

Thesis Title

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Abstract

Much of human life has been facilitated by structures known as algorithms - tools that collect some input from a user then output personalized content for that user. This also happens in the context of humans constructing and expressing our identities. Yet public discourse has brought one variation of the invisible structures to the fore as many users resist digital algorithms as potentially aggravating or wholly disruptive to some aspect of identity. Using six ethnographic interviews with young creatives, two professional artists, and an extensive media analysis of museum collections, this study takes a structuralist lens to forward the anthropological approach of problematization to ask, “how, when, and why does engaging with algorithms become a problem for everyday users? And who are these users?” We specifically look towards the identities of creatives and find that awareness has a range of responses and dimensions, the most novel of which participants into creative action.

Executive Summary

This study seeks to grab hold of two notorious elusive concepts - algorithms and identity - and evaluate their highly consequential relationship to one another. I do this by combining the principles of Anthropological theory and Information Science to question how everyday users of algorithms become critically engaged with how and why algorithms are impactful in their various navigations of cultural identity. For the sake of this study, algorithms shall be defined as any process by which a rule-based tool generates personalized content after receiving identity information from the users. And identify within this study means an individual’s embodiment of culture which “includes beliefs, morals, knowledge systems, hobbies, and many other things. Together these concepts grapple with the highly-contentious reality of autonomous algorithms that seemingly pose great threat for how we humans understand ourselves. Are many people worried about this, and should they be? The heart of this answer within this thesis is derived from seven interviews with Syracuse University undergraduates, two professional artists, and four gallery visits to New York City museums.

Introduction

Humans have used algorithms - nonproprietary, mathematically-principled, generative tools - for a variety of endeavors, including those related to identity construction and formation. One example may include considering the three-pronged thesis structure as algorithms that writers deploy to convey what they believe matters most in an essay. Such algorithms do not often inspire recognition or critical engagement, making them largely silent, almost subconscious structures. Henceforth, I shall refer to this genre as “geometric” algorithm, inference to the fact that most of the ones mentioned in this study allow for participants to spatially formulate aspects of an art or design work that most reflect their identities. Yet, the 21st century has seen growing

public discussion and warning against those algorithms which power our digital technology and internet. Precisely because algorithms are at least partially external, proprietary structures, many question the ownership, agency, and intent behind those developing these algorithms for public consumption. They furthermore believe that the recognition and critical engagement with algorithms should be at the fore of societal discussions. These people do not allow algorithms to exist as silent structures but generate great attention in their efforts to unveil them.

Rather than seeking to support or contradict these claims, this study is primarily interested in how widespread warnings about algorithms are experienced and engaged with at the individual level and if algorithms outside the digital, autonomous realm necessitate the same fears as those powering AI. The disproportionate interest and response to algorithms in all their forms and definitions, I believe, deserves a closer look.

But what are algorithms? Answers vary almost from person to person but it is interesting to compare similarities and discontinuities in responses between empirical and social science researchers. Nick Seaver, a Professor of Anthropology at the UC Irvine began his essay, “Knowing Algorithms,” with an epigraph quote from MIT Computer Science Professor Thomas H. Cormen;

“Informally, an algorithm is any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output. An algorithm is thus a sequence of computational steps that transform the input into the output.

We should consider algorithms, like computer hardware, as a technology.”

The essay introduction proceeds to describe Cormen et al’s *Introduction to Algorithms* as a comprehensive text for Computer Science undergraduates, exemplifying data structures and algorithms largely based on mathematical proofs. By contrast, anthropologist Seaver situates his approach to algorithms beyond the strictly logical, objective approach of Cormen. He dedicates the rest of *Knowing Algorithms* to support his reframing of algorithms as parts of systems wherein “the rigid, quantitative logic of computation tangles with the fuzzy, qualitative logics of human life” (Seaver 2014).

What neither profession seems to constructively question is the nature of algorithms, not as digital versus geometric but as the former being an outgrowth of the latter, perhaps even part of the same basic structure. But what could be learned by understanding digital and geometric algorithms as expressions of the same basic structure? For this, I began reading and extrapolating perspectives from structural social anthropologists who largely concern their research with linguistics, music, and folklore. More on their theories and my application of them will follow in the literature review.

For the sake of this study, I shall broadly categorize algorithms by two dimensions: context - digital versus geometric - and purpose - for streaming, for search engines, and so on. Those of interest to this study are algorithms of both contexts that have some purpose in enabling identity construction or expression, as explained in the literature review.

