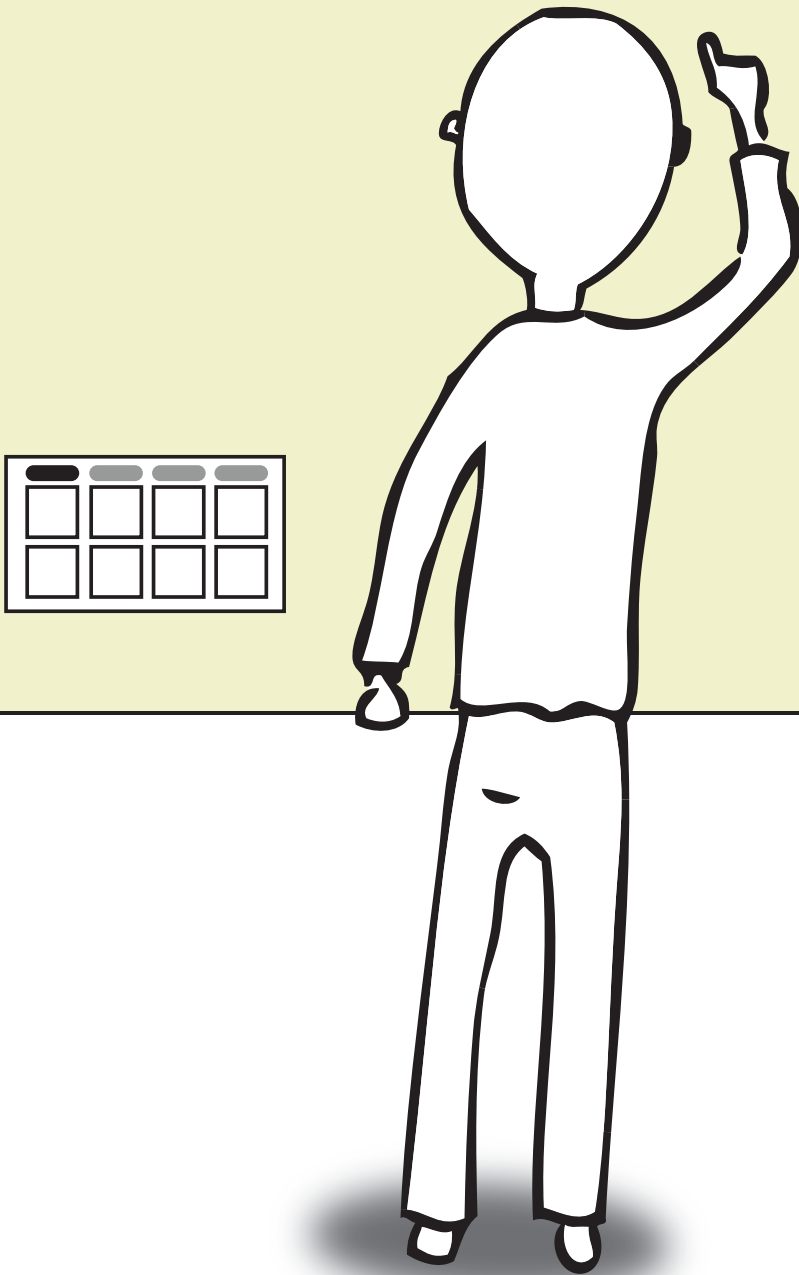


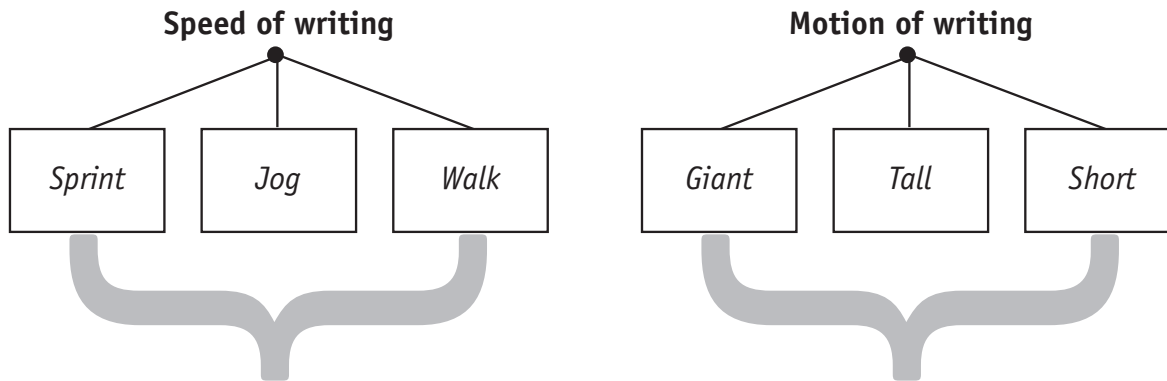
CASE STUDY TWO

## Message Board

*Message Board* is a concept for an interactive installation that creates a dialog from various handwritten messages. The physical display prompts users to write a message and calculates three physical properties: speed, size, and length. Once the message is complete, the program checks a database for messages with similar physical properties and displays them. The system does not care about the content of the message. In the end the experience is about the act of writing itself.

In traditional digital writing, relationships are based on content. For instance, if I am on Wikipedia and search for the British television series *Connections*, I get an entry related to the show and within it a series of hyperlinked words that lead to other related articles. This is a perfectly sensible approach to networking text in an online environment, but handwriting





*Figuring out the system logic*

lends numerous physical properties that are not available in digital writing (or typing at least).

A typical argument against the decline of handwriting is that digital writing does not reflect personality. If personality is truly a part of handwriting, *Message Board* is an experimental environment that explores shared personalities through writing. Categorizing messages based on physical properties is a different way to make connections. If a user writes quickly and with broad strokes, the system returns messages written quickly with broad strokes.

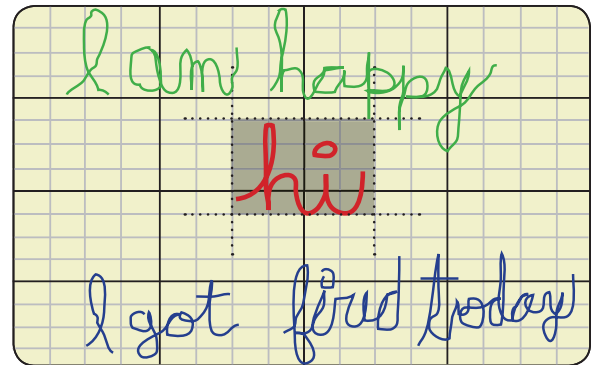
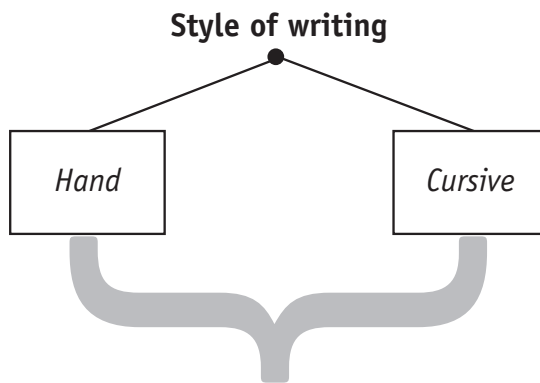
## Technology

Ironically, from a technological standpoint, *Message Board* is one of my more advanced and

abstract concepts and the only project where I didn't write a single line of code. As no one I know had a large touch screen display lying around, access to materials was an immediate problem. It made sense to stick with conceptual prototypes.

After sketching out the concept, I decided to do a quick and dirty hand-drawn animation that showed the system in use and its response to writing. This proved to be an effective method for demonstrating the concept so it made sense to continue using simple animations to demonstrate the project.





*How text is displayed*

## Process

Initially I did some sketches of the physical display, but quickly realized that the depth of this project was in the underlying system logic and user experience. There were a lot of problems to solve: How would the system connect messages? How will the messages be displayed? Can users interact with other messages?

As the connections between messages were the most vital aspect, I decided to start with the system logic that determined the outcome. After writing out a list of physical properties of handwriting, I chose three qualities that would provide interesting results: speed, size, and length.

Speed could indicate emotion or introspection, size is the most recognizable physical attribute, and length may reflect the thought process of the author.

Once the system logic was worked out, I needed to figure out how much control the user would be given. For instance, should they be able to choose different line styles, colors, and tools? I began sketching out interface concepts that gave the user total control, but quickly realized that this led to an overwhelming amount of decisions. The color and line qualities weren't as important as the connections that linked the messages together. In

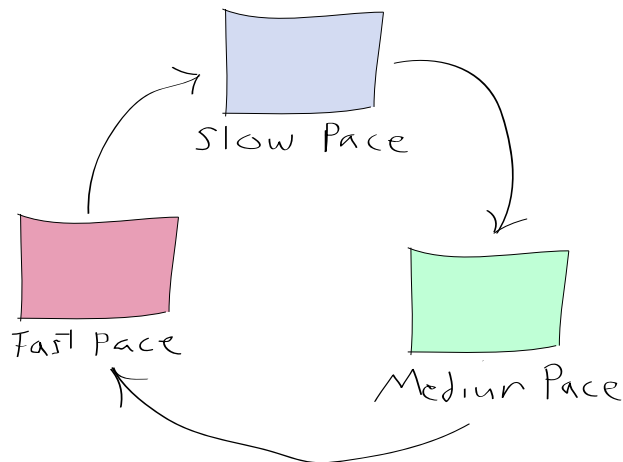
the end, the best solution was to get out of the user's way and remove the interface all together.

Another problem to solve was how to get people to interact with *Message Board*. An empty board hanging on a wall would not gain much attention. To address this I created an attract loop that would display how the installation works. During the attract loop messages are cycled through based on the different physical properties. As a user approaches, the messages erase and they are prompted to write a message.

The user experience is based on three phases. The attract loop created to gain attention, the writing phase, and the linking phase. To differentiate between the three phases, the board alternates colors to cue the user that something new is happening. If a user is still in proximity of the *Message Board* when the linking phase is complete, it reverts back to the writing phase. Otherwise, it returns to the attract loop.

While writing has always been an interest of mine, the concept of the *Message Board* illustrates the potential of digital handwriting. One of the most successful aspects of this project was in the new system of communication that was created. Connections were based on physical properties of writing rather than content. The meaning of the messages was no longer about what they said, but

in how they were written, which is exactly what is disappearing in our current models of digital communication. My writing looks like your writing.



*Attract Loop*



Material for the Generalbass

anything but

(born). My own first

being, one whose  
personality

tion only

had taken the most elementary

of paired

an 'all-e'

day conduct

ality.



## NARRATIVE

# Adrift

It was a typical assignment. I received an envelope full of salt, a scrap piece of paper with “adrift” handwritten in blue ink, and a week to finish the project. This was my first semester in the DMI program. I was confused.

The Drive home after class provided a little brainstorming time. “Adrift, afloat, aboard...” These words rifled through my head—a curious mantra stuck on an endless loop. “Adrift, afloat, aboard...” Across the Zakim and onto I93. “Adrift, afloat, aboard...” down I95. “Adrift, afloat, aboard...” up Route 3. “Adrift, afloat, aboard...” Onto the Lowell Connector. “Adrift, afloat, aboard...” Into my driveway.

After forty-five minutes of driving, no other thoughts even threatened to enter my mind. “Why does art school have to be so damn strange,” I thought to myself. “What could this assignment possibly have to do with anything?” I imagined getting pulled over and the police officer finding my baggie full of white powder. “It’s salt,” I’d protest, “I’m in art school for God’s sake.” I could think of nothing else but being lost at sea. Attempting, despite all vagary and confusion, to stay above water.

In my studio I listed everything that contributed to my growing stress levels. School, work, money, thesis, presentations, health, projects, reading, the list sprawled across the page. Creating this compendium of anguish made matters worse. I still had no response to the assignment and now all of my problems spilled out onto the page, a grocery list of anxieties. Not to mention my other projects and the mountainous pile of reading waiting to be picked through.

After the first few weeks of school, my three-ring binder became bloated. Dozens of photocopied packets were stuffed into plastic folders. Most of the readings came from theory books, art journals, and other esoteric academic texts. It was a mixed bag of recommended and required readings. I lost track of who was who and decided that reading everything would be less time consuming than sorting it all out. More importantly, however, I needed a solution for this assignment.

Inexplicably, I decided to make an origami boat out of the list I had written. Following an online tutorial I carefully folded the page from my sketchbook and in a few minutes had my own sailboat. Dry-docked on my desk, the small schooner looked out of its element. It needed some water. I grabbed my three-ring binder and removed one of the photocopied packets. "I shouldn't do this," I said to myself. "Ahh, what the hell." I cut each page of the packet line by line. The scissors sliced each page creating a pile of confetti text. After I finished with the first packet I grabbed another. One at a time I cut through the whole mountain of text before finally placing the boat on top of my placid sea of disconnected words—the gentle waters of a semester's worth of reading.

"What did I just do?" I panicked. Now I had a paper boat resting on a lifeless sea of words. Somehow I needed to make this thing move.

Sensing a near disaster, I pulled out my digital camera and tripod. Between shots I rearranged the words and inched the boat across the scene. I repeated this until the boat reached the other side of the ocean and then loaded the images onto my computer. I strung each frame together. The water flowed gently and the boat jumped across the screen. I repeated the process again, but this time I devised a way to make waves by rolling a tube underneath the ocean floor. After eight hours and a few hundred clicks of the shutter, I had a twenty-four second feature film.

In the process of making the movie, I came to appreciate and accept two essential elements: chance and surprise. As it was impossible to see how each frame fit into the whole sequence, my focus was on repetition. Pay attention to one frame at a time. First mess up the words, then roll the wave forward, and finally gently move the boat—snap.

The nature of the Design As Experience class was to instinctively react, create, and reflect. All of the assignments were open for interpretation. There were no boundaries and they lasted only a week to two weeks. As a class, we bonded together because of the odd and, at times, uncomfortable nature of the projects. Despite our camaraderie, I still wasn't confident showing the film in class. I didn't know what it meant or why I created it. The piece felt unfinished and the animation wasn't very good. "I'm not sure what this is or why I did it," I told the class, "but this is my response."

It was a simple movie. A fade in to the rolling sea, the boat gently rocks into the scene until nearly capsizing from a wave, and a final cut to an overhead shot of the boat swaying—fin. There's no plot, little action, and no readily available meaning—I don't think it can even be classified as a film. Additionally, it isn't interactive and nothing overtly characteristic of new media can be found in its short twenty-nine second life. What was it?



Recently I was reading Hans Richter's book *Dada Art and Anti Art*. Richter noted that, "Chance became our trademark. We followed it like a compass. We were entering a realm of which we knew little or nothing, but to which other individuals, in other fields, had already tuned." This passage reflected similar sentiments I felt when creating this stop-motion response. I tuned in to my instincts and let frustration and anxiety create something I was completely unqualified to make. The outcome was less important than the process of tapping into a subconscious discovery. This was my first major step navigating an approach to the looming thesis project.

During the critique the class pointed out something I hadn't considered. The entire animation was created using words. The paper boat was covered with handwriting; the sea was mottled with nouns, verbs, and adjectives. Why was I moved to use words?

I couldn't answer the question. It was chance, I thought, that led me to the words. I was overwhelmed and needed to relieve some pressure. Cutting up the packets felt wrong at first. I imagined my professors' enthusiasm in choosing the readings and taking time to photocopy each one. But after I had shredded a few of the packets, a satisfaction washed over me. I was doing something bad for all the right reasons.

Since graduating high school, books became sacred objects (even cheap paperbacks). I started reading everything that I should have read in school. Poe, London, Henry James, and other American authors started filling my bookshelves. Pulling this thread led me to study literature and eventually, following a series of twists and turns, dynamic media. My thesis work is an opportunity to continue pulling the same thread I've been tugging on for thirteen years and one I'll never stop following.

