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MEDIUM -  
MACHINE**

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MFA

THESIS

2012

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HUMANIZING TECHNOLOGY

REPROGRAMMING HUMANITY



HUMANIZING TECHNOLOGY//  
REPROGRAMMING HUMANITY

Mira Rojanasakul

Bachelor of Arts, Studio Art and International Relations  
Carleton College  
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HUMANIZING TECHNOLOGY //  
REPROGRAMMING HUMANITY

Mira Rojanasakul

Received and approved:

Primary Thesis Advisor \_\_\_\_\_  
Pirco Wolfframm May 2012

Secondary Thesis Advisor \_\_\_\_\_  
Mark Sanders May 2012

Secondary Thesis Advisor \_\_\_\_\_  
Hoon Kim May 2012

Chairperson \_\_\_\_\_  
Jeff Bellantoni May 2012

MFA Candidate \_\_\_\_\_  
Mira Rojanasakul May 2012





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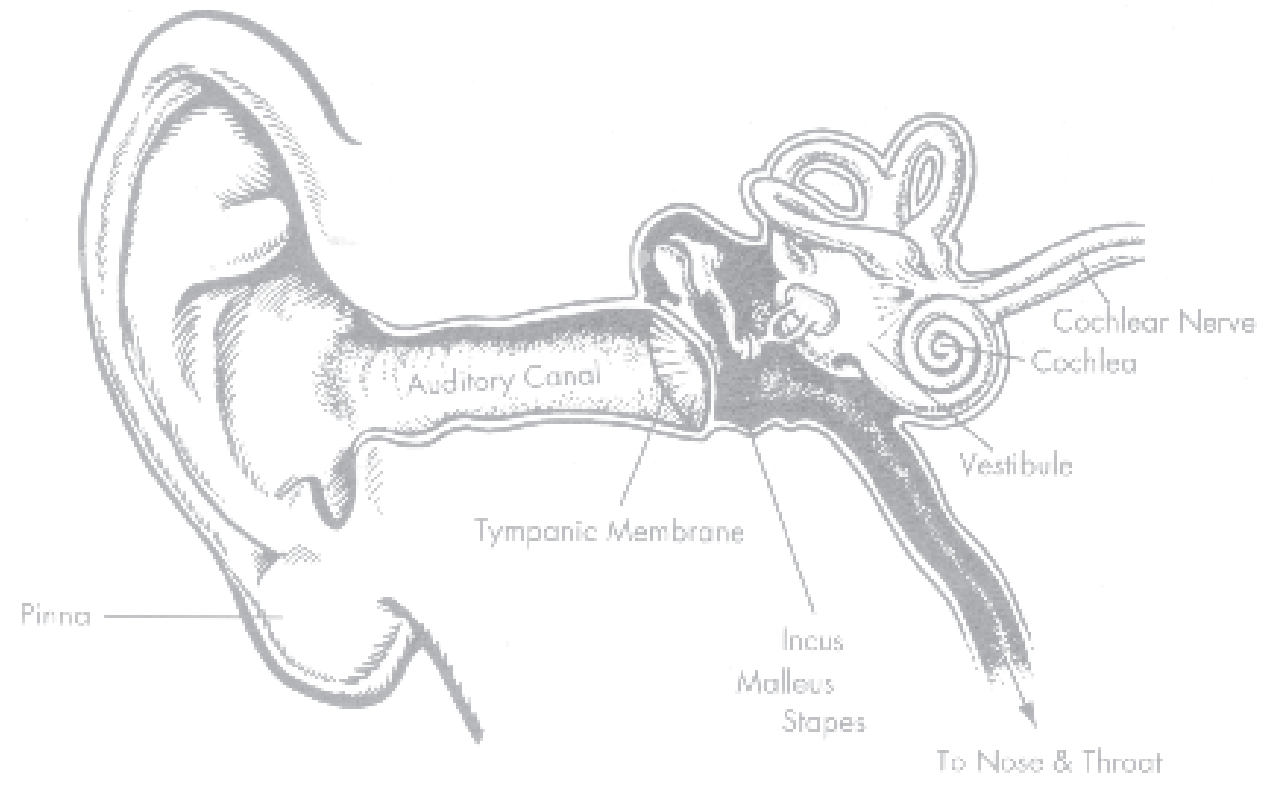
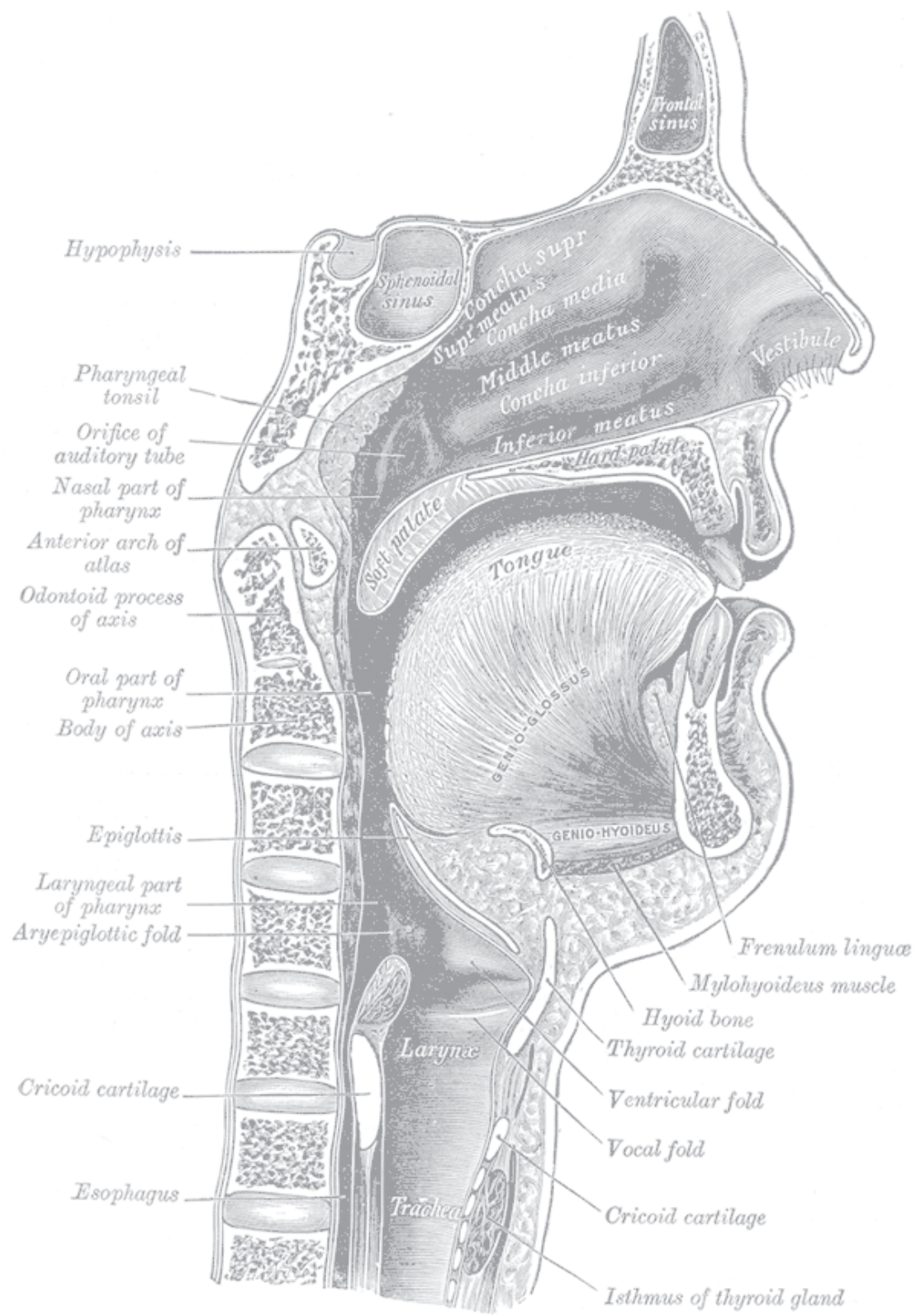
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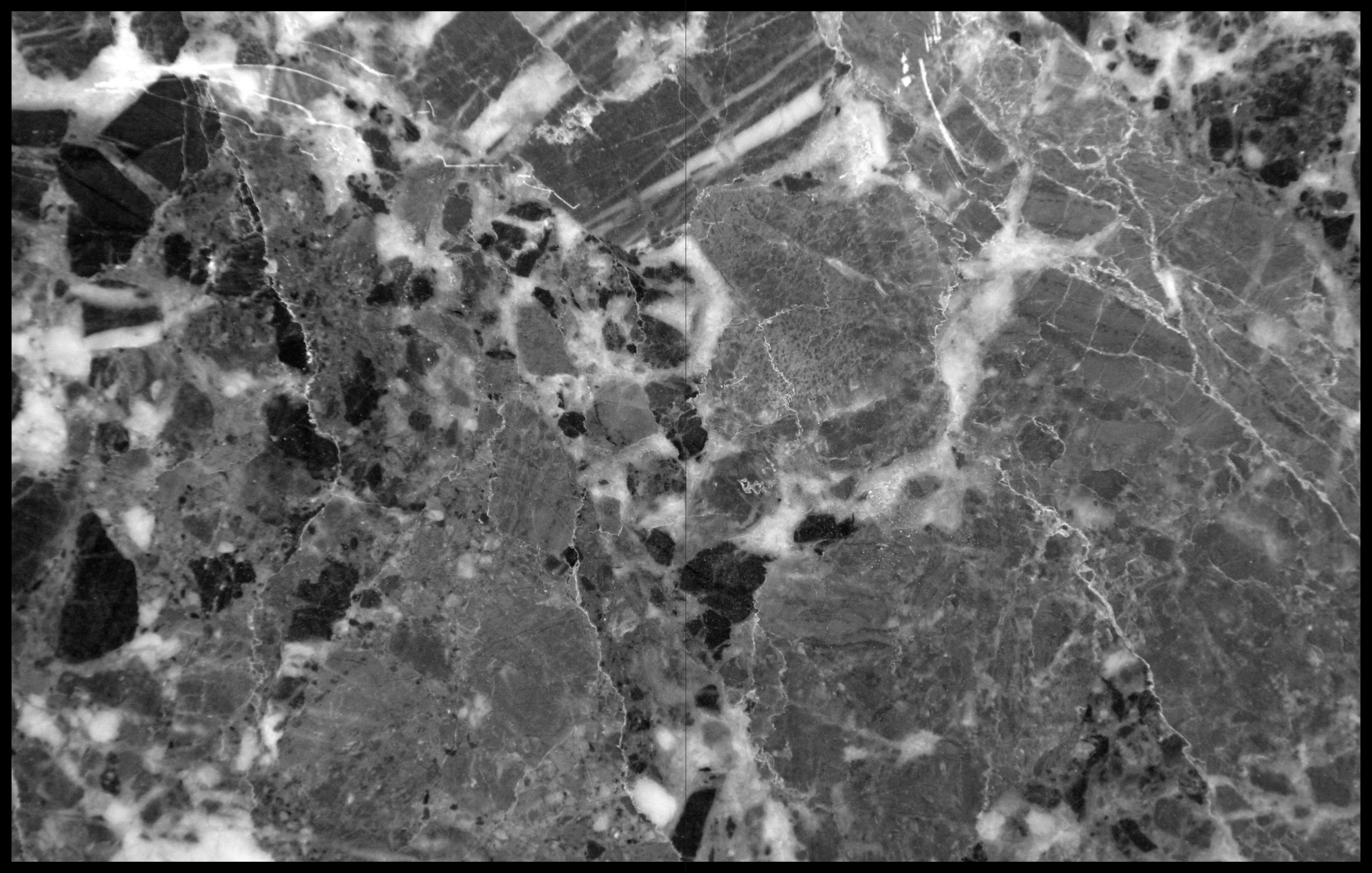
**We are at a turning point in our natural history, in which the rapidly changing face of modernity may exceed our biological capabilities to understand it. Man made machine, which in turn remade man in a co-evolutionary process — but we always run the risk of allowing these technologies to exert unknown and unexamined influence on our own humanity.**

In nature and in our mental constructs, the key to **evolution and innovation** comes from finding a common code for productive cross-pollination, but also allowing the mistakes or deviations in that transcription of genetic (or cultural) information. **Translation**, as one of design's key charges, plays an essential role in negotiating and reconciling our daily revolutions and disparate realities. **Remediation**, or migrating content through the diversity of tools and vessels that populate communications today, offers the possibility to break away from the templates and defaults of our usual tools and ways of thinking. We may not be able to understand the digital revolution for many years to come, but we have the opportunity to shape these frontiers according to more humanistic guidelines. This thesis encourages the design community to overcome our technological mysticism, to respond with a **constructive uncertainty, controlled chaos, and an experimental attitude** informed by the rich tapestry and taxonomy of the many histories that converge onto the present.

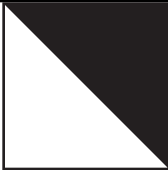
















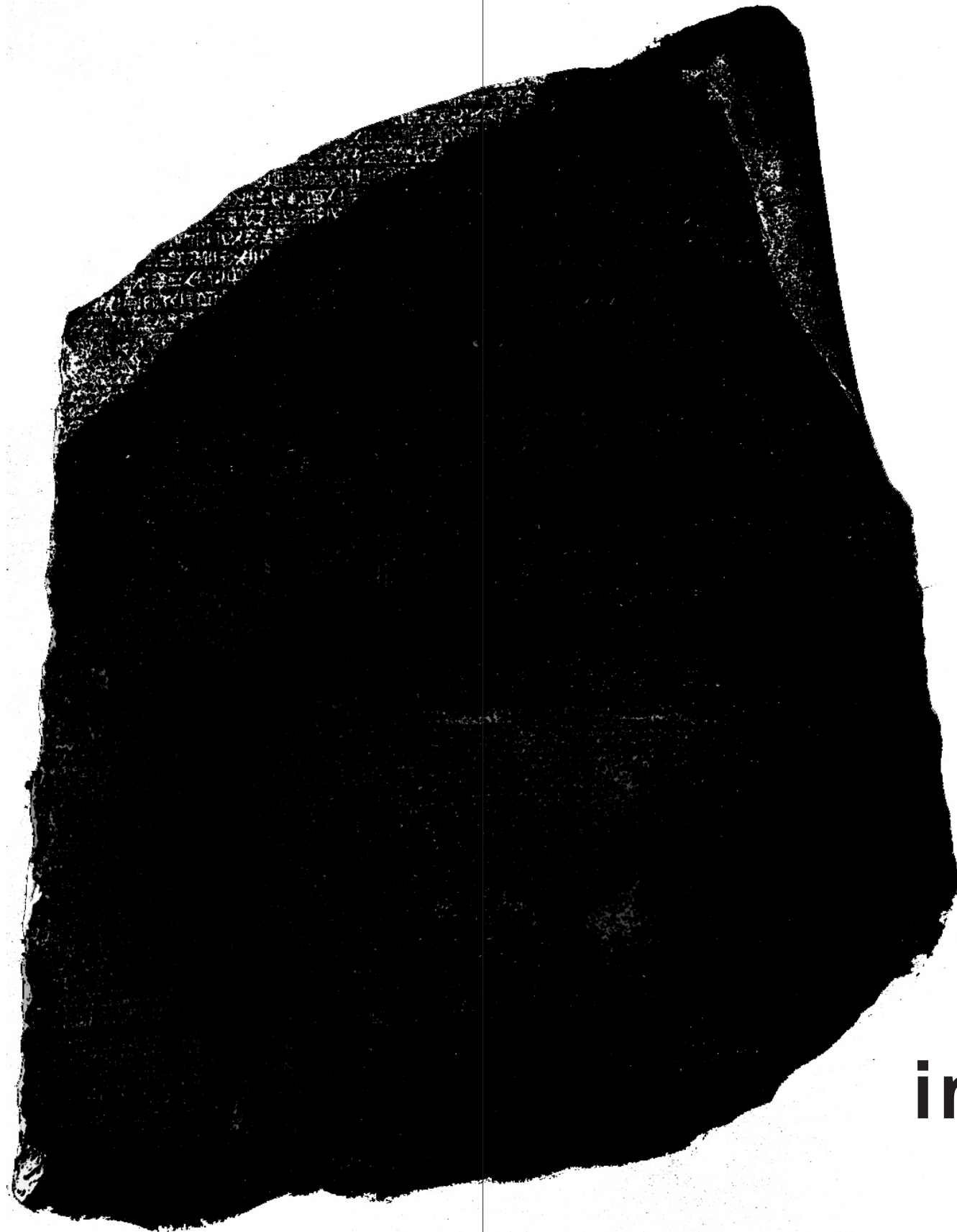


“The perfect symmetry of the whole apparatus—the wire in the middle, the two telephones at the ends of the wire, and the two gossips at the ends of the telephones—may be very fascinating to a mere mathematician.”

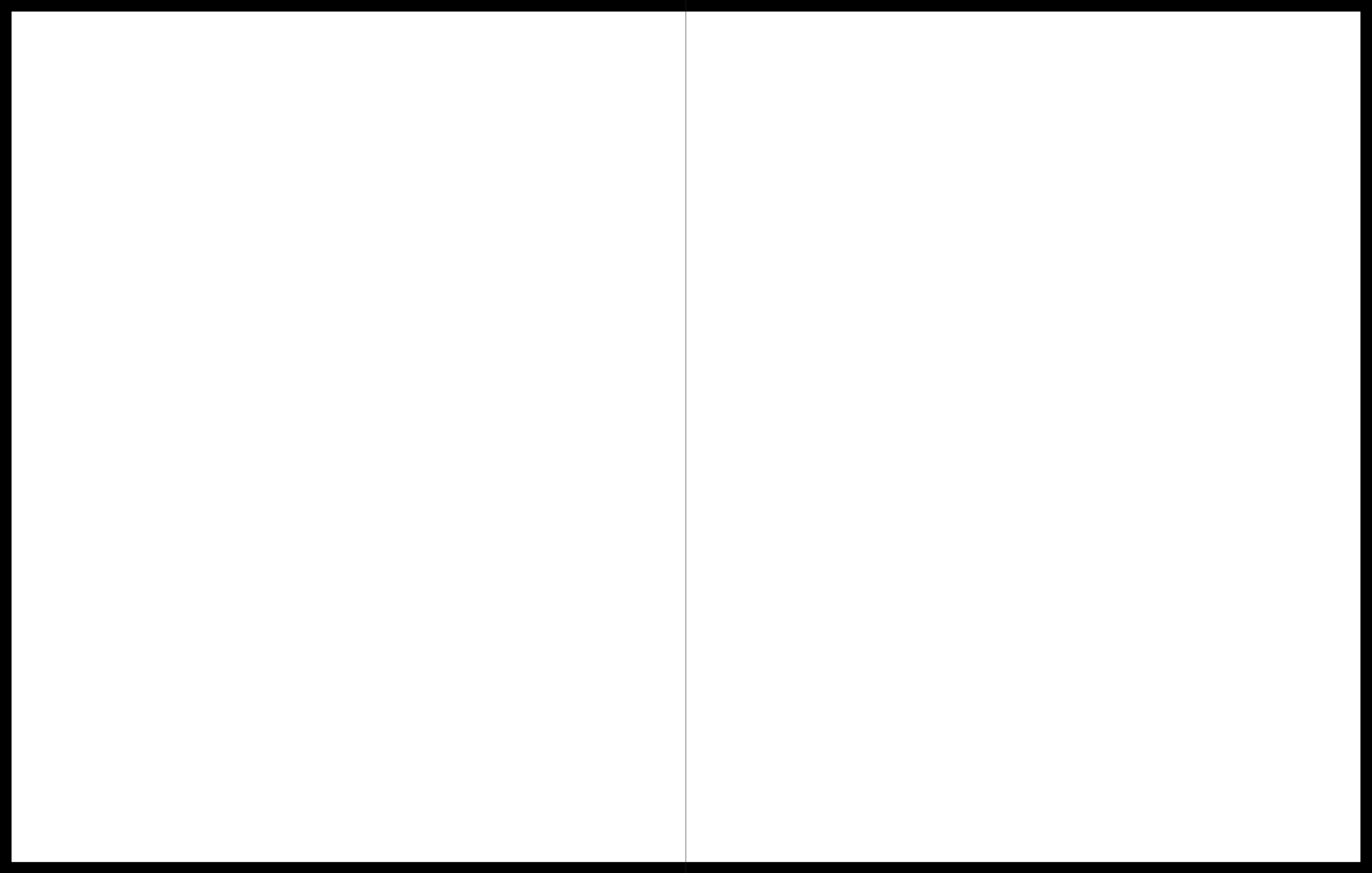
— James Clerk Maxwell (1878)

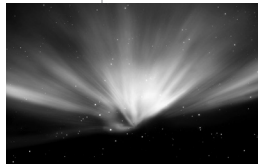


**digital—  
machine  
computer  
nature—  
hardware—  
code  
algorithm  
message—  
default  
genetics  
signal  
memory**

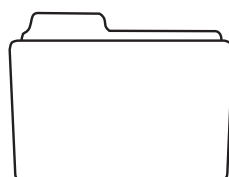


**analog  
man—  
human—  
nurture  
software  
language  
intuition  
meaning  
bias  
memetics  
interpretation  
forgetting**





# INTRO DUCTION



This thesis seeks to expose the role of increasing **digital mediation** in the **evolution of language**, and the reinforcement of biased thinking in our communications ecosystem. Although all languages are an abstraction of our internal mental processes, the speed and parsimony of electric mediums exacerbate the gap between experience and its representation. Our new ways of reading the environment and **distilling information** from it have taken on a troubling, **self-affirming tendency**. And as much as we need facts and grounding to act upon, leaving them unquestioned and filtering out conflicting data leaves us unable to move towards truer truths, more meaningful depictions of reality.

We still have only our old, **biological brains** to cope with the violent changes we've enacted on the world. **Translation**, as one of design's key charges, plays an essential role in negotiating and reconciling our daily revolutions and disparate realities. Analogous, **metaphorical connections** — sometimes in the form of puns, similitudes, or visual coincidences — are an essential mechanism for designers to **demystify** new developments in their own practice and also help explain the digital avant-garde growing around us in understandable terms.

As a way of breaking free of a templated dependency on our media, I propose **remediation** — translating content through a variety of vessels to diversify and shed light on the underlying structures. Each language is an ordered system that is continuously transgressed upon to express new information in new ways. Each medium

similarly exerts its **defaults** upon the content it carries, but can be hacked to make its influence on the formation of meaning more transparent. Through acts of **subversion** and **surprise**, I have endeavored to exonerate the producer from machine defaults, and exonerate audiences from their **embedded cultural and personal systems of beliefs**.

Unlike our lack of control over our genetic makeup, we are not bound by our professional designation (graphic design) and have the agency to adapt to these new territories with myriad interests and skills. As individuals who have an understanding and interest for a society built on communication, we have the opportunity to shape these new frontiers according to more humanistic guidelines, and to take history into consideration in avoiding the folly of glorifying technological prowess above our own well-being and pursuit of happiness. And though we may not understand what the digital revolution will mean for us without the benefit of hindsight, it still demands our **clear-eyed attention and sensitivity to developments in media and language**.

My response will promote a **constructive uncertainty**, and an **experimental attitude**, informed by the rich tapestry and taxonomy of the many histories that converge onto the present. This thesis encourages the design community to overcome our technological mysticism and bring our attention and skill to bear on pioneering, mapping, and helping others **navigate the evolutionary gap between our innate abilities and the rapidly changing face of modernity**.

Never delegate understanding.

— Charles Eames

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PROBLEM  
STATE-  
MENT

It seems our present scenario is this: we're unable to genetically engineer new selves, and natural selection does not act quickly enough to keep pace with the times. We're constantly reconciling that evolutionary gap between our biological hardware and new kinds of input. Yet through the plasticity of the brain and all the cognitive "software" that augments it, it is possible to have advanced quite beyond our savannah selves. But this software (language, myth, metaphor, media) must be constantly maintained and reexamined for biases, for these increasingly autonomous tools affect us in return.

The fact that our actions and their effects can now be separated by vast distances doesn't seem to have taken hold in our deeper, instinctual processing. We may intellectually understand that failing to recycle or taking the car instead of public transportation could end up harming someone or something down the line, but without immediate consequences, even the most conscientious of us are capable of unthinkable, inhuman action.

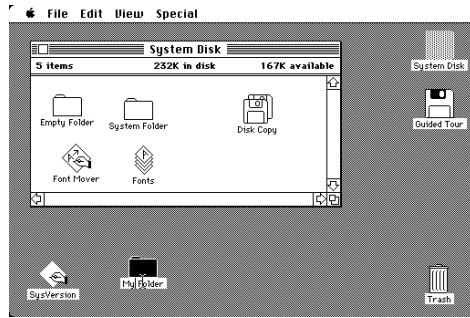
A popular episode of Radiolab presents the following scenario: you're standing by a lever in a rail yard while a train is heading toward a group of people who don't see it coming and, for the sake of the thought experiment, would definitely be run over. You have the option of doing nothing or pulling a lever that redirects the train down another track with only one person in harm's way. Most responders said they would be willing to pull the lever in order to redirect the train — killing one but saving a group of others.

