



Faculty of Design

2014

Designing for Our New Scale: A Provocation

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Suggested citation:

Kaiser, Zachary and Schaffzin, Gabriel (2014) Designing for Our New Scale: A Provocation. In: Proceedings of RSD3, Third Symposium of Relating Systems Thinking to Design, 15-17 Oct 2014, Oslo, Norway. Available at <http://openresearch.ocadu.ca/id/eprint/2089/>

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DESIGNING FOR OUR NEW SCALE: A PROVOCATION

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Hi, I'm Zach, I'm an assistant professor of Graphic Design and Experience Architecture at Michigan State University.

And I'm Gabi, I'm a visiting lecturer at the Massachusetts College of Art & Design in Boston.

We want to thank RSD for having us back and to Peter specifically for moderating this track. We've asked Peter to let us go a few minutes over—so if you have a question that you don't get to ask, feel free to tweet at us, or—of course—just grab us during lunch.

Today, we are here to present a provocation of sorts, to ask some questions about technologies that have changed what it means to design for scale and discuss some of our work as designers and artists in this context. In doing so, we hope to introduce a critical theoretical foundation for designing for the sort-of scale we discuss here, and present, more generally, a critical lens for designing at scale.

BUT FIRST, A STORY





GROWTH - HACKING ?

AND THE CULTURALLY HEGEMONIC POSITIVE
CONNOTATION OF GROWTH

A few years ago, Gabi and I learned of an emerging discipline in the consulting world called “growth hacking.” We weren’t quite sure what exactly it meant to “hack” growth, but sure enough, this new subgenre of value-creation even had its own Wikipedia entry. And apparently, if one queries the term on Google, it’s easy to find several “growth-hacking” acolytes, evangelists, and even a few specialized, expert “growth hackers.” Some of the most prominent and expert growth-hackers are based in the Boston area, where we ran a design studio and went to graduate school. One prominent Boston growth hacker writes that, “Startups are designed for astronomical growth, they aspire to grow at least 30 percent month over month while large companies are satisfied with just 5 percent year over year.”



GROWTH - HACKING !

GROW , BABY , GROW !

Growth—at least in the sense in which the typical North American business executive working say 5 or 10 years ago might understand it— isn’t enough. And in this fast-paced, competition-fueled world full of startups ready to create the next app you had no idea you needed, businesses must grow quickly. And the quicker you grow, according to the expert growth-hackers, the better. This attitude, growth-hacking in general, and its accompanying ideology exemplify the multi-tiered underlying problematic of the unquestioned value of “growth” in our contemporary moment.

HISTORICAL CRITIQUES OF ECONOMIC GROWTH



SYSTEMIC PERSPECTIVES: MEADOWS, SCHUMACHER

A critical outlook on economic growth is by no means new. Traditionally, arguments against the value of unchecked economic growth were, while systemic in nature, based on the impact of economic growth on the environment, including the work of Meadows and others, in *The Limits to Growth* (1972). E.F. Schumacher, in *Small is Beautiful*, wrote that, "The modern economy is propelled by a frenzy of greed and indulges in an orgy of envy, and these are not accidental features but the very causes of its expansionist success. The question is whether such causes can be effective for long or whether they carry within themselves the seeds of destruction." He argued that, "economic growth, which—when viewed from the point of view of economics, physics, chemistry and technology, has no discernible limit—must necessarily run into decisive bottlenecks when viewed from the point of view of the environmental sciences."

IMMATERIALITY AND THE IDEOLOGIES OF THE TECHNICAL

FALLACIOUS OBJECTIVITY OF THE TECHNICAL

The work of someone like Schumacher might be discounted (if even read) by growth-hacking groupies and others throwing speculative VC money at the next startup ready to “destroy laundry” or “disrupt education,” because, hey, we’re storing all our data in the cloud and all our products are basically immaterial, right? The knowledge economy is one that can certainly grow indefinitely, isn’t it? Like those during the age in which Schumacher was writing, we have certainly been blinded by the allure of growth. Now we also must contend with its flawless corollary, innovation. How can we question growth when Big Data, exponentially increasing computational power, and a plethora of platforms that provide transformative connectivity and the ability to harness all this computing power and data are right at our fingertips? At the fingertips of every designer, entrepreneur, and guy in the coffee shop who might just have the next big idea? Especially when such tools serve to confirm our biases—that growth is good and that big data and computation reveal universal truths?

- 
1. BIG DATA
 2. ALGORITHMS & INCREASING
COMPUTATIONAL POWER
 3. PLATFORM TECHNOLOGIES

ENABLING A NEW KIND OF SCALABILITY

Such transformative technologies and tools—big data, algorithms and increasing computing power, as well as the platforms that unite these two and enhance connectivity—have underscored the importance of scalability in post-industrial late capitalism. Scalability has always been a factor in the success of businesses. The assembly line was the scalable version of building an automobile by hand. Scalability of production is still an important element for many businesses that produce tangible goods, including hard goods that retain some kind of Marxian use-value. Warrior—the company that supplies Liverpool—had to ramp up production capacity of Balotelli kits very quickly once he was signed, right? Thus, throughout the decades, scalability — the ability to handle increasing demand or volume, to increase production, or more widely deliver services — and growth, its necessary counterpart, have always been perceived as essential by investors and the public alike.

When we consider the increasing amount of value created in the realm of the intangible—value drawn out of interactions and connected product-service ecosystems—scalability takes on an entirely new sort-of importance and meaning.

DYNAMIC SCALABILITY AND THE REALM OF THE INTANGIBLE




PERPETUALLY AND EFFECTIVELY MICRO AND MACRO

The dynamic scalability of today's most valuable systems - and the systems we aim to design specifically because they are the most valuable - forces us to design with a new kind of scale in mind. It is simultaneously a hyper-granular scale and an extremely big-picture scale. It is at once zoomed-in and zoomed-out, customized or tailored to each user, yet useful and delightful for all users. As commercial practitioners of interaction and experience design, we are often tasked with such goals, creating either an ecosystem of connected touchpoints or a product or service that integrates multiple sources of data and leverages computation in order to deliver relevant and tailored experiences for users.

SCALABILITY, COMPUTATION, AND THE INSURANCE INDUSTRY

KAYAK-ING THE INDUSTRY

About a year after we first heard about “growth-hacking,” Gabi, our business partner John, and I were invited to meet with a small, internal group at a large insurance company. During this meeting, employees from various parts of the company—from design to management—told us about some relatively new developments in the insurance industry that were changing the way insurance companies, agents, and policyholders or insurance shoppers interacted. These developments dovetail with the three crucial components of designing for scale to which we’ve begun to allude: platforms, big data, and algorithms. A few startup companies had begun to develop systems for matching users with the best quotes from a variety of companies, sort-of like Kayak or Orbitz does for travel. The thing is that insurance is a little more complicated than buying a plane ticket. So no one had really tried it until recently. As computation has gotten more sophisticated and as insurance companies have collected larger troves of data, their actuarial ability to infer certain things about customers based on data of similar customers has gotten quite a bit better.