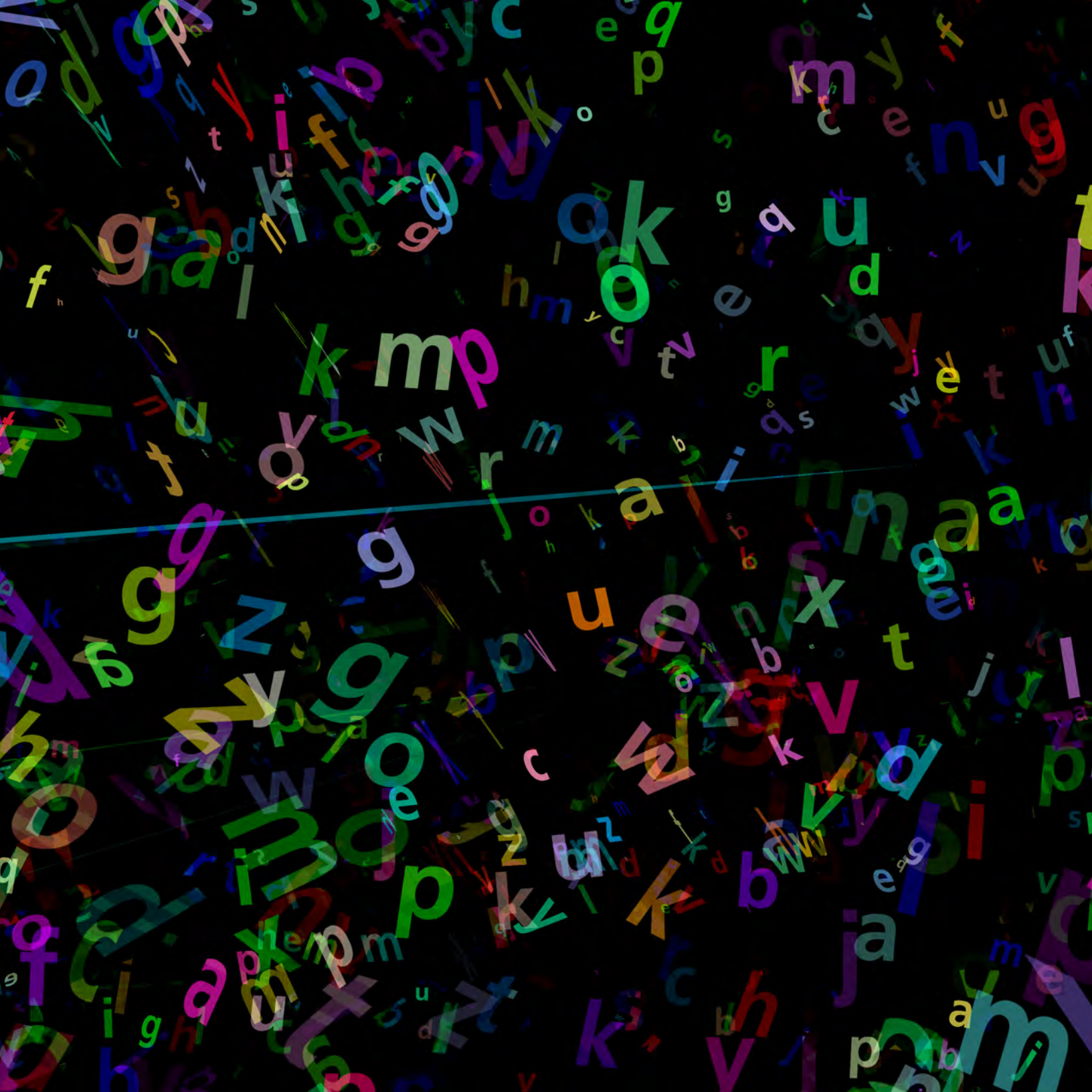


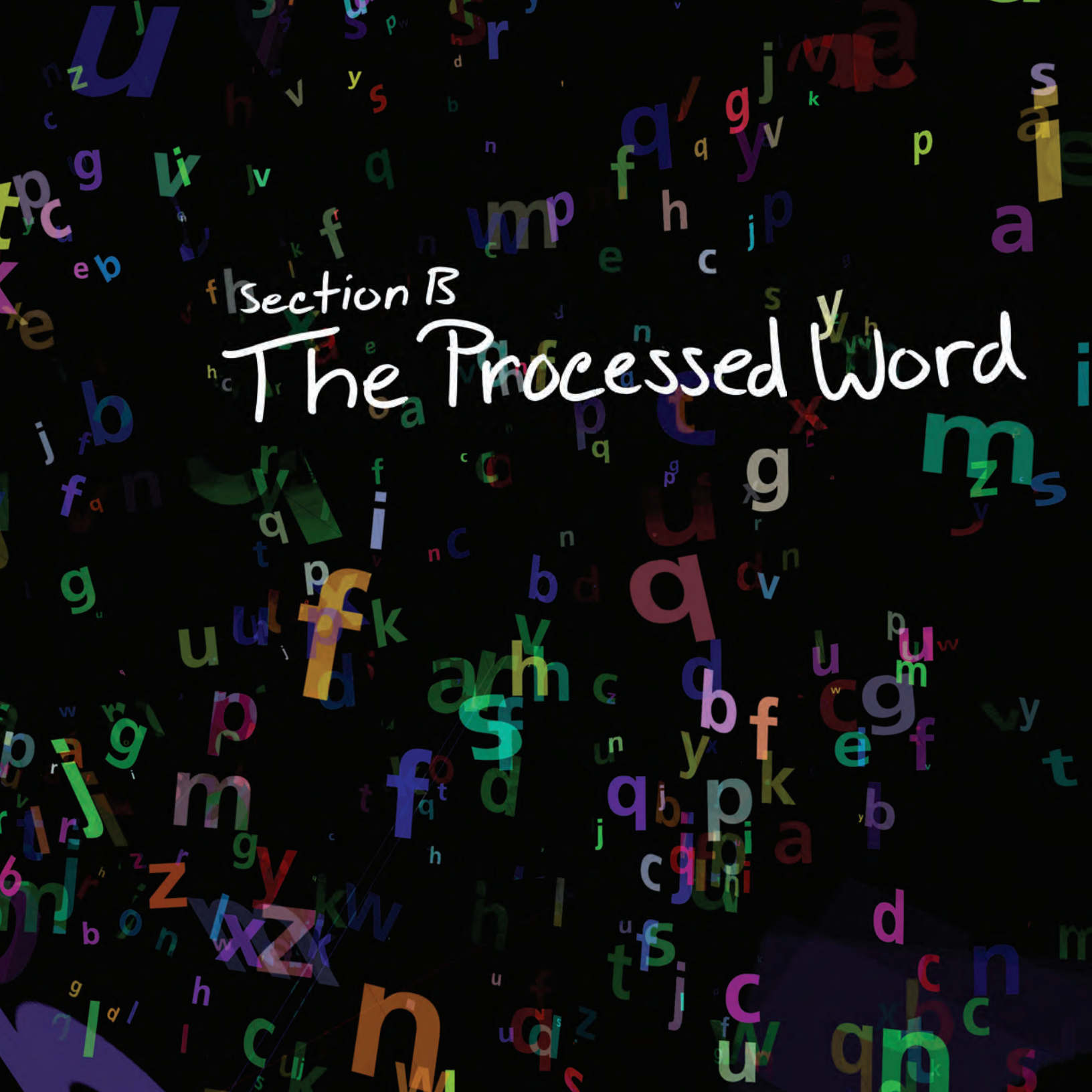








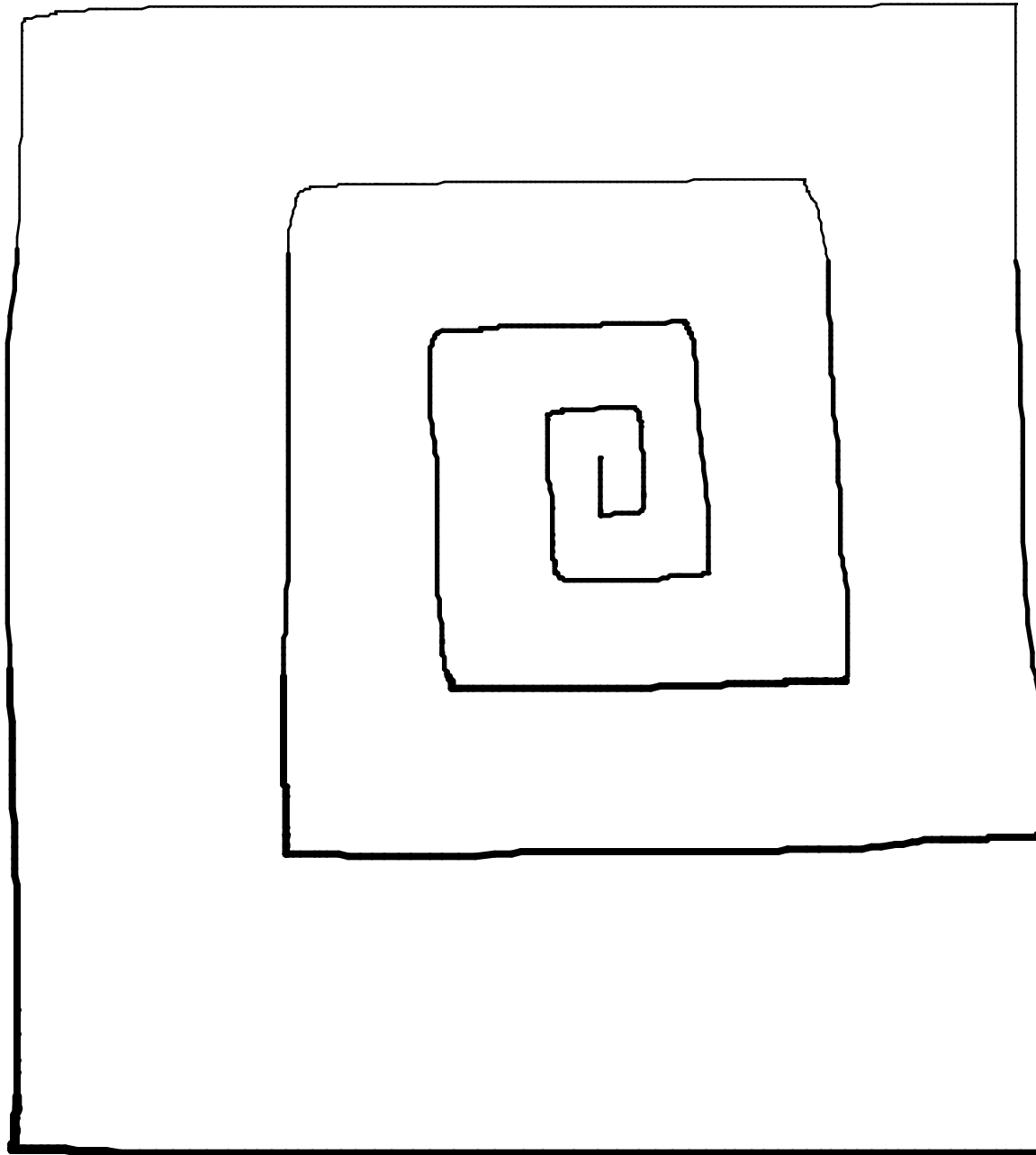




Section B

# The Processed Word





### CASE STUDY THREE

## Sound Writing

*Sound Writing* is an experiment in alternative writing outputs. Traditionally we expect a mark to be made as we drag a pen across the writing surface, but what if you get sound instead? Or even better what if you get sound and a mark? Digital media allows us to infinitely remap the inputs and outputs of any given medium, rewiring our expectations much like the Dada artists of the early 20th century.

Dada was never about creating the most visually pleasing art work. Instead, it continually prodded viewers to question the role of artwork, the artist, and viewer. There was a spirit of rebellion in their work, but it was most successful in redefining our relationship to media.

As a piece of Kurt Schwitters' "Ursonate" illustrates, there is no emphasis on the literal meaning of words:

Fümms bö wä tää zää Uu, pögiff, kwiiee.  
Dedesnn nn rrrrr, li Ee, mpiff tillff toooo, tillll,  
Jüü-Kaa?  
Rinnzekete bee bee nnz krr müüüü, ziiuu  
ennze ziiuu rinnzkrmmüüüü,  
Rakete bee

Instead he uses pure sound to reinterpret language. Dada's anti-art movement spread to virtually every realm of artistic world: performance, painting, and poetry—always demanding new questions. In this spirit, I wanted to see what new emotions and questions writing could provoke. So I started with sound.

The concept was to divide the screen into quadrants and depending on where the user was drawing different sounds were triggered. I also experimented with mapping the y axis to pitch. The higher the mouse moved on the y axis the higher the pitch. While this was a relatively simple idea, it still yielded some interesting results. The heart of this project was to see whether the sound or the writing/drawing become the predominant focus for the user. Do they make a sound composition, drawing, or both?

## Technology

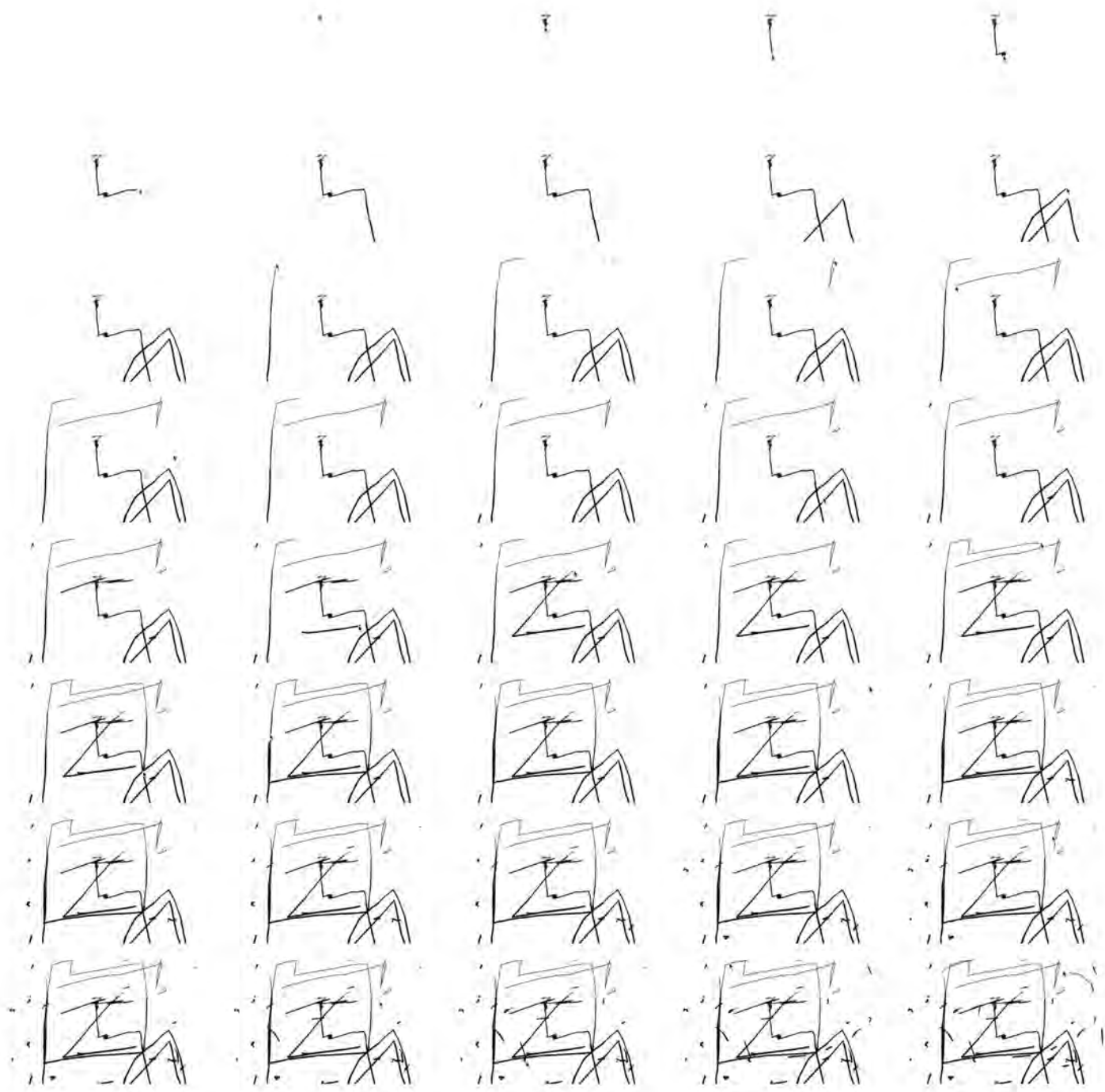
This project allowed me to dive into programming with sound, something I had very little exposure to. I started by simply loading and playing sounds and moved quickly to more complicated procedures like dynamically switching sounds as the mouse was dragged. The pitch shifting code was handled with byte arrays and other complicated mathematical stuff that I still don't really understand (Thanks, Colin!).