In the second scenario, however, there's a large man in front of you that you must push in front of the train if you're to stop it from running over the group down the line. The cold calculation is clear — sacrifice one to save many more — but when interviewees are asked, fewer are able to say they would push the man in front of them to his death. Brain scans of respondents, taken while they were answering, showed a heated internal debate. While scenario number one got quick, positive answers, the direct action of pushing a person to his death in scenario two violated a more hard-wired sense of morality, and was met with mixed answers from the group.<sup>01</sup> So we may have no problem harming others across the world because the consequences are distant (and the responsibility spread out), when doing it with our own hands would be unthinkable.

Another, perhaps more visible manifestation of this evolutionary lag shows in the obesity and related health problems. Hundreds of millions of years have conditioned us to savor and stockpile sugars and fats for leaner times, but the ways in which availability and scarcity affect our lives today differ completely from the environment we adapted to. Understanding and responding in this global context requires an immense amount of information gathering, mental modeling, and conscious restraint.

<sup>01.</sup> Morality, Radiolab.





Early experimental psychology was dominated by the behaviorists. In order to define themselves as scientists, and to distinguish themselves from unscientific philosophers and psychoanalysts, they deemed that behavior alone was worthy of study and refused to consider any processes that went on inside the “black box” of the brain.

A paradigm shift occurred in the 1960s: the cognitive revolution. Since that time it has become respectable to study cognition, although emotion and motivation were still considered suspect by many experimental psychologists. An integral part of the cognitive revolution was the computer metaphor for brain function. Psychological research during the past 40 years has been dominated by an information-processing model of brain function based on the computer metaphor.

Metaphors can help us to understand complex systems, because they give us a simplified way of conceiving how they work. However, metaphors can also mislead us and interfere with our understanding, precisely because they oversimplify. Like the carpenter whose only tool is a hammer and who thinks everything looks like a nail, the psychologist who subscribes to the computer metaphor tends to think every psychological process looks like a cognition. This myopic, overly cognitive viewpoint leads to absurdities in trying to squeeze human psychology into an information-processing model, such as defining emotions as “valenced cognitions.”

Recent social and affective neuroscience research shows that a computer is an inadequate and misleading metaphor for the brain, and this research is going to be the focus of my blog. Humans, along with other organisms with brains, differ from computers because they are driven by emotions and motivations. The brain is much too hot and wet to be represented by a computer. The brain is electrical, but it is also driven by fluids (blood) and chemicals (hormones and neurotransmitters). Most importantly, the brain is part of a body which it drives to action, and research from an embodiment perspective also shows that the whole body (not just the brain) affects emotion, motivation, and other psychological processes.

— Eddie Harmon-Jones  
 “Unplugging the Computer metaphor”  
 // Psychology Today

<http://www.psychologytoday.com/blog/the-social-emotional-brain/200904/unplugging-the-computer-metaphor>



The Enterprise makes contact with a Tamarian ship in orbit around the planet El-Adrel. Though the universal translator can translate their words, the Tamarians only communicate through metaphor which baffles the Enterprise crew. Likewise, the Tamarians cannot understand Picard’s straightforward use of language. Frustrated by their failure at communication, the Tamarian captain, Dathon, has himself and Picard transported to the planet’s surface.

On the surface, Dathon utters the metaphorical phrase “Darmok and Jalad at Tanagra” and tosses Picard a dagger. Picard mistakes this as a challenge to a duel and refuses. As night falls, Picard fails to make a fire and Captain Dathon shares his fire with the phrase “Temba, his arms wide”. The next morning, Dathon comes running and then Picard realizes that there is also a hostile predator in the area that is stalking them both. Picard finally begins to understand the way the other race communicates when he recites one of the metaphors and sees the meaning underneath it. The two attempt to fight the beast together, but due to the Enterprise’s ultimately unsuccessful transporter attempt preventing Picard from participating in the battle, Dathon is mortally wounded.

While tending to Dathon’s wounds, Picard deduces that Darmok and Jalad were two warriors who met on an island called Tanagra, and had to cooperate to defeat a dangerous beast dwelling there, becoming friends in the process. Dathon tried to recreate this event between him and Picard on El-Adrel, hoping that their shared adversity would forge a friendship where words had failed. Picard recounts for Dathon the Epic of Gilgamesh, a human story that parallels the allegory of Darmok and Jalad’s.

02. Lakoff and Johnson, “Conceptual Metaphor Use in Everyday Language,” *The Journal of Philosophy*, 2988. p 454

03. A number of associative automatisms commonly accepted as effective:
1. By similitude, which is in turn subdivided into similitude of substance (man as a microcosmic image of the macrocosm), quality (the ten figures for the ten commandments), by metonymy and antonomasia (Atlas for astronomers or astronomy, the bear for an irascible man, the lion for pride, Cicero for rhetoric).
  2. By homonymy: the animal dog for the constellation Dog.
  3. By irony or contrast: the fool for the sage.
  4. By sign: the spoor for the wolf, or the mirror in which Titus admired himself for Titus.
  5. By word of different pronunciation: sanum for sane.
  6. By similarity of name: Arista for Aristotle.
  7. By type and species: leopard for animal.
  8. By pagan symbol: eagle for Jupiter.
  9. By peoples: the Parthians for arrows, the Scythians for horses, the Phoenicians for the alphabet.
  10. By signs of the Zodiac: the sign for the constellation.
  11. By the relationship between organ and function.
  12. By a common characteristic: the crow for Ethiopians.
  13. By hieroglyphics: the ant for Providence.
  14. And finally, pure idiomatic association, any monster for anything to be remembered.
- p 46. Eco, *Interpretation and Overinterpretation*.

04. — p 46-47. Eco, *Interpretation and Overinterpretation*.

One of the ways we negotiate new experiences and scenarios more easily is through metaphor. Productive cross-pollination can only occur when there is a common code, describing the unfamiliar through the familiar. In *The Metaphors We Live By*, Lakoff and Johnson state that “our concepts structure what we perceive, how we get around the world, and how we relate to other people,” and that this conceptual system is “very much a matter of metaphor.”<sup>02</sup> They act as an essential piece of software in helping translate alien information into familiar experiences, but are never perfect analogies. Metaphors hide and highlight aspects. They can drift away from the thing they were meant to describe. And they are capable of breaking altogether.

Take the virtual “desktop” (and its implications: cabinets, folders, trash, etc) — part of a graphical user interface that helps us approach the computer more easily. But the computer hard drive is non-spatial, searchable, nested, and internally organized much differently than a physical desk would be. Relying on the desktop metaphor prevents users from exploring other organization and navigation opportunities.

If you chase the implications far enough, every metaphor breaks down after not too long. Yet these are the building blocks that allow us to model events and conceive of ideas beyond our direct experience. This could mean two things: That the world around us is not to be believed, or that more attention could be paid to just how powerful lateral associations are in the construction of knowledge and in meaningful communication. Umberto Eco listed a few ways in which things can relate in literature,<sup>03</sup> and outlines the problem of knowledge built upon analogy. “As long as some kind of relationship can be established, the criterion does not matter. Once the mechanism of analogy has been set in motion there is no guarantee that it will stop.”<sup>04</sup>

The relationship between man and machine is itself an example of an overgrown similitude rather than true equivalence. Yet the power of even weak associations is clear. Whether or not computers are accurate models of our own mental processes, their development has influenced our way of understanding our own minds, clearing a path for our technology to influence us in this mutual evolution.

As compelling as our man and machine mythologies may be, our real relationship with technology is quite a bit more nuanced than a simple us-vs-them struggle or technological utopianism. The new has a tendency to inspire fight-or-flight reflexes rather than a contextual evaluation, and we’re caught in a loop of knee-jerk reactions. Fear closes us off to new possibilities, if not completely paralyzing us. But even the total embrace of the technology can similarly lead to the persistence of old biases due to an outsourcing of critical thinking and memory to our myriad devices, which have their own defaults and proclivities.



Lauren King // Spencer Studio

27.1%

The acceleration of modern communications altered the way information is authored and read, a process defined in large part by our interfaces with machine technologies. Our appetite for information fuels the truncation of language, fewer parts must convey more meaning in shorter windows of time — so it should come as no surprise that the richness and nuance of verbal language is lost in these new mediums. This shifts more power to the audience in rebuilding the message to full resolution, leaving us vulnerable to the mental shortcuts that affirm our preconceptions.

This reconstitution of meaning operates not unlike the mechanics of memory. We don't remember entire scenes verbatim, but small details can trigger our minds to fill in the rest of the information, effectively rewriting the memory each time. In the sparse language of digital media, we're communicating in real time to one another as if from a distant memory.

27.8%





The order and structure give it the appearance of rationality and rigor. This appearance is easy to emulate.

— David Byrne



In *The Filter Bubble*, Eli Pariser describes how the massive influx of data requires the mind to compress and categorize input into what psychologists call schemata. “Schemata ensure that we aren’t constantly seeing the world anew: Once we’ve identified something as a chair, we know how to use it.” And once these are acquired, “we’re predisposed to strengthen them. Psychological researchers call this confirmation bias—a tendency to believe things that reinforce our existing views, to see what we want to see.”<sup>05</sup> Pariser goes on to detail the ways in which digital media entities like Google and Facebook screen the information stream in a way that only encourages this confirmation bias.

Easily google-able validation exerts a tendency on the online population towards more extreme, unshakable views. The once limited and elite sources of information have been surpassed by the outsourcing of knowledge-building, which doesn’t so much lead to anti-intellectualism as an all-inclusive intellectualism, where no one opinion can weigh more than another’s.

Though it’s not within the scope of this paper to properly research, it’s worth noting that much of the software and hardware we encounter are brought to us by for-profit companies, operating in a cutthroat market.<sup>06</sup> Human factors research in this context may be used more for validation than discovery, and most likely aims for desirability rather than sustainability (though the two are not mutually exclusive). Even the services we get for free like Google and Facebook ultimately answer to their bottom lines. As one MetaFilter user summed it up: “if you’re not paying for something, you’re not the customer; you’re the product being sold.”<sup>07</sup>

Though the variety of opinions may have increased within the overall system, a healthy diversity of thought seems to be diminishing somewhat on an individual basis. The nature of digitized communications grants the ability for the modern citizen to make any reality they want, despite the fact that the opportunity to hear narratives and differing opinions from far and wide is greater than it ever has been before.<sup>08</sup> Audiences, pandered to by Silicon Valley and saddled with the responsibility of reconstituting sparse constellations of data into meaningful resolution, are left to default to the mental shortcuts that affirm our preconceptions.

So the urgency is twofold. We must demystify these tools for ourselves, to gain the confidence needed and fulfill the niche for communications designers in digital communications. From there, our role is to provide the connecting fibers between this seemingly fragmented, ephemeral modernity and a tactile, spatial past more of us can understand.

<sup>05.</sup> P. 86, Pariser.

<sup>06.</sup> Though the open and crowd-sourced have also carved out a strong presence – Wikipedia, to name the most prominent example.

<sup>07.</sup> blue\_beetle, <http://www.metafilter.com/95152/Userdriven-discontent#3256046>

<sup>08.</sup> “How Bullshit Magically Turns Into Fact,” <http://www.drumsnwhistles.com/2011/11/25/how-bullshit-magically-turns-into-fact/>



09. "In the explosion of information breaking over us, there are tremendous quantities of data in need of processing. Computer technologies can fulfill the role of modernist Swiss school objective systems design, as we have seen in desktop publishing. The question posed is, How can all this data be turned into information, and the information into communication and meaningful messages? How can design assist our audiences to turn knowledge into wisdom? It may be that within an environment of abstracted technologically generated data, the designer's personal viewpoint and interpretive forms may be the humanizing element essential to make the vast quantities of abstract data meaningful, useful, comprehensible, and compelling to our audiences." — Katherine McCoy, "Education in an Adolescent Profession."

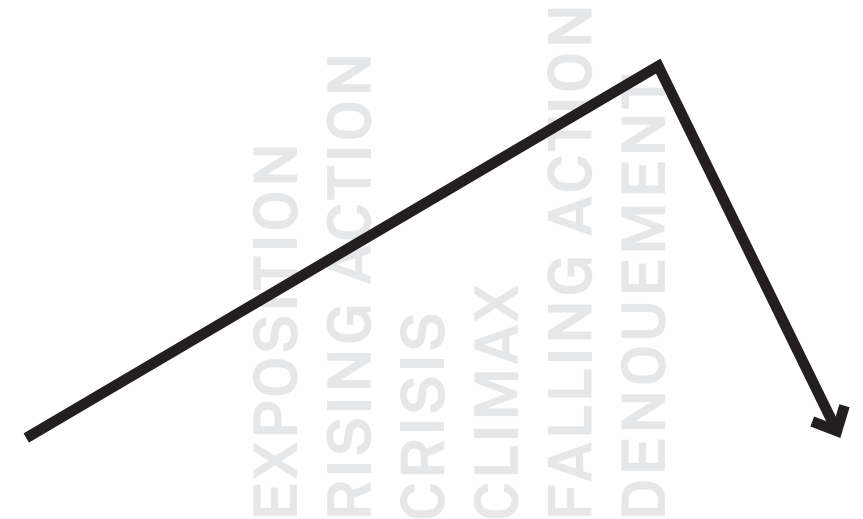
10. Vinh. Talk To Me catalog, p. 128.

The man versus machine saga is nothing new to this field, and for many longtime practitioners or students of design history, the tectonic shift of digital media might feel like déjà vu. While software sophisticated enough to generate professional design work is a distant (if not impossible) prospect, the learning curve and access to powerful tools has been so diminished by the networked computer that a threat to professional design practice is still registered. Each time another means of production disrupts the field anew, the manifesto-wielding revolutionaries and our nostalgia-bound Luddites come out of the fray. And while print rightfully resists its long-propheesied extinction, at least in our lifetimes, there is no doubt that a multiplying score of new communications variables to contend with have emerged.<sup>09</sup>

A century of control and formal dogmas wavered under Postmodern critiques, but seems to finally give way to the whims and interpretations of browsers and users alike. The internet's malleability is somewhat at odds with traditional practice, as Khoi Vinh details in his article for MoMA's *Talk To Me* catalog.<sup>10</sup>

"The designer as author, as craftsman, bringing together beginning, middle, and end, becomes redundant in a space in which every participant forges his or her own beginning, middle, and end. And that is exactly what happens in networked media. The narrative recedes, and the behavior of the design solution becomes prominent. What becomes important are questions that concern not the author but the users."<sup>10</sup>

It's an interesting coincidence that creationism was rebranded by its supporters as "intelligent design." Humans consider some things to be so rarified and complex that only meticulous planning by a divine being (or creative genius) could have brought it into being. A new paradigm that favors experimentation, iteration, and cross-pollination has arrived, yet design traditionalists are slow to relinquish their authorial rights. I do not deny the continued need for new narratives and visual storytelling — in fact, previous iterations of this thesis pursued that goal — however we must be cognizant that even stories (on and off the screen) now behave differently than they used to.



If you want to understand function, study structure.

— Frances Crick

It's not as though all of graphic design has turned a blind eye to these emerging interests. In our new reality of limited language and varying resolutions, users find resourceful workarounds that may sacrifice "design" for content and quickness. The invisible structures that channel these conversations exert their own kind of soft influence, which includes the preset tendencies within any given software.

Media and software defaults migrate into visual communications both actively and passively. The proliferation of systems fonts, colors, and page layouts are embraced in earnest by the countless millions who now have access to powerful design tools. High design similarly picked up on systems-defined presets, but (presumably) in a more deliberate way — partly to critique, and partly to call attention to programs and conditions that are surreptitiously emerging around us. *Émigré #65* coalesces around a soft definition of this phenomenon, where Rob Giampietro coined the phrase "Default Systems Design."

Without going so far as to name it, Giampietro's definition of default design has its best example in the early web — no type size hierarchy, flush left, limited typeface choices (including the regulars: Arial, Helvetica, Courier, Times New Roman, etc). It's a valid thing to observe and be responsive to these new barriers. "To articulate them and the conditions that enable them is an important first step in the critical process," he writes, but it may not be enough. "To evaluate their message is an important second step," a feat he deemed still unaccomplished in 2003.<sup>11</sup>

A 2010 article in *Eye Magazine* declared the "End of Default," but only on the basis of growing type options on the web.<sup>12</sup> The thinking is that if these digital platforms can begin to give us the control enjoyed in print, the default phenomenon will eventually dissipate, but it's not as if new kinds of defaults won't take their place. There's a tendency to only see the limitations presented by digital mediums, but there are just as many (or more) opportunities to explore.

11. Giampietro, Default Systems. <http://blog.linedandunlined.com/post/404940995/default-systems-in-graphic-design>

12. "Clients such as corporations and publishers who were accustomed to branding every visible square inch with their custom fonts had to accept the default nature of the Web, and many designers have long resigned themselves to living through the typographic equivalent of the dark ages..." — Esterson and Prynne, "End of Default."

13. <http://interactiondesign.sva.edu/mission>

14. Form follows function, and the user metrics all seem to point web design towards a general sameness.

15. Katherine McCoy, "Education in an Adolescent Profession" in *The Education of a Graphic Designer*.

Addicted, hyper-connected, isolated, inundated: the language used to describe our relationship with networked gadgets hints at a pathology, obsession, and religious longing. Perhaps it's that design like Apple's seductive gestural interfaces and Facebook's streaming updates appeal to some of our most primitive behaviors — tracking small changes for predators/prey, scanning surfaces, and recognizing patterns. Human-centered research certainly improves upon the intuitive guesswork that previous designers relied upon, but how well can we be served by "human factors" determined by limited definitions of humanity?

The visual culture of these new digital territories is largely defined by those who speak in code, figures who abide by goals and process considerations that are quite different from our own.<sup>13</sup> There's a heavy reliance on user metrics, and much of what I call the new (digital) modernism echoes the industrial-age optimism of graphic design's own period of Modernism.<sup>14</sup> A renaissance of these ideas should come as no surprise, given the need for clarity when we talk through noisy machines, and the inherent grid and typographic structure dictated by web standards and HTML/CSS. As Katherine McCoy's put it, "computer technologies can fulfill the role of modernist Swiss school objective systems design, as we have seen in desktop publishing."<sup>15</sup> But without the tempering effect of design history, I worry about when the cheerful naiveté towards the universality of a grid system and checking off the list of best practices will fail to deliver on all their quixotic promises.

Humanity isn't one-dimensional, so user experience and human factors research needn't come to any hard conclusions either. The intimidating learning curve has kept digital innovation exclusive until now. Programming literacy is growing, while the languages are becoming simpler. A diversity of thought and experience can be brought to the process of mediated communications and its automated actors to steer us away from a flavorless monoculture.

All this presents us with an oversimplified dichotomy: controlled narratives and meticulous visual planning, versus the total acceptance and embrace of pre-ordained systems and conditions. But I suspect that beyond these coping mechanisms, there are untapped opportunities to reach audiences through these new channels and utilize each new medium as part of the design solution. And beyond the high learning curve of web mark-up and code is a frontier space for visual communication that desperately needs the material sense, synthesis of modern and postmodern understanding, and human-to-human communications focus of trained graphic designers.

Hopefully we know better than to chase after utopia again, but it's difficult to resist these under the enchantment of the new. What I'm ultimately trying to say is that those of us who have been drawn to design, the various types we are, still have something to contribute. But it is not so simple as making more intuitive, gesture interfaces and ergonomic devices, and goes beyond user experience and human factors research as they are presently defined.





HYPPO-  
THESIS

16. "There are still people who believe that design is just about making things, people and places pretty. In truth, design has spread like gas to almost all facets of human activity, from science and education to politics and policymaking. For a simple reason: one of design's most fundamental tasks is to help people deal with change." Paola Antonelli in *The Economist*

17. ie. Using system fonts (Arial, Times New Roman) and endless other high design humor.

18. Also known as a discrete combinatorial system – in one like language, "there can be an unlimited number of completely distinct combinations with an infinite range of properties." Another example in the natural world is the genetic code in DNA. p. 69-70, Pinker.

19. McLuhan, *Understanding Media*.

20. Eco, *The Open Work*.

Graphic design today seems to be hungry for the legitimacy other fields seem to enjoy, and clamors to redefine itself in foreign terms. My contribution, as a professional dabbler and polymath wannabe, is to migrate the thinking, methodologies, and vocabularies from other fields into design and vice versa. Like bilingualism, or an ecosystem's healthy gene pool, supporting a diversity of thought paradigms can only serve to strengthen and enrich. In a media environment so in flux, I believe this kind of process thinking can help find the limitations and opportunities of emerging mediums more easily — while remembering the analogous old technologies that give a sense of perspective to all the hype.

As part of a larger movement to humanize technology, I explore the role of communications design in remediating the effects of our new digitally induced modernism and to expose the partisan presence of media in our lives. Visual communicators are needed to help discover more resonant and precise metaphors, so we might all more productively contribute to the critical discourse about present and future progress.<sup>16</sup>

To introduce new orders, existing paradigms established by program defaults and human defaults must be questioned and violated. Merely highlighting these defaults is not enough to curb their effects, since it takes a highly literate individual who already knows the critique to understand it.<sup>17</sup> As in natural language and genetic makeup, a shared structure and code of digital communication allows for new variation, combination, and expression.<sup>18</sup>

Acts of subversion set up the opportunity to liberate people from their over-reliance on automation and default thinking. To build new meanings, I mean to misuse vocabularies, juxtapose the unlikely, deconstruct and remix in order to present more poetic solutions that rely on the audience to complete the narrative equation. For the graphic design community: my goal is to contribute to finding adaptive methodologies for approaching new mediums, to use them in a self-aware and media-aware way.

McLuhan seemed after my own heart when he writes, "I am curious to know what would happen if art were suddenly seen for what it is, namely, exact information of how to rearrange one's psyche in order to anticipate the next blow from our own extended faculties."<sup>19</sup> It's a sentiment shared by Umberto Eco in *The Open Work*, where he describes the artist's role in "accustoming us to continual violations of patterns and schemes—indeed, alleging as a pattern and a scheme the very perishability of all patterns and all schemes."<sup>20</sup>

The fundamental unit is choice, and it is binary.

— James Gleick

# ASSUMP- TIONS + DELIMITA- TIONS



**IT IS :**

- + specifically an investigation of automated technologies that begin to threaten if not replace certain roles in society.
- + the reconciliation of the digital and analog
- + an exploration of the role of hand-making process to allow accidents and curb hubris
- + how design helps construct intellectual and moral authority
- + a communications of mutual understanding
- + humanizing technology, programming humans
- + domestic dada
- + a case for intuition in an increasingly quantified creative landscape

**IT IS NOT:**

- though there are lessons from gaming and gaming culture, this does not address the medium of the video game.
- it is not a projection into a future/singularity
- true cybernetic, human-computer communication. My interests intervene before futurism begins, with a modest hope that my contributions will help us guide that future more wisely.
- though I build upon and critique the work of interaction designers, this thesis is not meant to be a total shift into that field, and is still directed at a graphic design audience
- does not refer to all artificial intelligence when discussing the next man vs machine threat, but focuses more specifically on ones that work on natural language processing and text analysis. Not every “thinking machine” that tries to do what we do has to have a face.
- not specific to news media
- not a manifesto for the embrace of the next technological era
- nor is it doom-saying and a rejection of emerging media. Though I have nostalgic tendencies and have a growing appreciation for old media, the only way seems to be forward.

— To move forward with this thesis argument, we’ll have to give up on the notion of humans (individual or collective) as rational actors. Perfect consciousness and logic do not rule our behaviors, and to be free of that fallacy is (perhaps paradoxically) to be able to understand our patterns more clearly. Dan Ariely’s *Predictably Irrational* takes the reader through a number of clever experiments that demonstrate our poor decision-making. “Human beings may be a walking bundle of miscalculations, contradictions, and irrationalities, but we’re built that way for a reason: The same cognitive processes that lead us down the road to error and tragedy are the root of our intelligence and our ability to cope with and survive in a changing world. We pay attention to our mental processes when they fail, but that distracts from the fact that most of the time, our brains to amazingly well.”<sup>21</sup>

21. From Kathryn Schulz, *Being Wrong*, as quoted on p 83-84 of Pariser, *The Filter Bubble*.

22. p 67. Eco, *Interpretation and Overinterpretation*.

23. p 67. Eco, *Interpretation and Overinterpretation*.

— I assume that machine influence on human thinking is of a nature that encourages defaults and limits critical reasoning. If we look at history, it’s not exactly fair to make such a broad claim. It’s within human nature to create for ourselves this system of assumptions, and so when I say we should humanize technology with the primitive homo-sapien in mind, I don’t mean that everything should become simplified into savanna terms. The fact of our complex, modern existence demands new models and narratives that may appeal in a basic way to those old ways of thinking, but ultimately help us move beyond them and cope with the decisions and consequences of modernity.

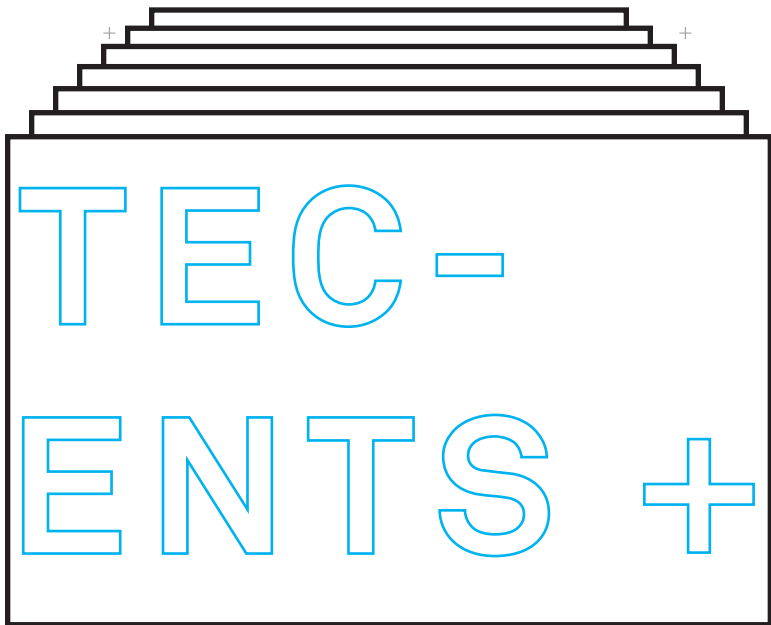
— The design of a message influences the way that information is received, which can have an effect on the very structure of thought.