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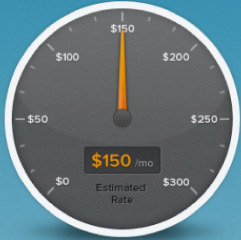
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Basically, the idea that several companies were after is this: a user arrives at a website, can enter as little or as much as he or she knows about his or her car and driving history...

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Western National	\$49	\$291	▼ 40%	BUY NOW
Rockford Mutual	\$51	\$303	▼ 18%	BUY NOW

STEPS
FINISH

Displaying 22 matches
\$34 - \$117 per month

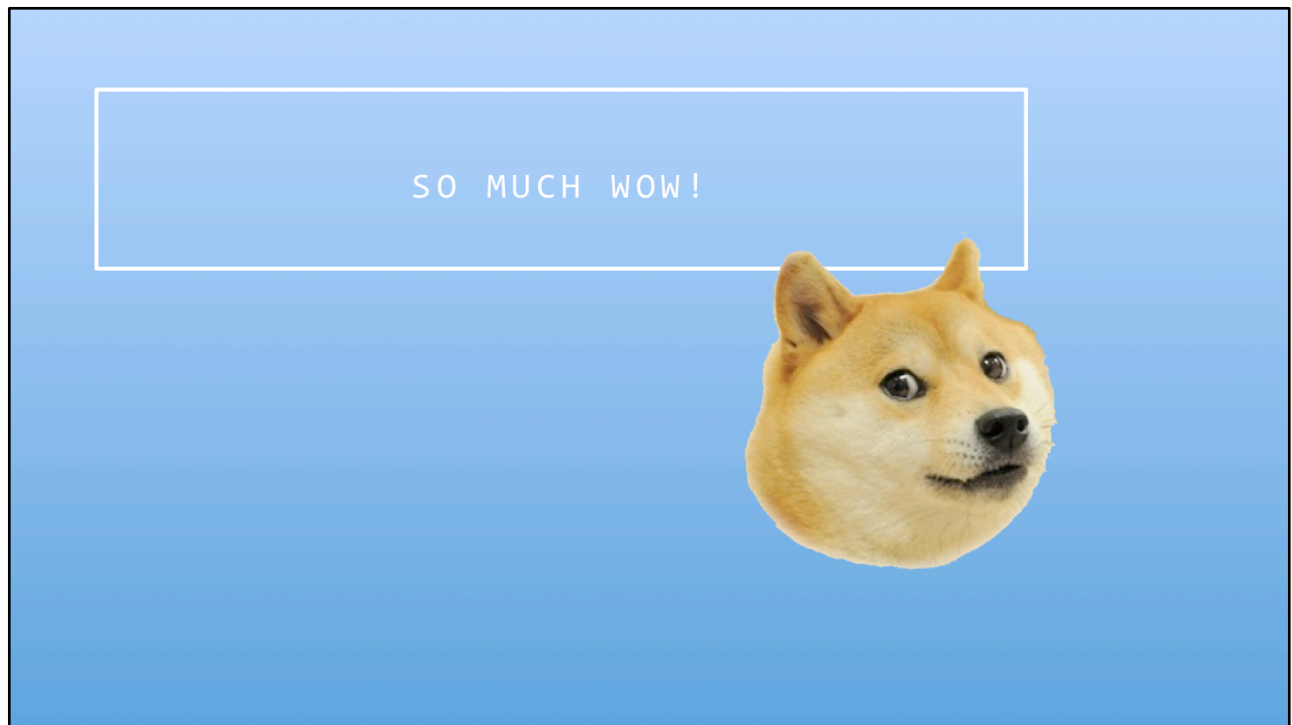
... and be quickly and matched with a relative degree of accuracy with the insurance carriers that provide the best coverage for that particular person at as low a rate as possible.



DATA COLLECTION, ANALYSIS,
CATEGORIZATION, INFERENCE AND
RECOMMENDATION

WE DON'T NEED YOU TO TELL US. WE ALREADY KNOW.

In principle, this sounds pretty simple. In practice, it's extremely complicated. I mean, we really had no idea just how complicated this was. Which is where our friends big data, algorithms, and platforms come in. There are, according to our colleagues at this insurance company, over a thousand data points that an insurance agent needs to know about a customer in order to give him or her a quote that most closely approximates the customer's monthly payment. Also, depending on how a user signs in—they might be allowed or encouraged, for example, to sign in through Facebook or google plus—there's a lot of data about that user and about his or her habits and behaviors that we might have access to. We also have access to data about people who, depending on the metrics we use, might be "similar." Based on the various pieces of data we can collect about a user, either about him or her specifically, or about those to whom the user is connected either socially or categorically, we can start to make some pretty incredible inferences. The 1000 or so required data points, of which we've maybe only grabbed a hundred or so at best, start to fill in pretty quickly.



Now, this is all pretty incredible. And from a technical standpoint, it really is. Ubiquitous computing and machine learning allow us both to gather data about the most minute aspects of our daily existences, and then at the same time, crunch all that data and spit out some astounding inferences. Generally speaking, what we were working with this client to do was to design a system wherein we would leverage various platforms to gather as much data, big data, as possible about a given user, then employ various algorithms (and the proprietary platforms to which they belong) to help us analyze that data and make some inferences and recommendations that would be beneficial to the user and make good business sense for those providing services to the user.



SO WHAT?

Thus far, this all sounds pretty standard. I mean, any competitive product-service ecosystem that is operating today will surely take advantage of constant connectivity and perpetually bigger data, not to mention the typical user's willingness to share their data in exchange for more convenience or ease.

SO WHAT?

1. BELIEF IN OBJECTIVITY OF TECHNOLOGY, TOOLS AND ALGORITHMS AS "MATTERS OF FACT"
2. THE IMPACT OF THIS IMPLICIT ACCEPTANCE ON CULTURE, SOCIETY, AND HUMAN EXPERIENCE

So what's really the problem here? Why are we standing up here under the premise that we'll be getting all worked up about all this cool stuff that allows us to grow our businesses super fast and scale to accommodate any amount of incoming or outgoing data? Well, the problem is twofold. First, there are underlying ideologies driving all of the technologies on which we are building the complex systems and services that we design—APIs, for example—but a lack of consideration of the mere existence of these ideologies leaves us blind to the chance the what is being handed to us through these technologies is more than just neutral or "true." Second, a causal implication of the first is the way the ideologies underlying these technologies are impacting society as a whole. Understanding this two tiered problematic requires a broad and systemic approach that critiques and expands the boundaries of the systems we are designing. We must be willing to push the boundaries of where we typically might establish the edges of a system or service in order to understand the implications of the technologies we employ in its design; and while this is nothing new, the systems we leverage in order to design new systems have implications of their own, which is where both a micro- and macro-lens must be applied to the critique of system boundaries.