The core issue to solve was in the number of sounds stored. The code I initially wrote allowed me to store and playback 4 sounds that were mapped to different parts of the stage. However, if I wanted to change that number to 8, for example, I would need to manually change the code to make certain accommodations. I needed to figure out a way create an expandable sound space so that however many sounds I loaded into the system the program would automatically calculate the number of positions on the screen.

I was able to create a multi-dimensional array that swapped the sounds depending on the mouse position and then another function was created to divide the screen based on the number of sounds that were loaded into the system (Thanks, Bert).

*Following page: animated sequence*





This solved all of the technical issues and left me with the ability to add as many or few sounds into the system—now I just had to figure out what sounds to load.

### Process

Like some other projects related to my thesis, the design followed the functionality of the program. And in this case all of the functionality was behind the scene. Since the writing and sound were the emphasis, buttons and other interface elements would only have gotten in the way. Any initial sketching done was to figure out how to properly divide the screen to accommodate the writing input and the sound output.

The relationship between the writing input and the sound output always seemed disparate. So the challenge, which I never fully got right, was what types of sounds should be played as the user draws. I started by simply recording strange noises. I would hum or groan into the microphone partly as a joke and then load them into the program to see what happens. This was fun at first, but then there was a deep level of frustration because I couldn't connect the aural and visual components.

I decided that I should test the project and see if I could get some ideas on how to proceed. The first user simply tested the system to try to figure out what was going on and see if they could



*Completed sequence*

break it. In this case, neither sound nor drawing mattered. Another user drew a picture and didn't seem to care about the sound at all. The final test yielded a combination of the other two. One of the important things I noted during all of the tests was that, regardless of the types of sounds that played, each user seemed to enjoy the process and surprise of the sound output.

I set out to determine if users would be more interested in the sound or writing as an output, but it became more interesting to have two records of the same action. This is similar to the *Writing Recorder* included in section A. The output yields two copies a digital set of x and y coordinates and a physical copy. In this case, however, it is more abstract. A sound is recorded with the digital drawing—or is there any relationship between the two at all?

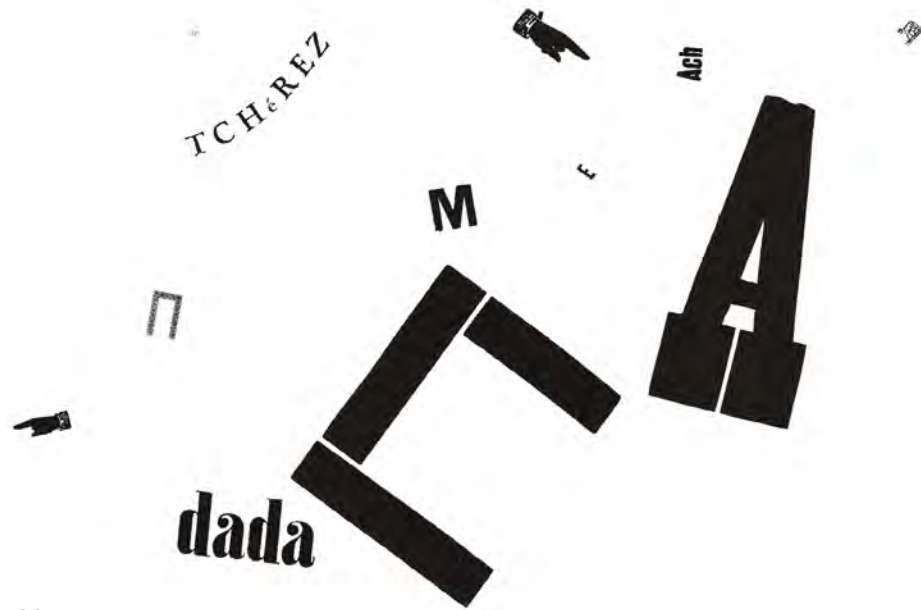
## CASE STUDY FOUR

# Dada Machine

The *Dada Machine* converts writing into an audio/visual experience that strips away many conventions of written communication. The basics of digital writing rely on a keyboard to input letters and a computer program that organizes the writing into lines, paragraphs, and pages—an efficient, organized system. The *Dada Machine* interrupts this system by remapping the keys, shifting the visual output, and adding sound to the experience. As each key is pressed, a recording of a mouth sound is played and a letter animates onto the screen before landing in a random position. For example, if the “a” key is pressed, the O mouth sound plays and the letter “s” animates onto the bottom corner of the screen, making it impossible to create a coherent message.

Besides their keen visual sense, Dada artists displayed an understanding of how the





*First composition*

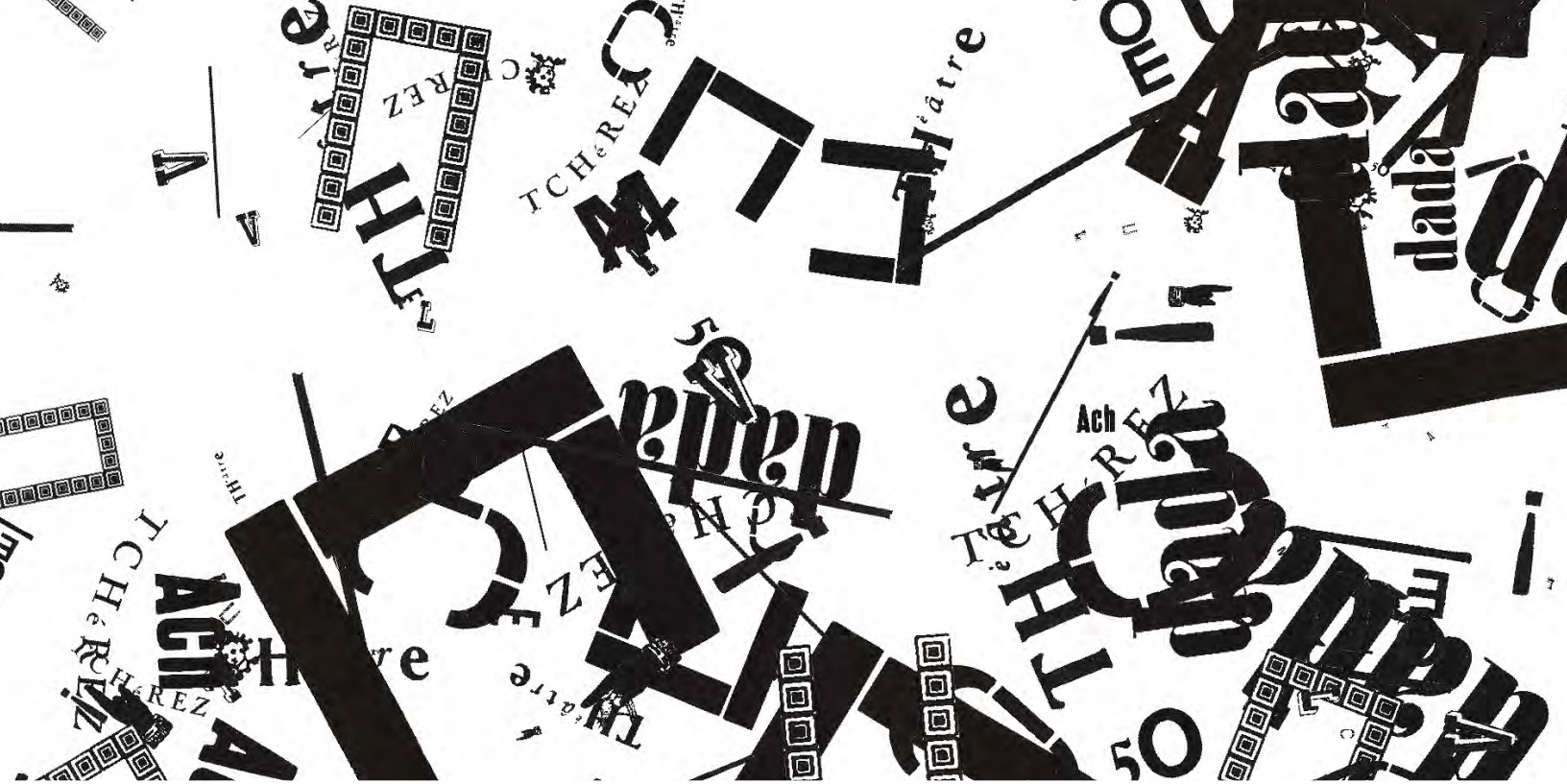
expectations of the viewer can significantly alter an experience. Duchamp's "Fountain," for instance, was a remarkable piece because he playfully toyed with the expectations of his audience, and by doing so he called into question the role of the artist, viewer, and object.

Similarly, I'm hoping that by interrupting the writing process, the *Dada Machine* will question the purpose and experience of written communication. The writer becomes a performer and their incomprehensible message is the medium.

## Technology

The *Dada Machine* was a breakthrough for me. It was the first project that I conceptualized, sketched out, and coded successfully without much outside assistance. I was able to list out the steps and write the program so it performed as expected. While this seems like a pretty basic priority for programming, it was concrete proof that all the work I had been doing to learn how to program was paying off.

*Following page: second and third iteration (from top to bottom)*







*Fourth iteration*

The *Dada Machine's* code consists of a few key elements: storing components in arrays, cycling through them and making random selections, and placing them on the stage. The first step was easy. Flash creates a custom class for each element added to the library and they can be accessed through that class. All I needed to do was create an array that stored all of the classes. To cycle through the array I initially created a timer function that pulled elements from the array and stopped once the timer hit a certain point. This changed once I began using the keyboard to control the output. Most of this was relatively familiar to me.

Remapping the keyboard keys, on the other hand, was something completely new to me and surprisingly simple. ActionScript identifies keys through their unique key code property. Once I knew all of the key codes, I wrote a switch statement that checked which key was pressed, and what the program should do when they were pressed. For instance, hitting the "a" key triggers a specific function. This is what eventually controlled the output of the program.

### **Process**

The *Dada Machine* project had two phases. The first was creating a program that created unique



collages comprised of various Dada elements. Their were only two options for this program “run” and “clear.” Run created the composition and clear, not surprisingly, cleared the screen so the program could be run again. This iteration of the project didn’t require much user input so I made some alterations. The second phase required more user input via the keyboard and was more inline with my thesis direction.

Since I had been working with experimental writing concepts throughout the last couple of semesters, I decided to think more broadly about the writing experience. At the time I was specifically influenced by the collage work and poetry of Dada artists. Traditionally we think of Dada artist as anti-artists, but they could have been equally called anti-writers. The explosive textual compositions and nonsensical poems pointed to an interest in the connection between visual and verbal communication. I wanted to pay homage to the spirit of their work and question everything I knew about writing at the same time.

As chance and randomness were the hallmarks of Dada, I decided to create a program that could randomly assemble a Dada collage—A digital assembly line that created infinite possibilities from the same pieces. The difficulty came in choosing the elements from Dada art pieces

that would fit together at least in the sense that they didn’t obscure one another completely. The original system consisted of mostly black elements that, when randomly placed on the screen, did not create an interesting visual result. The current version of the system combines a variety of elements in color and black and white, which work better when the program is run, but still feels incomplete.

An important realization was that I needed to have some control over the outcome. Some of the pieces worked better as background elements and others worked better in the foreground. To accommodate for this I separated the elements into different arrays identifying them as background, black and white foreground, and color foreground. The program cycled through the arrays one at a time until the composition is complete. This iteration of the program ensured randomness, but within certain defined parameters that produced the most interesting results.

My advisor asked me a couple of key questions: What does this have to do with your current work? And what is different about it? Initially, I couldn’t answer either of the questions

*Following page: fifth iteration*





because I hadn't looked at my work from this angle before. It is different, we surmised, because it does not provide a space for others to converge and communicate. While the *Dada Machine* is interesting visually in what it creates, it is not about providing a writing surface for others to utilize and become part of the creation. This thinking helped me recontextualize the project into something requiring more input from users.

This direction triggered the second phase of the project and it became more about the act of writing and our expectations as writers. I changed the program so it responded only to the keyboard. Users would be prompted to type a message, but none of their expectations would be met. The keys were mapped to random letters and the letters sprayed onto the screen chaotically. At this point I decided to add random letter sounds to create a more dysfunctional writing experience. Now by pressing the "a" key, the letter "g" appears, but the sound for the letter "o" is triggered.

The development of the *Dada Machine* made this such a memorable project. It started as one thing and, through a process of programming, testing, and refining, it became something else entirely. Where the *Message Board* project was conceptually successful, it didn't have the chance for testing and refining, so it is impossible to



*Sixth iteration*

know if it would actually be successful. The *Dada Machine*, however was successful in the opposite sense. The process of making it informed its design. From the beginning I didn't have a concrete idea of what this project was about. It was a fluid concept that changed depending on the outcome of my testing. The visual results were surprising and the process made this an extremely pleasing experience.

*Next spreads: final compositions*





























NARRATIVE

## Summer Reading

You are going on vacation with your family. Every year your parents rent a cottage near the beach and you spend the days lazing in the sun and swimming in the cold ocean water. At night you go to the arcade to play video games until sadly you run out of money. You dine on pizza and fried dough and each year you hope to avoid a painful sunburn.

Before they get on the highway, your parents go to the bookstore. There is no parking so they pull around the back of the lot where there is a single secluded spot. Your father turns off the engine and asks if you are going to join them in the bookstore. Your brother and sister are yelling with excitement.

*If you decide to go with them in the bookstore, turn to page 91.*

*If you stay in the car, turn to page 89.*

You don't buy any books at the bookstore and spend the summer bored. Your family spends their time reading and you have nothing to do but sit silently in the sun. You get a horribly painful sunburn and really wish you bought a book to read.

The End!



Your family heads into the bookstore and you are alone in the car. It seems very quiet and you don't see any other people around. Your father left the keys in the car so you could listen to the radio.

As you begin fiddling with the stations, something suddenly darts out from the woods. You turn quickly to see what it is and you realize that it's just a cat chasing after a bird. *Phew*. You try to relax and turn back to the radio stations. After fiddling for a few minutes you realize that nothing good is on and you switch the dial off.

Just as the dial clicks off, you hear a knock on your window. A bearded man in raggedy clothes is banging his fist against the glass. Your heart begins to race and you notice that he is holding a large knife in one hand.

*If you press on the car's horn to try to alert someone of your situation, turn to page 90.*

*If you get out of the car and run screaming into the bookstore, turn to page 92.*

You start honking the horn and scream wildly, but nobody hears you. The bearded man breaks the glass and enters the car. He looks at you wildly and stabs you with his knife.

The End!

You enter the bookstore with your family. Immediately your brother runs off in search of a book and your sister stays by your father's side. You walk around for a few minutes with your mother and don't see anything interesting. She goes over to the mystery section and looks at fat books you'd never be able to finish reading.

She tells you that you can go off and find something on your own.

*If you decide to go off on your own, turn to page 93.*

*If you decide to stay with your mother, turn to page 88.*



You run wildly into the bookstore and get away from the knife-wielding lunatic. After a short while you calm down and wonder if the man actually had a knife or if it wasn't just a homeless man begging for some change. As you wander around the store, you realize that you probably weren't in danger and decide to look for a book.

*Turn to the next page.*

You immediately head towards the kids' section and look around. Nothing seems to jump out at you, but just before giving up, you come to a wire rack full of paperback books. One of the books is entitled *Choose Your Own Adventure*. You then realize that they are all titled *Choose Your Own Adventure*. It's a large series of books that seem fun to read.

*If you put the book back on the rack and go off to find your family, turn to page 88.*

*If you decide to buy the book, turn to the next page.*

*Congratulations! You buy the Choose Your Own Adventure book and spend the week at the beach having fun reading through all of the different possible endings. Now you can read the rest of my essay without having to make any more decisions.*

When I was a kid *Choose Your Own Adventure* (CYOA) book's were the best. They worked for me because I had a difficult time reading longer texts, my mind wandered and trying to keep focused was tiring. I often ended up frustrated. CYOA books were different. They didn't require the same demand as traditional books.