— Though it takes on Dada airs, my thesis is driven by a curiosity and belief in the importance of the human want, need, and nature of communication. “When I speak with a friend I am interested in detecting the intention of the speaker.”<sup>22</sup>

— But this thesis also takes as a given the authority of many readers to interpret a message in many ways. “... [but] when a text is produced not for a single addressee but for a community of readers—the author knows that he or she will be interpreted not according to his or her intentions but according to a complex strategy of interactions which also involves the readers, along with their competence in language as a social treasury.”<sup>23</sup>

— Like memory, the misinterpretation I’m interested in is largely unintentional, or just on the cusp of our self-awareness—far more dangerous than overt manipulations.

ANTECEDENTS + PRECEDENTS



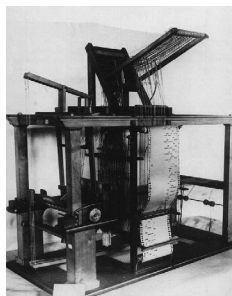
39.1%

frontiers<sup>24</sup>

Water	1400
Land	1840
Gold	1850
Wire	1880
Air	1900
Celluloid	1920
Plastic	1950
Space	1960
Silicon	1980
Networks	1990
Data	2000

39.8%





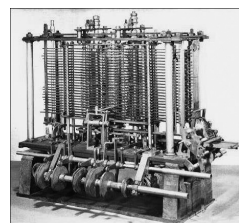
1801  
Jacquard Loom

The Jacquard loom was the first machine to use punched cards to control a sequence of operations. Although it did no computation based on them, it is considered an important step in the history of computing hardware. The ability to change the pattern of the loom's weave by simply changing cards was an important conceptual precursor to the development of computer programming. Specifically, Charles Babbage planned to use cards to store programs in his Analytical engine.



1818  
Frankenstein  
Mary Shelley

Frankenstein; or, The Modern Prometheus is a novel written by Mary Shelley about a creature produced by an unorthodox scientific experiment. Frankenstein is infused with some elements of the Gothic novel and the Romantic movement and is also considered to be one of the earliest examples of science fiction.



1876  
Telephone  
Alexander Graham Bell  
// Thomas Edison

The telephone is a telecommunications device that transmits and receives sounds, usually the human voice. The microphone converts the sound waves to electrical signals and then these are sent through the telephone network to the other phone and there converted by an earphone, or speaker, back into sound waves. Telephones are a duplex communications medium, meaning they allow the people on both ends to talk simultaneously. The telephone network, consisting of a worldwide net of telephone lines, fiberoptic cables, microwave transmission, cellular networks, communications satellites, and undersea telephone cables connected by switching centers, allows any telephone in the world to communicate with any other.

1837  
Analytical Engine  
Charles Babbage

The Analytical Engine was a proposed mechanical general-purpose computer designed by English mathematician Charles Babbage. It was first described in 1837 as the successor to Babbage's Difference Engine, a design for a mechanical computer. The Analytical Engine incorporated an arithmetic logic unit, control flow in the form of conditional branching and loops, and integrated memory, making it the first design for a general-purpose computer that could be described in modern terms as Turing-complete.



1885  
Georges Seurat  
A Sunday Afternoon on the Island of La Grande Jatte

Seurat took to heart the color theorists' notion of a scientific approach to painting. The tiny juxtaposed dots of multi-colored paint allow the viewer's eye to blend colors optically, rather than having the colors physically blended on the canvas.



1907  
Pablo Picasso  
Les Femmes d'Alger (O. J. R. M.)  
Version O

Les Femmes d'Alger (The Young Ladies of Avignon, and originally titled The Brothel of Avignon) is a large oil painting of 1907 by the Spanish artist Pablo Picasso (1881-1973). The work portrays five nude female prostitutes from a brothel on Carrer d'Avinyó (Avinyó Street) in Barcelona. Each figure is depicted in a disconcerting confrontational manner and none are conventionally feminine. The work is widely considered to be seminal in the early development of both cubism and modern art. Femmes d'Alger was revolutionary and controversial, and led to wide anger and disagreement, even amongst his closest associates and friends.

1909  
Futurist Manifesto  
F.T. Marinetti

The Futurist Manifesto, written by the Italian poet Filippo Tommaso Marinetti, was published in the Italian newspaper Gazzetta dell'Emilia in Bologna on 5 February 1909, then in French as "Manifeste du futurisme" in the newspaper Le Figaro on 20 February 1909. It initiated an artistic philosophy, Futurism, that was a rejection of the past, and a celebration of speed, machinery, violence, youth and industry; it was also an advocacy of the modernisation and cultural rejuvenation of Italy.



1913  
John E. Watson published 'Psychology as a Behaviorist Views It' marking the beginnings of Behavioral Psychology.



1917  
Fountain.  
Marcel Duchamp.

"Whether Mr Mutt made the fountain with his own hands or not has no importance. He CHOSE it. He took an article of life, placed it so that its useful significance disappeared under the new title and point of view - created a new thought for that object."  
— The Blind Man, Vol.2, 1917, p. 5.

1936  
Turing Machine  
Alan Turing

A Turing machine is a device that manipulates symbols on a strip of tape according to a table of rules. Despite its simplicity, a Turing machine can be adapted to simulate the logic of any computer algorithm, and is particularly useful in explaining the functions of a CPU inside a computer.

The "Turing" machine was described in 1936 by Alan Turing who called it an "a-machine" (automatic machine). The Turing machine is not intended as practical computing technology, but rather as a hypothetical device representing a computing machine. Turing machines help computer scientists understand the limits of mechanical computation.

34

### The Mathematical Theory of Communication

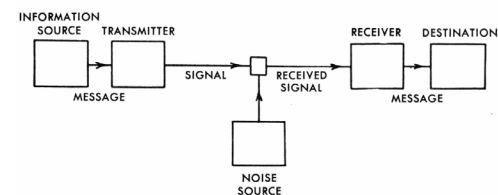


Fig. 1.—Schematic diagram of a general communication system.

1940s—  
Cybernetics  
Norbert Wiener

Cybernetics was defined in the mid 20th century, by Norbert Wiener as "the scientific study of control and communication in the animal and the machine." Cybernetics from the Greek meaning to "steer" or "navigate." Contemporary cybernetics began as an interdisciplinary study connecting the fields of control systems, electrical network theory, mechanical engineering, logic modeling, evolutionary biology, neuroscience, anthropology, and psychology in the 1940s.

1948  
Information Theory  
Claude Shannon

The Shannon-Weaver model of communication has been called the "mother of all models." It embodies the concepts of information source, message, transmitter, signal, channel, noise, receiver, information destination, probability of error, encoding, decoding, information rate, channel capacity, etc.



1940's - 70's  
Charles and Ray Eames

Charles Ormond Eames (1907-1978) and Bernice Alexandra "Ray" (née Kaiser) Eames (1912-1988) were American designers, who worked in and made major contributions to modern architecture and furniture. They also worked in the fields of industrial and graphic design, fine art and film.



1964  
IBM exhibit  
Eames

The IBM Exhibit at the 1964 Worlds Fair, the Eameses designed a 9-screen film about the workings of computer logic.

1964  
Understanding Media  
Marshall McLuhan

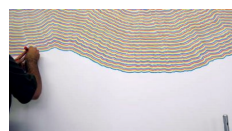
A pioneering study in media theory, it proposes that media themselves, not the content they carry, should be the focus of study. McLuhan suggests that a medium affects the society in which it plays a role not by the content delivered through it, but by the characteristics of the medium itself.

1950  
Turing Test  
Alan Turing

The test was introduced by Alan Turing in his 1950 paper "Computing Machinery and Intelligence," which opens with the words: "I propose to consider the question, 'Can machines think?'"

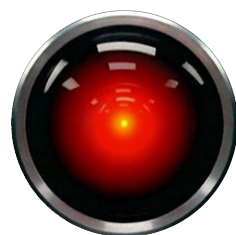
The Turing test is a test of a machine's ability to exhibit intelligent behaviour. In Turing's original illustrative example, a human judge engages in a natural language conversation with a human and a machine designed to generate performance indistinguishable from that of a human being. All participants are separated from one another. If the judge cannot reliably tell the machine from the human, the machine is said to have passed the test. The test does not check the ability to give the correct answer; it checks how closely the answer resembles typical human answers.

The book is the source of the well-known phrase "The medium is the message". It was a leading indicator of the upheaval of local cultures by increasingly globalized values. The book greatly influenced academics, writers, and social theorists.



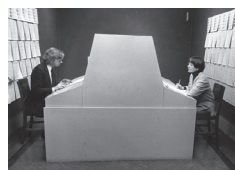
1968—  
Wall Drawings  
Sol Lewitt

Lewitt was an American artist linked to various movements, including Conceptual art and Minimalism. In 1968, Lewitt began to conceive sets of guidelines or simple diagrams for his two-dimensional works drawn directly on the wall, executed first in graphite, then in crayon, later in colored pencil and finally in chromatically rich washes of India ink, bright acrylic paint, and other materials.



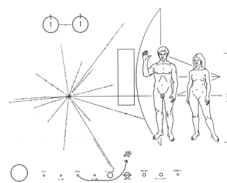
1968  
2001: A Space Odyssey  
Stanley Kubrick

2001: A Space Odyssey is a 1968 science fiction film produced and directed by Stanley Kubrick. The screenplay was co-written by Kubrick and Arthur C. Clarke, and was partially inspired by Clarke's short story "The Sentinel". The story deals with a series of encounters between humans and mysterious black monoliths that are apparently affecting human evolution, and a space voyage to Jupiter tracing a signal emitted by one such monolith found on the moon.



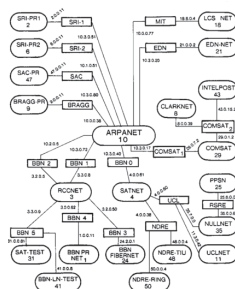
1960s—  
Stephen Willats  
is a British artist. He lives and works in London.

Willats is a pioneer of conceptual art. Since the early 1960s he has created work concerned with extending the territory in which art functions. His work has involved interdisciplinary processes and theory from sociology, systems analysis, cybernetics, semiotics and philosophy.



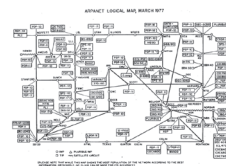
1973  
Pioneer

The Pioneer plaques are a pair of gold-anodized aluminium plaques which were placed on board the 1972 Pioneer 10 and 1973 Pioneer 11 spacecraft, featuring a pictorial message, in case either Pioneer 10 or 11 is intercepted by extraterrestrial life. The plaques show the nude figures of a human male and female along with several symbols that are designed to provide information about the origin of the spacecraft.



1973  
TCP/IP

The Internet protocol suite resulted from research and development conducted by the Defense Advanced Research Projects Agency (DARPA) in the early 1970s. TCP/IP provides end-to-end connectivity specifying how data should be formatted, addressed, transmitted, routed and received at the destination. It has four abstraction layers, each with its own protocols.



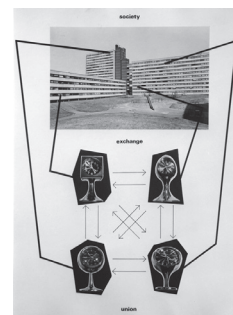
1969  
ARPANET

The Advanced Research Projects Agency Network (ARPANET) was the world's first operational packet switching network and the core network of a set that came to compose the global Internet.



1970's—  
April Greiman

April Greiman is a designer. "Recognized as one of the first designers to embrace computer technology as a design tool, Greiman is also credited, along with early collaborator Jayme Odgers, with establishing the 'New Wave' design style in the US during the late 70s and early 80s." Greiman heads Los Angeles-based design consultancy Made in Space.



1990  
Our Interpersonal Home  
Stephen Willats



1993  
V.D.U. Transformation-  
Series-No11.  
Stephen Willats

1990s—  
John Maeda  
(MIT Media Lab)

John Maeda is a Japanese-American graphic designer, computer scientist, academic, and author. His work in design, technology and leadership explores the area where the fields merge. He is the current President of the Rhode Island School of Design.

At the MIT Media Lab Aesthetics + Computation Group, Maeda work toward the design of advanced system architectures and thought processes to enable the creation of (as yet) unimaginable forms and spaces

1991  
HTML (Hypertext Markup  
Language)

HyperText Markup Language (HTML) is the main markup language for displaying web pages and other information that can be displayed in a web browser. HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts in languages such as JavaScript which affect the behavior of HTML webpages.

1996  
Cascading Style Sheets  
Language)

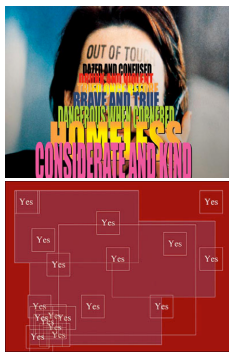
Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can also be applied to any kind of XML document, including plain XML, SVG and XUL.





2001  
Processing  
Ben Fry & Casey Reas  
(+ open source)

Processing is an open source programming language and integrated development environment (IDE) built for the electronic arts and visual design communities with the purpose of teaching the basics of computer programming in a visual context, and to serve as the foundation for electronic sketchbooks. The project was initiated in 2001 by Casey Reas and Benjamin Fry, both formerly of the Aesthetics and Computation Group at the MIT Media Lab. One of the stated aims of Processing is to act as a tool to get non-programmers started with programming, through the instant gratification of visual feedback. The language builds on the Java language, but uses a simplified syntax and graphics programming model.



2003  
E.E.E.I.  
Envisioning Emotional Epistemological Information  
David Byrne

Art works and experiments using Powerpoint. While Byrne poked fun at the popular Microsoft presentation software's bullet-point tyranny and Autocontent Wizard inanity, Byrne also defended its appeal as more than just a business tool – as a medium for art and theater. His talk was titled “I ð PowerPoint,” and he confessed that he loves the program not in spite of, but in some ways because of, its shortcomings.



ABCDEFGHIJ  
KLMNOPQRS  
TUVWXYZ

2005  
Scriptographer  
Jurg Lehni + Jonathan Puckey

Scriptographer is a scripting plugin for Adobe Illustrator™. It gives the user the possibility to extend Illustrator's functionality by the use of the JavaScript language.

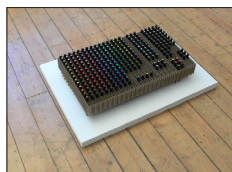
The user is no longer limited to the same tools that are used by most graphic designers around the globe. Scriptographer allows the creation of mouse controlled drawing-tools, effects that modify existing graphics and scripts that create new ones. But Scriptographer is also a webpage on which users can exchange scripts and ideas.

Scriptographer gives the tool back into the hand of the user and confronts a closed product with the open source philosophy.



2005  
Empty Words  
Jurg Lehni & Alex Rich

Together with Jonathan Hares, a pair of drilled posters were made as a contribution to The Free Library, curated by Mark Owens. This prompted the exploration of possible methods of mechanised production. Using a standard CNC plotter, a rotated LCD display, an Apple TV, and a software interface, Empty Words cuts each dot of the poster in sequence at a controlled speed. Similar to a Linotype machine, the resulting device became a tool for the production of text works, used by both ourselves and the general public.

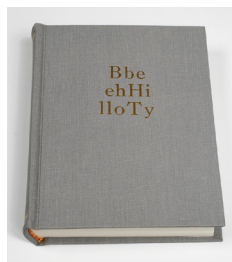


2006  
Pantone Pen Print  
Dan Eatock

One complete set of Letraset TRIA Pantone markers, arranged in the colour spectrum; left for one month resting on their nibs on a stack of 500 SRA1 sheets 70gsm uncoated white paper. Edition 73 original prints

2007  
iPhone  
Apple, Inc.

The iPhone is a line of smartphones designed and marketed by Apple Inc. The first iPhone was unveiled by Steve Jobs on January 9, 2007, and released on June 29, 2007.

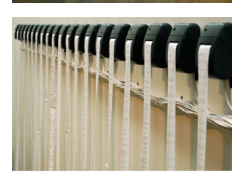


2006  
Alphabetized Bible  
Tauba Auerbach



2007  
Histoface  
Stewdio (Stewart Smith)

An edition of Mary Shelley's Frankenstein laid out using characters and glyphs from PDF documents obtained through internet searches. The incomplete fonts found in the PDFs were reassembled into the text of Frankenstein based on their frequency of use. The most common characters are employed at the beginning of the book, and the text devolves into less common, more grotesque shapes and forms toward the end.



2008  
Murmur Study  
Christopher Baker

Murmur Study is an installation that examines the rise of micro-messaging technologies such as Twitter and Facebook's status update. It consists of 30 thermal printers that continuously monitor Twitter for new messages containing variations on common emotional utterances. Messages containing hundreds of variations on words such as argh, meh, grrrr, oooo, ewww, and hmph, are printed as an endless waterfall of text accumulating in tangled piles below.



2009  
Browser Pong  
Stewdio (Stewart Smith)

Browser Pong instead exists between a collection of windows. During play the negative space between windows is transformed into a playing field; the abstracted tennis court of Pong. The idea of thinking inside or outside some “box” is of course a dead and beaten horse. Browser Pong attempts to think with the boxes.

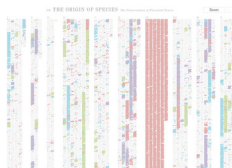
2009  
MakerBot / Thingiverse

MakerBot Industries is a Brooklyn, New York-based company founded by Bre Pettis, Adam Mayer, and Zach “Hoeken” Smith producing open source hardware, specifically 3D printers. MakerBot builds on the early progress of the RepRap Project with the goal of bringing desktop 3D printing into the home at an affordable price.

MakerBot Industries hosts an online community called Thingiverse where users can post files, document their designs, and collaborate on open source hardware. The site is a collaborative repository for design files used in 3D printing, laser cutting services, and other DIY manufacturing processes.



2010  
"I Am Not An Artist"  
John Kelly + Matt  
Cooper



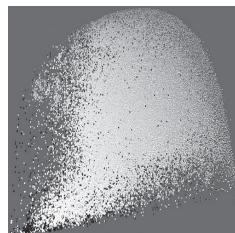
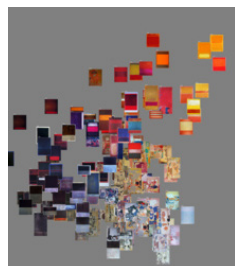
2009  
The Preservation of  
Favored Traces  
Fathom Information  
Design

Darwin's *On the Origin of Species* evolved over the course of several editions he wrote, edited, and updated during his lifetime. The first edition was approximately 150,000 words and the sixth is a much larger 190,000 words. In the changes are refinements and shifts – increasing emphasis, adding details, or even a change in the idea itself.



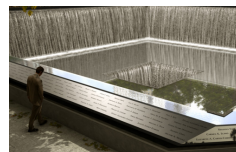
2010  
Just in Time, or A  
Short History of Pro-  
duction.  
Xavier Antin

A book printed through a printing chain made of four desktop printers using four different colors and technologies dated from 1880 to 1976. A production process that brings together small scale and large scale production, two sides of the same history.



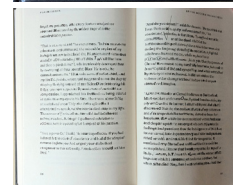
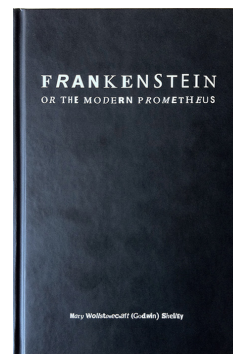
2011  
ImagePlot

ImagePlot is a free software tool for visualizing collections of images and video of any size. Visualize image collections as timelines and scatter plots which display all images in a collection. ImagePlot was developed by the Software Studies Initiative with support from the National Endowment for Humanities (NEH), the California Institute for Telecommunications and Information Technology (Calit2), and the Center for Research in Computing and the Arts (CRCA).



2011  
9/11 Memorial  
Jer Thorp, Michael Arad

The project was to design an algorithm for placement of names on the 9/11 memorial in New York City. In architect Michael Arad's vision for the memorial, the names were to be laid according to where people were and who they were with when they died. Underneath this river of names, though, an arrangement would provide a meaningful framework; one which allows the names of family and friends to exist together. Victims would be linked through what Arad terms 'meaningful adjacencies' – connections that would reflect friendships, family bonds, and acts of heroism. through these connections, the memorial becomes a permanent embodiment of not only the many individual victims, but also of the relationships that were part of their lives before those tragic events.



2011  
Frankenstein  
Fathom Information  
Design

An edition of Mary Shelley's *Frankenstein* laid out using characters and glyphs from PDF documents obtained through internet searches. The incomplete fonts found in the PDFs were reassembled into the text of *Frankenstein* based on their frequency of use. The most common characters are employed at the beginning of the book, and the text devolves into less common, more grotesque shapes and forms toward the end.



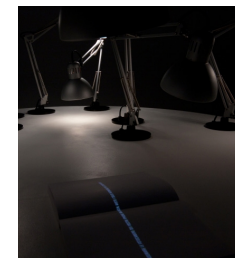
2011  
Watson on Jeopardy  
IBM

Watson is an artificial intelligence computer system capable of answering questions posed in natural language, developed in IBM's DeepQA project by a research team led by principal investigator David Ferrucci. In 2011, as a test of its abilities, Watson competed on the quiz show *Jeopardy!*, in the show's only human-versus-machine match-up to date. In a two-game, combined-point match, broadcast in three *Jeopardy!* episodes, Watson beat Brad Rutter, the biggest all-time money winner on *Jeopardy!*, and Ken Jennings, the record holder for the longest championship streak.



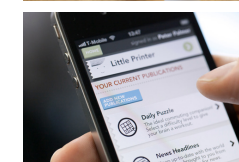
2011  
Poly-Arc / Posterwall  
LUST

Visitors at La Chapelle could interact with this 'polyarc' to make their own digital or print publication, before adding their own contributions to it. Through its form, it considers the paths and media travelled by graphic design; and how they are evolving in light of technology, the amount of information and images being produced, and changes in the applications of the discipline. During the festival visitors could pick up one-of-a-kind print-on-demand booklets at La Chapelle which could be inserted into this dossier.



2012  
Res Sapiens  
LUST

The Res Sapiens is a network of everyday objects, which use the internet as an endless source of energy. When working together they form a super-organism; revealing a possible awareness by mentally interpreting online data and their direct environment. The two lamps presented in Centre Pompidou are part of this network. They produce bodily responses, they shine, move and react, also to each other. Using the continuous stream of micro-conversations on twitter, they enact the binaries of emotion and rationality. LAMP014 senses feelings in the vicinity of Paris while LAMP015 detects worldwide opinions about current significant wikipedia topics.



2012  
Little Printer  
BERG

"Little Printer" is a compact, inkless, thermal printer which can produce receipt-sized miniature newspapers, notes, or images directly from a cellular device. Through the custom-designed BERG cloud program, the printer connects wirelessly to any smartphone with zero configuration. 'little printer' itself is constructed from a high-gloss injected moulded plastic with a brushed steel face-plate, intended to hold the paper and thus framing each delivery as it prints.



Software is a tool for the mind. While the industrial revolution produced tools to augment the body, such as the steam engine and the automobile, the information revolution is producing tools to extend the intellect.

— p 17 // FORM + CODE

We might as well begin this line of reasoning where many speculations about new technologies begin — some thousands of years ago with two men, Plato and Socrates, perhaps sitting in the sun and having a conversation that, unbeknownst to them, we still speculate on and relive today. The gentle irony of Socrates was that his total reluctance toward the written word — as a diminishing force against the memory and strength of mind — would be the vessel to carry his thoughts well into the future (although whether this would be of any comfort during his lifetime cannot be known).

“For this invention will produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory. Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them. You have invented an elixir not of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise.”

— Plato (quoting Socrates) in Phaedrus.<sup>25</sup>

It would take thousands of years of speaking and writing before researchers put together a body of evidence that explains a state of experience that came before utterance, before signs and signifiers. Verbal language itself was the first and penultimate intermediary between our direct experience of the world and a world of representation. Ever since we first allowed the mysterious workings of our mind to be outsourced into something as strangely concrete as an alphabet, the mediating bodies have grown in the spaces between us.

Around the 1930s, Edward Sapir formalized Linguistic Relativity, a theory that has come and gone out of favor among researchers but still holds considerable sway among communications practitioners. Certainly the original argument by Edward Sapir and Benjamin Whorf overstated language’s influence on behavior, and pivoted around European supremacy and prejudice toward “savage” tongues of

Native Americans.<sup>26</sup> But it’s no surprise that the disembodied kernel of an idea — “language structures thought” — continues to influence and inspire. It offers an explanation for why some people act differently than others, and provides a vocabulary and grammatical structures to mine for evidence. It served as a fundamental premise in my original thesis statements, but continued inquiry revealed far more complex and nuanced propositions.