THE PROBLEMS WITH:
PLATFORMS / BIG DATA / ALGORITHMS

FULL OF CONNECTIVITY AND EMBEDDED BIASES,
FREE OF RESPONSIBILITY FOR CONTENT

As intermediaries, platform technologies occupy a precarious cultural and commercial position—they enable the distribution of information without being party to its creation. Through the use of the term “platform,” they simultaneously position themselves as tools on which others “stand,” yet distance themselves from the actual content of the data being distributed (Gillespie, 2012). To use the capabilities of a platform (e.g., an API) also requires the designer to submit to the metrics that the designers of the platform have determined to be worth measuring in the first place. YouTube's API will give you the most popular videos, but not the least. This is a specific choice made by their platform team that serves the profit-motives of the corporation.

THE PROBLEMS WITH: PLATFORMS / BIG DATA / ALGORITHMS

APOPHENIA, UNEQUAL ACCESS,
AND THE MYTH OF OBJECTIVITY

A reliance on large data sets that help us design for scale raises further concerns. danah boyd and Kate Crawford (2011) identify a number of provocations related to the use of "Big Data" including the tendency towards apophenia, or finding patterns where there are none. They also allude to a common concern of many civic-focused projects—that of privileging that data which is accessible, rather than relevant — when they note the divides created by the various tiers of technological know-how and funding required to access certain stores of information. Embedded both in the computational interpretation of Big Data as well as the way in which it is collected -- what is deemed as "signal" and "noise," what parameters are determined as valuable for measurement -- are the ideologies and politics of the organizations and individuals programming the hardware and software capturing and interpreting all this data. Proponents of the power of Big Data, argues Nathan Jurgenson, tend to distance the researchers from the data, arguing that the sheer quantity of data and the computational analysis of it speak for itself. That passively collected data is objective and that with enough of it and enough computing power, universal truths are imminent. This is the myth of the objectivity of Big Data. Of social media sites, some of which now traffic in non-IRB approved unethical research practices, Jurgenson writes, "The politics that goes into designing these sites, what data they collect, how it is captured, how the variables are arranged and stored, how the data is queried and why are all full of messy politics, interests, and insecurities." We have been seduced by an informational power (Lash, 2002) that comes at the expense of the establishment of a discursive space.



THE PROBLEMS WITH:
PLATFORMS / BIG DATA / ALGORITHMS

PERCEIVED NEUTRALITY, INCREASINGLY RELIED-ON,
FEWER HUMAN-READABLE EXPERIENCES

To keep our heads above the floodwaters of data rushing over us, we increasingly turn towards, and privilege, the interpretive and analytical power of algorithms. And yet, as products and services become more algorithmic in nature, algorithms — to which we have given over our agency as synthesizers and analyzers of information — communicate with one another. These communications between algorithmic systems may, without careful systemic consideration, leave humans as bystanders to exclusively machine-readable communications.

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Amazon Algorithm Price War Leads to \$23.6-Million-Dollar Book Listing

BY DAVID MURPHY APRIL 23, 2011 06:03PM EST 10 COMMENTS

Two Amazon Merchants. Two different pricing algorithms. One seemingly normal book. This perfect storm of competitiveness lead to a twenty-three million dollar list price for a standard academic book.

314

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\$1,730,045.91	New
+ \$3.99 shipping	

\$2,198,177.95 New

+ \$3.99 shipping

What do you usually expect to pay for a book on Amazon? Perhaps \$7-\$10, if you're scouting for a paperback? Around \$20 or so if you're looking to score a hardcover? Maybe \$1,000-\$1,500 if you're trying to hunt down that elusive, rare edition of "Teaching With Calvin and Hobbes?"

If your eyes aren't open yet, how about this: \$1.7 to \$2.1 million for a book—a perfectly average, out of print but not quite rare title that's considered a fundamental work of development biology? Or how about... \$23.6 million?

That's the result of a recent bidding war between two third-party Amazon merchants, each attempting to use algorithms to sell an out-of-print version of Peter A. Lawrence's, "The Making of a Fly: The Genetics of Animal Design."

Take, for example, the \$23.6 million book, priced by an algorithm caught in a bidding war. In addition, the functions of the algorithms on which we rely today are based on the ideologies of the individuals and corporations responsible for programming them in the first place.

ALL MEDIA AND TECHNOLOGIES
ARE COLLECTIONS OF INTERRELATED
SYSTEMS THAT EXERT ENORMOUS
INFLUENCE ON US

BUT WE DON'T PERCEIVE THEM AS SUCH, AND ANY RESULTANT
"GROWTH" OR "INNOVATION" INHERITS THIS NEUTRALITY

You know, in the grand scheme of things, that insurance thing might not matter that much. At least not the insurance thing itself, but the components of it have been situated in relationship to one another and in relationship to society as a whole - and when we as a society accept the terms and conditions of its use in exchange for more "convenience" or "productivity" - that's when it becomes problematic. It's when we fail to understand the ecology of relations that establishes the systems and structures that we take for granted — that this insurance service is just a "service" and not a collection of interrelated systems each with their own ideologies and biases designed into them, created with certain goals that operate at odds with one another and with the stakeholders in the various systems of which they are a part — now that is an issue. It's an issue because "growth" and "innovation" are the words we hear, and we take these words at face value. The "wicked problem" that the folks at the insurance app company might be trying to solve is only a problem insofar as they have defined it as such. But everything is a nail when all you have is a hammer. And everything requires a profit when the system establishing success is based on profits. And everything is measurable and thus "understandable" when we have access to so much data.