Each story was written in the 2nd person, lending the role of protagonist to the reader. After a short introduction, you decided which path the story should follow until you successfully completed the book or died in some horrible fashion. I remember frantically flipping through the pages steering my character down every ill-fated path I could. When the words "the end" appeared on the page, I immediately fanned to the beginning and started fresh.

Since this writing assignment brought back such fond memories, I decided to check out a CYOA book from the library. I wasn't sure that they even existed anymore, but I found *You Are an Alien*, number 156, sitting on the shelf. The cover was worn through with creases and loose pages jutted from the spine. The book was held together by a piece of tape. I immediately set out with the task of successfully completing the book with a happy ending.

It took three tries before saving the world from an asteroid, but I was successful. Along the way I was thrown in prison for robbing a bank, eaten by a huge sea creature, and driven to the brink of insanity and forced to seek psychiatric assistance. While this journey stirred dormant



memories, sadly I was disappointed. The writing was terrible (even for a children's book), the decisions were to few and far between, and the outcomes far less gruesome than I recalled.

It wasn't long after starting to read CYOA books when I discovered interactive role playing games. We gathered on the weekends for marathon sessions running straight through the night. It was a thrill to create different personas, enter into strange lands, and inevitably die from a magic missile caste by a more powerful wizard.

This fantasy environment fostered my interest in storytelling and writing. Each week the person in charge of running the game (otherwise known as the game master) created a story for the characters to follow. They could be straightforward stories or complex tales difficult to finish—it was completely up to us. We could be creative in a structured environment with endless possibilities.

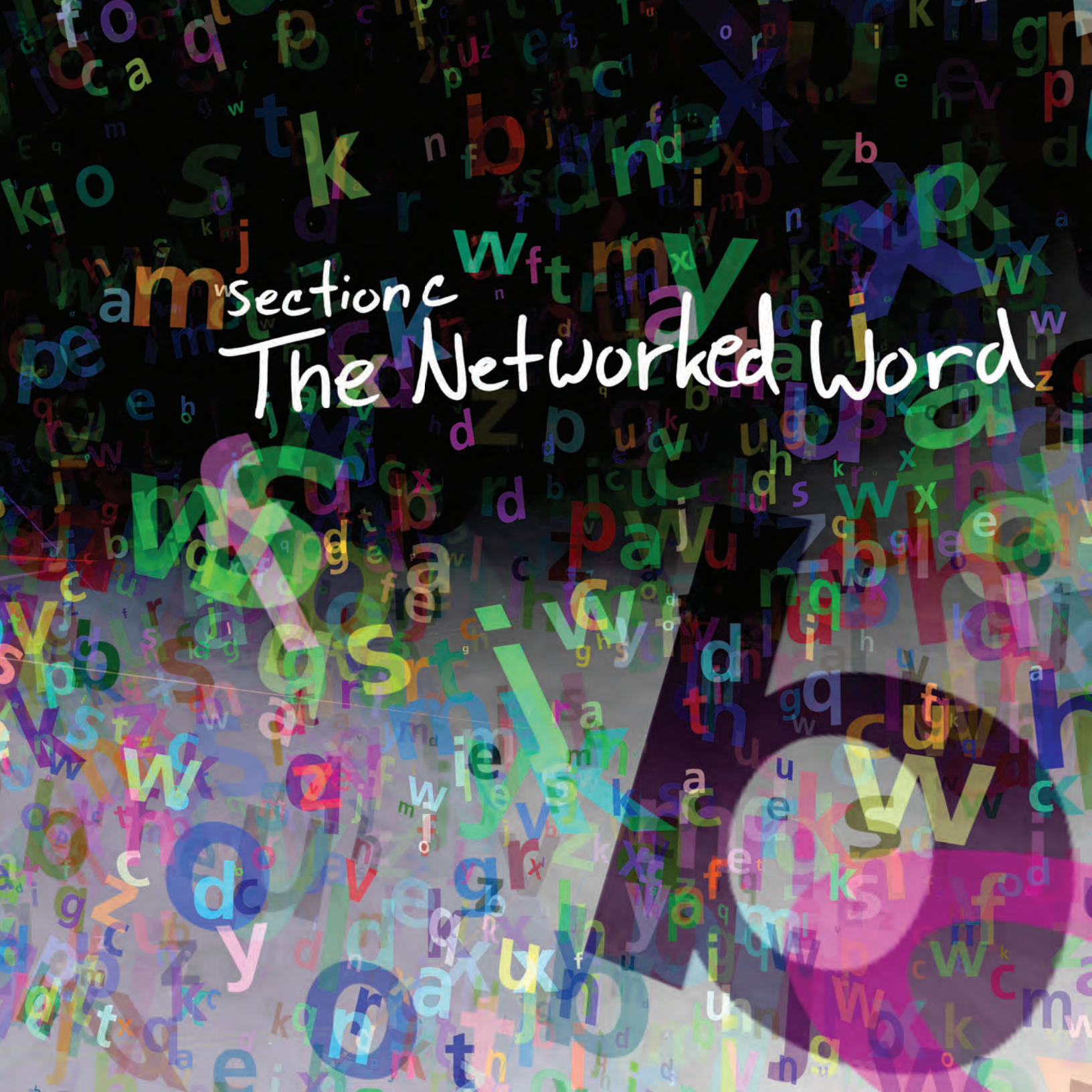
This isn't far off from what new media strives to offer users. The Internet and web applications certainly create structured environments for users, but often fall flat when it comes to allowing the freedom to explore them creatively. Certainly one of the problems I'd like to solve is how to offer a more engaging and free environment for written communication—a place offering similar shared experiences of interactive games. A place we can all contribute creatively and have fun along the way.





Section C

# The Networked Word

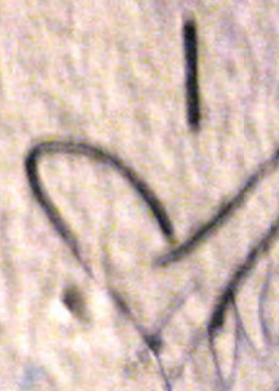




Derrida  
knocks my  
socks off

not as much a huge  
as Baudrillard!

Jay  
has



ORIAN

TONGUE

## INTRODUCTION

# On Bathroom Walls

When I was younger I visited the same public restroom on a weekly basis. It was in a basketball gymnasium. After each practice I was greeted with a poem that read, "Here I sit broken hearted/  
Paid a dime,/But only farted." This puzzled me for many reasons. Why, for instance, did the man pay a dime? Who was the author of this limerick? And why did they take their time to anonymously write it on the bathroom wall?

There is something fascinating about public restrooms. Something in this dirty, smelly, and sticky place triggers a primal urge to voice feelings and sentiments unfit for cleaner more civil environments. In his study on walls and graffiti, Psychologist Harvey Lomas points out, "it is an undisputed fact that throughout history, wherever and whenever men have contact with walls,

graffiti appears” (Lomas 91). What is it about this space that prompts communication?

Oftentimes I find myself amused, baffled, and even horrified by the literature posted in public restrooms. Messages range from harmless questions to malicious racial sentiments. In many cases conversations and heated debates are sparked. In one case I found this peculiar message (*Note each quote represents a new writer*):

“Haruki Murakami writes beautiful novels”

“Your gay”

“Your gay cousin probably knows how to spell ‘you’re’”

“You’re = You + are (contraction), Your = possessive meaning ‘belonging to you,’ Youri = popular name in Slavic cultures”

Interactive designers can learn a lot from bathroom walls. There is no interface, buttons, or pull-down menus to choose from, yet the level of interaction, while crude, can be rich and expressive. Writers are free to interact within the space as they choose—they can post their own message, respond to a post, or make a drawing of a cat. In my introduction I pointed out that each Facebook user has their own public writing space called their “wall.” But it’s not really like a wall at all. It’s just another version of sending instant

messages to other users—organized into long, boring columns. We are locked in to a specified protocol for tasks and because of this are losing an important component to interaction—control of our environment.

The Facebook “wall” promotes passive interaction. By passive I’m suggesting that sure we can pass messages back and forth to one another, but within a set of rules that immediately restricts and limits our interaction. Likewise texting, twittering, and instant messaging fall into a similar category. I am not trying to suggest that they aren’t good methods of communication, simply that the strict environments don’t leave room for creative interplay between users.

The bathroom wall, on the other hand, is a true open source environment where creativity and interaction are promoted from within the users themselves. Without specified rules, the users simply make them up as they go. I’m not implying that this is a convenient method for digital media, but an opportunity to learn from a universal activity. If a blank wall prompts interaction, what would happen with a blank web site?



## CASE STUDY FIVE

# Bathroom Writing

The writing found on bathroom walls amuses me. It is often crude and is almost always bad, but there is something universal here—across time and space people have always written on walls, and bathroom walls are reserved for the juiciest of content. The writing can be funny, puzzling, dirty, and even sad. *Bathroom Writing* is an interactive anthology comprised of this writing. In this collection, no writing is too bad—worse is better.

The goal was to create a database of 100 objects and create a series of filters to hide and reveal information based on certain properties. While there are infinite potential properties to choose from, I narrowed it to seven: genre, color, tool, location, time, typography, and illustration. Similar to the *Message Board* project, this database relies on the physical properties of text to define the user experience. How specific information is



*Interface sketches*

revealed and when it is revealed creates a dramatic story. More importantly, the design must reflect and protect this story.

In order to do this I created a virtual bathroom wall that displays information dynamically. Within the design, the user is presented with certain choices that control the initial experience. For example the homepage reveals the first filter—the user needs to choose to go number one or number two. The path chosen determines what information will be accessible. The user can always go back, but the choice will always alter the experience. In the culture of interactive media, choice matters.

## Technology

ActionScript became my friend (or at least a friend of a friend). It was the architecture I used to build all of the interactive elements. At the end of a couple of weeks worth of coding and debugging, I had a semi-workable prototype—a huge success in my book.

There isn't anything revolutionary in the code, but the challenge of having a working prototype allowed me the opportunity to work with programming long enough to get comfortable with it. This foundation was enough to help me build more complex projects like the *Dada Machine* and *Sound Writing* where I begin working with arrays, multi-dimensional arrays, conditionals, and loops.

While my uphill battle with programming continues, I made some serious progress in the development of this project.

## Process

The design process was broken into three phases: research, wire frames, and visualization. Breaking down the process this way helped to better understand the content and how to visualize it in a

*Following page: initial research*

ROCK PLASTER



Save America - Impelch Down

So where's the action around here?  
 I want some  
 Some dick  
 GRAY TRAIN

SEEMS TO ME,  
 WE HAVE ONE OF  
 TWO CHOICES...  
 HUMAN BEING OR HUMAN DOING?  
 WHICH ONE ARE YOU?  
 Politicians are  
 willing but make  
 for Magicians

Long Live Jacey Bottom  
 Fuck Uddiment

anybody know where to buy acid?  
 VMI CALL (a18) a11

Freedom for all from all.

NEVER CONFUSE MOVEMENT WITH ACTION.

YOU'RE COUSIN  
 NAME: yunggay cousin  
 probably means how to spell "you're"  
 you're = you + are (combination)  
 your = possessive marking always to you  
 yours = popular name in culture  
 yours was taught

YOUR NAME HERE

ceiling  
 CAT  
 FLEW  
 WENT

The Root of All evil!!  
 Go read Atlas Shrugged, fool  
 -BSTE  
 ADWA

ROCK PLASTER



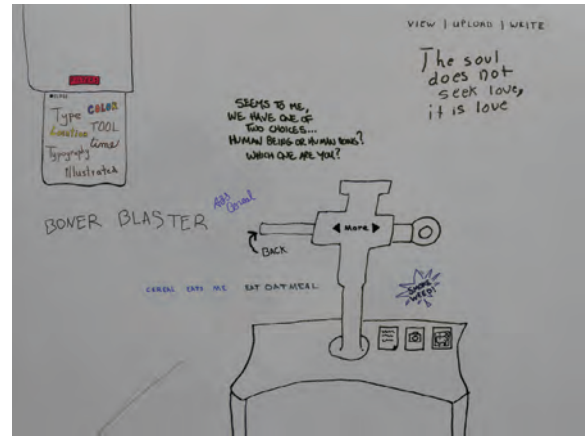




Three initial design concepts

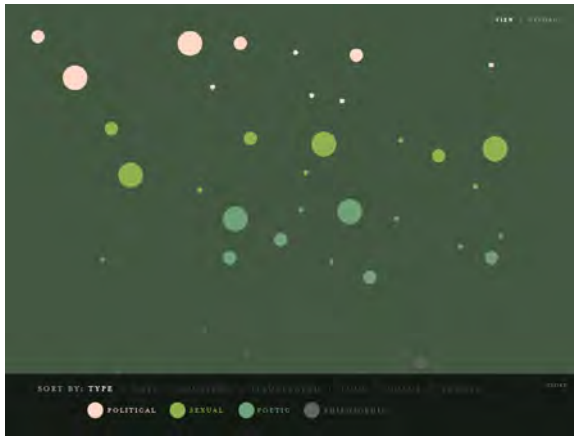
way that represents and further enlightens the experience.

Most of the research phase was spent collecting content, which meant spending numerous hours in public restrooms. During this time I discovered the shared qualities of bathroom wall writing—the tools, writing styles, and content commonly found in the bathroom space. With this in mind I questioned the various characteristics of each specimen collected. First, where were the images written, in the stall or by the urinal? What tools were used to create the messages? What was the content of the message? What type of building was the message written in? By categorizing



each post based on visual, thematic, and spatial characteristics, I developed the structure necessary to begin thinking about the overview of the database.

The wire frame sketches provided the skeleton of database, how information would flow, and areas of interaction. In the beginning of this project I thought of the database as nothing more than a simple collection of images that visitors could look through. But from the wire frames I developed a level of participation and communication based on three modes: viewing, sharing, and commenting.



When visualizing this information, I created three different concepts. My first reaction was a more conventional interface that wasn't specific to the content. The second concept used the content to drive the design. For this visualization I created a virtual bathroom wall that sorted and displayed writing based on a variety of filters. Finally, the third concept was an abstract system of circles that allowed for a variety of different information to be displayed, but again wasn't content specific.

I decided the virtual bathroom wall was the most appropriate visualization for the content and used a variety of bathroom specific interactions as the basis of the design. The user first decides

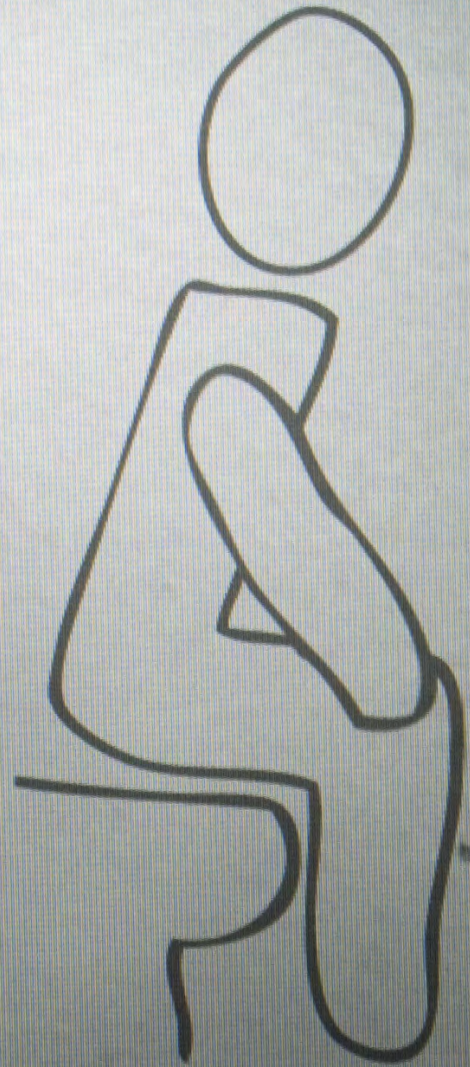
to visit the stall or the urinal, which initially filters the content based on where it was written in the bathroom. The paper towel dispenser contains the filters and to view more content another toilet is visited. When the user wants to return to the home page, the toilet must be flushed.