Well-honed critiques from Noam Chomsky took down the unqualified arguments of the theory’s originators, but couldn’t kill the notion itself. Chomsky puts forth a counterargument, of a Universal Grammar, that we are born with the basic ingredients for complex language abilities and instinctively develop this whenever and wherever there’s someone around to listen and speak back.<sup>27</sup> Steven Pinker, often aligned with Chomsky on linguistic issues, describes a pre-language mentalese that forms thought and emotion within the individual, and continues to, unrestrained by language.<sup>28</sup>

In specific contexts, the application of a certain kind of wording does indeed seem to have a powerful ripple effect. Lakoff and Johnson describe how metaphors, “typically viewed...as matters of ‘mere language,’” actually have a power to define reality. “They do this through a coherent network of entailments that highlight some features of reality and hide others... We draw inferences, set goals, make commitments, and execute plans all on the basis of how we in part structure our experience, consciously and unconsciously, by means of metaphor.”

By that token, language and conversation today should be radically restructuring the way we think and interact, on a personal and societal scale. Sherry Turkle is among a battalion of concerned voices on the role of digital media in human connection and conversation. Her experience in psychoanalysis and human-technology interaction also sheds light on the nerves that these digital facsimiles seem to touch. “Always-on/always-on-you devices provide three powerful fantasies: that we will always be heard; that we can put our attention wherever we want it to be; and that we never have to be alone.”<sup>29</sup>

24. Drew Breuning, [drewb.org](http://drewb.org)
25. <http://classics.mit.edu/Plato/phaedrus.html>
26. <http://plato.stanford.edu/entries/relativism/supplement2.html>
27. p 9–10, Pinker.
28. p 47, Pinker.
29. Turkle, “The Flight From Conversation.” <http://www.nytimes.com/2012/04/22/opinion/sunday/the-flight-from-conversation.html?pagewanted=all>



The history of the telephone provides a more direct analogy to the adoption and use of networked computers. In an 1889 edition of *Nature*, published a scathing editorial about the dangers of the telephone entering our homes.

“Indeed, it may be stated as a postulate, on general principles, that the ratio of evil is a hundred to one of good accomplished by man’s inventions, either in respect to the intrinsic properties of the machines invented, or to the population upon which they directly act. So that, while man apparently is working out his own salvation and benefitting himself, each effort is actually involving him more inextricably in the meshes of the Divine penalty.”

It’s easy to laugh at the conservative estimates (quite intelligent) people used to make about how prevalent a new technology needs to be, but we would do well to learn from their lack of foresight and develop less naïve critiques for future developments to come. In fact, the use of extreme language and opinions for or against a developing technology often obscures more substantive issues that could be meaningfully addressed. For example, a fear of robot sentience well documented in sci-fi usually takes precedence over the physical dangers posed by large manufacturing robots or untold financial ruin that could at least be partially blamed on a handful of algorithms run rampant.

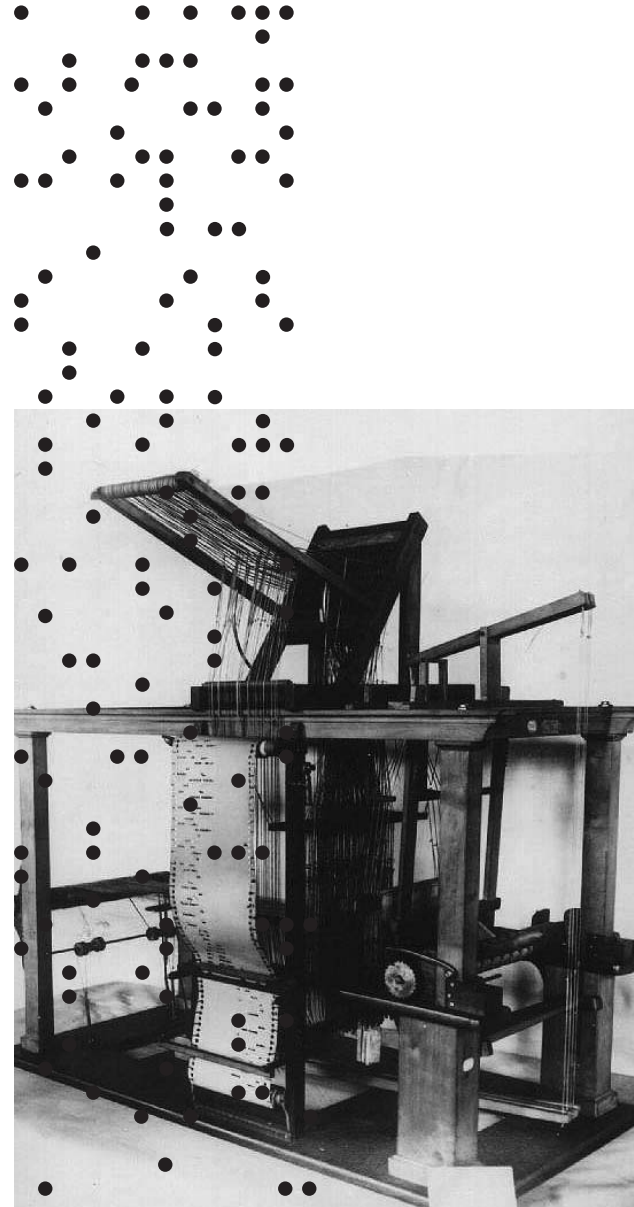


Ever since the industrial revolution, the development of work-displacing technologies has had a precarious relationship with our sense of well-being and accomplishment. There has always been an element of the adversarial, or at least uneasiness in figuring out what certain innovations will mean — an uneasiness we sometimes try to settle by setting up games or showcases to gauge the ever-closing gap between our biological selves and our technological facsimiles. Science fiction has already explored the frightening possibilities for when we become evenly matched, but looking backwards also yields examples of the mythic qualities of this man/machine struggle.

One of the first automated machines — one that influenced computer science directly — was used for patterned textiles. The Jacquard Loom, invented in 1801, used a binary system in the form of punched cards to control which needles could pass through, “programming” the weaving performed by the loom.

Around that time, Charles Babbage had already developed plans and early prototypes for his Difference Engine, a mechanical calculator that could compute polynomial functions. Although the British government had provided funding for his original Difference Engine, they withdrew it as they realized expenses and time were greater than expected. But he was already planning a new invention, the Analytical Engine, which would be able to compute any number or solve any mathematical problem.

He encountered the Jacquard Loom on display at the Strand, and became interested in the manner of encoding patterns from one medium into another.



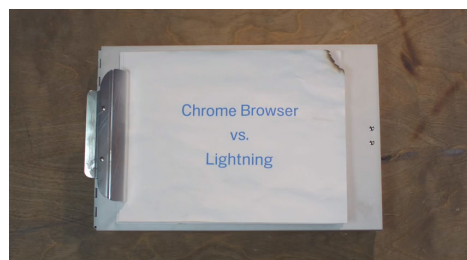
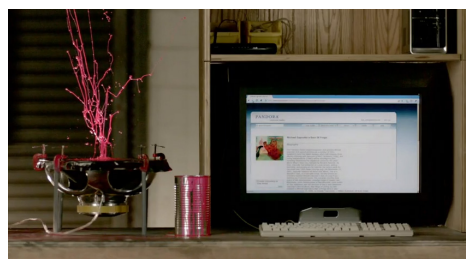
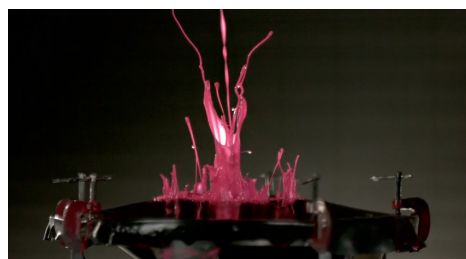
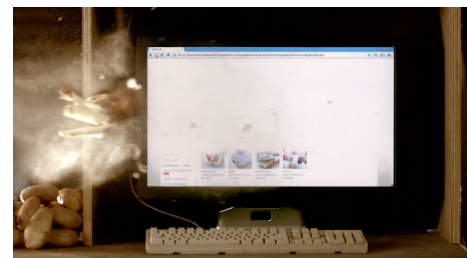
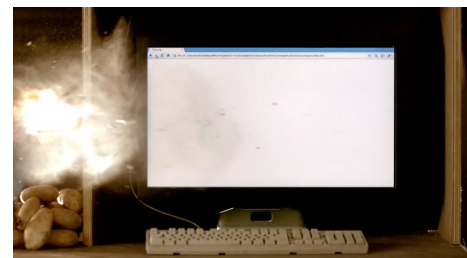
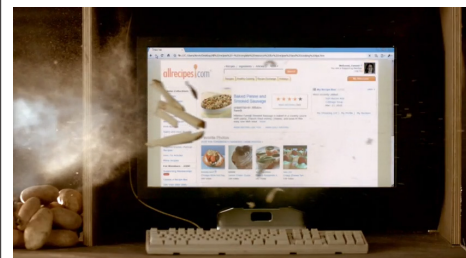
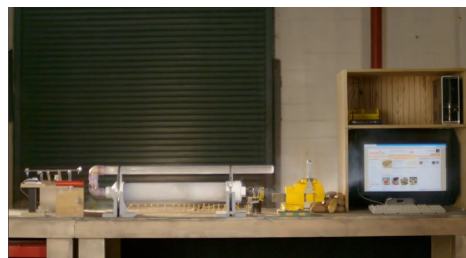
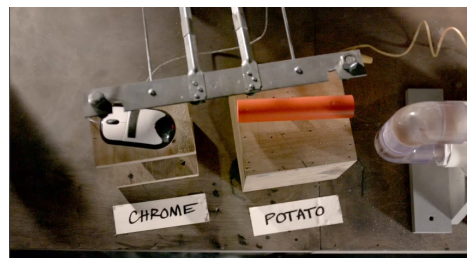
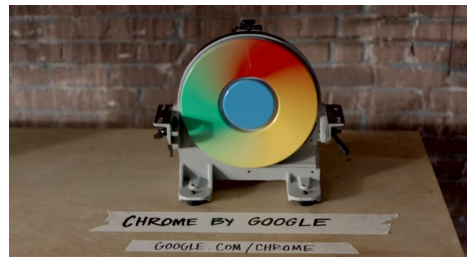
The notion of abstracting information away from its physical substrate required careful emphasis... As Babbage conceived his machine now, it raised this very process of abstraction to higher and higher degrees. He meant the cogs and wheels to handle not just numbers but variables standing in for numbers. Variables were to be filled or determined by the outcomes of prior calculations, and, further, the very operations—such as addition or multiplication—were to be changeable, depending on prior outcomes. He imagined these abstract information quantities being stored in cards: variable cards and operation cards. He thought of the machine as embodying laws and of the cards as communicating these laws.

— James Gleick, *The Information*

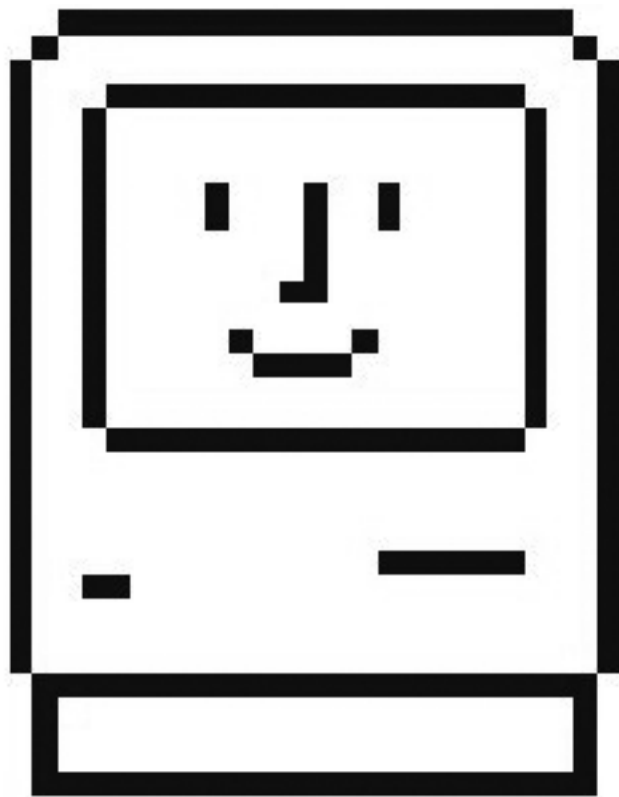
30.  
“Foldit Gamers Solve Riddle of HIV Enzyme within 3 Weeks,” Michael J. Coren.

His Analytical Engine would be more general purpose and flexible because it would be programmable, thanks to the use of Jacquard’s punched card technology and the idea of further abstracting data. The two main parts were even called the “Store” (memory unit) and “Mill” (CPU) after terms in the weaving industry. His designs were never completed in his lifetime, but modern reconstructions — including one that will be the size of a football field — corroborate his plans and would have functioned as expected.

From humble beginnings, this would evolve into actual “thinking machines,” and now are the start of the sleek, multi-purpose computers we carry around today. While we still consider them extensions of ourselves, it may be worth remembering that they’re actually becoming fully realized entities in their own right. The shift toward automation began an era of work-displacing technologies that threatened our own sense of well-being and accomplishment. Yet today, we entrust data processing, the very act of gathering information about the real and virtual world, to algorithms that dictate the trajectories of our global economics.







31.  
 “Aspects of modern architecture and design had been viewed as cold and impersonal ever since the 1920s, even by many supporters of modernism who stopped short of going all the way with Bauhaus design or International Style architecture. Behind the jokes... lay serious questions about semiotics, ‘functionalism,’ the relationship between object and user, and a world ruled by machinery. (5-6, Kirkham)

First, the ambiguity around part of this thesis’s title, humanizing technology, needs to be addressed. “Human factors” cannot be so capriciously pinned down as a well-honed gestural interface or ergonomic shape, after all. But neither can it be so exalted and rarified to preclude all efforts to describe and understand it. Though I will come to my own notions and arguments, it may be valuable to first walk through with the design practitioners that came before me.

At this moment, any digital design agency worth their salt is in the work of humanizing technology. Those two words are literally in the biographies of almost all the firms I admire and humbly consider precedents, but the work of translating alien technologies for the masses, as we know it today, had perhaps its earliest example with **Charles and Ray Eames**. Though we all feel the growing pains of a digital age now, the convergence of political, social, and technological revolution in America’s mid-century wrenched the country forward at unimaginable velocity that parallels, if not exceeds, our present rate of change.

Through films and exhibitions in their work with IBM, Charles and Ray translated the new into the familiar to reimagine the human-computer relationship. They understood the role of the human hand, the emotionality of color, and that a few metaphors can transform deep suspicions of technology into curiosity and a sense of wonder. And they weren’t only adapting the public to new technologies, but adapting the form of modernism that preceded them to respond to more humanistic guidelines. By the 1930s and 40s, there was building dissent for the Bauhaus and International Style design, which favored of the machine aesthetic and engineering systems over the organic and ornamented.<sup>31</sup> The “organic modernism” they created as a result continues to be a model of forward-thinking attitude and narrative, human-centered approach that I aspire to.

**Berg’s** work also exhibits a lovely marriage of the digital and physical, with a specialty in anthropomorphizing objects and adding new dimensions to digital flatland. Their most recent product, *Little Printer*, introduces itself with a smile and combed, side-parted hair. It uses the basic receipt printer form and its inherent quickness and ephemerality to migrate daily updates and small bites of information into the physical realm.

The approach taken by **LUST** to develop a dedicated research and development lab for human/technology experimentation is a great marriage of aforementioned approaches. In *Res Sapiens*, animated, tweeting, desk lamps manage to incite curiosity and empathy for a pile of steel and electricity. The many, unlikely pieces in play also remediate one another — lamps that are reprogrammed to move, a twitter account that controls these lamps, and the light itself responding to a sentiment analysis that dims and brightens with the mood on Twitter.

In *Polyarc*, they take on the task of computer automated poster design — the same Posterwall that appears in the Walker Art Center’s *Graphic Design: Now In Production* show. Visitors to the show could contribute to the archive that fueled these designs through twitter, then interact with enormous screens that tracked movement and followed the viewer. Finally, printers installed in the ceiling would print a unique poster. The flow of different kinds of information, and all the interfaces and interactions taking place is completely impractical but inspiring. I’m certain that the **LUSTlab** is a great source of inspiration for unlikely ‘solutions’ like this.

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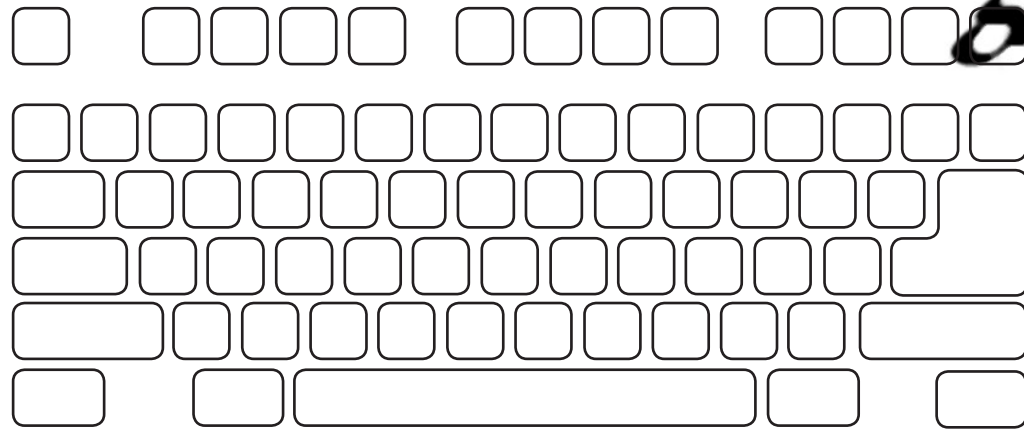
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32. "Since the early nineties, an ever increasing number of artworks have been created on the basis of preexisting works; more and more artists interpret, reproduce, re-exhibit, or use works made by others or available cultural products... The material they manipulate is no longer primary. It is no longer a matter of elaborating a form on the basis of a raw material but working with objects that are already in circulation on the cultural market, which is to say, objects already informed by other objects. Notions of originality (being at the origin of) and even of creation (making something from nothing) are slowly blurred in this new cultural landscape marked by the twin figures of the DJ and the programmer, both of whom have the task of selecting cultural objects and inserting them into new contexts." Bourriard, *Postproduction*.

33. Lawrence Weiner speaking at TypoLondon, Oct 21, 2011. <http://typo.apeunit.com/lawrence.html>

34. <http://stephenwillats.com/work/meta-filter/>

It's interesting that those who are acting out new modes of humanity tend to be artists rather than designers. It shouldn't have to mean that this cannot be design work as well. Perhaps not all are so enthralled, but there's a delight to seeing a creation based on a logical system — humans acting out conditional statements, and "reprogramming" the way we think and interact with one another.<sup>32</sup>

There's a rough correlation between the onset of computing technologies and concepts and the rise of a more conceptual form of art. Sol Lewitt undoubtedly drew influence from the programmatic nature of computers and physically enacted its implications for the art world and cultural sector.

Operating in a similar vein, Dan Eatock takes some of the most visually mundane (default) activities and repositions them as high art through his focus on process. His participatory projects, especially, highlights the conceptual and recasts the artist as programmer rather than executor. Using everyday materials, anyone can enact one of his projects, but the assignments themselves are undeniably his own. His works also relate to mass production in a way that segways nicely into design, and are in fact often shown alongside design pieces.

Taub Auerbach's sense of play with the structure and aesthetics of language is something I admire. There's a programmatic sensibility that hints of what Sol Lewitt produced, she but draws from real languages and mediums just enough to relate it to more familiar sources. Her *Holy Bible* with all the letters arranged alphabetically is a delight. It chose a text that's been so revered and highly (loosely) interpreted and applied such a severe "interpretation" to it — drawing attention to the problematic logic of textual processing. Her gradient book and screen/moiré works similarly exploit the physical-digital grey area. There's a formal clarity (or austerity) but the ideas need that space to breathe, which I appreciate — though my own visual solutions will need to give more information to communicate to a design audience.

He is a more tangential influence to be sure, but Lawrence Weiner took text to its conceptual potential, and shows us a design that is cognizant of semiotic playfulness and language's ability to pierce the imagination and reshape our thinking. He also occupies a space within both art and design that I admire, and is an example of what design can learn from art (just as designers, even the most commercial, influenced his work). He also joins McLuhan, Eco and Paola in pointing out art and design's social role at a recent talk at Typo London:

"Design is as politically important as the making of art, and I think the making of art really does completely, irrevocably, and without any backing, change the way people relate to their society."<sup>33</sup>

I spent a number of years in Minnesota, visiting the Walker Art Center every now and then. His piece on the museum's exterior has become a bit of a mantra, comforting to hear and open enough to speak to many ideas. It's an oddly fitting way to describe — **Bits and pieces, put together to give the semblance of a whole.**

Also working within the intersection of text and conceptual art around that time was Stephen Willats, whose work directly reminded me of Shannon and Weaver's information theory diagram. When we brought machines into our circles of conversation, a new field of interactions and experiences came into being that called for form. The communications theories and talk of cybernetics at the time was the avant-garde, and Willats riffed on that form of compartmentalization and clear directionality, expressed most purely by boxes and arrows.

Beyond just redrawing the style of information diagrams, Willats constructed an interactive installation titled "Meta Filter" that also rethought the way art and societal agreement could operate. It "represented a new way for art to operate directly within society; rather than just looking at a work of art, it requires two people to construct a model of their own society in agreement with someone else."<sup>34</sup> The two people on either side of a machine and systematically worked through a series of steps to describe the situation around them.



What I cannot create, I do not understand.

— Richard Feynmen

PROCESS +  
METHOD-  
OLOGY

Thus far I've outlined a broad argument for the need of cross-pollination, innovation, and evolution in the field of graphic design and in digital communications in general. It's a time of importance for structure and processes, but exactly what that means for design is still unclear.

My brand of "humanization," in particular, may be unlike the highly narrative and anthropomorphized approach expected. Since the thesis title also includes "reprogramming humanity," the idea is actually to find middle ground, or a more symbiotic relationship, between our technology and ourselves. My intention is to mix (or remix) the physical and digital, make information palpable and show the artist or designer's hand without giving in completely to nostalgia for hand-made craft.

At the 2011 Strata Conference, I attended a talk by Arnab Gupta titled "Man + Machine." He walks through a familiar history of Man vs Machine games, but then gives contemporary examples that highlight the vastly greater potential of combined powers. For example, a group of online gamers playing a protein-folding puzzle were able to model the structure of an HIV enzyme that leading researchers and supercomputers separately weren't able to solve for nearly a decade. "Humans have an edge over computers when complex problems require intuition and leaps of insight rather than brute calculation" (or force, speed, volume, etc).<sup>35</sup>

Working with technology in a more symbiotic manner begins with trying to understand that tool, or medium, or algorithm. The following methodologies attempt to formalize the means by which I approached all these aforementioned considerations.