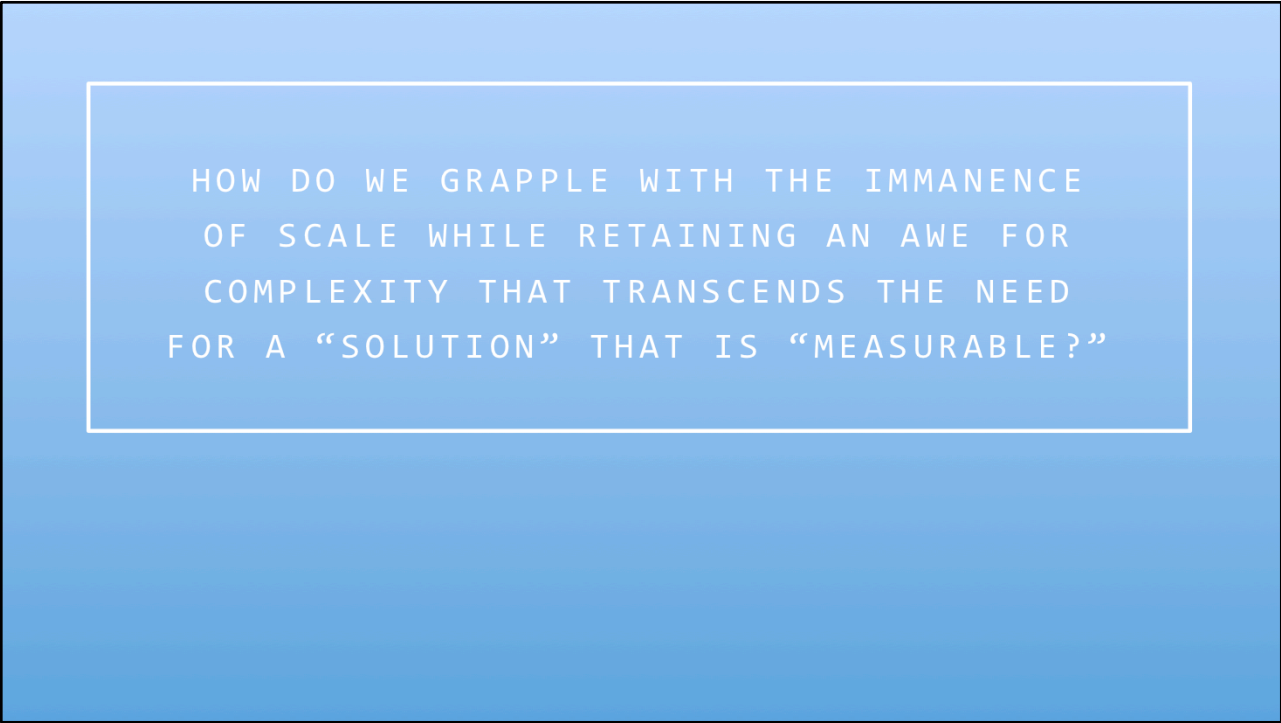
PROBLEMS END UP BURIED

COMPLEXITY IS CLEANED UP INSTEAD OF REVEALED

In a way, the ideology of Big Data and its almost-pop-culture positivism—that it embodies some sort-of universal truths—along with the connective power of platform technologies and our collective faith in the possibility and objectivity of computation have moved us away from acknowledging the “wickedness” in the purportedly “wicked problems” we should be trying to solve. The transformative power of these tools paired with their immateriality and intangibility end up burying the problems that they create more deeply than ever before. The complexity and messiness of life is cleaned up through computation, not made legible and not revealed for our acknowledgement.



It's a challenge to wrap up a discussion of these problems because they are so deeply intertwined, leading us in circles, spiraling down towards some kind of existential angst or, worse, an argument that can be perceived very quickly as a quasi-hypocritical-ludditism, as we stand here caressing our iPhones.



HOW DO WE GRAPPLE WITH THE IMMANENCE
OF SCALE WHILE RETAINING AN AWE FOR
COMPLEXITY THAT TRANSCENDS THE NEED
FOR A “SOLUTION” THAT IS “MEASURABLE?”

So the question becomes, as designers of all kinds—graphic, product, interaction, experience, systemic—are forced to grapple with the immanence of scale through the interconnected systems of big data, ever more powerful computation and machine-learning algorithms, as well as platforms that provide new sorts of connectivity and access to these resources—is there a way to retain an awe for complexity that transcends the inclination to need a “solution” that is “measurable”?



BY MAKING ART.

Well, we want to suggest that the answer lies in making art. And we're not just saying that cause we're artists. We really believe this.

SUPPOSED “NEUTRALITY” OF MEDIA AND
TECHNOLOGICAL SYSTEMS RESULTS IN AN
“AFFECTLESSNESS” TOWARD THEM

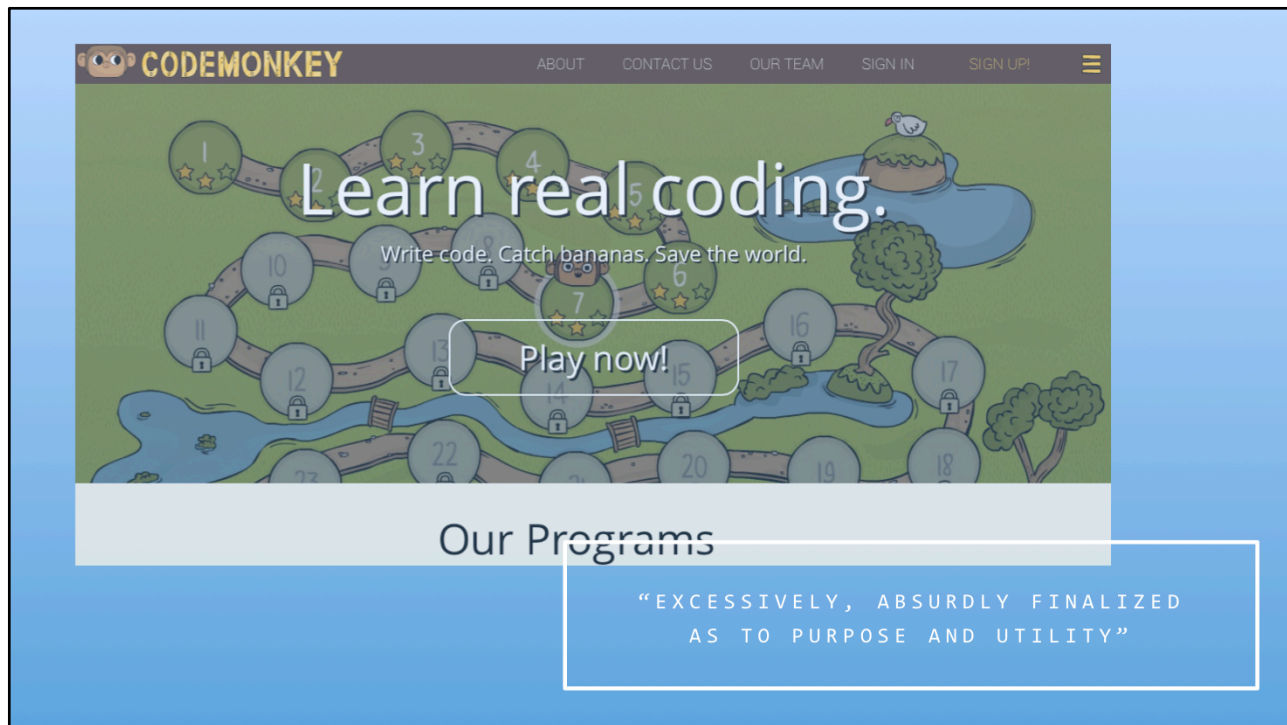
FULLER AND GOFFEY, EVIL MEDIA

In order to elaborate on this, we're going to use the work of Matthew Fuller & Andrew Goffey. They wrote a book called *Evil Media*. It's probably the least systemically constructed book we've read, so we hesitate to bring it up to this audience, but that's also sort of the point: they want their work to be perplexing—garrulous, really—as they convey the complexity and incomprehensibility of today's seemingly-neutral media systems. They use the word "affectlessness."