The main goal for the visual side of this project was to bring the user into a dingy typographic space. The believability of this space centered around the creation of hand-drawn text and images. I discarded all the basic rules of craftsmanship. No line was too crooked and messy, no image too childlike, and certainly no animation too crude. I channeled all of the time I spent in the bathroom photographing different specimen.

The Bathroom Wall Database was most successful in bringing meaning to the design from the content and bringing meaning to the content from the design. In this sense every aspect of the design was meaningful to the user and created a rich experience in the process. While the project doesn't answer any questions about bathroom wall writing (which was not my goal), it does create an interesting virtual space to explore.

*Overleaf: interface details*





#1 or #2



ot

Long Live Harvey

Freedom for all,

The time is always right

YOUR  
NAM

SEEMS TO ME,  
WE HAVE ONE OF  
TWO OBJECTS...

BLASTER

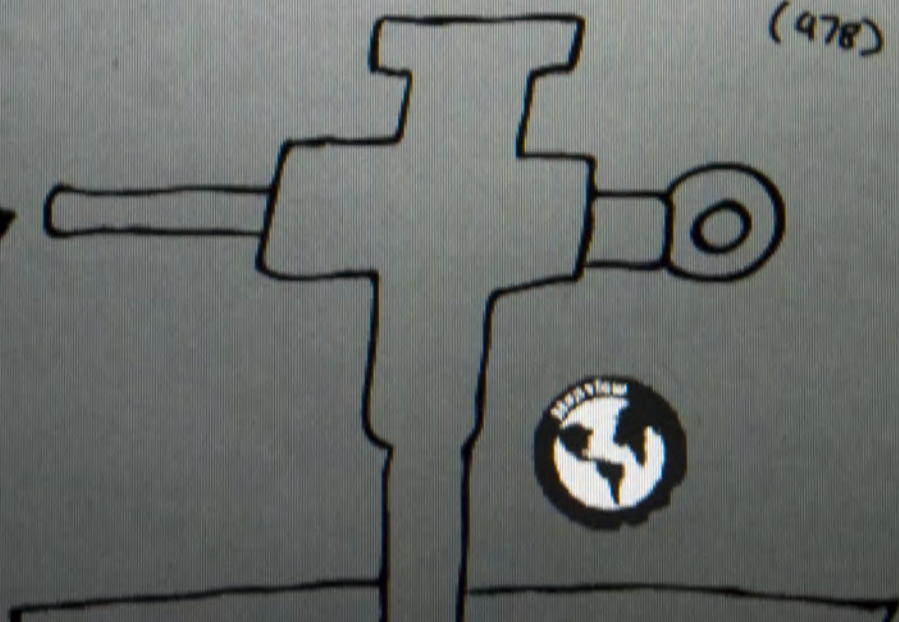


The  
Root  
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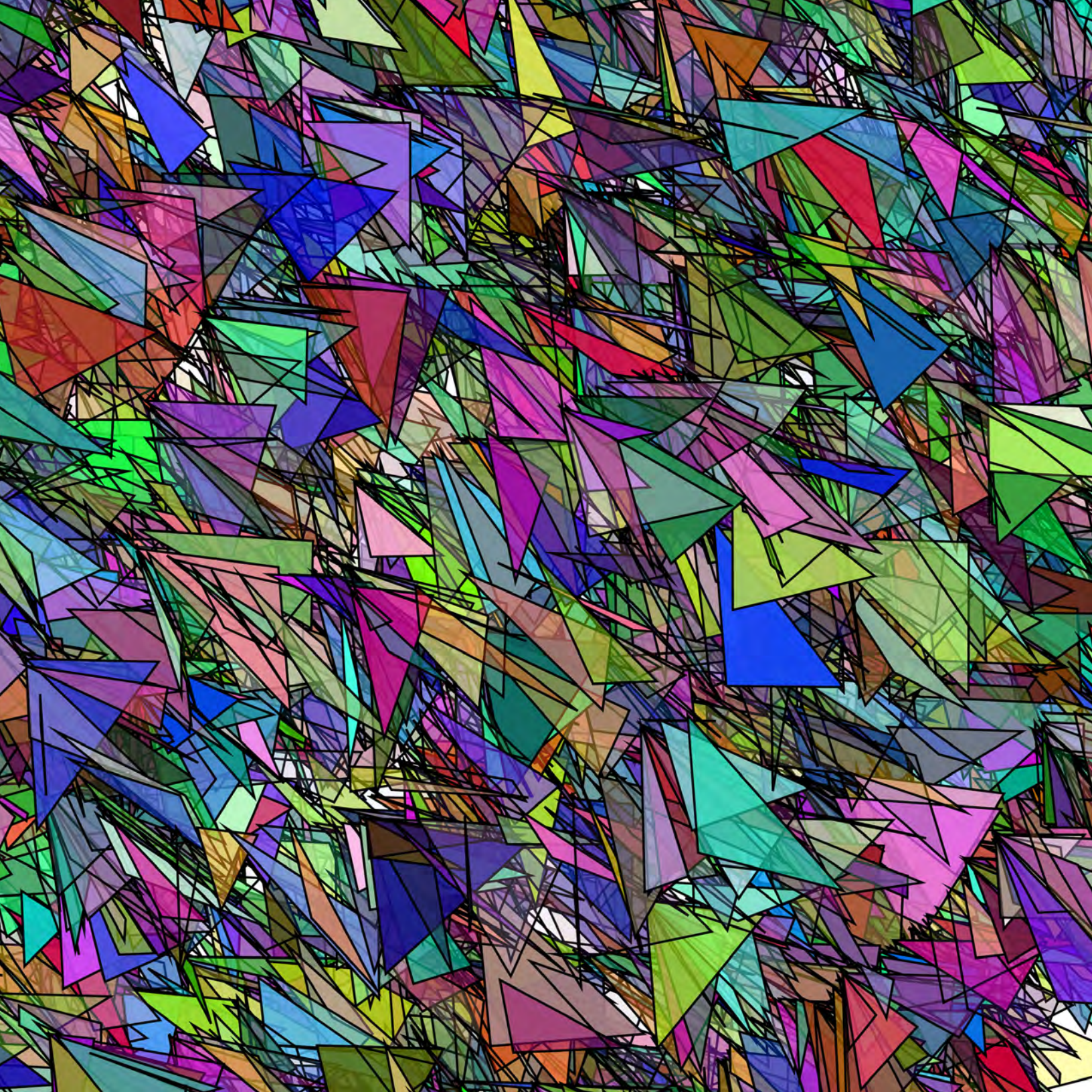
EAT OAT MEAL

YAI (ALL  
(478) 911)

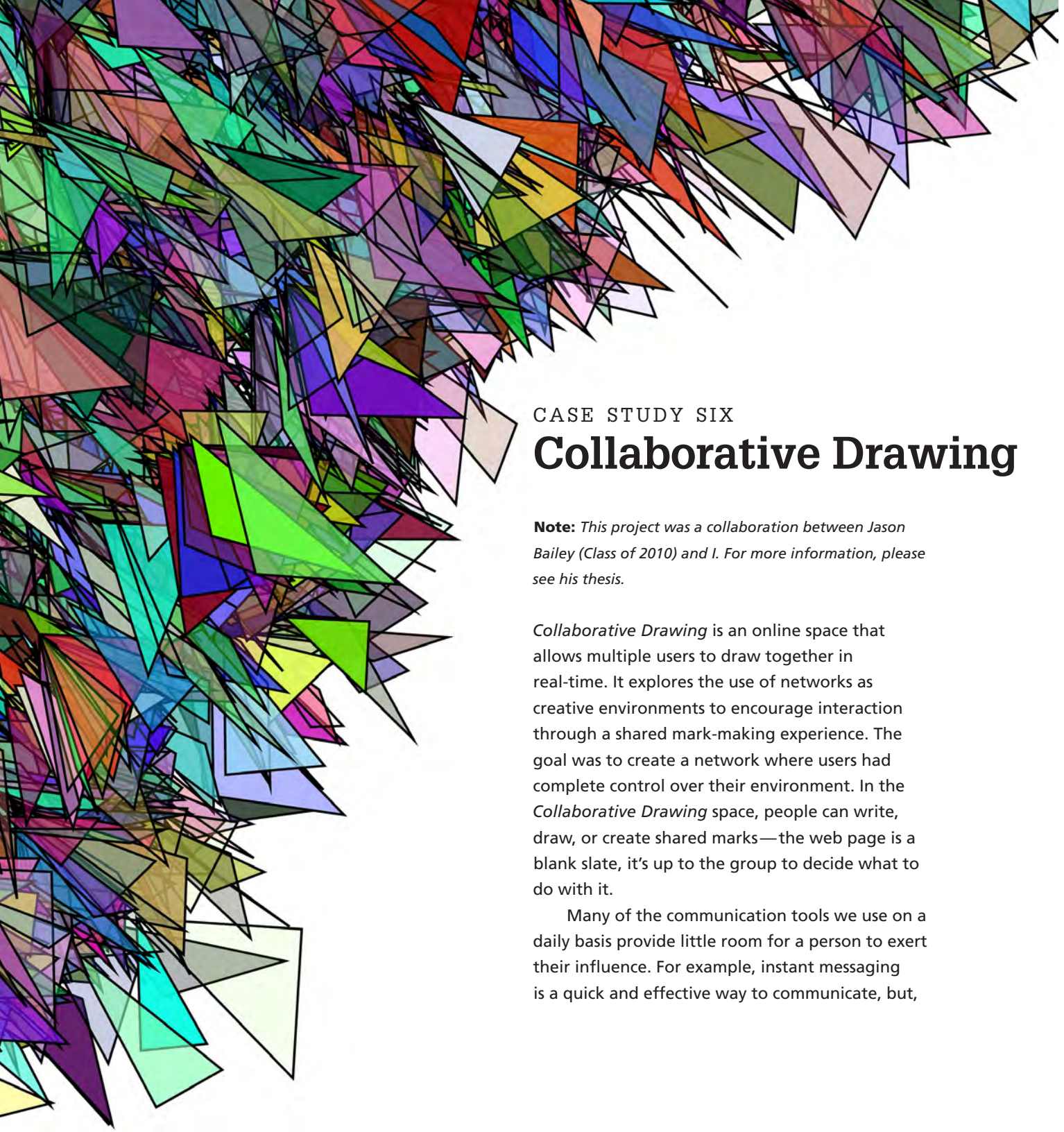
BACK ▶











## CASE STUDY SIX

# Collaborative Drawing

**Note:** *This project was a collaboration between Jason Bailey (Class of 2010) and I. For more information, please see his thesis.*

*Collaborative Drawing* is an online space that allows multiple users to draw together in real-time. It explores the use of networks as creative environments to encourage interaction through a shared mark-making experience. The goal was to create a network where users had complete control over their environment. In the *Collaborative Drawing* space, people can write, draw, or create shared marks—the web page is a blank slate, it's up to the group to decide what to do with it.

Many of the communication tools we use on a daily basis provide little room for a person to exert their influence. For example, instant messaging is a quick and effective way to communicate, but,



aside from creating a smiley face with a colon and a parentheses :), there are simply no creative options for users. The space restricts us to typing and displaying messages.

*Collaborative Drawing* sits at the opposite end of the spectrum. It is not yet an effective tool for written communication, but it is a completely non-restrictive environment. I say not yet because I do see potential in this application for many real-world uses. It could evolve into a handwriting chat similar to IM and text messaging (it's not far off from this already). I see potential for editors to have the ability to write directly on documents sent to them electronically. The strength in this project is its emphasis on collaboration.

The ability to share in the mark making process with others is unique to the digital experience. While the bathroom wall is a collaborative space where authors share their work with one another, it is an asynchronous collaboration. Networks, on the other hand, provide the means to communicate in both synchronous and asynchronous time.

By throwing numerous people into the same time and space, we noted many interesting experiences. Occasionally a leader emerged who all other users followed. The leader, for example, might draw a robot and others would draw



*First collaborative drawing*

robots or add on to existing robots. On other occasions, users would try to dominate the space and a struggle for power emerged. There were also times when no collaborations occurred at all. Users simply stayed in their corner of the screen and showed no interest in the drawings of others. These findings highlight the potential for new methods of communication to emerge from more collaborative spaces.

## **Technology**

This project got off the ground with the help of a couple of open source Processing projects written by Daniel Shiffman and Alexander Galloway (for more information, please see the header

in the Processing Code). It turns out creating a networking connection between two computers in Processing is surprisingly simple. One computer acts as the server and the other machines connect to it via its IP address. The nature and stability of the network, on the other hand, is a much more complicated animal.

Jason and I received a crash course on networks and their strange and scary protocols. One of the problems early in the project was related to static and dynamic IP addresses. A network's IP address changes frequently and each time it changed, the Processing code had to be altered. Jason came up with a solution when he found DynDNS, a company that offered free dynamicDMS service. This allowed us to create a subdomain to connect to a computer even though its IP address was constantly changing. This fix helped stabilize the network and kept it from continuously crashing, but we continued to struggle with the speed in which the network handled all the data coming in.

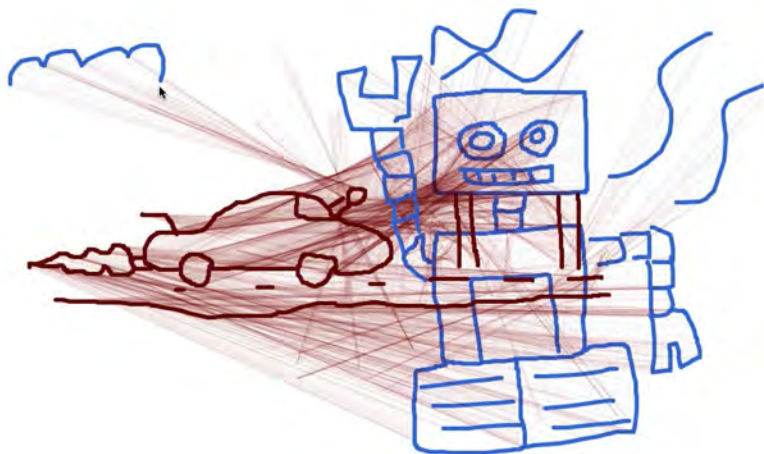
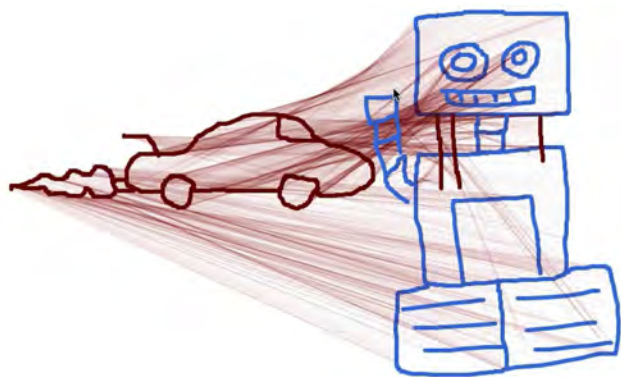
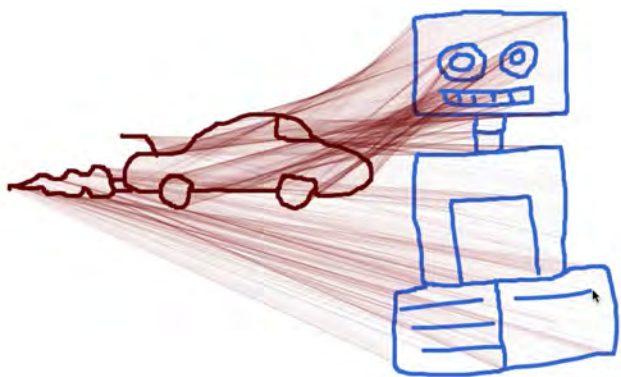
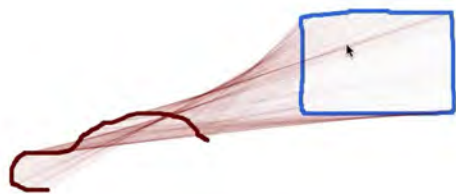
In order for each users drawings to be fed and displayed by other users, the network is bombarded with information. The program kicks out four numbers (previous x/y and current x/y) 30 times per second for each client and then passes those numbers to all other users. The more people

signed onto the server the slower the network. Because this delay inhibits collaboration—the main goal of the project—it was a huge bug. The problem seemed to be in how much information was being passed from the users to the server and then from the server back to the users.