35. "Foldit Gamers Solve Riddle of HIV Enzyme within 3 Weeks." - Michael J. Coren. Scientific American. <http://www.scientificamerican.com/article.cfm?id=foldit-gamers-solve-riddle>

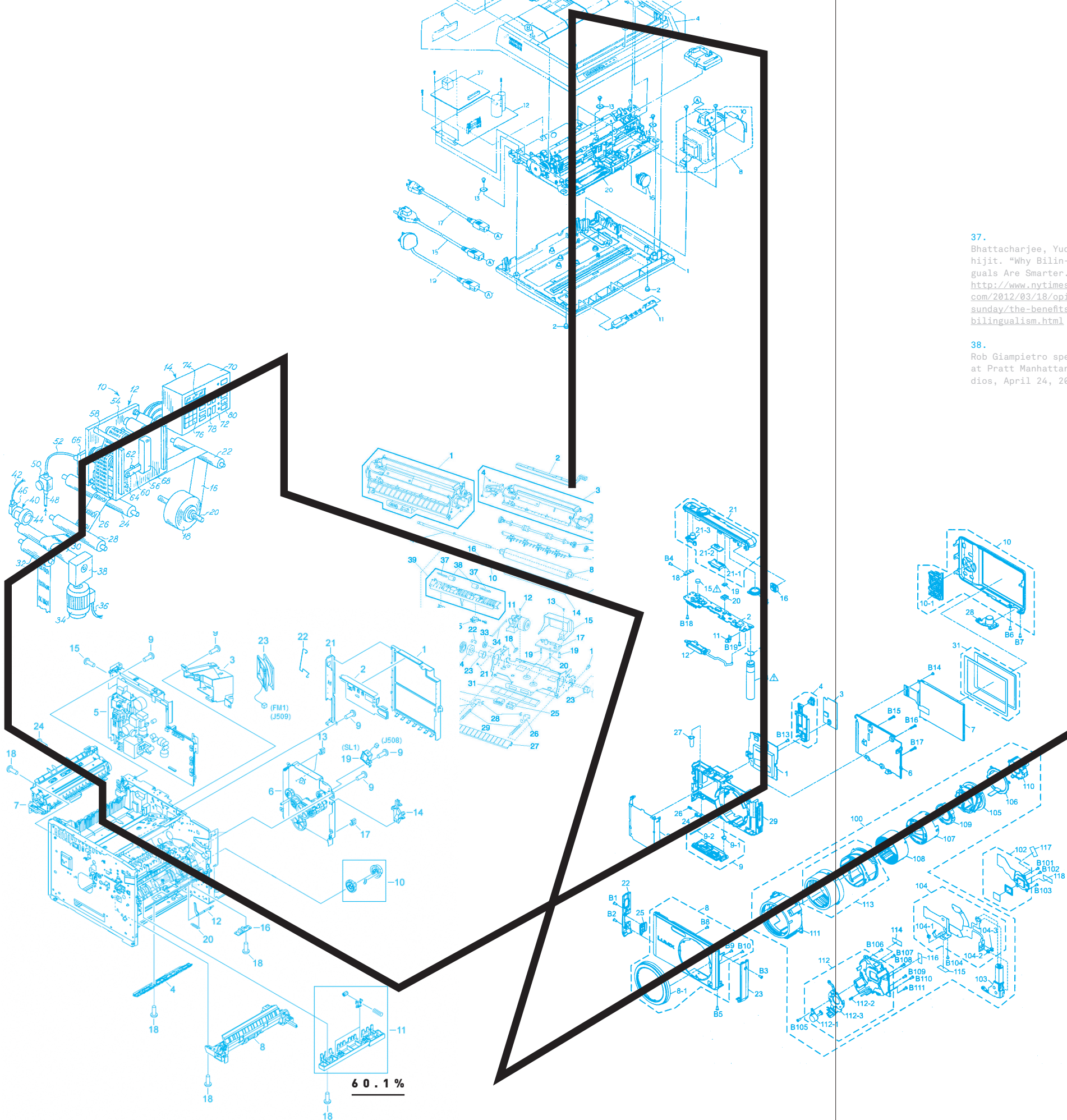


36.  
 A notion from Heidegger, which is just about the only notion of his I can understand. <http://www.albany.edu/faculty/rpy95/webtext/invisble.htm>

The problem with working with mediums in a more cognizant way is that when we are using equipment, it has a tendency to “disappear.”<sup>36</sup> We’re not aware of it has having any characteristics at all — sometimes referred to as absorbed coping, where the awareness recedes into transparency as one becomes absorbed in the task at hand. When that equipment breaks or is somehow found to be unusable, it becomes conspicuous in a way that lets it enter into the equation. If the medium is the message, then the vessel itself is a semiotic ingredient to work with. And in order to make it visible, it must be reworked to do what it wasn’t designed for.

My use of the term hack is a bit broader than the official computer science meaning. It doesn’t have to happen in code or in digital space. I’ve physically taken apart objects, taken a hacksaw to them, just to rework them in a more meaningful way. Even planned or unplanned obsolescence also factors into the visibility of a piece of media.





60.1%

37. Bhattacharjee, Yudhijit. "Why Bilinguals Are Smarter." <http://www.nytimes.com/2012/03/18/opinion/sunday/the-benefits-of-bilingualism.html>

38. Rob Giampietro speaking at Pratt Manhattan Studios, April 24, 2012.

My thinking is that if working within one language, medium, software/tool continues to exert its defaults — seen in much web design today — then it would help to translate it through a variety of forms to break away from single paradigms. Research has shown that bilingualism promotes a more active brain and improved cognitive skills from infancy into old age.<sup>37</sup>

Rob Giampietro's recent lecture at Pratt<sup>38</sup> articulated the worth of these media migrations the most clearly — essentially, when we bring them back into a physical space, it becomes apparent where the analog metaphors for the digital realm break down. That's not to say that they shouldn't be used at all. The paperback size, page-flip interactions, and highlight capabilities on a Kindle all help a user navigate the eBook more easily — but as persistent as these metaphors can be, they also limit our chances of taking new technologies to their fullest potential.

This is not new of course. There's been a resurgence of hand-drawn elements in design lately and even the act of scanning, printing, and collaging elements are remediating the content. But I will try to bring the media component to the forefront, and perhaps mix techniques in more experimental ways. If all this is unclear, then I hope the individual project descriptions will help define it further.

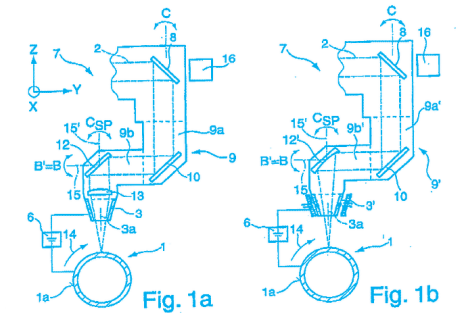


Fig. 2

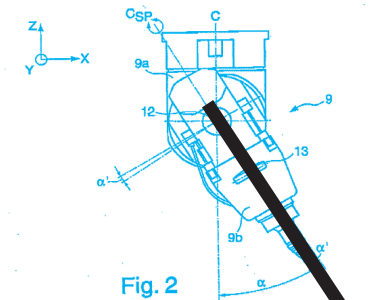
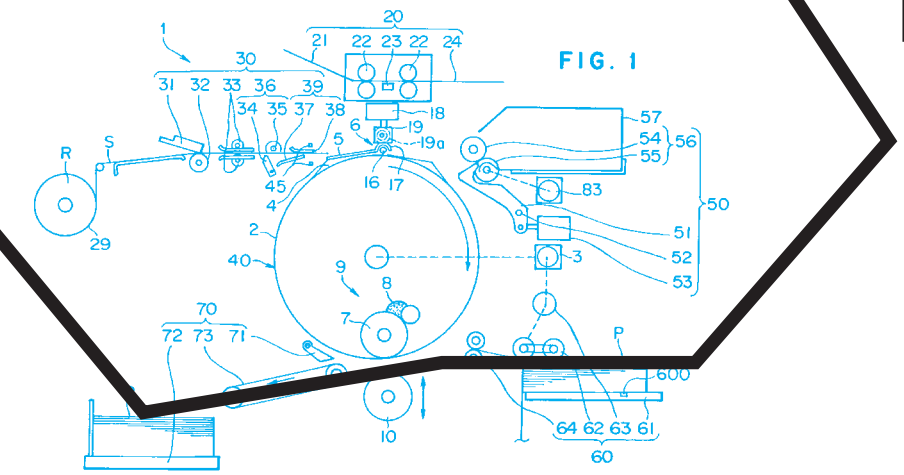


FIG. 1



60.9%

It's a funny serendipity that this thesis meandered through multiple histories and came back around to lessons from one of the first assignments at Pratt — to communicate a notion about humanity to an extraterrestrial intelligence. The qualities that my colleagues honed in on were varied and insightful: the rhythm of the heart, our dichotomous thinking, first use of tools, and landmark moments in our cultural history. My own space envoy was a modified pocket watch — sized to fit a human hand — that used time as the common denominator by which to translate structural realities of life on earth to distant and un-imaginable life-supporting planets.

The spinning of a second hand roughly matches the rhythm of our heart, and approximates the smallest notable changes in time. A day's length is traced by the hour hand, which completes 365 turns to move the year around once. This mapping of our solar system and time was chosen based on carefully researched and interrogated assumptions about the emergence of life and consciousness and perception. If they were capable of intercepting messages from the cosmos to begin with, they've likely worked out the rotations and revolutions of their own planet and solar system. It was a challenging prompt, but rewarding in its lessons on translation, audience, and finding common ground.

# /SPACE /TIME

## REASONING BEHIND PROJECT:

Shares insights by which we structure our reality.  
The hour, minute, and second increments we use are actually quite arbitrary — an artifact of certain (western) groups developing various technologies sooner than other cultures.  
By relating these man-made increments directly with astronomic events, a clearer understanding may be achieved.  
Human time's basis on the Earth's rotations only may suggest some of our accomplishments and limitations: transported on the globe but no further into the solar system or universe beyond.

There are 60 seconds and an average of 72 human heartbeats in each minute. Showing the second increment can express a human rhythm, as well as approximate the quickest perceived change in time by our brains.

\*bottom: titanium half with inner tip will contract less than the "upper" gold half, the force pressure on the tip and hold the form intact in the extreme cold space environment.

When the object nears a star, or is exposed to a large amount of heat, the gold expands more than the titanium, the gold with some general prodding.

(Linear) Thermal Expansion Coefficients:

Silica	0.15
Quartz	0.59
Diamond	1.5
Titanium	8.5
Gold	14

## MATERIAL CHOICES

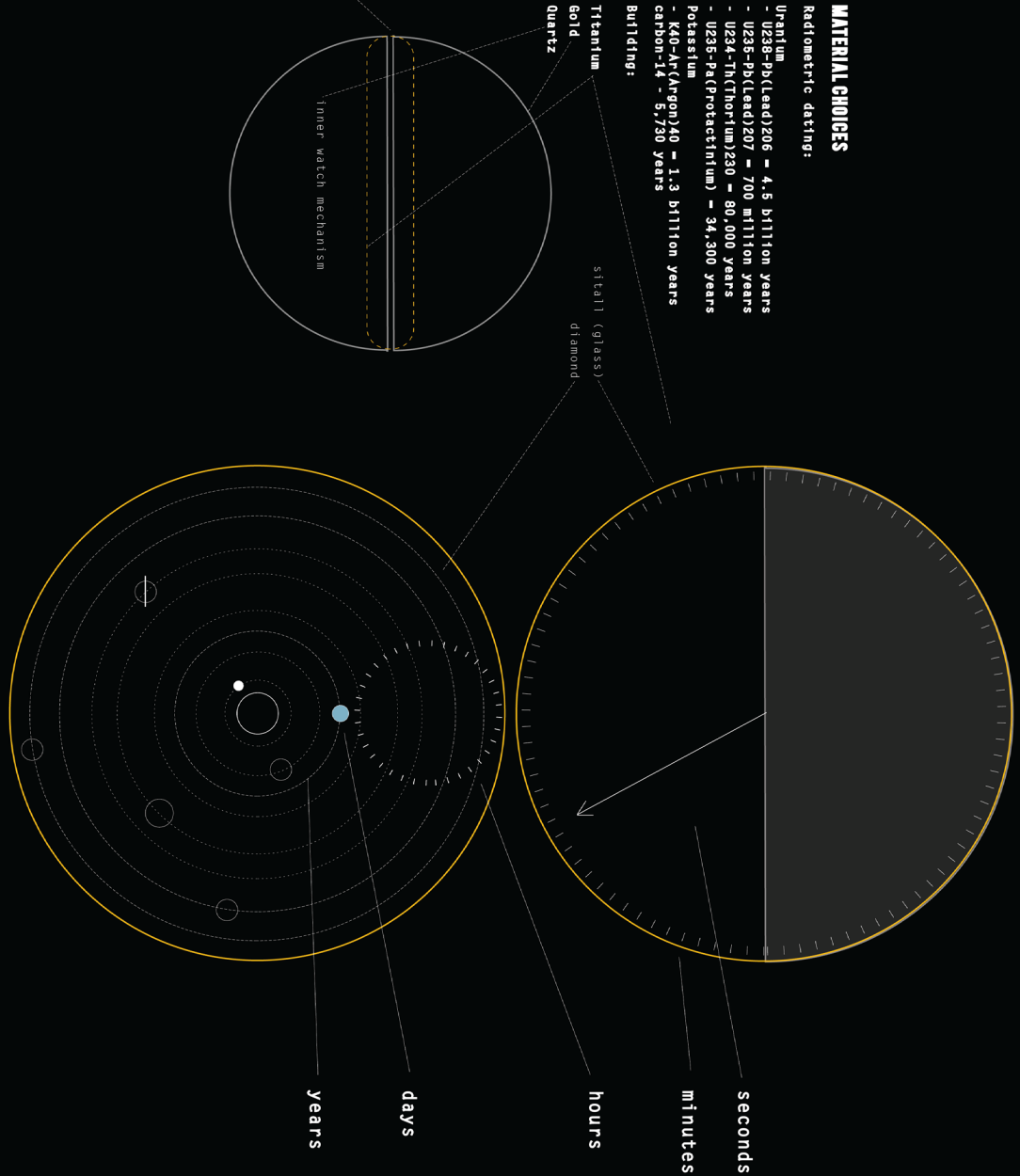
### Radiometric dating:

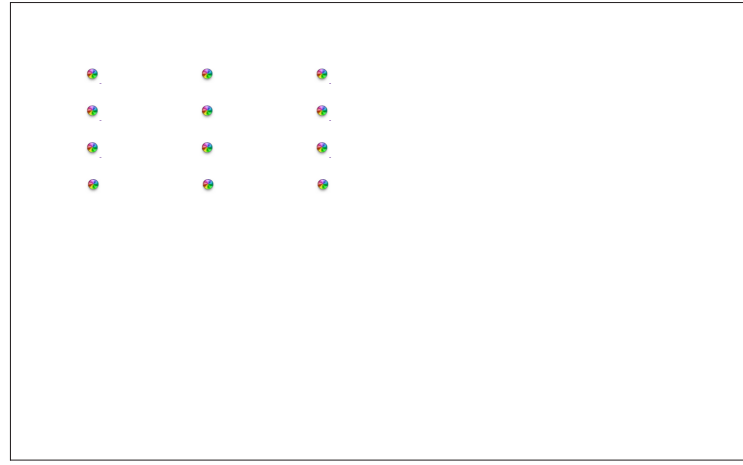
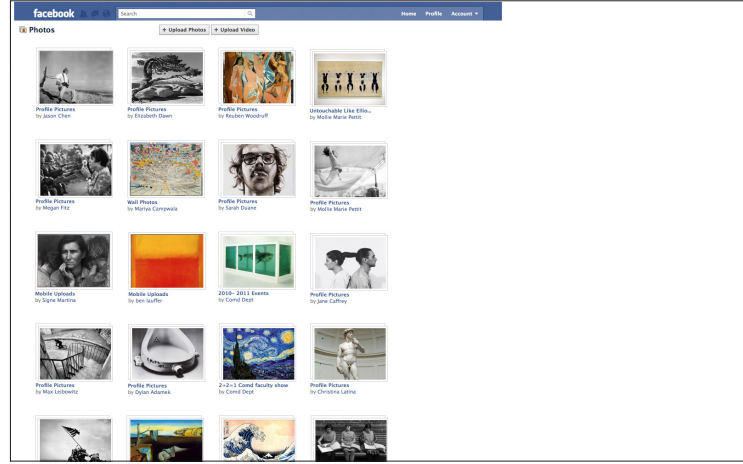
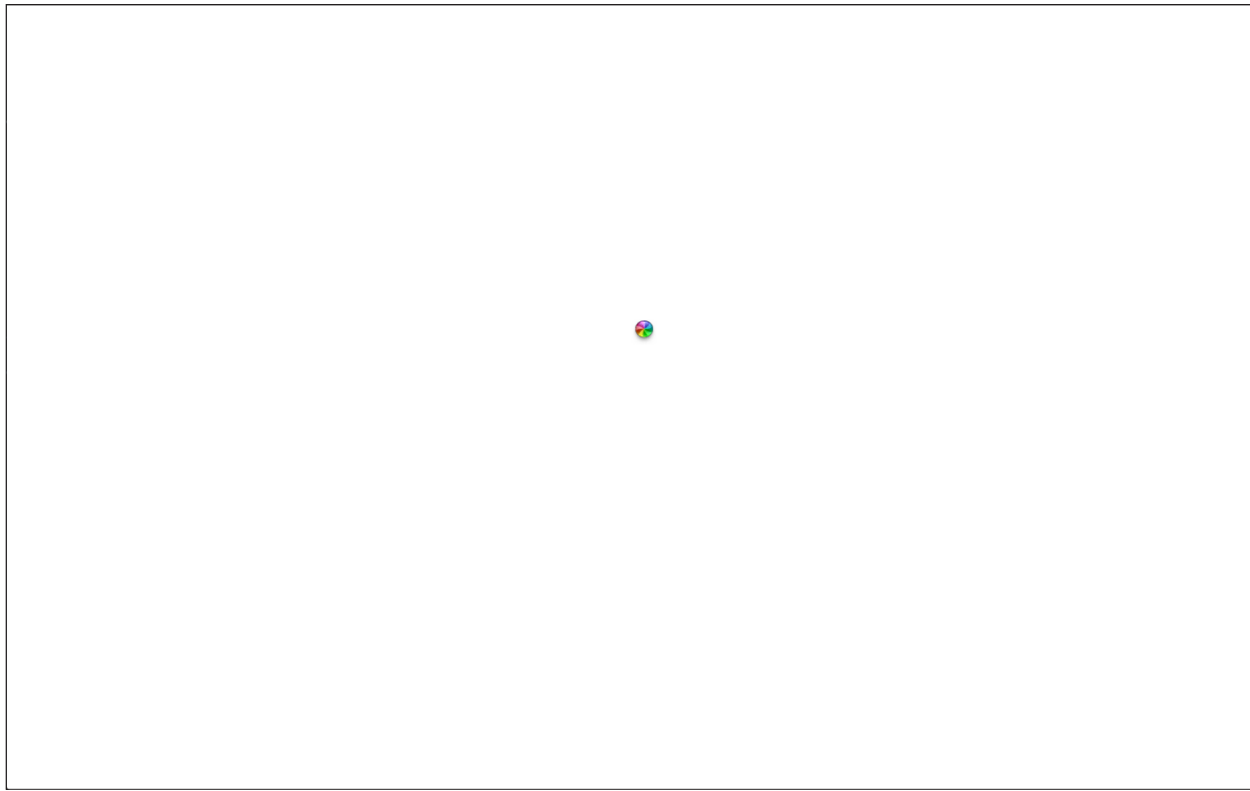
- Uranium
- U238-Pb(Lead)206 — 4.5 billion years
- U235-Pb(Lead)207 — 700 million years
- U234-Th(Thorium)230 — 80,000 years
- U235-Pa(Protactinium) — 34,300 years
- Potassium
- K40-Ar(Argon)40 — 1.3 billion years
- carbon-14 — 5,730 years

### Building:

- Titanium
- Gold
- Quartz

silica (glass)  
diamond





The following Technology project, my web-based Rube Goldberg, hint at the thesis problem statement I arrived at. With the end-goal of simply saying hello, it explores a general frustration with digitally mediated communications and the overwhelming obstacles and distractions that populate web space. Instead of physical actions and reactions setting the piece in motion, it relies on exploratory and aimless/frustrated mouse clicks from the user to move towards the end goal.

The architecture was simple and fairly linear. The visual language borrowed from or directly imitated familiar websites that act as sources or channels of information, and was otherwise fairly undesigned. Though it seemed to need a few more directions, the in-class demonstration worked incredibly well in placing the user in a state of anxiety and frustration, but provided just enough delight to maintain curiosity.





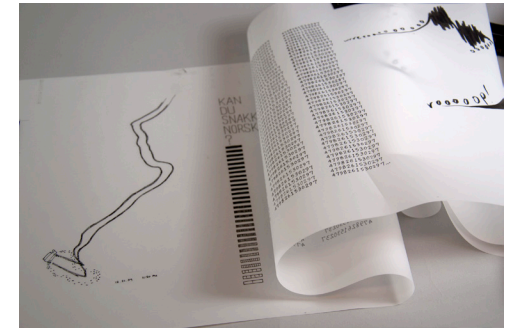
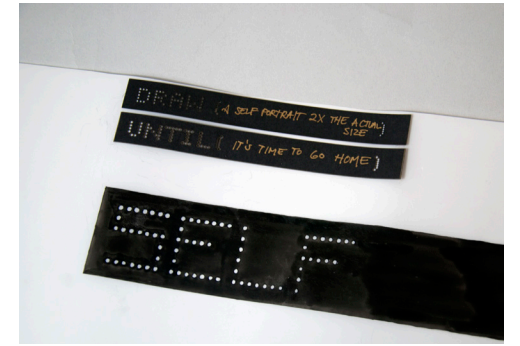
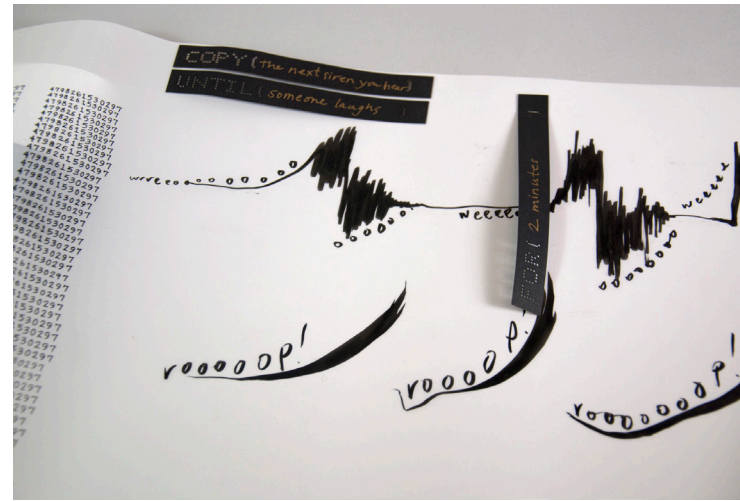
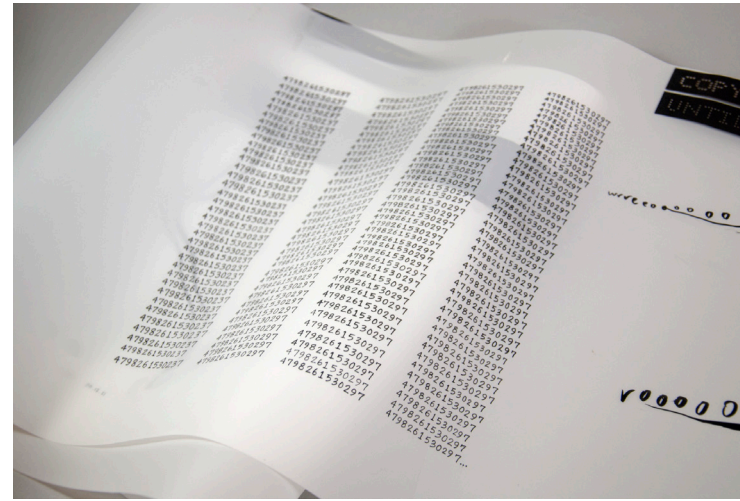


Past and future: asked to choose an old technology, then speculate on the future of it. The Jacquard loom was the first programmable machine, using punched cards to determine weaving patterns. For the future of programming languages, I predicted code that so closely resembled natural language, and could be controlled as intuitively as mastery over art or music.

Computer language is built first on machine code — simple binaries that were once easily visible as on/off switches in early models. Zeros and ones can be bundled, though, and higher-level languages can use simpler vocabularies to stand in for basic functioning. The goal is to make it more intuitive for humans to understand, but each step up means a level of compiling and interpretation that becomes hidden to the programmer.