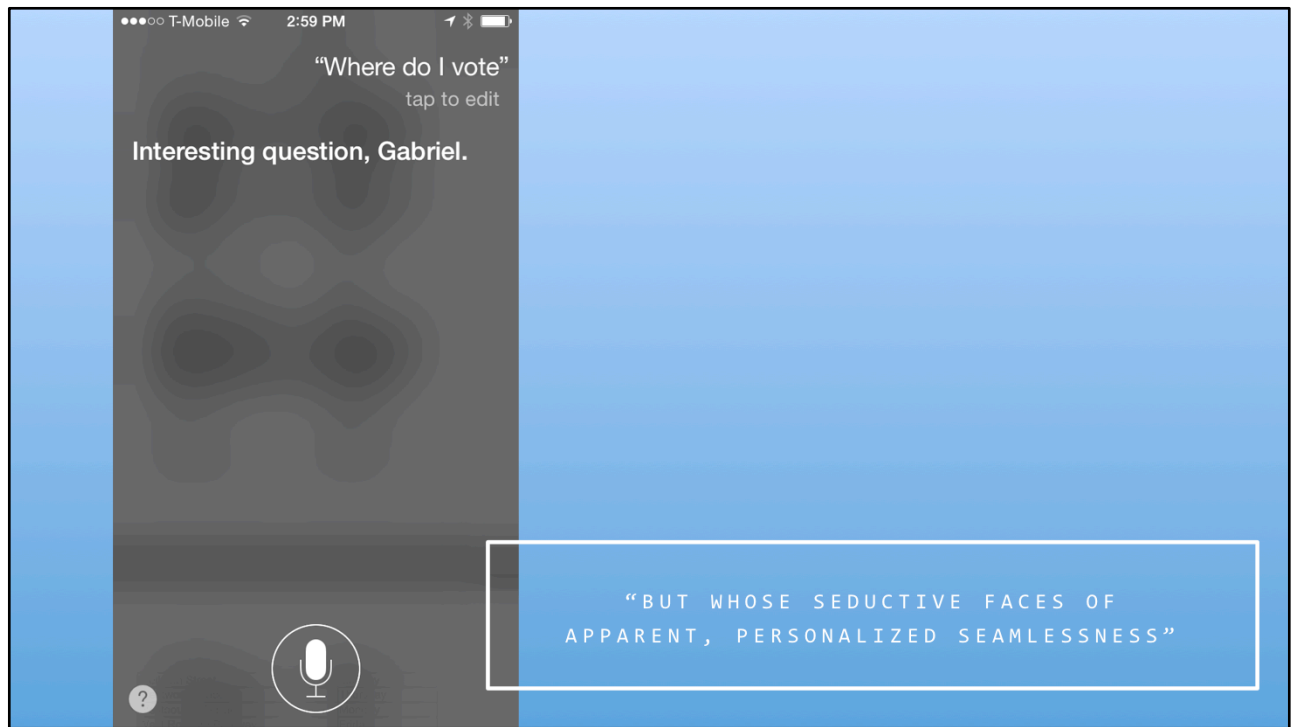
“CALL INTO QUESTION THE PRESUMED
MORAL SUPERIORITY OF THOSE WHO
SEEK THE TRUTH.”

FULLER AND GOFFEY, EVIL MEDIA

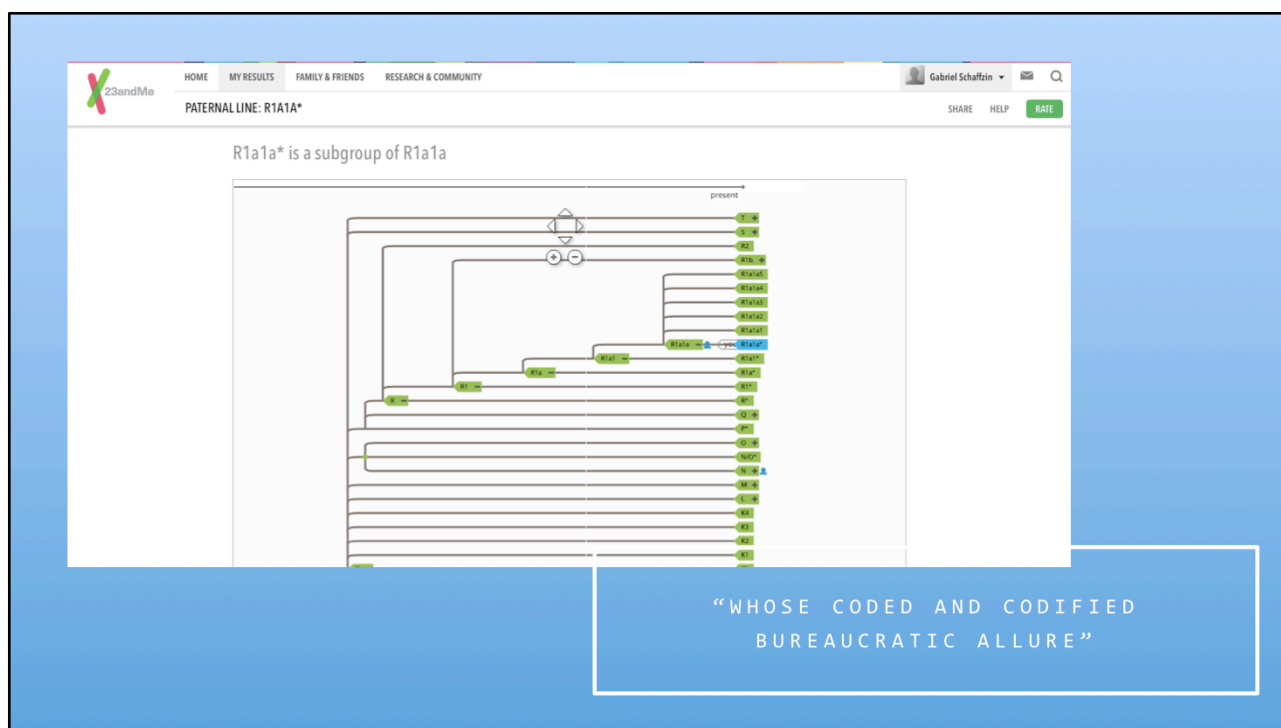
Anyway, in the book, they argue that to "call into question the presumed moral superiority of those who seek 'the truth'"—as the sophists once did



"is about operating with media forms, techniques, and technologies that are excessively, absurdly, finalized as to purpose and utility"



"but whose seductive faces of apparent, personalized seamlessness"



"whose coded and codified bureaucratic allure"



“WHEN REGARDED FROM THE RIGHT ANGLE,
PRESENT MULTIPLE OCCASIONS FOR CRAFTY—
AND WELL-CRAFTED— EXPLOITATION”

"when regarded from the right angle, present multiple occasions for crafty— and well-crafted— exploitation"

(And that's really what we're looking to do)



“PROVIDED THAT THEIR SLEEK AFFECTATION
TO AFFECTLESSNESS IS PROBED FOR THE
ENERGY IT ABSORBS.”

And they provide those occasions, "provided that their sleek affectation to affectlessness is probed for the energy it absorbs."

So that's how we need to do it: counter the affect-sucking-black-hole of these objects.