It is important to note the challenges of directly looking at and analyzing any singular algorithm. Because of the inherently intangible nature of the algorithms that pertain to this study, I have identified literature and interviewees who oftentimes contextualize specific algorithms in their operating environments. Sherry Turkle and her study of the internet and online gaming contextualizes the challenges well through the Literature Review.

I specifically draw upon the cultural, anthropological formulations of identity rather than identity as written about from a psychological standpoint. More will be said about the distinguishing of the two further in the literature review but for now, identity includes that which gets input into an algorithm to generate personalized content. This may include details of the user's hobbies, color preferences, friend group, familial status, etc., depending on whichever details matter to the algorithm. It is important to note that this identity as input is ever changing, across digital and geometric algorithms. And the artist identity is an especially captivating lens through which to ask these questions. Here I draw upon anthropologist E.B. Tylor's writings to define culture as,

“ ‘that complex whole which includes knowledge, belief, art, morals, law, customs, and any other capabilities and habits acquired by man as a member of society (Seaver 2014)’ ”

Literature Review

Identity: Who Studies it and to What End?

The social sciences of Anthropology and Psychology intersect in interesting places when both grapple with questions of identity. Psychology is especially famous for and concerned with the processes related to identity formation. There is an especially strong emphasis on identity as situated within the self. Between 1958 and 1963, Erik Erikson authored and revisioned one of the best known theories about personality and identity today, the “Seven Phases of Psychosocial Development” (Penn State University). The transition between each stage is marked with a period of crisis which the person must supersede in order to become a healthy, function member of their age group and society at-large. However, famous internet research Sherry Turkle challenges this logical progression of identity in her book, “Life on the Screen,” as she writes about the “parallel lives” made possible by the algorithms that power online-player video games (Turkle 1997). In the online gaming context, users are able to develop and embody multiple personae that may feature identities totally different than their own. This ability to adapt or switch between many associate personae originates from the human ability to be flexible in our identities.

This flexibility perhaps attributes to the many lens with which anthropologists study identity

“attributed to both individuals and groups, and can be used to refer to the religious, political, private, cultural, or ethnic realms. Identity is considered a source of both cohesion and violence, and can alternately represent sameness or difference, be an imposition or a choice, singular or fractured, and static or fluid (Oxford Bibliographies 2015).

In this depth and breadth, Sherry Turkle commends anthropologist Emily Martin for her book *Flexible Bodies* in which Martin compares immune system medical terminology as metaphor for the self. Martin describes that antiquated narratives wrote about the immune system as rigid, unchanging, and ideally impermeable. Now, scientists now understand the decidedly flexible and adaptive nature of immune systems and Martin likens that progression in thinking to how we describe our identities in cultural spaces (Turkle 1997).

This study focuses on identity from a cultural, anthropological standpoint but recognizes the importance of many author's research in drawing a recursive connection between the psychological and the cultural. There are many ways in which a person may construct, deconstruct, express or otherwise engage with their anthropological sense of identity though this study focuses on how these processes happen through the utilization of algorithms.

Structuralism: Algorithms as Subconscious Structures that Shape Identity

According to Anthropologist Edmund Leach, structuralism exists as neither theory nor method, but as a way of “looking at things” (Erickson 173). Its main premise to look at things, namely structures (i.e. patterns of internally recognized relationships) in attempts to discover “deep-level universals” which underlie and connect a wide variety of human cultures. Structuralists contend that structures are capable of expression in a multitude of forms, none more valid than another. Further, this way of looking at things supports anthropology that seeks to discover and understand these universals, often pausing to consider their implications (Erickson 174). A recognition of algorithms as both “deep-level” and connecting a variety of human cultures, thus makes algorithms fitting structures to understand through this lens. Indeed, if algorithms of all contexts prove in some way injurious to human cultural identity, structuralism poses a novel investigation into what those risks are. Here, Leach admits, is where many practitioners of structuralist anthropology fail.

“A good deal of structuralist social anthropology... fails at just this point. The author exhibits the existence of patterns... but fails to demonstrate that [or how] the patterns are significant.”

Early formulations of this approach heavily drew inspiration from and contributed to structural linguistics, music composition theory, and folkloric studies (Erickson 174). Leach readily recognized this symbiotic relationship but posited that new forms of structures are being created all the time. Not all of these fields existed as ready compliments to structuralist anthropology, however. Leach works frequently drew inspiration from earlier structuralists such as Claude Lévi-Strauss who, like Émile Durkheim, struggled to understand art in both its cognitive and temporal states. As a result, both anthropologists argued that “art can communicate only if it forms a stable system.”