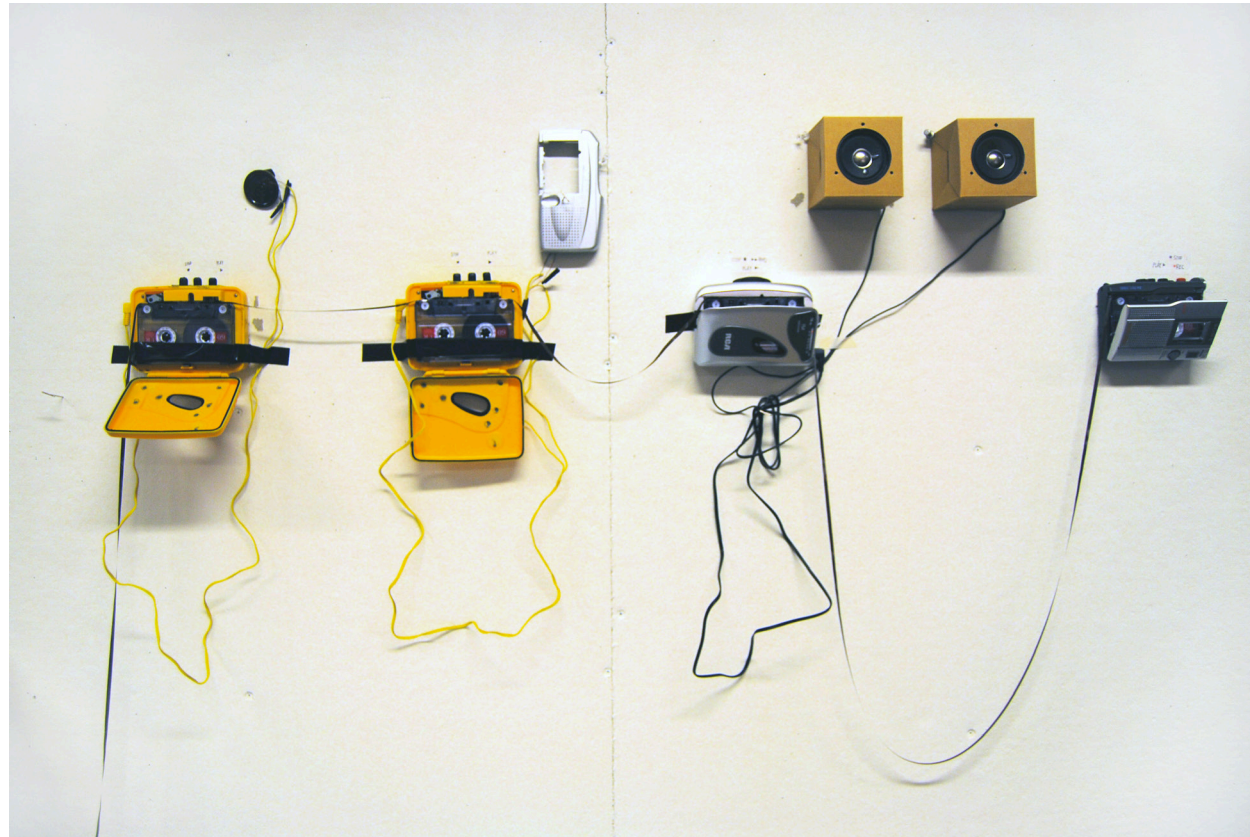
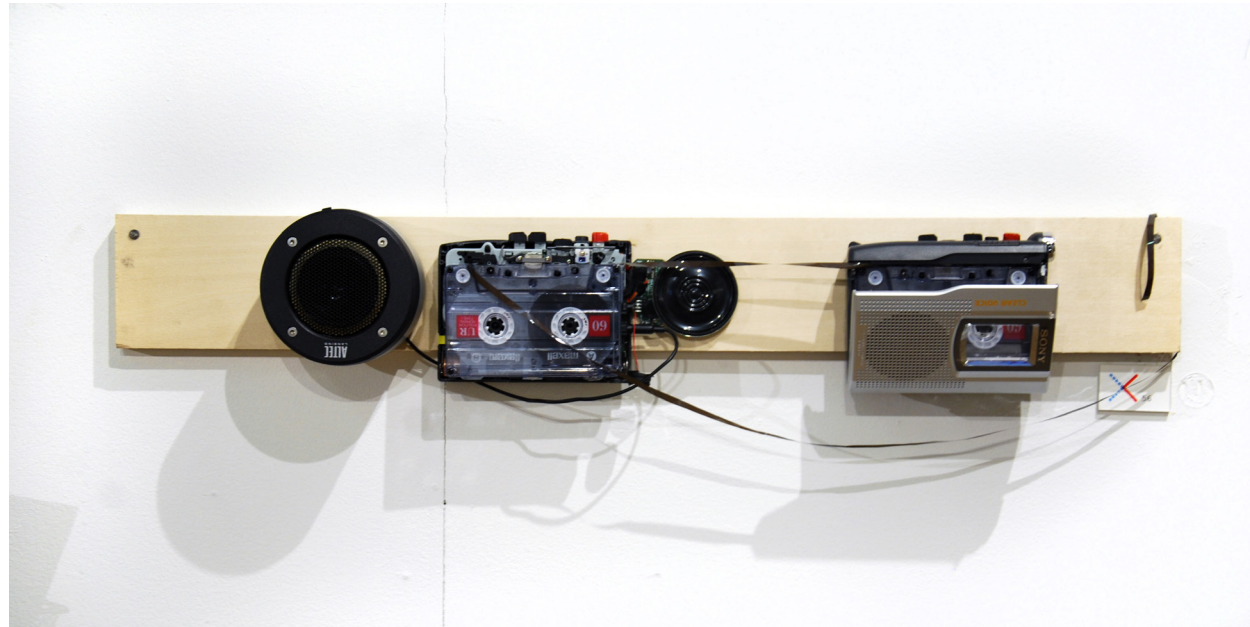
After verifying some of these hunches with actual programmers, it was not so hard to conceive of casually speaking to a computer and having it listen, interpret, and build a program based on a more natural language understanding. At the same time, a few basic structures would be hard to shake. So after some testing with my peers, I settled on a pared down list of verbs upon which a user can elaborate, based mostly on Processing and OpenFrameworks documentation.

In order to replicate my projection of what programming languages would look like many decades into the future, I had to act the part out myself. I played with the idea of performance, but ultimately settled on having the document as proof of the transcription process. The ambiguity between humans and “thinking machines” present in this experiment lead me to use a continuous roll of paper, reminiscent of the Turing test and Turing Machine. The transcriptions presented at the Fall MFA survey were highly interpreted pen drawings, and seemed to pique interest, but ultimately erred too far in a fine arts realm. However, elements of this investigation reappear in the auto-text, dot matrix project that appears in the show.





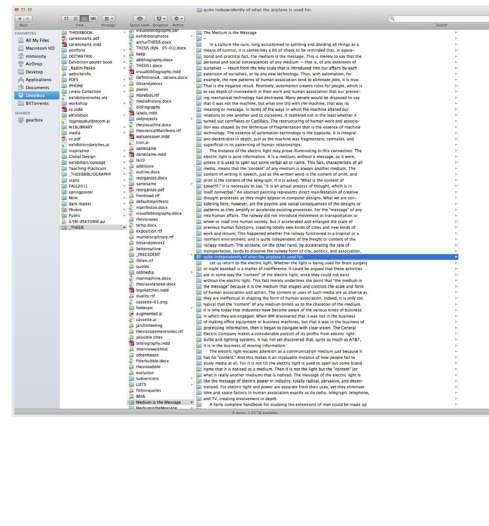
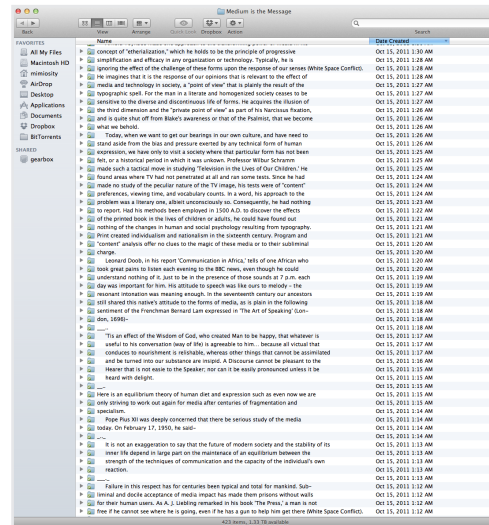
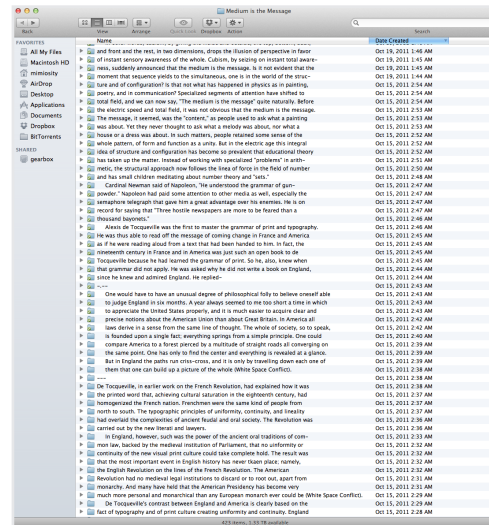
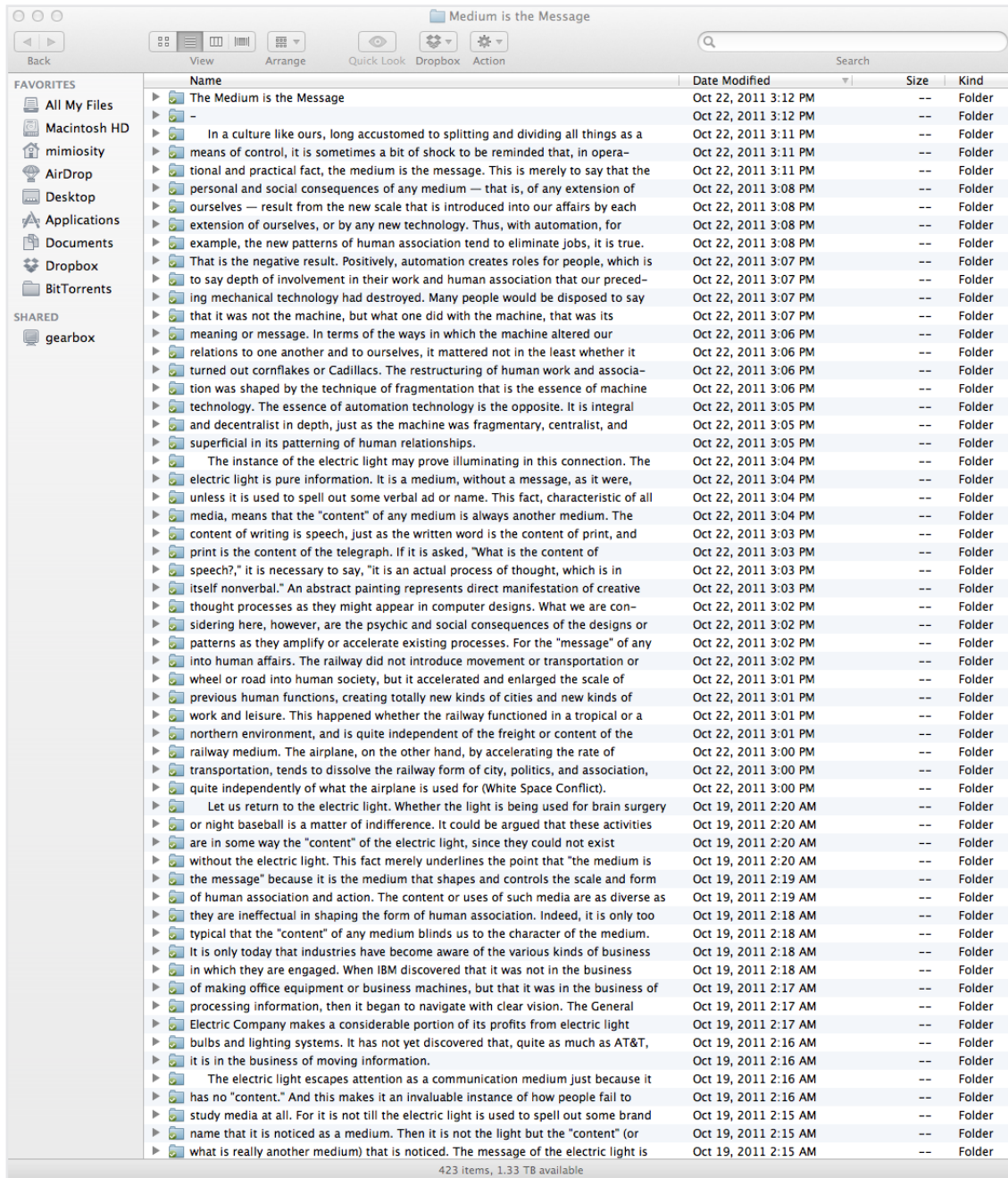




This cassette player installation was another project from my first term, fall semester, which I've carried throughout this thesis process as a conceptual pivot point for other work. The original piece had one set to record, and three subsequent set to play, with tape running through to produce an echo effect.

The focus on more elemental relationships is better served with only two — a physical delay that demonstrates, in real time, the relationship between original and representation. And as the second player finally broadcasts the signal recorded moments ago, that sound travels back to the microphone, leaving yet another ghost of itself. It's a basic premise of this thesis — that machines are made after our own image, only to feed back into shaping our understanding corporeal and societal selves.





Chapter 1 of Understanding Media, The Medium is the Message, is type-set in folder format according to date created (aka written line by line, backwards). The honest but perhaps unsatisfying explanation of how I arrived at this idea was simply that I woke up one morning with it. Since part of this thesis is a celebration of a well cultivated intuition (pruned by critical analysis and reasoning, of course), I can only explain that making designers more aware of the strong Apple presence in the design community was on my mind.

Though there were hints of it in the web Rube-Goldberg, this began the series of "Apple Hacks," that don't sabotage Macintosh code so much as find unused communications niches within the system. Apple is the obvious (default) target by a designer for an audience of designers. I experimented with placing fragmented images in that created a whole when viewed as thumbnails. I also tried to work with Time Machine for some time, to have it display a message when "traveling" backwards, but it did not retain the information I set up.



Chapter 2 // Overinterpreting Texts - Umberto Eco

based on the individuation of the relationships of sympathy that link microcosm and macrocosm to one another.

In order to assume that the similar can act upon the similar, the Hermetic semiosis had to decide what similarity was.

list of criteria for associating sixteenth-century mnemonics or ars memoriae. The quotation is interesting because quite apart from any Hermetic presumption - the author has identified in the context of his own culture a number of associative automatisms commonly accepted as effective.

(man as a microcosmic image of the macrocosm), (the ten figures for the ten commandments), by metonymy and antonomasia (Atlas for astronomers or astronomy, the bear for an inscible man, the lion for pride, Cicero for rhetoric).

- By homonymy:
By irony
By sign:
By a word of different pronunciation:
By similarity of name:
By type and species:
By pagan symbol:
By peoples:
By signs of the Zodiac:
By the relationship between organ and function
By a common characteristic:
By hieroglyphics: the ant for Providence.
And finally, pure idiolectal association,

sometimes the two things are similar for their behavior sometimes for their shape, sometimes for the fact that in a certain context they appeared together. Once the mechanism of analogy has been set in motion there is no guarantee that it will stop. The image, the concept, the truth that is discovered beneath the veil of similarity, will in its turn be seen as a sign of another analogical deferral.

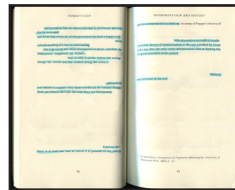
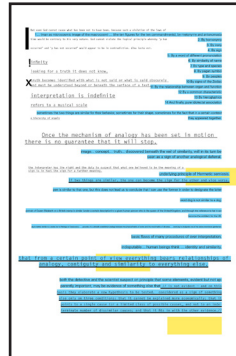
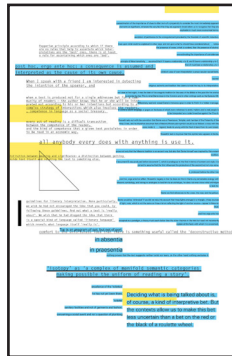
the interpreter has the right and the duty to suspect that what one believed to be the meaning of a sign is in fact the sign for a further meaning.

underlying principle of Hermetic semiosis. If two things are similar, the one can become the sign for the other and vice versa. pen is similar to that one, but this does not lead us to conclude that I can use the former in order to designate the latter

word dog is not similar to a dog. The portrait of Queen Elizabeth on a British stamp is similar

- interpretation -

- overinterpretation -



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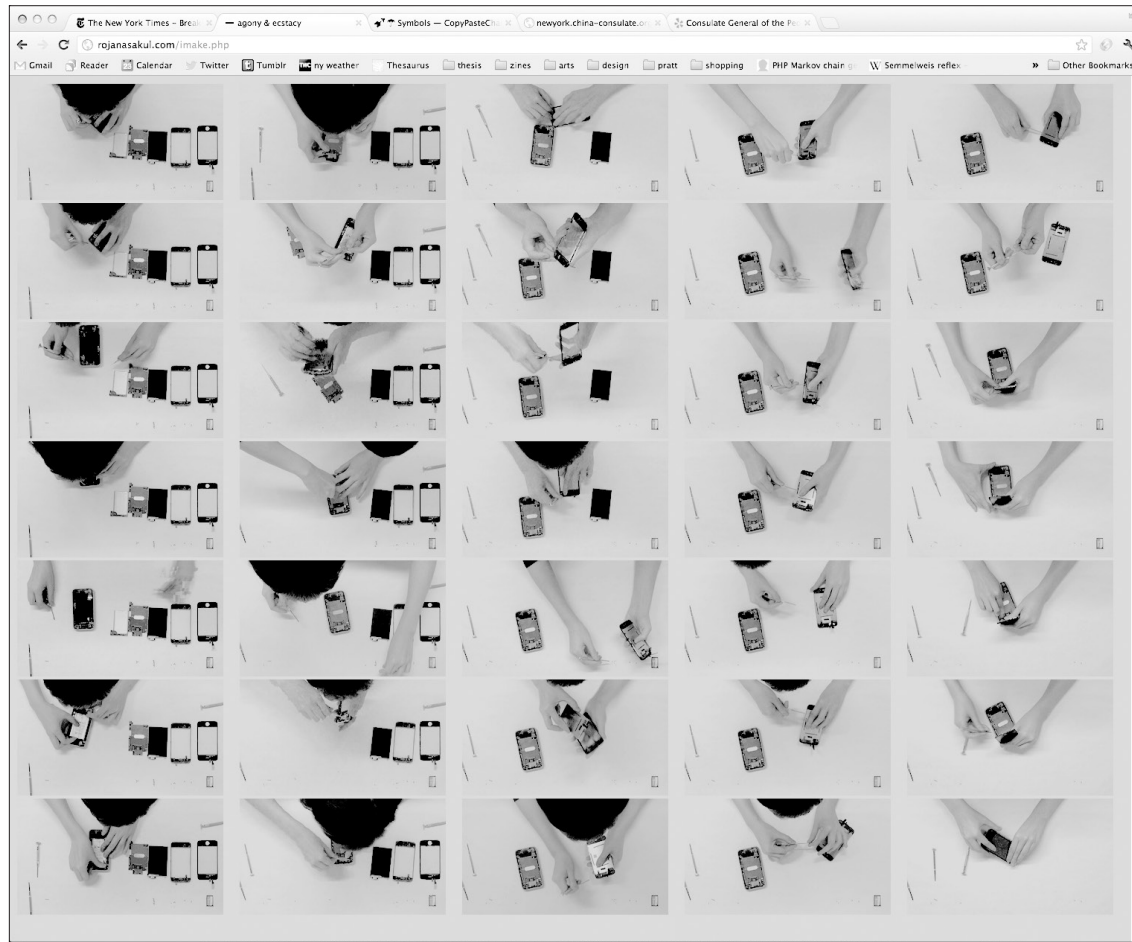
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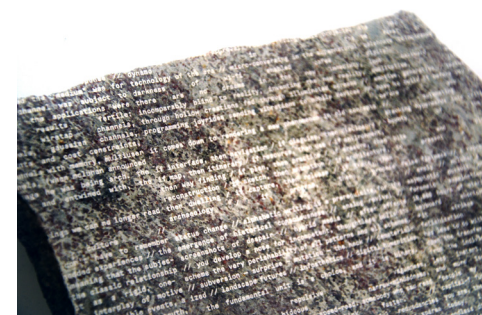


Technological optimism comes a bit too easy in the developed world, cocooned by LED glow and self-affirming information sources. Rosy platitudes from Kevin Kelly, Thomas Friedman and the like seem to be in troubling dissonance with expose's on violent oppression in the Congo sustained by tantalum mines, or sweatshop conditions at electronics manufacturers across Asia.

In an attempt to demystify the most desired piece of technology at this moment, I deconstructed and rebuilt an iPhone 3G. Having taken apart electronics in the past for DIY fixes, I've found the process humanizes objects otherwise designed to look like they were machined from one piece of glass, carved down to a platonic form like a Greek statue. But inside, things are tiny but physical — glued together, screwed in, and at times taped into place — collecting dust. Many of the steps in building consumer electronics today are still handmade under industrial-era conditions. Humans are treated like machines, compartmentalized to do one repetitive task over and over, optimized for peak output, caged in complexes with questionable safety measures and brutal psychological conditions.

Video from the DIY manufacturing process was processed into a series of animated gifs, to show the ongoing, repetitive tasks that are performed by human workers. Though the rainbow gradient connotes far more than the Apple brand, hopefully within this context it reminds a viewer just enough of the iconic spinning color wheel of anticipation and infinite delay. The scrolling change in color-scenery is also meant to imply a digital sunrise/sunset — things changing and things staying the same.

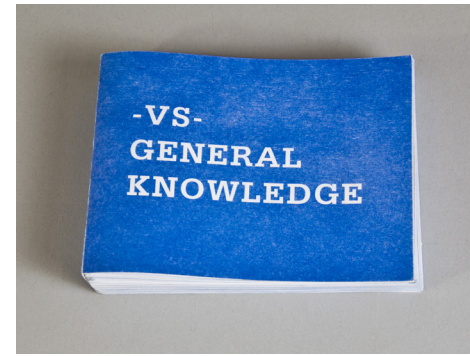




To attempt comprehension of the present, we scan the past for clues and keys to an ongoing translation. Though design as we know it was borne out of a riot cadence and revolutionary embrace of the new, articulating our contemporary relationship with technology reveals our profession's fragmented nature and reluctance with bold proclamations. I knew I wanted to work with the image / silhouette of the Rosetta Stone for some time. It's role as translator and as a key into history has always interested me, and it seemed like a good vehicle to connect our present technological relationship and language changes with past ones.

The strong, confident prose of FT Marinetti on the Rosetta shape is subverted with the ghosted image of a charcoal rubbing — eternal language emblazoned in a medium/means that speaks to something long past. Set in DIN for its industrial connotations, the type itself is highlighted for its most bold statements and set in a way to fill the shape. Meanwhile, byte-sized moments of digitally culled text have their ephemeral qualities subverted by etching them in stone, reframing our critique in terms of a longevity and sustained relevance. The sources come from my notes on readings, mostly current articles on the dangers or untapped opportunities in digital communications.





Print experiments inspired by games that defined landmark moments in our cultural regard for automated technologies: man's futile race against their own obsolescence [John Henry] our tentative advantage in creative thinking against mere thinking machines [Tron]; and technology's trespass onto humanity's predominate defining element — natural language and communication [Watson].

Though pop culture orients these stories with the human players as centerpiece, starting with the Watson example brings forward the fact that the games themselves are actually meant to test technological benchmarks. It is a reinforcement of the predominant history of automation displacing human work and once-unique human abilities. After all, John Henry did not have to prove himself anew, nor Gary Kasparov or Ken Jennings. Competitions are set up for the benefit of inventors, capitalists, and those with a radically progressive agenda — to measure their mechanical accomplishments against the flesh and blood originals.

The assignment that begot this series came from Ryan Waller's Visual Language course — to give form to a count-up. Presumably it could begin anywhere and end nowhere, or so far off into the horizon that the end was not in sight. The particular moment I first wanted to visualize was in 2007, when rough estimates put the world's computational power on par with a single adult brain. As a more specific case study, I charted the progress of Watson in its successful 2011 Jeopardy games.

A matter-of-fact layout shows only the question, category, and Watson's score as it answered questions correctly, incorrectly, or not at all. Though viewers can skim through to see how outstandingly well IBM's machine fared, the more interesting The end of the game does not end the overall count-up with our machines, but previous champion Ken Jennings perhaps prematurely welcomed "our new computer overlords."

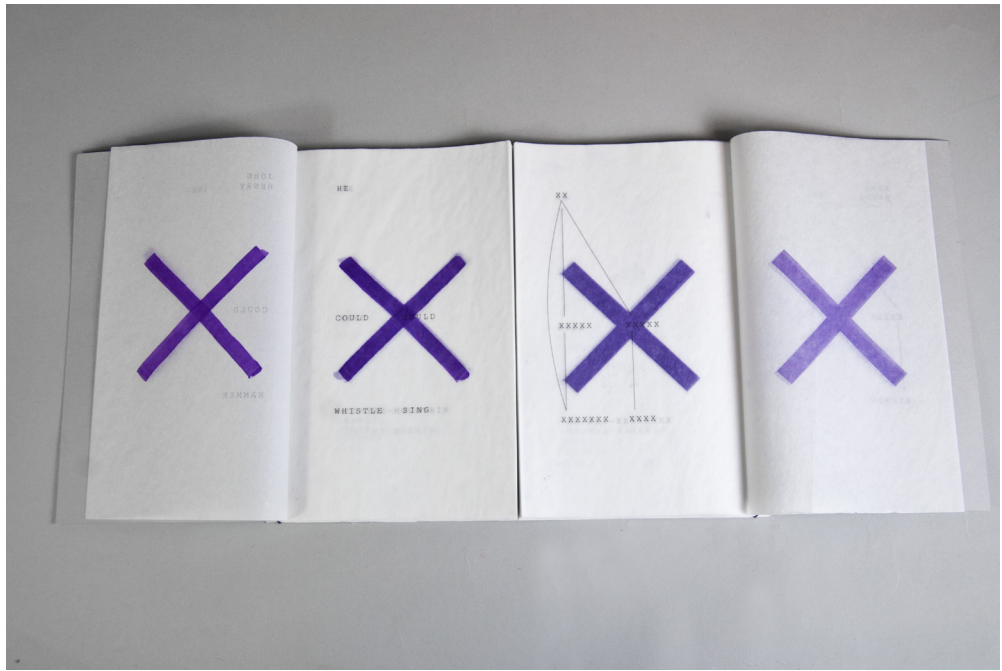
The book was treated as if it was Watson's own memoir of the event. The spreads simply display the category, question, and Watson's score — which tells you whether it got the question right, wrong, or did not answer. To make the physicality of the book more apparent, it was printed on the digital duplicator, which gives a almost wood print quality.

For the John Henry book, I wanted to work with the folk songs that pass down this particular myth. Working with the lyrics alone was problematic, since they're highly stylized. It was also difficult to begin a series based on an already-completed piece (Watson). So with Ryan's help, I reconsidered it as part performance, and a competition with the duplicator. Using the simple X mark (railroad crossings, and the notation for percussion), I used the duplicator to print around 50 and made 50 myself in pen. Overlaid were the lyrics from Harry Belafonte's version, that were diagrammed according to my own sentence structure. But the direction the lyrics are read can only be deciphered by looking at the machine-page: humans looking to machines to reconsider themselves.