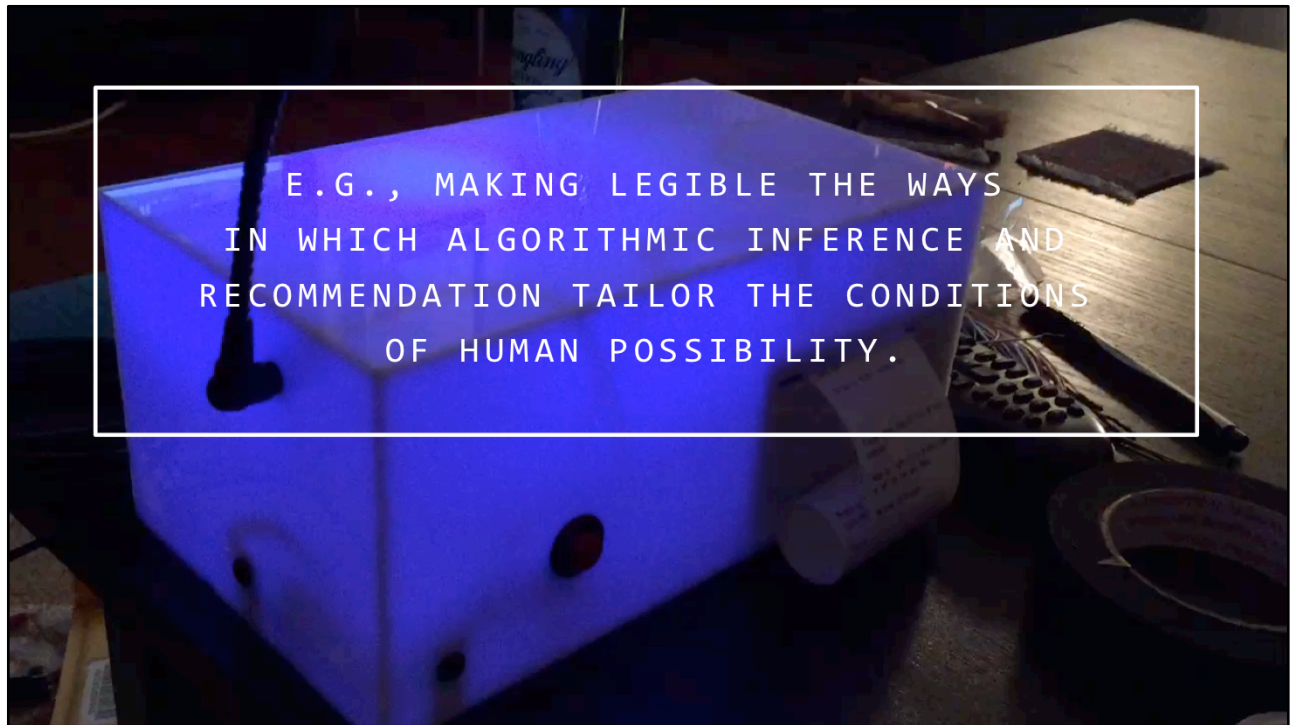


COUNTER AFFECTLESSNESS THROUGH AFFECT.

CRITIQUE THROUGH RENDERING THESE ISSUES VISIBLE AND TANGIBLE

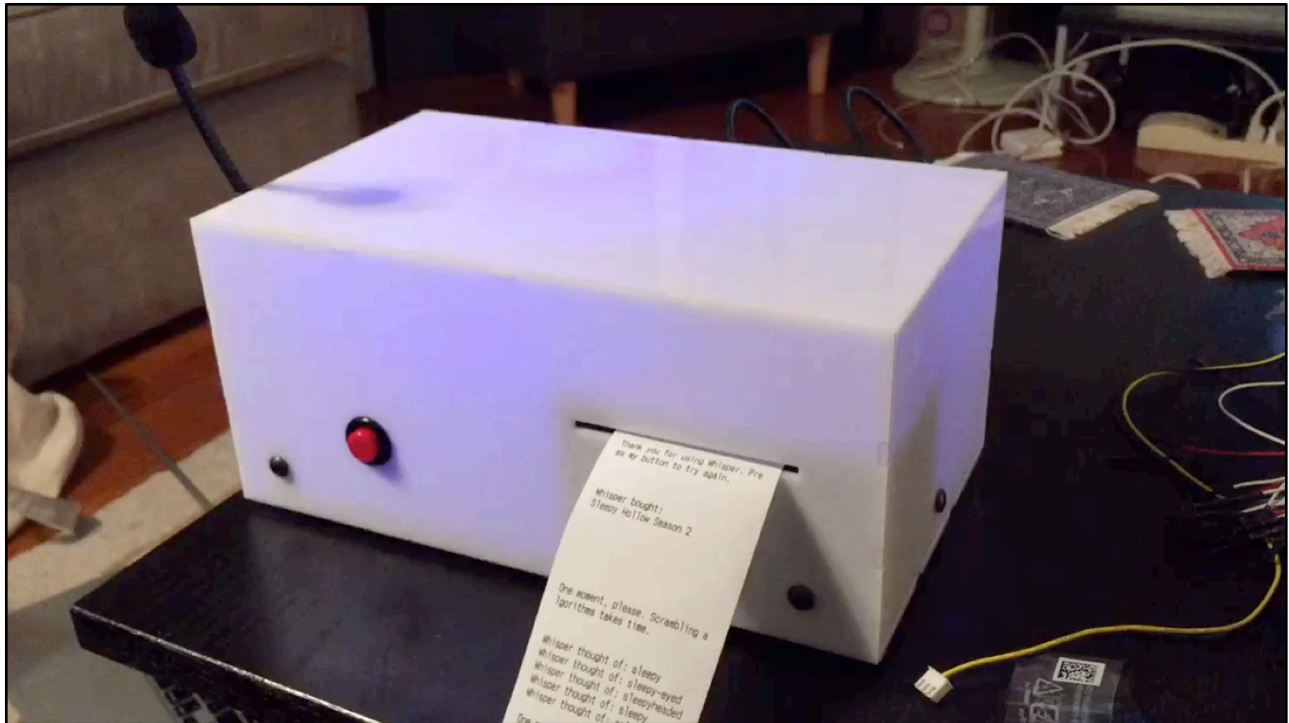
And what's the best way to counter affectlessness? Well, affect. Affect, through art.

Because the problems we're describing are often taken as matters of fact. They are the underlying ideologies and the functioning of the systems and products and services we use and encounter everyday. Their intangibility makes them extremely difficult to “see,” to interrogate, inspect, or critique. So one thing that we hope to do by making art about this stuff is to render these issues visible and tangible.



What does it look like to take issue with algorithmic inference and recommendation? What type of object or interaction might help someone see the way that such systems of big data capture and subsequent inference and recommendation tailor the conditions of human possibility, and that serendipity—true serendipity—may be on the verge of extinction?

Well, Whisper is a project that points at a near future in which we are completely algorithmically anticipated, in which Big Data captures every single moment and minutiae of our daily lives, and ubiquitous computing and machine learning are able to capture quickly information from our connected household objects and make inferences and recommendations in order to enhance convenience and ease. Our washing machine is ready for our next load, our toaster gives us warmer bread on a colder day. It is a future bereft of serendipity or surprise—and yet we avoid questioning its functionality because of how convenient it is. Whisper began as a proposal for a project that would intercept and scramble the data being transmitted from connected household objects in order to reintroduce surprise and serendipity into someone's life. In reality, it is an interventionary artwork, where a user approaches the device, and tells it how he or she feels. The device then takes the user's description of her feeling, transforms it through an association algorithm, queries Amazon using the scrambled data, and orders a product.