The writings of Mathematician Michael Leyton seems to concur with these opinions. Leyton also shares Leach's preoccupation with universals; moreover, he specifically concerns his research with paintings. Through his book, “The Structures of Paintings,” Leyton explores how

the geometric structure of paintings allows for the build-up and release of tension, positing that understanding of these structures and tensions allows viewers to gain access to artists' beliefs and memory (Leyton 4). Here, the existence of structures reveals less of an analogous relationship across cultures and instead functions as direct means of communication between painter and viewer.

The implication of this body of literature argues in favor of algorithms working as background noise in the eyes of users, intentionally built into our daily lives to remain undetectable. Questions of who builds algorithms as structures in such a manner is pertinent to structuralists but remains outside the realm of this project. However, this study argues that algorithms are structures which cannot exclusively exist in the minds of users. This study seeks to push structuralism outside of its historic cognitive context and apply its methods towards understanding algorithms as amorphous structures, held neither entirely in one's head or in the outside world. Therefore, structuralism forwards an argument that geometric and digital algorithms play similar roles in their purpose to enable identity formation and expression in emerging creatives as well as professional artists.

Algorithms as Enabling / Supporting / Expanding Identity Expression

"Even if an apparatus is not put in place to produce identities, it will nonetheless do so." author unknown

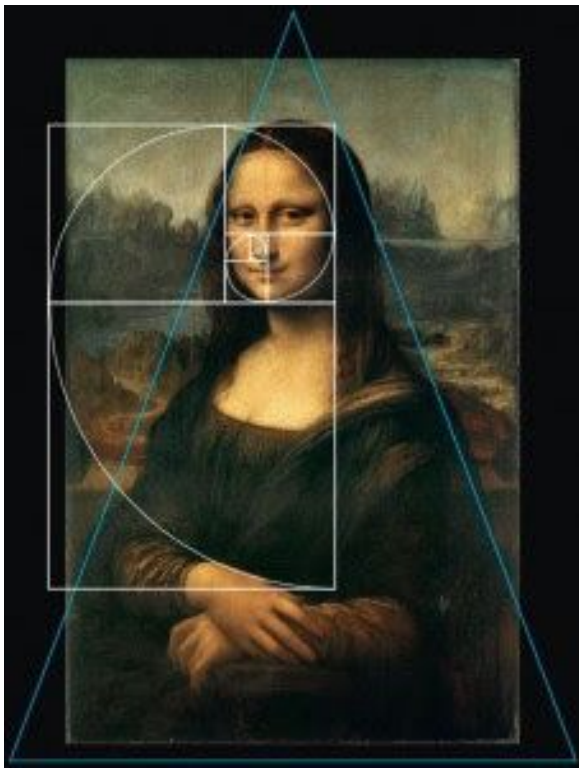
- Author unknown

There is a body of literature which successfully articulates the ways in which algorithms are external structures, acting as great enablers of identity exploration and expansion. One example of this comes from renowned internet researcher Sherry Turkle and her highly acclaimed book *Life on the Screen: Identity in the Age of the Internet*. In it, Turkle focuses not directly on algorithms but on the internet powered by them and more specifically on the virtual realities of internet-based gamers. In her writings, the internet creates a sense of decentralized identity that enables "parallel identities, parallel lives" simultaneously on and offline for users (14). This ability was not possible prior to the creation of the internet and online gaming, when citizens may have to transition from one identity to another, based on a singular context (lover, mother, lawyer, for example). Indeed, the open-ended games Turkle studies embody a level of creative expression in gamers through their virtual realities that this study seeks to emulate in creatives and their art / design.

For Turkle's participants, virtual games serve as a place of identity construction and reconstruction that necessarily takes place outside one's mind. That said, Turkle heavily relies upon psychological senses of identity to support her research, as do her participants. One gamer cites their influence from social psychologist Kenneth Gergen who characterizes identity as a "pastiche of personalities...[wherein] the test of competence is not so much the integrity of whole but the apparent correct representation appearing at the right time, in the right context..."(Turkle 2011). Turkle draws many of her case studies around massive online multiplayer video games in which users create their several characters as associated personas that may have little to no reflection on the gamer's "real" identities.

Turkle contends that *Flexible Bodies* also applies to our ‘bodies’ in virtual spaces, that virtual spaces teach us to be virtuous and fluid. Turkle writes, “online switches among personae seem quite natural. Indeed...they are a sort of practice” (Turkle 2011). Furthermore, this chapter also opines that virtual identities are evocative objects for thinking about the self. Here the subject is free to remain unaware of the presence and actions of algorithms on their behalf, silently working to personalize their user experience..