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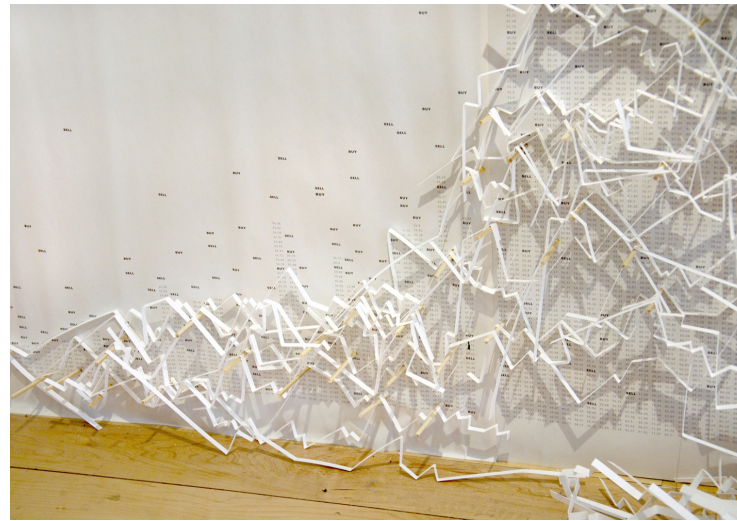


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80.4%

The installation was originally imagined for Times Square, the site for an “information node” as assigned in our cross-disciplinary course with Ned Drew and Nicole Robertson. I wanted to draw a relationship between two major New York landmarks — dual seductions — with Times Square the bright, electric façade of the same policies and hungers that drive Wall Street. Its beautiful as it is toxic, a promise of plenty and more and the impossible. The most common form that communicates this is the line graph, chasing that upward trajectory.

In pursuit of a never-ending growth, we entrusted global economies to black box formulas that operate mainly beyond our human oversight. The invisible is made tangible in print and paper, modeling our anxiety over these wavering, ephemeral transactions.

The remediation here was simple: to take data visualization, typically manifest in statistical authority of flat, opaque language in annual reports, and build the information in fragile, fallible paper instead. The installation would sag, warp, and shake under a gust or heavy breath. What changed from the original project was to introduce the role of complex, highly secretive financial algorithms in these impossible profits and unsurprising crashes. I wanted to communicate this clearly and without the pedantic pitfalls of written language, and chose to use a field of stock prices on newsprint instead.





With distant roots in the human-computer/creative transcription experiment, I wanted to use a mechanical printer (instead of myself) to transcribe information to the gallery. In a workshop with Rory McGrath and Geoff Han over spring break, I had worked with the auto-summarize feature in Mac to see how a machine processes text. The content from that didn't relate as much to my thesis, so I decided to fold it back into this project.

I chose a dot matrix printer for a number of reasons — in the digital/analog spectrum, this is just low resolution enough to actually hear the individual points being printed. Because it uses pressure, it can make carbon copies (I originally wanted visitors to interact with the piece and be able to take a copy for themselves.) As I used a program to truncate text, the printer truncates that information further through its pixelization.

But to maintain a human hand and element in it, this process was not fully automated. In the summarization, I sometimes chose to do the summary myself, mixing it in with the computer-summarized parts. There's an element of the Turing Test to this, where the audience member tries to decide whether a human or computer is interacting with them. Although working out the gallery interface and labels to help understand this project has been ongoing, I hope that all these elements will become clear by the show's closing.

# CONCLU- SION

Without an established gauge to compare my progress to other MFA theses, it's with some trepidation (but mostly excitement) that the conclusion to this body of inquiry feels much more like a launch pad for new beginnings than any tying up of loose ends. I explored the avenues I set out to explore, and then some, holding onto a tentative faith that **eventually, everything connects.** There were both confirmations and rejections of my hypotheses and assumptions, but mostly it was an **experience of new ways of understanding things,** and more focused questions to ask of the design process. The following conclusion is a snapshot of what I hope will be a **fruitful and evolving career.**

Though this investigation began in familiar territory, it brought me into content areas and perspectives quite different than those I've taken before. While pointing out the subjective in the quantitative world is neither new for myself nor original in comparison to many other artists and designers, with this thesis I allowed design's pragmatism to draw me towards narrative and a more rigorous, considered application of research than ever before. In this way, I believe I both played to my conceptual strengths and multidisciplinary interests, as well as pushed myself into unfamiliar territory that constantly made me reevaluate and strengthen my position.

A state of uncertainty (controlled chaos) cultivates a state in which serendipitous connections can occur — one of the essential mechanisms that evolve language and design forward. I've found it can be quite problematic when working under tight deadlines, and works best when paired with an iterative approach. The way I used this state of informed intuition was mostly to develop concept and feel I missed the opportunity to do the same with form, evidenced by the fact that projects that fared best seem to have begun earlier in the fall semester, then worked through iterations into the spring. Though scheduling and structure made it somewhat difficult to do so, more trial + error and in-class workshops with peers would have helped a great deal. Making confident formal decisions is still one of my weaknesses, and having learned from this experience, I hope to work through that in the future.

For pragmatic reasons, my audience consists primarily of graphic designers, and of my peer group in particular. As part of a generation that fortuitously straddles both sides of the networked, digital revolution, we're well poised to act as the translators between generational gaps — leading a reticent field through an evolving virtual space, and tempering the unbridled enthusiasm of digital natives with a rich tapestry of the many histories that converge onto the present. In my two years at Pratt, I've been fortunate enough to see a number of my concepts and projects help inform and inspire my peers, and have been informed and inspired by the unique work of my peers in turn. So apart from cultivating my own point of view and honing my practice, this thesis seeks to impart upon that audience fruitful analogies, and provide a tactile history that hopefully demystifies and reveals the opportunity in venturing into new media.

Feedback has been mixed among a mixed audience. My projects, which took shape in such an immersive environment, tended to fill with references and allusions that made them richer for some, and less accessible for others. First and foremost, the pieces as they were displayed in the exhibition could have been framed with more clarity. Though I gave input and ultimately went along with decisions made in the exhibition design class, I believe my body of work would have been better served if exhibited more closely together, since they are investigations of a whole. The sparse labeling system and decision to more strictly systematize the design of individual x's also lead to an ambiguity that confounded the reading of my pieces. Nevertheless, there were valuable lessons learned about framing my intentions and adapting the work to their surrounding context.



The living room smelled faintly of burned grease, an odor he had not come across since childhood. Going into the kitchen he discovered the reason. His stove had reverted. Back to an ancient Buck natural-gas model with clogged burners and encrusted oven door which did not close entirely. He gazed at the old, much-used stove dully—then discovered that the other kitchen appliances had undergone similar metamorphoses...

Perhaps this weirdly verified a discarded ancient philosophy, that of Plato's ideal objects, the universals which, in each class, were real. The form TV set had been a template imposed as a successor to other templates, like the procession of frames in a movie sequence. Prior forms, he reflected, must carry on an invisible, residual life in every object. The past is latent, is submerged, but still there, capable of rising to the surface once the later imprinting unfortunately—and against ordinary experience—vanished.

— Philip K Dick, *Ubik*

My particular contribution to the effort of humanizing technology wasn't entirely premeditated, but came about organically as I worked through my own struggles to better understand new media interactions. Faced with limited time and high learning curves for many of my project aspirations, I turned towards older technologies and made do with what I had. This embrace of limitations will be a widespread and persistent necessity in our field, I suspect, given the rapid development of new languages, platforms, etc. And in this uproar, those who remind themselves of their audiences, and try to be generous to them, I believe will gain the esteem and longevity they deserve.

One of the more visible tactics in humanizing the new has been to look back to preceding, analogous technologies. I discovered that the sleek devices we live with today are the product of many small innovations, rather than any one great leap forward. My version of humanizing technology was linked to the act of remediation — mostly from the virtual world into the tactile and more easily understood by our evolutionarily old brains. In **The Uneasy Architecture of Algorithmic Promise**, the infallibility of infographic language is translated into fragile paper, to communicate an uncertainty that can be sensed in visual, auditory, and tactile ways that are impossible to replicate in excel. At the same time, lessons from the paper installation can be remediated back into a digital format and influence a more practical application of data visualizations. There are benefits to both digital and physical modeling of events, and by translating thought across these media boundaries, we can arrive at clearer understandings all around.

These hacks not only demystify these communications technologies, but can also make them conspicuous in a way that adds to a message. As pieces like **The OSX is the Message** and the **Rosetta Manifesto** hopefully demonstrate, there are many surfaces, containers, and contexts that either actively or passively speak to us in our present environment — ripe with opportunity and potential meaning. If something as bland and ignored as our folder structure may be imbued with narrative livelihood, imagine the possibilities. Bringing this hardware and software to life for the designer

All this while, I accumulated a concern for legibility, narrative, layers of interpretation, and a curiosity in what makes us human and why we communicate with one another at all. While the works in the exhibition are directed at a more specific audience and it takes time for these revelations to work their way into projects — I look forward to the application of ongoing research, critique, and life experience on more meaningful, resonant designs that expand our definition of humanity and humanizing technology.

The problem with the term **humanizing technology** is that it's often claimed by those who deal in platitudes that come with glass screens and status updates. They understand the Savanna self and cater to it, but do not necessarily ask more of their audiences. There is much that is shared across human culture and time, and a modest form of universality is certainly within reach — but to aspire to a lowest common denominator is extraordinarily dull. There's a great richness and pleasure in the idiosyncratic, the incongruent, the misread, and what can be translated and what is lost.

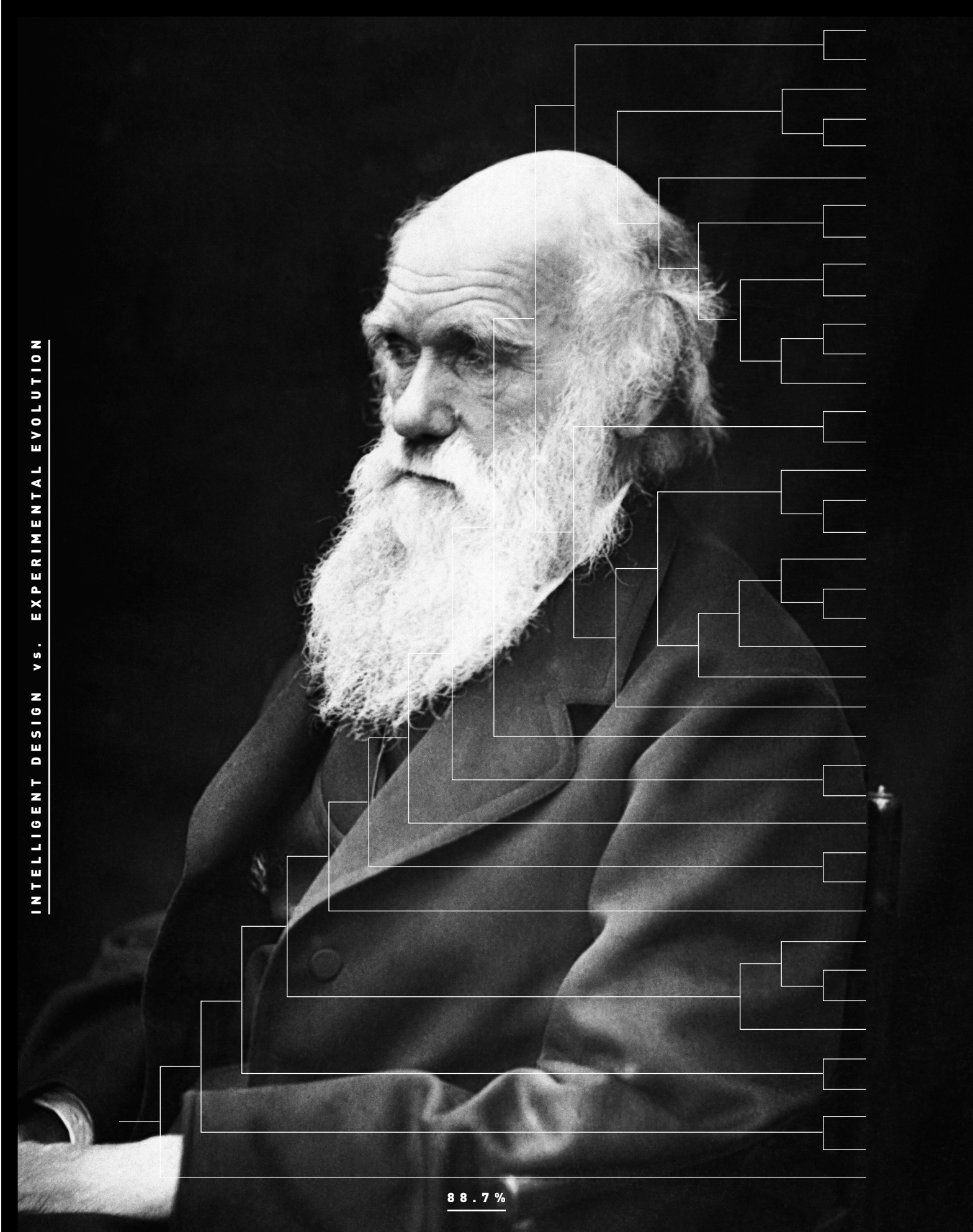
One noticeable change from my earlier hypothesis is just how much there is to learn if we include the idea of reprogramming humanity — encouraging our human capability for openness, critical consciousness, and an expanded moral horizon that becomes ever more necessary as our global impact is blurrier and more mediated than ever. Reprogramming humanity addresses a societal need to meet technology halfway, and make a much better effort at learning about these new systems we inhabit and inhabit us. Human factors have helped build interfaces and languages that come more naturally, but to appeal to our most primitive human instincts is, to put it unfairly, the low hanging fruit that will eventually be picked bare.

After all, the screen is not flat. The way we flatten our earth and all its lush complexity onto gridded map pages is not so different from flattening the growing wilderness of code and renderings and interactions that make up the computer and all it connects to. Though I still oversimplify this fact throughout the thesis, it's helped steer me away from "tyranny of the screen" language and unwarranted rejection of digital media's many positive possibilities.

In this sense, this thesis also acts as a call to action to gain new literacies, learn about systems and structure, and be more aware of these technologies so we can make better decisions regarding them.

I don't demand clever remediation of all designed content, but when print can overcome its reticence to new ways of reading, a kind of truth resonates in the work that I believe connects audiences more closely to it. Recent book designs of *I Read Where I Am* by LUST and the *Graphic Design: Now In Production* catalog honor the way we search and scan for information, and enjoy our online collections and distractions. The Rosetta Manifesto's text on stone similarly called attention to the fragmented nature of digital reading. Even more than art, design (due to its inextricable duty to function) should be a reflection, translation, and expression of the tacit conventions of our times. Even if it's to resist popular urges, we must be aware of those popular urges and other determinants of contemporary culture. We're evolving, take notice! I hope this thesis has demonstrated that no matter what medium we choose, we cannot pretend that the digital forms of communication have not transpired and changed the way we communicate and think.





The most far-reaching contribution comes from applying the evolutionary biology metaphor to the design process at an individual, academic, and studio-practice scale. It positions us to recognize the need for responsiveness to change, but not revolutions that eradicate all sense of what's past. It encourages experimentation but grounds it within existing language and history. Instead of dealing in absolutes, it recognizes that there are niches for many kinds of design, and encourages a diversity of thinking over dogma. Perhaps most importantly for communications design — it recognizes the need for a common code and common ground by which to bridge the gaps between parties that wish to understand and be understood.

For the individual designer, a mixture of considered control and a more experimental approach seems to be best. Without the opportunity to make mistakes, evolution and adaptation cannot truly occur. But neither are we nature — blind, without intent, and able to afford so many failures. (Where those failures can be absorbed and transformed into larger lessons-learned is at the academic level, which I will elaborate on below.)

What I propose for myself and my fellow designers is a hybrid approach that many already practice: design informed by artistic experimentation. Many choose artistic pursuits as an escape, while others purely experiment with design as art (Metahaven, Paul Elliman). But others — LUST, Stewdio, Jer Thorp — have incorporated artistic practice in a more deliberate way, to innovative yet accessible results. As difficult as it must be to carve out exploratory space, all the examples I've seen and experienced confirm the importance of finding a way to do so in whatever way possible.



40. Eames: The Architect and The Painter. Dir. Jason Cohn + Bill Jersey. 2011.

41. "You develop a nose for incompetent, thoughtless bullshit. And an eye for the ingenuity of a surprising phrasing. If you read literally and slowly, you know like lightning whether somebody knows what he's writing about or not. You see the secret vanity of how somebody lays the blame in a subtle way with somebody else. You hear emotions between the facts. The repulsive vagueness, the hideous narrow-mindedness. You don't see all that if you speed-read. Somebody who can read slowly learns to think faster."  
 - Dirk van Weelden from Exploring New Information Cultures: I Read Where I Am

Charles Eames once suggested "you could take apart everything that had meaning and form and could show it as a simple combination of yes-no binary choices."<sup>40</sup> Given the stubborn persistence of "questioning one's assumptions" as a driving force throughout my short career, it should come as no surprise that this thesis focused on such elemental questions, mysteries, and observations. By taking a microscope to many fundamental communications problems, I often put forward more experimental pieces than finished products for the masses. Working with elemental parts — the one-to-one message, human/computer binaries — helped to generate complex ideas and give them simple forms, though the projects did not always hit all the notes as a result. But I stand by this strategy for its spirit of experimentation, the wealth of more foundational lessons it provided, and what it could come to contribute to design education.

Firstly, I hope this body of work was evidence of the advantage of a liberal arts background. My own career trajectory could have benefitted from more focused formal training, but design — which often purports to be a multidisciplinary practice — is in need of critical voices with background in those related fields. (I single out the design field for obvious reasons, but this opinion goes for all our other fragmented disciplines as well.) In particular, a broad education provided the systems-level thinking that acts as a fundamental architecture to bring varied and opinions and hypothesis into — "learning how to learn," as its more often put. And most importantly in the information age, I felt my undergraduate education equipped me with the basic research and analytical skills to "discern fact from bullshit."<sup>41</sup>

Though I focus more on my conceptual accomplishments, I am equally grateful for the breadth of media experience provided by my sporadic fine arts education. A lifetime of drawing, some early (albeit embarrassing) web experiments, and dabbling in metals, ceramics, and nearly all printmaking forms — a media multilingualism.

Another muscle I worked on developing throughout this investigation was connecting ideas across those seemingly impossible disciplinary divides. I predict a continued need for designers to act as translator and ambassador in a digital future, and have intentions to cultivate myself for that role.

Though I'm confident this knowledge (and my design endeavors and solutions) will grow in complexity, I would have little faith in these future projects had I not set out to establish a framework to build upon. Two years is far too short to truly interrogate the role of linguistics, metaphor, translation, myth, and medium in design — but as Feynman said he cannot understand what he could not create, it's not in my nature to make without at least tangentially informing myself of these fundamental concepts.

I believe this will serve me well in an academic role, whether my students are just beginning to learn about design or are later in their careers and need some well-intentioned challenging of their assumptions. In Jeff Bellantoni's Teaching Practicum course, many of my thesis interests were able to translate nicely into a hypothetical syllabus for an introductory graphic design class. One assignment, **Metaphors We Evolve By**, takes the concept for my Same-Same index and translates it into something similar to Michael Beirut's 100 days project. Students are to choose an entity or phenomenon from the virtual world and keep a daily journal of possible metaphors to apply to it, innovating away from tired metaphors like the computer "desktop" or browser "window." Another assignment, **Science and Mythology: narrating the counter-intuitive**, asks students to take a scientific theory and apply their understanding of storytelling and myth to make it more understandable to a wider audience. Both the thesis exercise and my TA experience have nudged me closer to pursuing teaching earlier and into considering it as the path I might focus on for a long-term career.



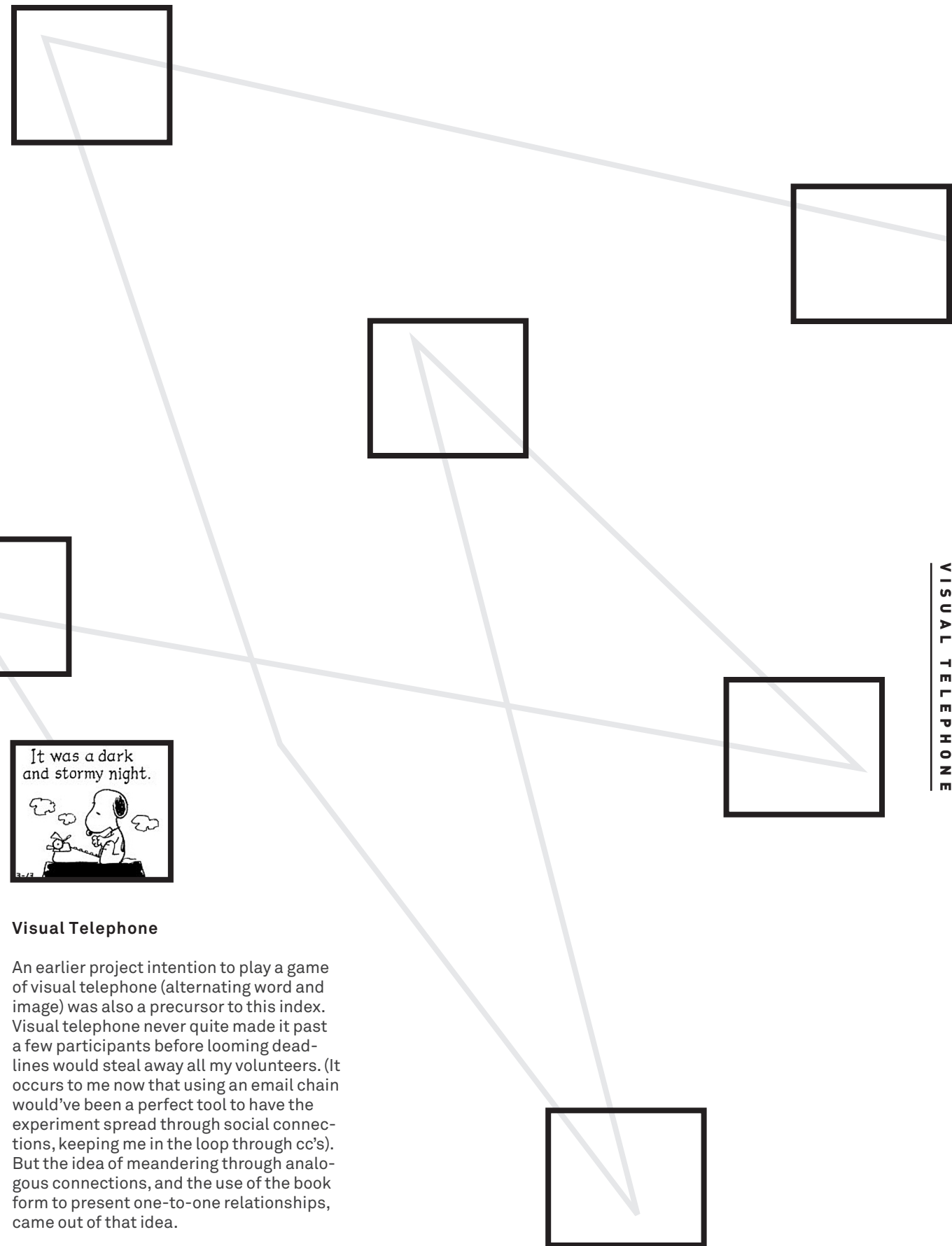
FURTHER  
DIRECTIONS

Same-Same

Same-Same is an index of lateral metaphors, mediums, and common denominators that make it possible for understanding to migrate through consciousness, space and time. The collection is less of a deliberate project than an ongoing index of this body of work. Since a singular capstone project wasn't pursued and many projects, which also had to adhere to class assignments, came at this thesis at disparate angles, I sensed a need for some kind of cohesion and simpler explanation. In my writing and other projects, was dissecting down to the atomic fundamentals, individual units and binaries of communication (man – machine; sender – receiver; original – representation).



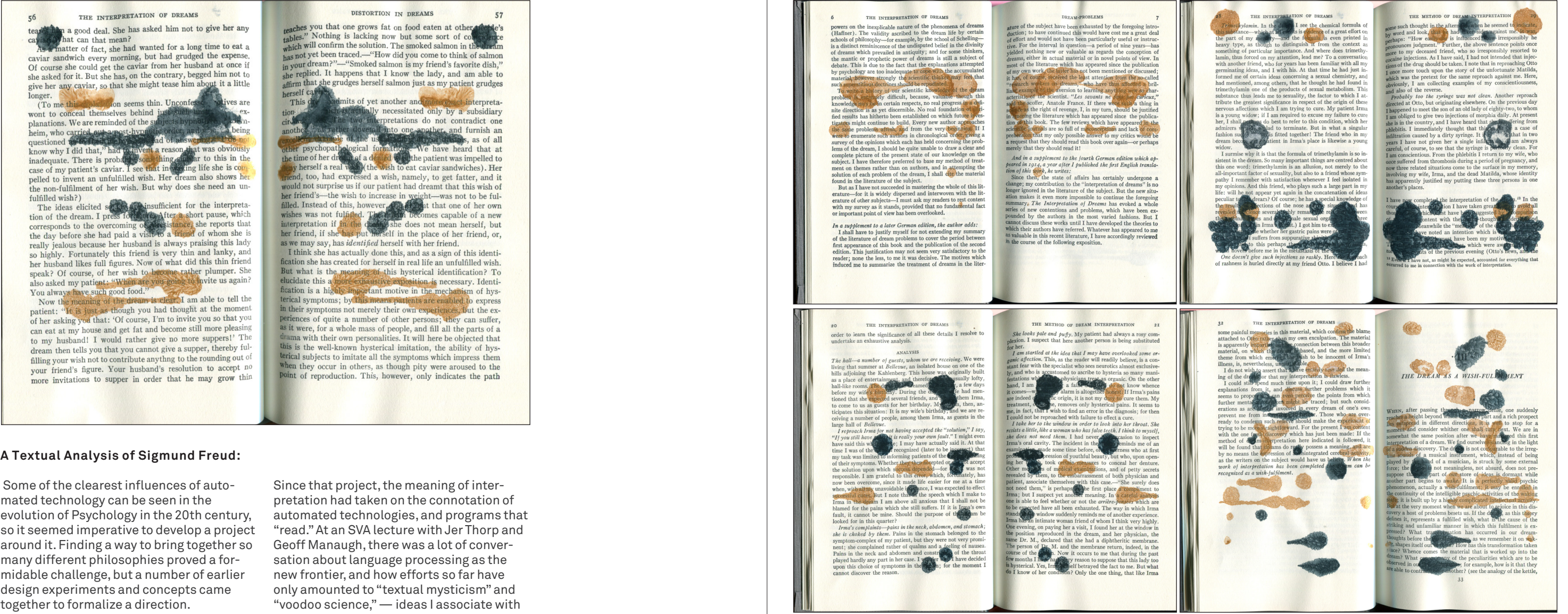
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Visual Telephone

An earlier project intention to play a game of visual telephone (alternating word and image) was also a precursor to this index. Visual telephone never quite made it past a few participants before looming deadlines would steal away all my volunteers. (It occurs to me now that using an email chain would've been a perfect tool to have the experiment spread through social connections, keeping me in the loop through cc's). But the idea of meandering through analogous connections, and the use of the book form to present one-to-one relationships, came out of that idea.