Gabi says that he feels Happy

Whisper thought of fortunate
Whisper thought of providential
Whisper thought of luck
Whisper thought of condition
Whisper thought of instruct

One moment please, scrambling algorithms takes time

Whisper bought: Ishmael instructs Isaac: An Introduction to the Qu'ran for Bible Readers

(Video link: <https://vimeo.com/110656705>)

This piece is both seductive in form and absurd in purpose.

Also, Whisper will be installed at the Impakt festival in Utrecht at the end of this month.



Along those same lines, we made the YouTube Descrambler in conjunction with Daniel Buckley. This is a black box—literally—that projects some of the most popular YouTube videos associated with predetermined tags. For a user to see the least-popular videos for the same tags, he must physically turn the crank on the side of the box as he battles YouTube's algorithmic investment in—and financial motivation to promote—popularity.

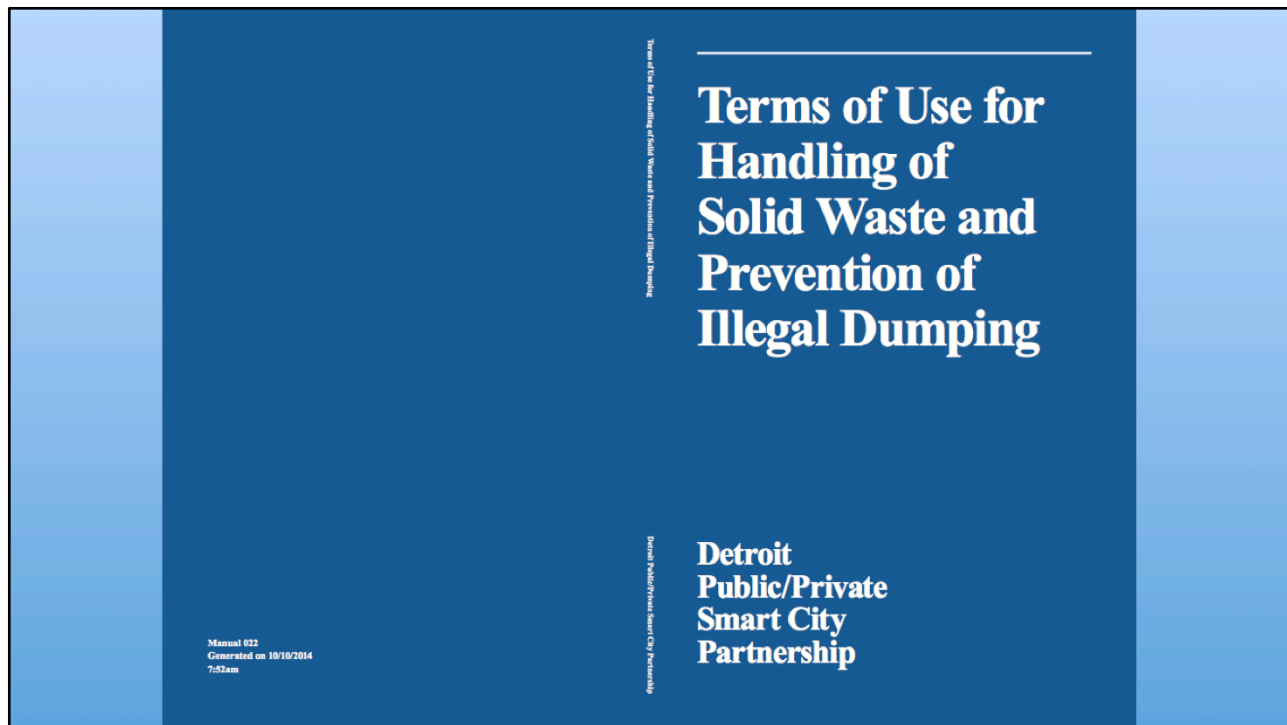


Video link: <https://vimeo.com/110498213>

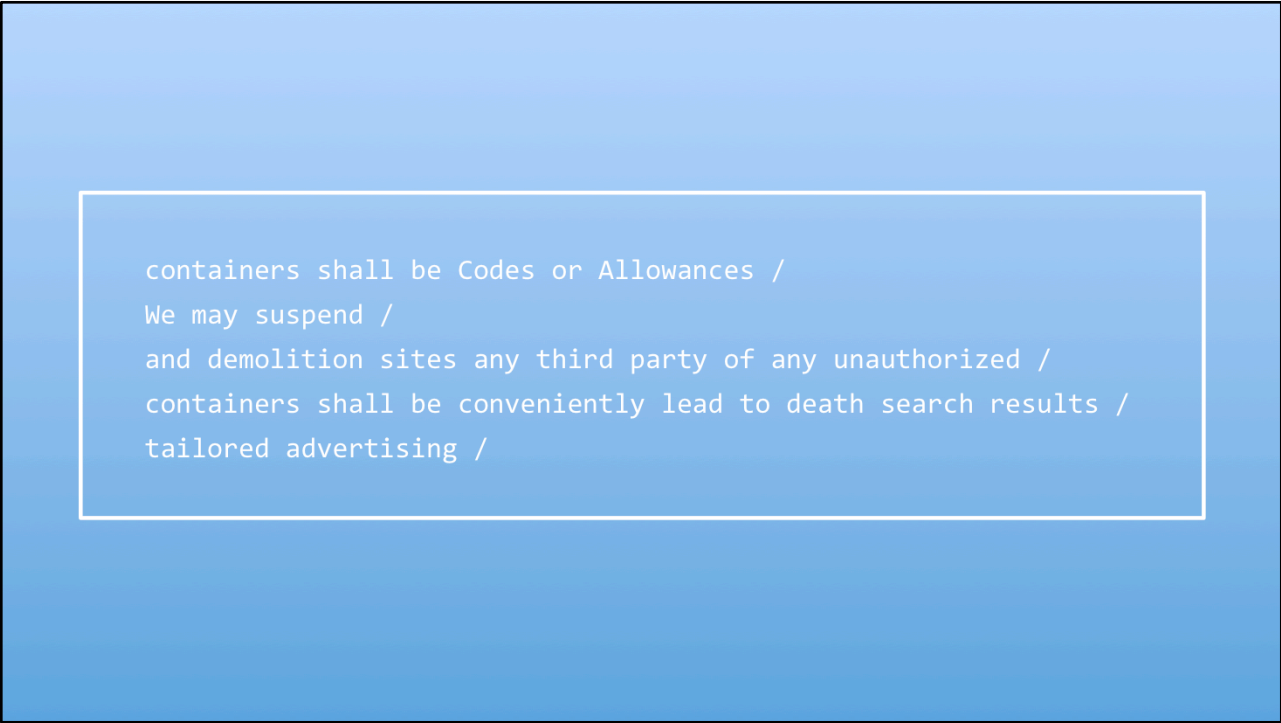


OR, ASKING IF A FUTURE OF “SMART”
MUNICIPAL SERVICES IS WORTH THE
TRADEOFF OF PRIVATIZATION AND AUTOMATION.