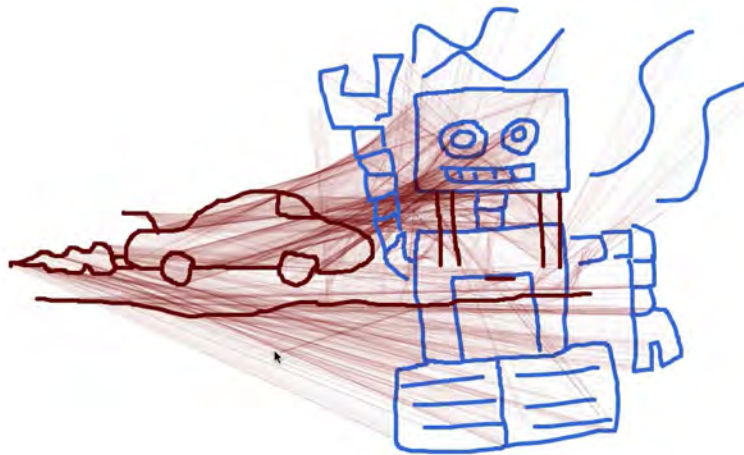
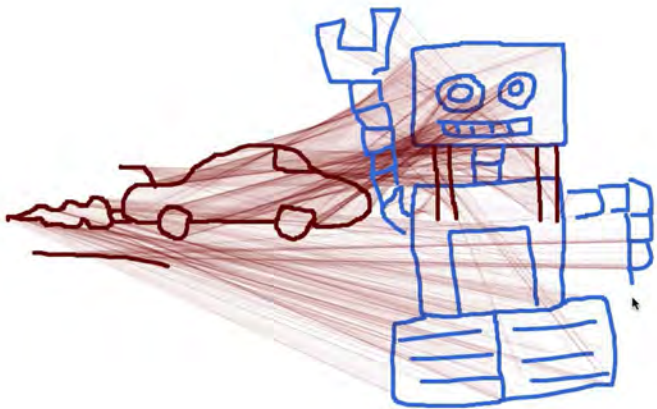
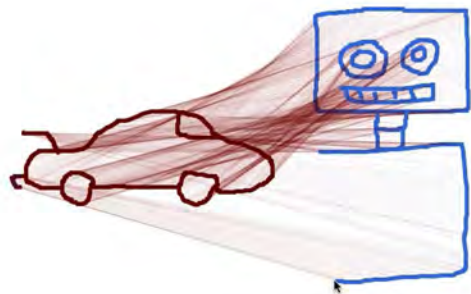
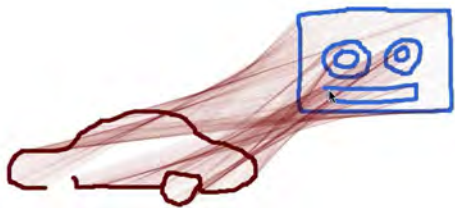
We initially thought that if we set a slight delay to give the network some time to buffer, it would be able to keep up with the flow of information. This solution helped stabilize the network a bit, but the lag time still existed. Jason came up with the final solution. We bribed a kind MIT student to look at the code and tell us what we did wrong (Jason gave him a television). It turns out that the solution was simple. Change one of the conditional statements from if to while. This optimized how the server looked for the information to send out and sped the entire project up significantly

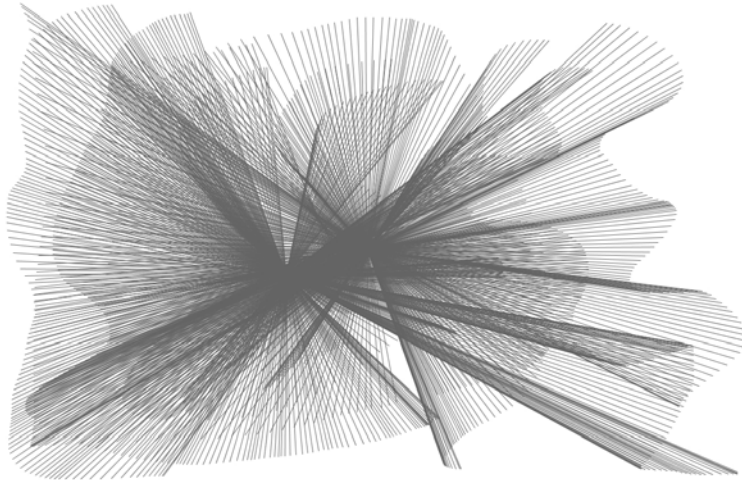
While using a network to create an interactive environment is somewhat difficult, it turned out to be a rewarding process. There were many problems to solve (most of which we didn't), but in the end we had a workable prototype to share with our peers. Success!

*Overleaf: drawing sequence*









*Example of network lines*

## Process

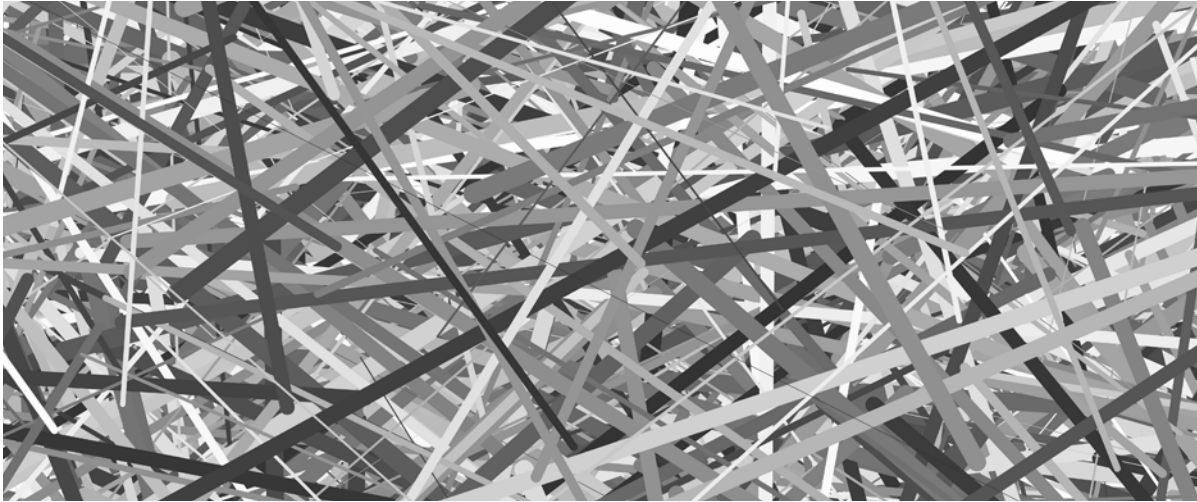
At the end of the third semester I presented a project proposal to create a virtual bathroom wall where users could communicate with one another via writing or drawing. After my presentation, Jason said that we should collaborate on creating a networked drawing application that we could get up and running relatively quickly. As his thesis was about the potential of drawing in the digital world and mine was about writing, it seemed like a perfect fit. We met before class one evening and were able to successfully connect to each other's machines and draw together. Admittedly, this sounds much grander than the reality. The code for

a basic shared canvas application already existed, but this was simply a first step.

This project progressed organically. We would draw together, decide what refinements we needed, and separately make changes. We first dealt with adding some functionality and refined the default brush used to draw. Additionally, we had to deal with the network problems like server crashes and unrecognized users. The initial design (or lack of design) was intended to solve these issues.

Somewhere along the way we made some changes to the code and crazy geometric lines started shooting all over the screen. After looking closer at what was happening, we noticed that we were sending the server additional line coordinates that connected our mouse positions. This became a mapped view of the relationship between our drawings. After tinkering with it some more we made the primary drawing lines much larger and the network lines smaller to recede into the background. After receiving some good feedback from other students and faculty who joined in on our drawing sessions, we began to focus on three aspects of the project—stabilizing the network, visual output, and line behavior.

The network lines and the general drawing lines became too chaotic after a few minutes of



*Brush exploration*

drawing. We decided that we should be focusing on the experience of the collaboration and the network lines got in the way, so removing them seemed like the best option. This created a more pleasant drawing experience, but with multiple people drawing (more than 2), the screen still filled up quickly and it became difficult to draw anything visually coherent. To solve this we decided to have the drawings slowly fade over time creating an infinite canvas.

The visual output was pretty basic. Users had a single colored line with a fixed width. There were no special tools—only lines. Changing the simple line to shapes gave us some interesting

visual results. The new brushes ranged from the practical—like thick and thinner weights—to the impractical—such as crazy colored triangles shooting out randomly and uncontrollable 3d lines. The more experimental brushes radically changed the nature of the drawing application. The farther away the brushes moved from the simple line, collaboration seemed to diminish. For example, the 3d brush, our most radical visual output, made beautiful compositions, but the collaboration suffers because users are no longer working together. The more practical brushes refined the drawing capabilities and seemed to encourage further participation.



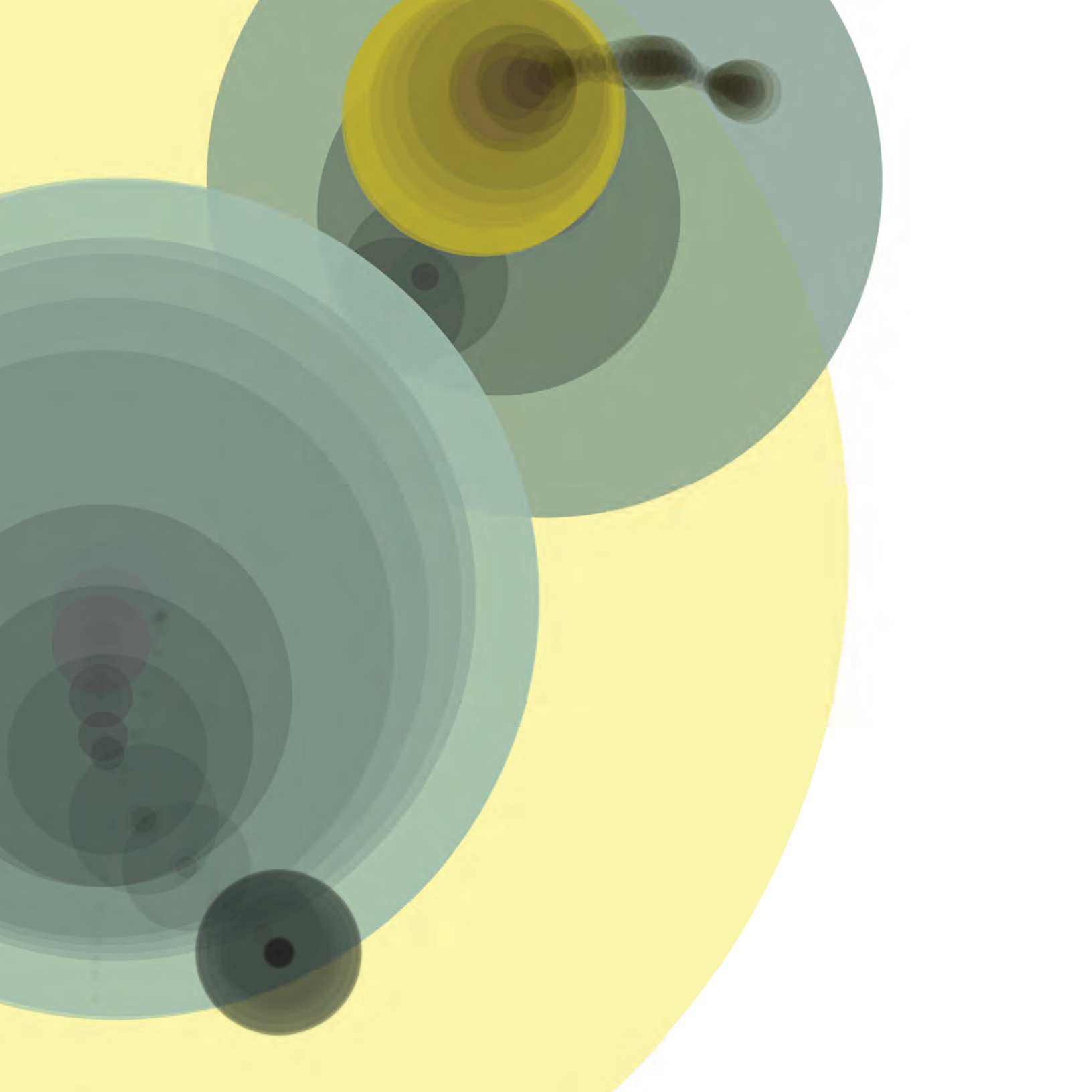


*Average distance controlling line weight*

Our final modification to the behavior of the lines was an attempt at further encouraging participation. By averaging the distance between the users, we were able to use physical proximity to drive the brush size. Users farther away from one another would have a smaller brush size, but as their mouse positions came closer together, the size would increase. Again we got some unexpected results that changed the drawing experience. When the users got very close together, the brush size magnified into a visual explosion and filled the entire screen. After this discovery, we let proximity drive the size, color, and transparency of the brushes. The visual results were beautiful and it created a game-like aspect to the program where users chased one another around the screen.

Working collaboratively on this project was by far the most gratifying experience in graduate school. More often than not, collaboration in the educational realm fail. People have different schedules, methods of working, and feel more comfortable with their own ideas. Jason and I, it turns out, work very well together and neither of us tried to steer the project one way or another. The process of working together constantly generated ideas and helped the project to evolve into its final form. From the beginning Jason and I wanted this project to be open sourced. Our end goal was to get the program to a stable condition (which it is not quite at) and then release to a broader community of users to help refine it. A project about collaboration should be created in a collaborative spirit.