A TEXTUAL ANALYSIS OF SIGMUND FREUD

teaches you that one grows fat on food eaten at other people's tables." Nothing is lacking now but some sort of connection which will confirm the solution. The smoked salmon in the dream has not yet been traced.—"How did you come to think of salmon in your dream?"—"Smoked salmon is my friend's favorite dish," she replied. It happens that I know the lady, and am able to affirm that she grudges herself salmon just as my patient grudges herself caviar.

This dream admits of yet another and most correct interpretation—necessitated only by a subsidiary circumstance. The two interpretations do not contradict one another; they dovetail into one another, and furnish an explanation of the use of the word "salmon," as of all other psychopathological formations.—We have heard that at the time of her dream, a dinner at the patient was impelled to herself a real wish (the wish to eat caviar sandwiches). Her friend, too, had expressed a wish, namely, to get fatter, and it would not surprise us if our patient had dreamt that this wish of her friend's—the wish to increase in weight—was not to be fulfilled. Instead of this, however, we find that one of her own wishes was not fulfilled. The fact becomes capable of a new interpretation if, in the dream, she does not mean herself, but her friend, if she has put herself in the place of her friend, or, as we may say, has identified herself with her friend.

I think she has actually done this, and as a sign of this identification she has created for herself in real life an unfulfilled wish. But what is the meaning of this hysterical identification? To elucidate this a more exhaustive exposition is necessary. Identification is a highly important motive in the mechanism of hysterical symptoms; by this means patients are enabled to express in their symptoms not merely their own experiences, but the experiences of quite a number of other persons; they can suffer, as it were, for a whole mass of people, and fill all the parts of a drama with their own personalities. It will here be objected that this is the well-known hysterical imitation, the ability of hysterical subjects to imitate all the symptoms which impress them when they occur in others, as though pity were aroused to the point of reproduction. This, however, only indicates the path

### A Textual Analysis of Sigmund Freud:

Some of the clearest influences of automated technology can be seen in the evolution of Psychology in the 20th century, so it seemed imperative to develop a project around it. Finding a way to bring together so many different philosophies proved a formidable challenge, but a number of earlier design experiments and concepts came together to formalize a direction.

Since that project, the meaning of interpretation had taken on the connotation of automated technologies, and programs that "read." At an SVA lecture with Jer Thorp and Geoff Manaugh, there was a lot of conversation about language processing as the new frontier, and how efforts so far have only amounted to "textual mysticism" and "voodoo science," — ideas I associate with Freud's own overreaching statements.

Last summer, a number of us decided to attempt Michael Beirut's well-known 100 days project. I intended (unsuccessfully) to make a Rorschach a day, given the emphasis on interpretation that my thesis had at the time. A number of lessons from Interpretation / Overinterpretation also re-emerged here. My curated collection came from the highlights of myself and a previous reader from the chapter titled "Overinterpreting Texts", in which Umberto Eco takes on the "Death of the Author" notion and argues that the body of text, itself, prevents outlandish readings of it. The final presentation was a simple website, which only shows the highlighted text

Using an actual, physical copy of The Interpretation of Dreams to contain inkblots was to utilize unexpected opportunities of the generic book form and the specific content of Sigmund Freud's writings. The mysticism of Freud's psychoanalysis and modern textual analysis by programs both promise a scientific understanding of human thought. According to the location of keywords, info graphic Rorschach's bloom in the pages and are then scanned into the computer for deeper analysis and meaning. The layered scanning is meant to be analogous to an MRI or Cat scan, which builds a model of the brain with layered slices of imagery.

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powers on the inexplicable nature of the phenomena of dreams (Hallier). The validity ascribed to the dream life by certain schools of philosophy—for example, by the school of Schelling—is a distinct reminiscence of the undisputed belief in the divinity of dreams which prevailed in antiquity; and for some thinkers, the mantic or prophetic power of dreams is still a subject of debate. This is due to the fact that the explanations attempted by psychology are too inadequate to cope with the accumulated material—however strongly the scientific theories may look, that such scientific theories should be repudiated.

To this history of our scientific knowledge of the dream problem is, in certain respects, no real progress in any definite direction is as yet discernible. No real foundation of scientific results has hitherto been established on which future investigations might continue to build. Every new author approaches the same problem afresh, from the very beginning. If I were to enumerate such authors in chronological order, giving a survey of the opinions which each has held concerning the problems of the dream, I should be quite unable to draw a clear and complete picture of the present state of our knowledge on the subject. I have therefore preferred to base my method of treatment on themes rather than on authors, and in attempting the solution of each problem of the dream, I shall use the material found in the literature of the subject.

But as I have not succeeded in mastering the whole of this literature—for it is widely dispersed and interwoven with the literature of other subjects—I must ask my readers to make up for my survey as it stands, provided that no fundamental fact or important point of view has been overlooked.

In a supplement to a later German edition, the author adds:

I shall have to justify myself for not extending my summary of the literature of dream problems to cover the period between first appearance of this book and the publication of the second edition. This justification may not seem very satisfactory to the reader; none the less, to me it was decisive. The motives which induced me to summarize the treatment of dreams in the literature of 1914, a year after I published the first English translation of this work, he writes:

Since then, the state of affairs has certainly undergone a change; my contribution to the "interpretation of dreams" is no longer ignored in the literature of the subject. But the new situation makes it even more impossible to continue the foregoing summary. The interpretation of dreams has evolved a whole series of new contentions and problems, which have been excluded by the nature of the material, and which, in addition, I cannot discuss these works until I have developed the theories to which their authors have referred. Whatever has appeared to me as valuable in this recent literature, I have accordingly reviewed in the course of the following exposition.

*And in a supplement to the fourth German edition which appeared in 1914, a year after I published the first English translation of this work, he writes:*

Since then, the state of affairs has certainly undergone a change; my contribution to the "interpretation of dreams" is no longer ignored in the literature of the subject. But the new situation makes it even more impossible to continue the foregoing summary. The interpretation of dreams has evolved a whole series of new contentions and problems, which have been excluded by the nature of the material, and which, in addition, I cannot discuss these works until I have developed the theories to which their authors have referred. Whatever has appeared to me as valuable in this recent literature, I have accordingly reviewed in the course of the following exposition.

*He looks pale and puffy. My patient had always a rosy complexion. I suspect that here another person is being substituted for her.*

*I am startled at the idea that I may have overlooked some organic affection. This, as the reader will readily believe, is a constant fear with the specialist who sees neurotics almost exclusively, and who is accustomed to a state of hysteria so many, that his sensations which his physicians treat as organic. On the other hand, I am so sure of a fallacy that I do not know when it comes—when a fact is altogether denied. If Irma's pains are indeed hysterical, it is not my duty to cure them. My treatment, as usual, removes only hysterical pains. It seems to me, in fact, that I wish to find an error in the diagnosis; for then I could not be reproached with failure to effect a cure.*

*I take her to the window in order to look into her throat. She resists a little, like a woman who has false teeth. I think to myself, she does not need them. I had never any occasion to inspect Irma's oral cavity. The incident in the dream reminds me of an examination made some time before, of that man, with whom I had had an affair. I remember very distinctly his expression of youthful beauty, but who, upon opening her mouth, took certain measures to conceal her denture. Other marks of medical examinations, and of petty secrets revealed by them, to the embarrassment of both physician and patient, associate themselves with this case.—"She surely does not need them," is perhaps the first place of connection to Irma; but I suspect yet another meaning. In a certain analysis one is able to feel whether or not the erector-potency which are to be expected have all been exhausted. The way in which Irma stands at the window suddenly reminds me of another experience. Irma has an intimate woman friend of whom I think very highly. One evening, on paying her a visit, I found her at the window in the position reproduced in the dream, and her physician, the same Dr. M., declared that she had a diphtheritic membrane. The person of Dr. M. and the membrane return, indeed, in the course of the dream. It occurs to me that during the past few months I have had every reason to suppose that this lady too is hysterical. Yes, Irma herself betrayed the fact to me. But what do I know of her condition? Only the one thing, that like Irma*



## Multi-media

The growing open-source movement deserves more than this nod. It seems to have enough principled followers that not every new innovation can be bought out, continuing the surprisingly robust culture of sharing that the internet was founded upon. In addition to creative coding platforms like Processing, free API's help expand existing tools and platforms, and filling forums with shared code — not to mention all the asking and answering of questions taking place that make it possible to learn these new tools for free. Thus far, I have mostly explored these methods in physical form, but ultimately I would like to learn the programming literacy needed to see them take shape in digital and automated things themselves. With libraries like Processing and simpler scripting languages lowering the learning curve, it certainly seems feasible.

In some ways this thesis is preparation for my next foray into newer media practice — breaking the default intentions of mediums and languages, suggesting unusual and illuminating juxtapositions, and levying critiques of our automated thinking machines and mechanizing a human labor force alike. I'm excited to take this perspective more into digital space, with the hopes of working with others who are interested in this hybrid approach to communications design. "Lush, humanistic crops will grow from that smoking, ashy, techno-rubble of ours, someday," and I look forward to cultivating such a future.\*

## Information Design

My media interests grew side by side with an ongoing interest in data visualization and information design. I had ultimately chosen design over art out of a concern with/ interest in the aesthetics of authority. Authority is designed.

Early in the spring semester, I found myself at diverging paths and ended up meandering away from the more familiar direction — mapping uncertainty. There could've been clearly identifiable problems to solve, a set of aesthetics I love and love to subvert, and tie-ins with science and politics that I can't seem to let go of. But there's something to be said about practicing something you didn't directly, vocationally learn, so you have something to contribute to your field, as well as something to learn from it. My decision to focus more on media and technology was ultimately decided by my philosophy on the role of education: to expand perspectives and learn what is necessary, not just profitable, and to get away with as much as possible while I still can. As an emerging program, Pratt proved quite receptive to this experimental attitude, often challenging me to expand/defy my tendencies.

What resulted is still, very much, about information to me. It allowed me the freedom to research linguistics, statistics, information theory, media history, among other subjects of interest. I now realize I've also been mapping the uncertainty of design's contemporary relationship with communications technologies. But what comes next for me may be a return to a more practical realm — maneuvering myself into that profession and expanding what information design and data visualization could become from within. Studios like Stamen and Fathom, as well as work by Jer Thorp and Amanda Cox for the New York Times have influenced my perspective on design and would be studios I would be quite thrilled to work at. I look forward to cultivating those skills and continuing to attune myself to excitements and goings-ons in that field.

\*  
"An Essay on the New Aesthetic." — Bruce Sterling.  
[http://www.wired.com/beyond\\_the\\_beyond/2012/04/an-essay-on-the-new-aesthetic/](http://www.wired.com/beyond_the_beyond/2012/04/an-essay-on-the-new-aesthetic/)

## Writing

In any way possible, I hope to continue to cultivate my writing as part of the design process and as a critic and author within the field. I'd be lying if I did not admit that I often find the written word to be the most direct and fluid path to expressing the argument at hand. It's always been an important part of my internal art and design process, and during my time at Pratt writing has emerged as something I could pursue in more public forums.

In the fall of 2011, I volunteered to cover the Strata conference on data and data visualization for [infosthetics.com](http://infosthetics.com), run by Andrew Vande Moere. The resulting articles were published on the blog to 40k+ followers, and I was invited back again to review the IBM Think exhibit on show at the Lincoln Center. Even though these were not particularly thesis-driven articles, positive feedback from that experience has given me the push of confidence to send more writing in to blogs and publications. At this point in time, a few Pratt cohorts and myself are also interested in starting our own collective and online publication to support a critical environment and share our continued research and synthesis on issues pertaining to design.





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# CREDITS

Many thanks to my advisors throughout this process: **Pirco Wolfframm** for being the voice of reason when my meandering tendencies took over, and for indulging us with design-world gossip (and history); **Mark Sanders** for giving the assignments that seem to keep on teaching me new things well after classes end, leaving me with questions that enriched my thinking far more than easy answers could have; and **Hoon Kim** for introducing me to new formal possibilities, having discussions that enhanced my process and methods, and for being an inspiration through his own work and professional practice.

Thanks to **Alex Liebergesell**, whose early guidance in thesis research gave me the steady footing and confidence to pursue a far more adventurous thesis than I would have dared to alone. Even when he wasn't an officially designated advisor, his continued support and clear, responsive advice kept me on a productive path at times of self-doubt. Thanks to **Ryan Waller** for indulging my strange project ideas and helping me take them to better places; and for bringing in so many inspired guests, helping to map out "real world" possibilities that promise a career of mixing work + play.

Thanks to **Matt Martin** for his time to make the laser cutter etch into stone, reboot 80s technology, and a slew of other distractions — and actually be earnest and cheerful the whole way through.

And an enormous debt of gratitude to **Arthur Elmes**, who not only put up with my entropy-increasing effects at home, but whose masterful cooking kept me from wasting away on a peanut butter and ramen diet. His own insatiable curiosity and intellectual rigor was an example I could aspire to, and he constantly stimulated and challenged my ideas — giving me first hand experience of how direct conversation is still the best way to become more open and evolve one's worldviews.

And of course, my talented colleagues who amazed me daily with their determination, deep and poetic thinking, visual virtuosity, and compassion for others:

**Skyler Balbus**  
**Thersa Berenato**  
**John Chaich**  
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**Brenda McManus**  
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**Will Hoffman**  
**Yanwen Hu**  
**Leigh Mignona**  
**Greg Reistenberg**  
**Jangho Park**  
**Liz Seibert**  
**Karin Wood**



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Cognitive technologies and related cultural phenomena

- 2900bc – Sumerian
- 1050bc – Phoenician alphabet
- 275bc – Socrates on written language (in Phaedrus)
- 196bc – Rosetta Stone
- 1040 – Movable Type
- 1454 – Printing Press (Gutenberg)
- 1801 – Jacquard Loom
- 1818 – Frankenstein published
- 1822 – Difference Engine (Babbage)
- 1837 – Analytical Engine, programmable, proposed (Babbage)
- 1857 – Offset Printing
- 1890s – Psychoanalysis (Freud)
- 1900 – The Interpretation of Dreams (Freud)
- 1913 – Behavioral Psychology (John Watson)
- 1927 – Pavlov published on classical conditioning
- 1930 – B.F. Skinner Behaviourism
- 1936 – Turing machine imagined
- 1938 – The Behaviour of Organisms (Skinner)
- 1943 – Maslow's Hierarchy of needs
- 1948 – "A Mathematical Theory of Communication" – Claude Shannon
- 1950s – multitrack recording, enabling remixes
- 1959 – Noam Chomsky publishes review of Skinner, beginning of cognitive revolution
- 1964 – Dot Matrix Printer
- 1967 – Cognitive Psychology
- 1973 – Xerox PARC, first graphical user interface (GUI) with desktop metaphor
- 1977 – Apple II (Steve Wozniak and Steve Jobs)
- 1990s – rise of commercial internet use
- 1997 – Gary Kasparov vs. Deep Blue (IBM)
- 2011 – Watson (IBM) on Jeopardy

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Infrathin — Impossible to define. “One can only give examples of it.”

— Marcel Duchamp

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**DEFINITIONS**

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+ **Humanity/Humanize** – This may include but goes beyond some of the research and lines of questioning started by user experience, human factors, and design ethnography work. Without going too deep down the rabbit hole, I’m interested in catering to higher level needs, physical and philosophical, that people rely on to survive in a modern, technological age.

+ Human beings may be a walking bundle of miscalculations, contradictions, and irrationalities, but we’re built that way for a reason: The same cognitive processes that lead us down the road to error and tragedy are the root of our intelligence and our ability to cope with and survive in a changing world. We pay attention to our mental processes when they fail, but that distracts from the fact that most of the time, our brains to amazingly well. (p 83-84, Kathryn Schulz, Being Wrong)

+ Humans are fallible, whereas machines are not or not expected to, unforgiven for any deficiencies in performance.

+ **Technology** – is something “in order to,” an “extension of man,” or augments human activity – but my thesis also focuses on the more adversarial relationship we have with the growing amount of automated technologies. For the bulk of this document, though, I will use the phrase “digital technology” in a more colloquial sense to mean electronic devices.

+ **Machine** – encompasses a number of automated technologies, but I sometimes use the term to mean the computational ones specifically – aka “thinking machines.”

+ **Language** – is also a technology, as is a medium. There are times when these terms are used somewhat interchangeably, hopefully clarified by the context they appear in. But these terms are fuzzy because the way they’re used in real life, and what they denote and connote, are also of an ambiguous nature.

+ **Media/Medium** – this thesis takes the term medium to mean any kind of tool or vessel that exerts its own context upon a piece of content. This type of definition becomes extremely difficult with the computer – which as an entirety means something, but is actually the aggregate of all the software and interfaces that live within as well. To flatten this experience into a screen is an oversimplification. But since I have no interest in making up new terms, the word “medium” will continue to encompass its colloquial uses.

+ However, I reject the typical connotation of the word “media,” as the various sources and disseminators of news.

+ +

**Remediate** – taking content and working on it through a variety of mediums, ie. starting a poster layout with only hand-made elements, then scanning it into a computer to finish it. Also – taking iconic elements or structural aspects from one medium and migrating into another, like the dog-eared page icon you can add to the top right corner of a Kindle.

**Digital/Analog** – the difference is between discreet versus continuous information, but as the resolution of digital copies becomes more refined, the ability of human senses to detect a that difference slowly dissipates. Both these words have very media-specific connotations today that I will try to clarify within the writing.

**Computational theory of mind** – is a philosophical concept that the mind functions as a computer or symbol manipulator. The theory is that the mind computes input from the natural world to create outputs in the form of further mental or physical states. A computation is the process of taking input and following a step by step algorithm to get a specific output. The computational theory of mind claims that there are certain aspects of the mind that follow step by step processes to compute representations of the world.

**Discrete Combinatorial System** – are systems that have the capacity to generate an infinite number of combinations and permutations out of a finite number of discrete elements. Moreover, the combinations generated by these systems have properties that are quite distinct from the properties of their particular elements.

Language and genetic makeup are examples of systems based on a discrete combinatorial system. In language, an infinite number of sentences, each distinct from the other, can be formed based on a fixed set of rules or a code called the generative grammar and on a finite number of words that make up the mental dictionary of a person. Similarly, in genetics, an unlimited number of different genes can be strung based on only sixty-four codons, which are formed from only four nucleotides that make up the DNA molecule. The generative grammar is found to be universal among all human beings just as the sixty four codons of nucleotides are the same in all organisms.

**Art** – I invoke the name of art for its ability to innovate, but only a small margin of artists actually are successful in this way, and their relevance to broader historical movements is only fully realized through apt curation and art history writing. By this definition, I understand it as that fuzz that always hangs over the edge of what we empirically know. Just like our uncertainties and unknown-unknowns will always surround us, so will art. It’s not only the comfort with ambiguity that I look to art for, but that innate need to subvert. As Umberto Eco puts it, “every real artist constantly violates the system within which he works.”



**Design** always seems to be in flux, its motives and duties constantly being loudly established and challenged. Though there's little question about this field's ancestors and common forms, academic programs go by many names. I've come to appreciate Pratt's "Communications Design," which can be interpreted to go beyond profession and medium to the heart of language, context, nature and culture. Design is mediation and amplification. Design today is often setting the parameters for form as well as necessary ornamentation. The design I've learned and want to practice always has a visual component, but may be conceptual at heart.

#### **BIOLOGICAL INTERACTIONS:**

**Neutralism** describes the relationship between two species, which interact but do not affect each other. It describes interactions where the fitness of one species has absolutely no effect whatsoever on that of the other. True neutralism is extremely unlikely or even impossible to prove. When dealing with the complex networks of interactions presented by ecosystems, one cannot assert positively that there is absolutely no competition between or benefit to either species. Since true neutralism is rare or nonexistent, its usage is often extended to situations where interactions are merely insignificant or negligible.

**Amensalism** is a relationship in which a product of one organism has a negative effect on another organism. It is specifically a population interaction in which one organism is harmed, while the other is neither affected nor benefited. Usually this occurs when one organism exudes a chemical compound as part of its normal metabolism that is detrimental to another organism.

**Competition** is an interaction between organisms or species, in which the fitness of one is lowered by the presence of another

**Antagonism** (predation, parasitism) is when one species benefits at the expense of another. Predation is an interaction between organisms in which one organism captures biomass from another. It is another synonym for carnivory but in its widest definition includes all forms of one organism eating another.

**Symbiosis** is a close and often long-term interaction between different biological species.

**Mutualism** specifies an interaction in which species derive mutual benefit.

#### **COMPUTER SCIENCE HISTORY:**

**Turing Machine** is a device that manipulates symbols on a strip of tape according to a table of rules. Despite its simplicity, it can be adapted to simulate the logic of any computer algorithm, and is useful in explaining the functions of a CPU inside a computer. It was described by Alan Turing in 1936, as a hypothetical device representing a computing machine.

**Turing Test** is a test of machine's ability to exhibit intelligent behaviour. In Turing's original illustrative example, a human judge engages in a natural language conversation with a human and a machine designed to generate performance indistinguishable from that of a human being. All participants are separated from one another. If the judge cannot reliably tell the machine from the human, the machine is said to have passed the test. The test does not check the ability to give the correct answer, it checks how closely the answer resembles typical human answers. The conversation is limited to a text-only channel such as a computer, keyboard and screen so that the result is not dependent on the machine's ability to render words into audio.

**The Uncanny Valley** is a hypothesis in the field of robotics and 3D computer animation which holds that when human replicas look and act almost, but not perfectly, like actual human beings, it causes a response of revulsion among human observers. The "valley" in question is a dip in a proposed graph of the positivity of human reaction as a function of a robot's human likeness. The term was solidified by Frued's 1919 essay, The Uncanny.

**Mechanical Turk** is a crowdsourcing internet-marketplace that enables computer programmers (known as Requesters) to coordinate the use of human intelligence to perform tasks that computers are unable to do yet. The Requesters are able to post tasks known as HITS (Human Intelligence Tasks), such as choosing the best among several photographs of a store-front, writing product descriptions, or identifying performers on music CDs. Workers (called Providers in Mechanical Turk's Terms of Service) can then browse among existing tasks and complete them for a monetary payment set by the Requester.

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### **Exhibitions / events**

Rob Giampietro, speaking at Pratt Manhattan, 24 April 2012.

Khoi Vinh, speaking at Pratt Manhattan, 27 March 2012.

Whitney Biennale, at Whitney Museum of American Art. March 10, 2012.

Denis Wood speaking about Everything Sings: Maps For a Narrative Atlas. Printed Matter, New York City. 24 Feb 2012.

Rob Giampietro & Prem Krishnamurthy of Project Projects speaking at Artist's Space. 15 Jan 2012.

"Talk to Me: Design and the Communication between People and Objects." MoMA. 24 July –7 Nov 2011.

Strata Conference: Making Data Work. New York City. 22-23 Sept 2011.

— Alistair Dent of The Guardian's data visualization team

— Arnab Gupta of Opera Solutions : "Man + Machine"

### **Film**

Eames: The Architect and The Painter. Documentary. Dir. Jason Cohn and Bill Jersey. 2011.

Bladerunner. Dir. Ridley Scott. Perf. Harrison Ford, Rutger Hauer, Sean Young. Warner Brothers, 1982.

Terminator. Dir. James Cameron. Perf. Arnold Schwarzenegger, Linda Hamilton, Michael Biehn. MGM, 1984.

### **Other**

Start the Week with Andrew Marr: Tim Hartford, Andrew Adonis, Priyamvada Gopal, and Eli Pariser. BBC Radio 4. June 20, 2011.

Cory Doctorow. "The Coming War on General Computation: The copyright war was just the beginning." Chaos Communication Congress 28: Behind Enemy Lines. [http://www.youtube.com/watch?feature=player\\_embedded&v=HUEvRyemKSg](http://www.youtube.com/watch?feature=player_embedded&v=HUEvRyemKSg)

"Talking to Machines" Radiolab. WNYC. June 1, 2011.

"Morality" on Radiolab, WNYC. August 13, 2007.