Finally, let's consider for a moment our basic municipal services—which are being increasingly privatized and subjected to a Big-Data-backed elastic-pricing model. What if question what happens when we have to agree to a complex terms of use agreement for these services, abstracting an already complex service system, one that is increasingly tailored for machine readability.

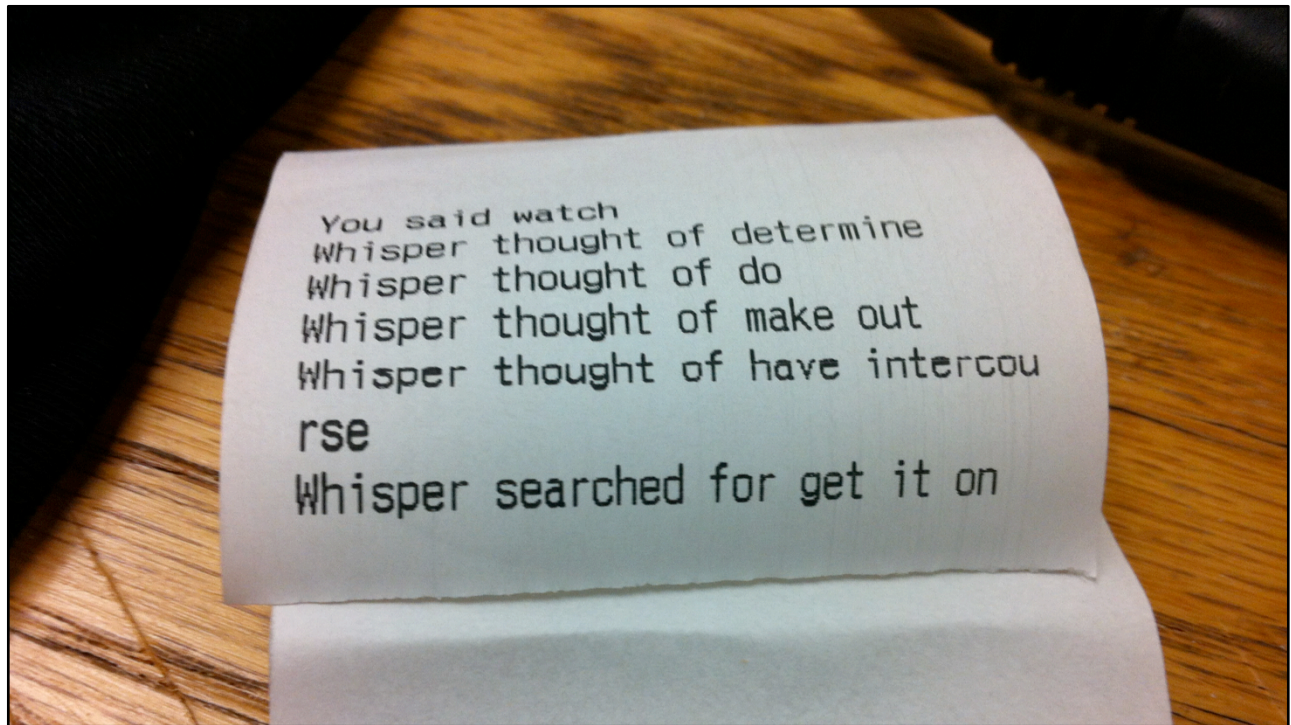


Using my own algorithms, the iTunes Terms of Use, and the Detroit municipal codes for solid waste removal, I created a book of abstract, concrete poetry, masquerading as a municipal handbook. Let me read you one:

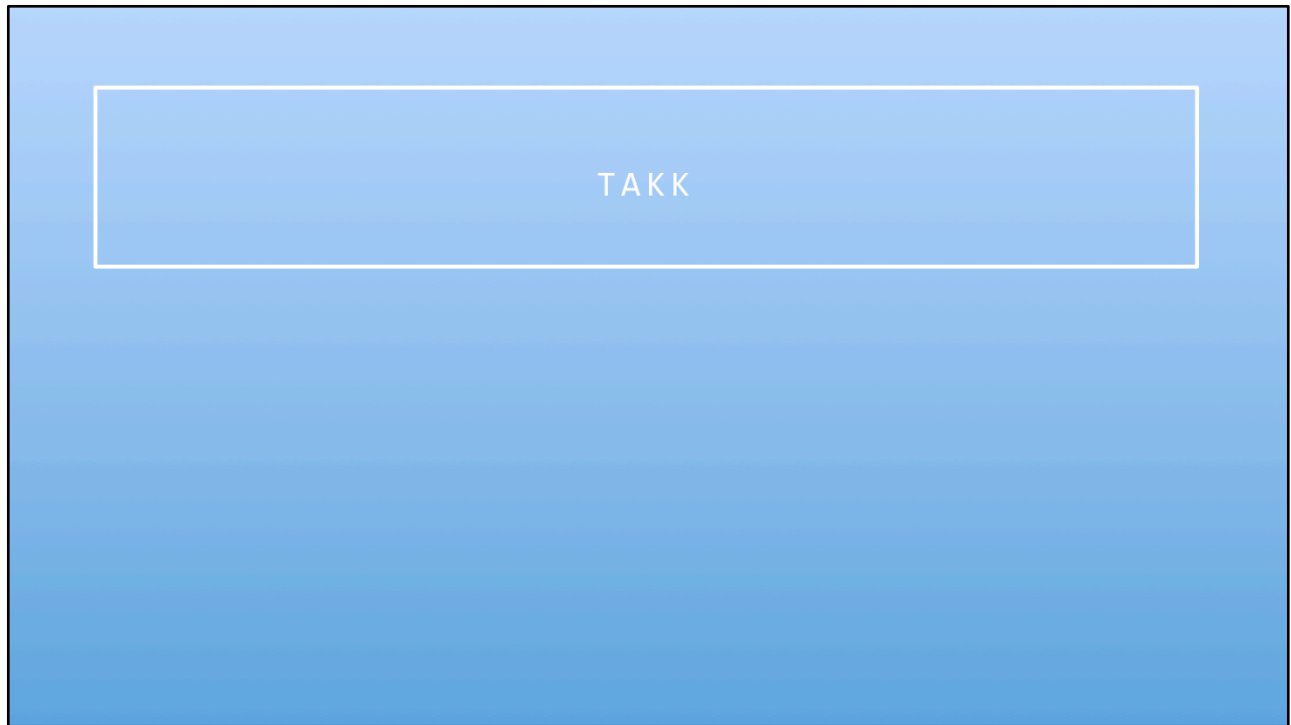


containers shall be Codes or Allowances /
We may suspend /
and demolition sites any third party of any unauthorized /
containers shall be conveniently lead to death search results /
tailored advertising /

On display at Museum of Contemporary Art, Detroit.



All of these pieces co-opt the language of innovation and growth through the implementation of the three elements we outlined a bit earlier: data, platform, and algorithm. The pieces disguise themselves as objects with utility, but also objects with Fuller and Goffey's "sleek affectation to affectlessness"—built to absorb an energy, turn it around, and spit it back out.



It is our job as artists and educators to build these objects and inspire in our students the desire and skills to do so, as well.