*Following page: detail of proximity brush;  
Following spreads: completed drawing, user studies,  
network line detail, and brush samples*



SPACE BUS

→  
Space  
Road









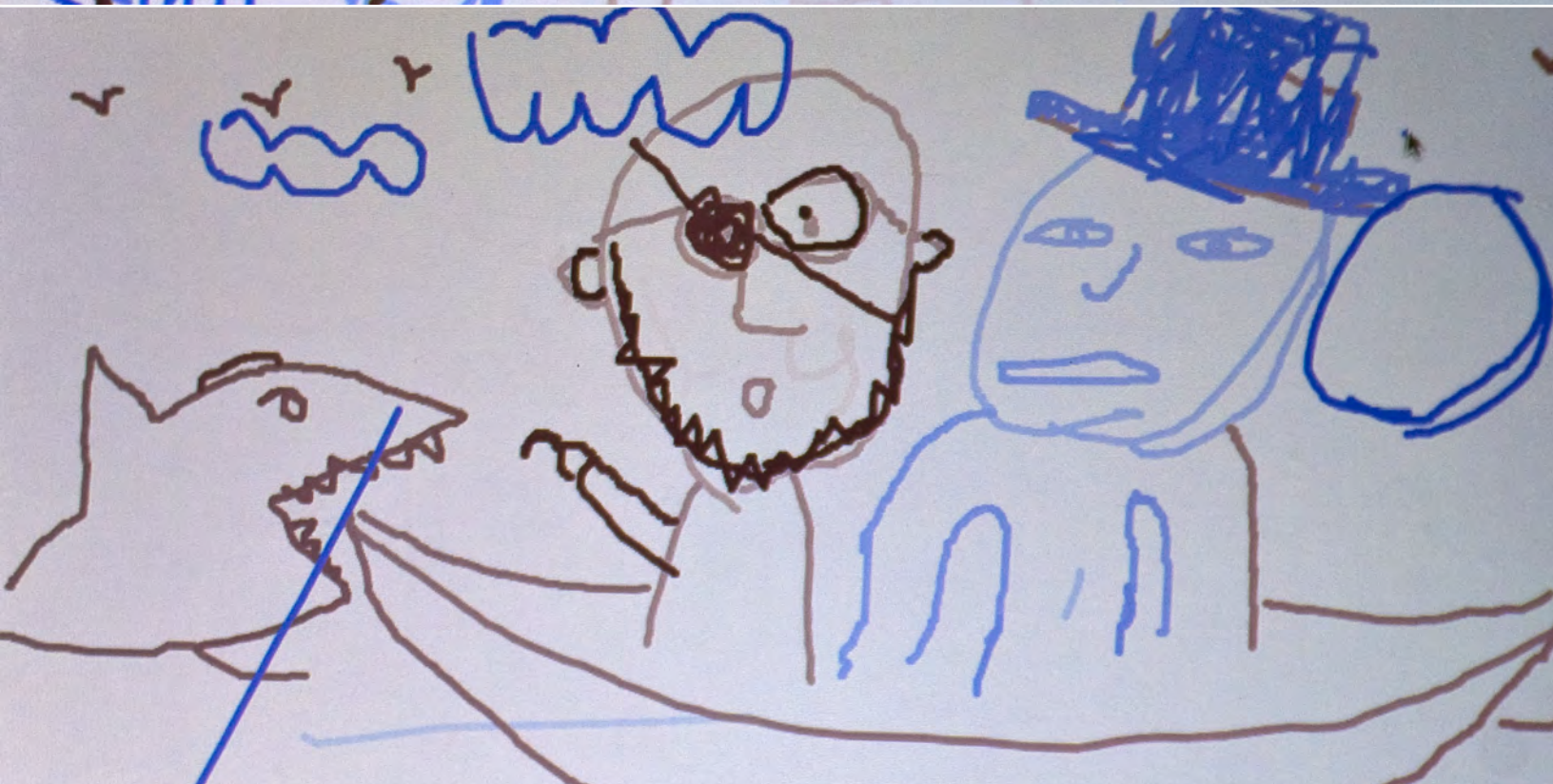




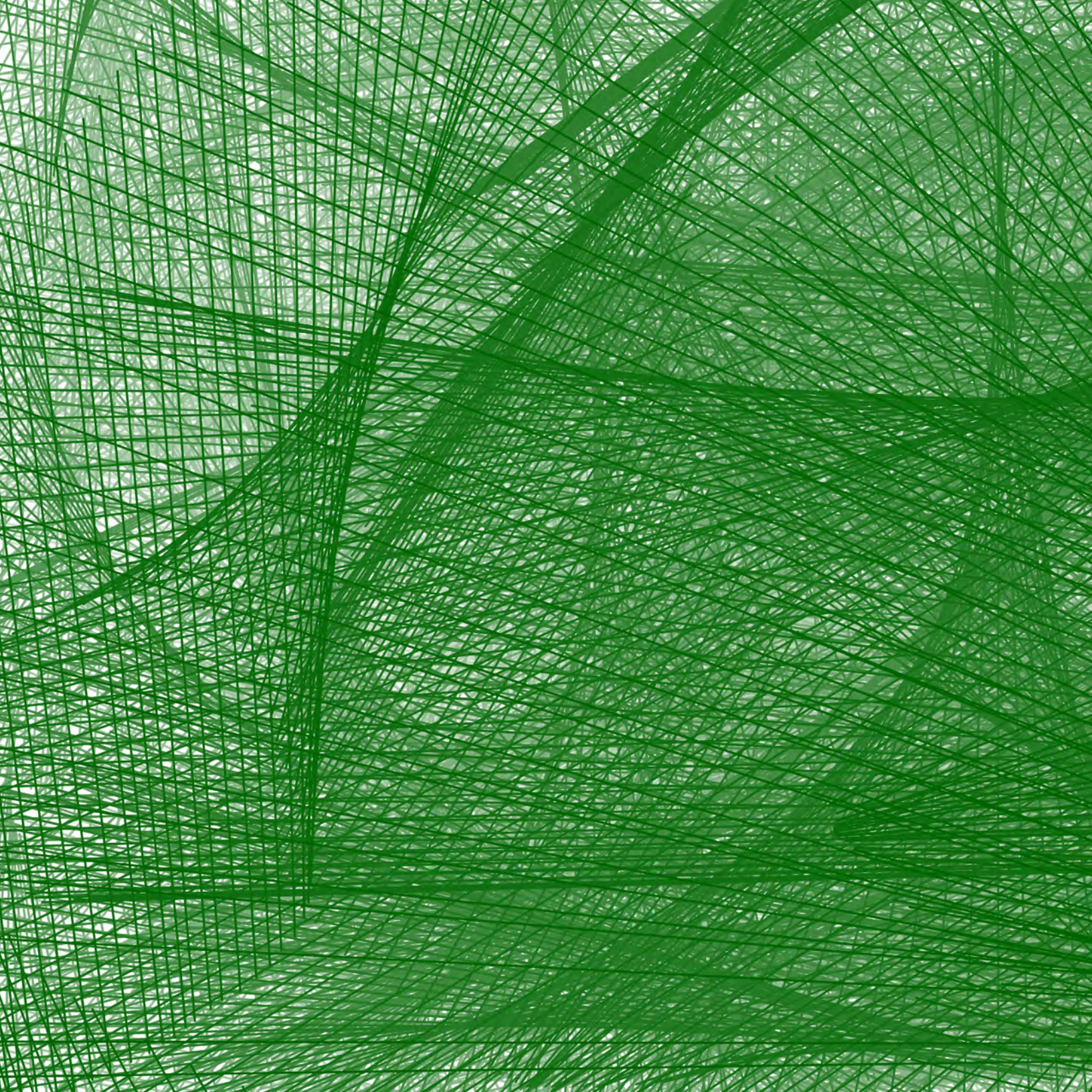




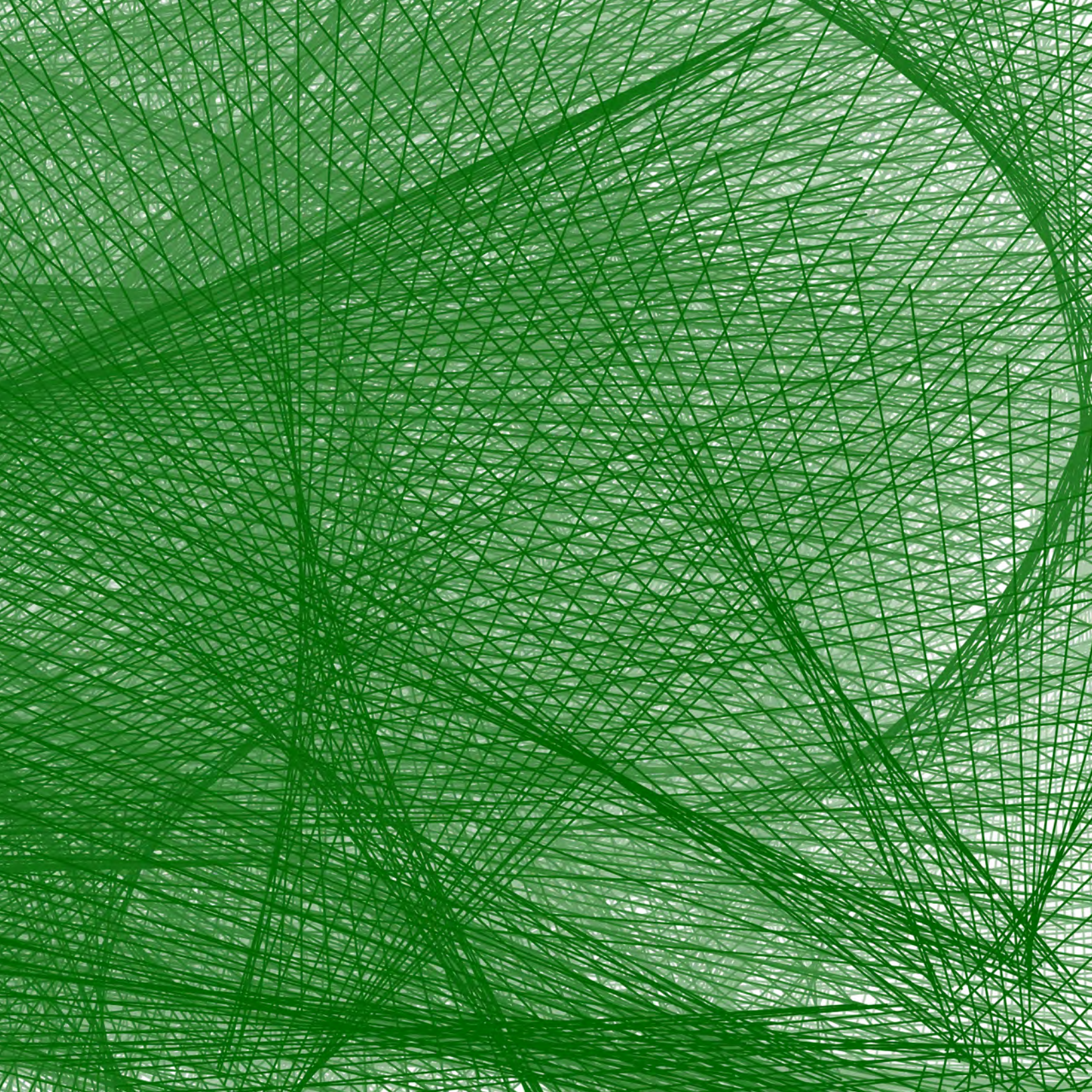




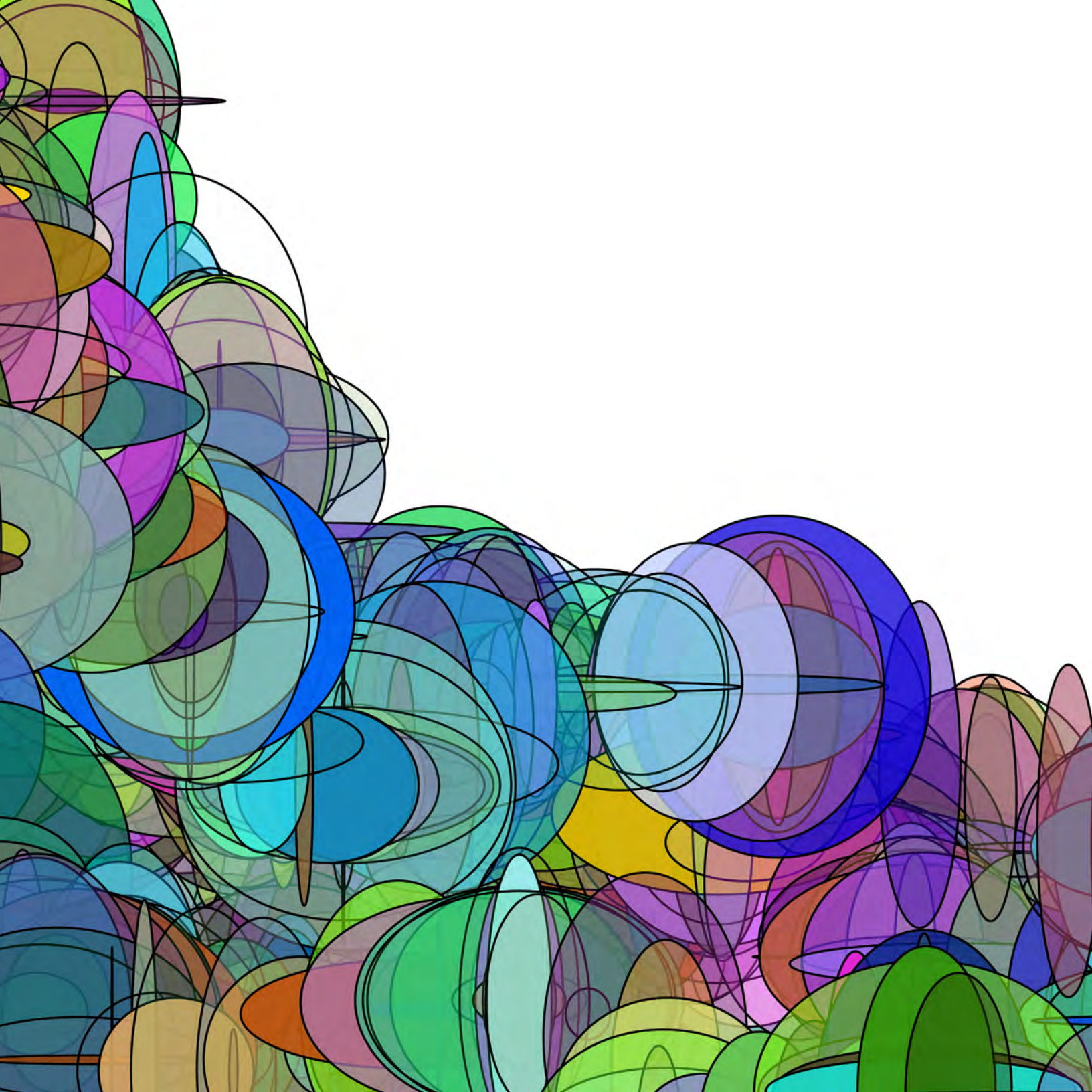


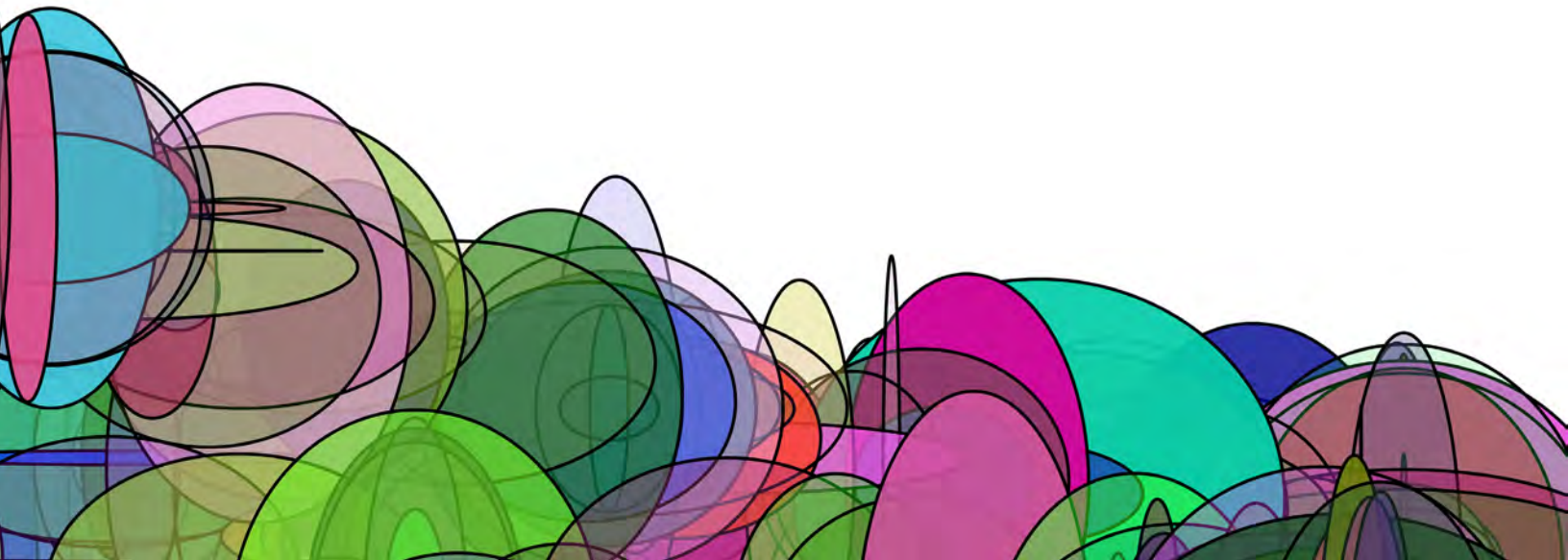




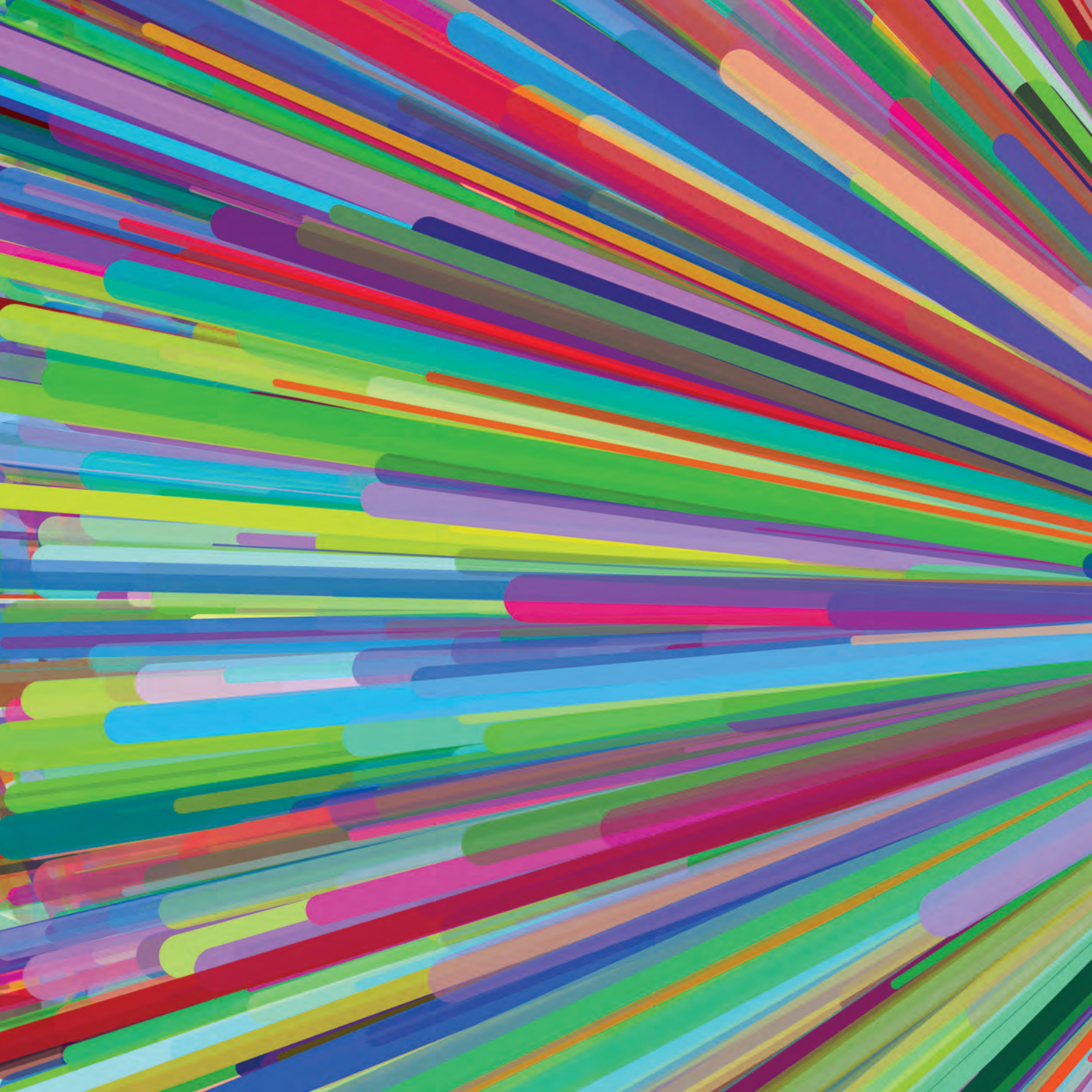




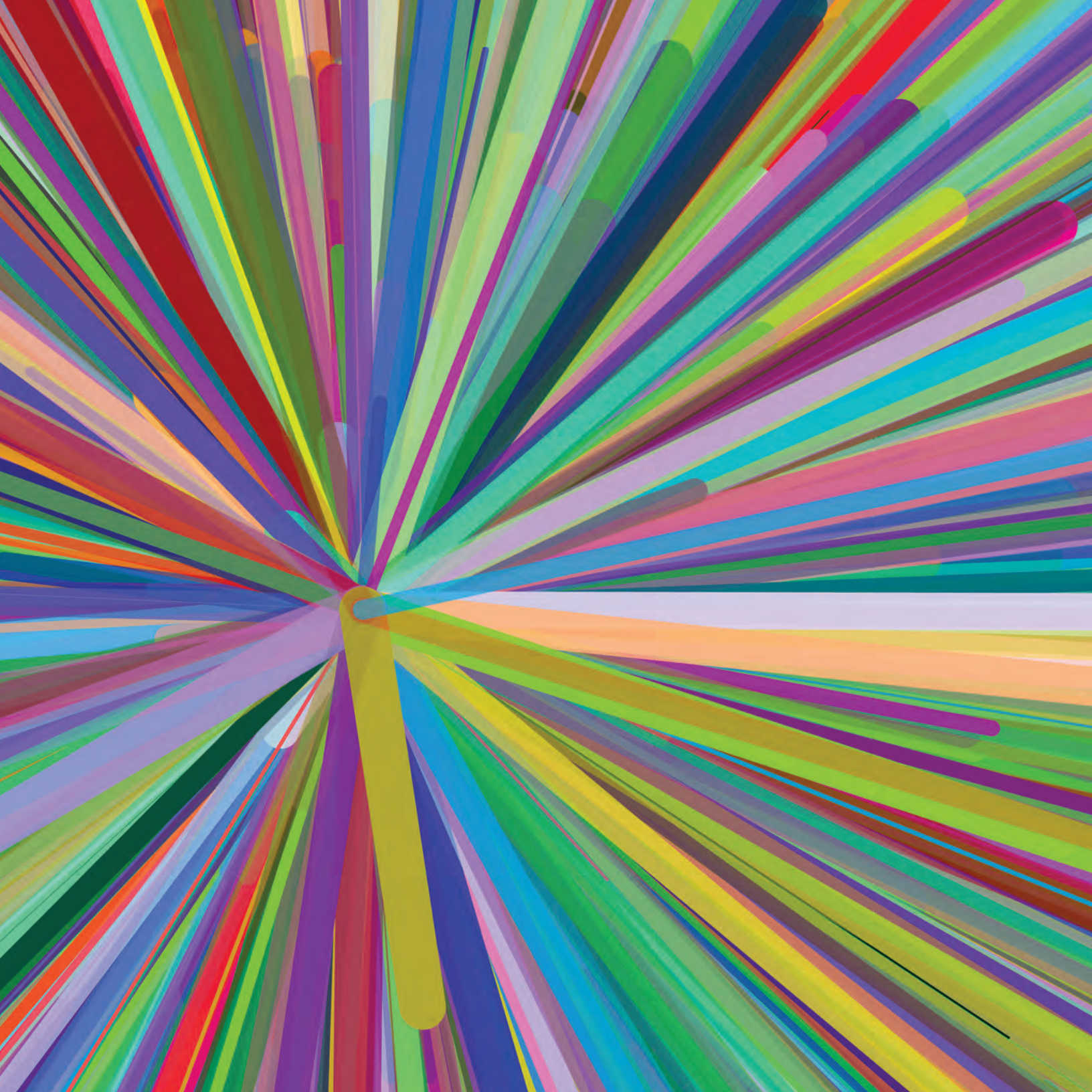




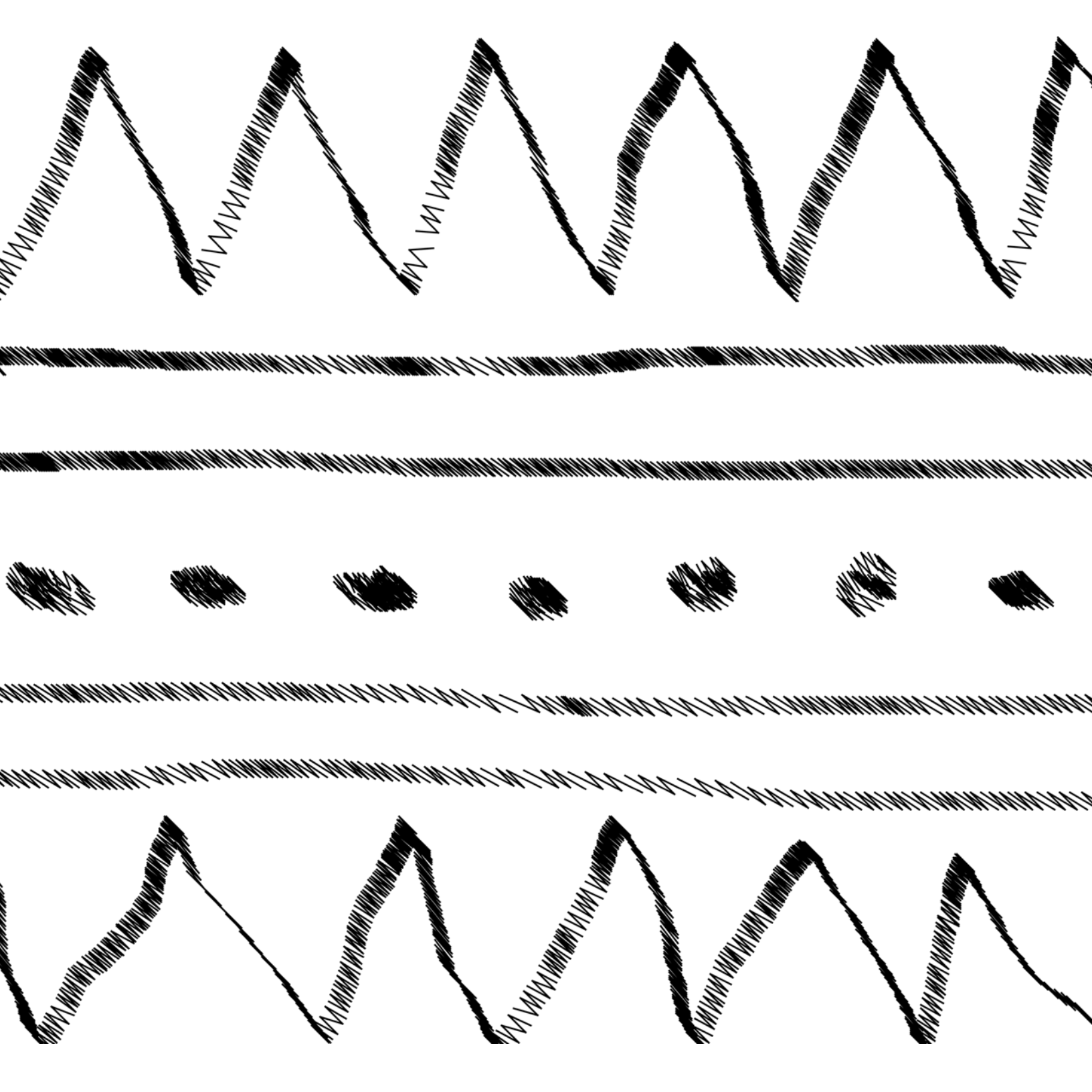












# Conclusion

“The time to begin writing an article is when you have finished it to your satisfaction. By that time you begin to clearly and logically perceive what it is that you really want to say.”

Mark Twain

Discussions surrounding dynamic media do not often include writing. It is a technology that we no longer even really consider to be a technology. On a personal level, creative writing has been an interest of mine for a number of years and being allowed to wrap that into a discussion about design has been rewarding on a number of levels. Primarily, my work at DMI allowed me



to move beyond thinking about writing as purely a device for literary communication. Letters contain important visual properties, the motion of our bodies as we write is meaningful, and the physical space in which we write plays a vital role in shaping our thoughts. In many current web applications the writing experience becomes an afterthought, but writing is still the foundation of all media and most communication.

Words have found themselves in an uncomfortable place. Like any other medium their migration to the digital world has caused some growing pains. Unlike other technologies, however, handwriting has become inextricably linked to our personal identities. Signatures provide proof we are who we say we are, they bond agreements (it is interesting that this replaced a handshake after spitting in one's hand), and we rely on them on nearly a daily basis. Although the slow demise of physical handwriting and the printed word has unsettled many individuals, examining the digital word and its role within a technological society reveals many new potential opportunities.

Coming from a writing background, understanding the digital word has been challenging for me. To me writing was writing. It didn't matter if it was handwritten, typed on

a vintage typewriter, or displayed on a screen. What makes one word different from another? George Landow's definition is a good starting point. He lists eight properties attributed to digital text: virtual, fluid, adaptable, open, processed, duplicated, animated, networkable. Of the eight, my thesis is primarily interested in three: virtual, networked, and processed. These properties are truly unique to a digital environment and understanding them more clearly underscores the potential benefits of the new text.

Virtual is an interesting word. The first definition in my *American Heritage Dictionary* says, "Existing in essence or effect though not in actual fact or form." The virtual word has a soul, but no body. Where a pen leaves a physical artifact, digital writing is made up of pixels on a screen. The *Writing Recorder*, a project from section one, creates both physical and virtual marks. The physical mark is stored on paper while the digital mark is stored in a database. The differences in appearance are slight, but the philosophical differences are vast. Once a text is translated to the virtual world, it immediately inherits new properties, but does it really exist?

A networkable text, as Landow describes, is one that can be linked to other texts, the basis for what we know as hypertext. The entire philosophy

of the Internet is based on hypertext or a series paged linked together in a non-spacial fashion. The *Collaborative Drawing* application that Jason Bailey and I developed explores the notion of connected users and passing real-time information through a network. While this network is different from standard hypertext where pages can be linked to other pages based on key words, it is an experiment in free and open communication through digital writing or drawing.

Processing, in relation to computers, is the point at which the machine receives data, stores it in RAM, and displays it to the screen. The data in our case is text. In the final section of my thesis I discuss multimedia writing applications in which the writing drives other forms of outputs. This is possible because once text, a line, sound, or any other input is converted into digital information, we can use it to drive other forms of output. Sound can become visual objects and visual objects can become sound.

These properties have spurred on a number of new literacy technologies that are transforming our relationship to words, the act of writing, and the writing space. At the time of this writing Twitter is in its fourth year and already has millions of users. Jonathan Schwartz, the former CEO of Sun Microsystems, posted his haiku resignation on twitter:

“Financial crisis  
Stalled too many customers  
CEO no more,”

What is interesting here isn’t the resignation haiku, but how ubiquitous and pervasive the technology has become. Really it was only a matter of time before someone resigned using this technology.

Recently, New Yorker writer George Packer and Times columnist Nick Bilton, had a literary sparring match about the overflow of data especially in regards to Twitter. Packer compared Twitter to crack while Bilton defended Twitter’s social aspects. The two sides, one entrenched in the print world, the other more digitally inclined, are typical poles during technological transitions. These sentimental attitudes don’t change reality. Reading and writing, for better or worse, are changing.

The decline of handwriting has sparked a number of articles and books. Kitty Burns Florey’s nostalgic view of handwriting in her recent book *Script and Scribble* argues that handwriting has some beneficial educational and behavioral qualities. In support of her claims, she provides vague and insufficient evidence mostly from academics. While she is clearly passionate about the subject of handwriting, her arguments



clearly lack an understanding of technology. The argument shouldn't focus on handwriting itself. It should, instead, look at the space in which we write.

Handwriting has a future. Drawing tablets have been used for years and touchscreen technology is quickly becoming cheaper and will soon be the standard in computing. As of this writing, tablet computers are beginning to hit the market including Apple's much anticipated iPad. While critics are quick to point out that technology is dehumanizing and that the death of handwriting is another step in this progression, all of these new technologies point to an emerging humanistic digital experience. Handwriting will be done directly on the screen. We are already doing this with electronic signatures, but soon it will be available in our everyday lives. So it is less about the disappearance of handwriting and more about replacing the physical with the virtual.

As I've already discussed, writing has been through many adjustment periods where new technologies are adopted and, after a period of time, are widely accepted. Digital writing is no exception. Our level of comfort with the pen and paper will transition slowly into a familiarity with touchscreen technology where we can write with our finger or with a pen-like device. The

virtual environment will replace pen and ink just as pen and ink replaced chisel and clay. The discussions, then, should not be about mourning the loss of handwriting, but identifying how the digital environment changes our relationship, expectations, and cultural understanding of the written word.

My projects over the past two years attempt to address this issue. Some had varying degrees of success in influencing my thinking, but each gave me a new perspective on writing and dynamic media. Using one of the oldest media forms to discuss our most recent developments has given me an interesting vantage point—not only do I get to look at what we are moving towards, but I get to see what we are leaving behind. While my work doesn't provide all of the answers (and I never expected them to), they are a starting point to a better understanding of digital writing—the virtual, networkable, and processed words of our future.

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