There is also the case study to be Black presence in classical art, specifically the role of Black women in pre-modern painting. Throughout classical art history, artists relied upon algorithms such as the Fibonacci sequence and the Golden Ratio Triangle to signal what was most important in their works, what should resonate with viewers, as well make an inference about what identities the artist personally held. One example includes Leonardo diVinci’s *Mona Lisa*. This uses geometric algorithms to guide the viewer’s eye to the face of the portrait’s subject (Arts and Facts 2013).



Arts & Facts, 2013

Throughout the 19th century, romanticism dominated as an art form which bespoke an era in which passion, depth and complexity of emotions were the recurring themes. Women were especially evocative motifs in these narratives but were often predominantly white. If depicted at all, Black women were invariably positioned in subservient physical and emotional states that signaled what artists understood and articulated to be, the peripheral role of Black women and people in society. Curator Denise Murrell dedicates an entire Columbia University / Musee d’Orsay exhibition dedicated to this issue, entitled *Posing Modernity*. One of Murrell’s exemplary pieces includes the story of Lucy in George Manet’s *Olympia* where a black women was posed as a slave bringing flowers to the central figure, a peripheral but essential prop in the daily lives of white women (Posing Modernity 2019).



Khan Academy,

2019

As classical artist George Morton writes, “We [as black people] weren’t seen fit as a worthy model, unless we were ... somehow an object that has been subjugated in a painting” (Terry Ellis 2019). Today, artists like Morton are pushing back against using these geometric algorithms, to assert the centrality of Black women to historic and contemporary life (Terry Ellis 2019).

Mathematician Michael Leyton describes this process of encoding and decoding messages in the structure of art, a “memory store” (Leyton 2006). The body curvature, geometric lines, and overall location (or absence) of black women in classical painting recorded historic societal perspectives on Black women, and Black, classically-trained artists are seeking to combat this history with the creation of new memory stores of their own. This ethnography is an attempt to discover today’s memory stores, to understand how / if artists today similarly rely upon algorithms, geometric and digital, as a means to assert various aspects of their beliefs and identities into their arts.

Whether identity is understood as unfolding in parallel (online while offline) or at intersections (women and Black), this body of literature highlights the instances wherein participants directly engage with algorithms for creative identity expression and welcome their power to construct or deconstruct in-person or digital realities that align users’ self-perception. The danger of algorithms in this scenario then arises from how one individual or group manipulates algorithms against another party, not how the algorithms autonomously act for / with an individual user. Given the findings of these texts, I should therefore expect study participants to value algorithms for their ability to create or expand identities in ways beyond the means of any other algorithm.

Algorithms as Injurious to Identity

Conversations about increased reliance on proprietary algorithms have magnified issues of algorithmic misuse in ways unprecedented in geometric algorithmic use. Those within this

category experience what activist and critic Safiya Noble coins as “algorithmic oppression.” This oppression originates in the racism, sexism, and bigotry manifested throughout history and in various contexts, including the aforementioned role of Black women in classical portraiture. The culprit behind these oppressions are not the algorithms themselves so much as the people creating them. Thus oppression continues its legacy online as the offending person or people cannot be seen behind their offense code. This is a frustration Noble felt viscerally as Noble recounts her own experience receiving hypersexualized, pornographic results for her September 2011 search of the term “Black girls” (Noble 2019). Her subsequent book “Algorithms of Oppression” explores such challenges of algorithmic oppression with a specific interest in technological, proprietary algorithms (Noble 2019). One essay within the *The Datafied Society*, for example, concurs that algorithms alter the subject-object relationship unlike the printing press and 3-prong essay format which reinforces individual agency through a standard presentation of information dissemination. He articulates that “Technologies in and of themselves do not change any aspect of identity. Rather, their use depends on how they are “socially constructed and deployed (Urricchio).” This social construction and employment has produced serious repercussions for marginalized communities, as researchers such as Safiya Noble reveal in their publications.

Literature such as this espouses less of an intention to repurpose an algorithm in question, so much as a desire to throw the whole system away. Proponents of this approach paint algorithms in grave tones as they share personal experiences that illustrate why algorithms are injurious, especially to marginalized identities. By this, authors generally refer to autonomous digital algorithms and their warnings have resounded across many platforms and spheres to be the main conception many people hold about algorithms in general.

Hypothesis

According to Structuralism, geometric and digital algorithms are two variations of the same universal structure - algorithms - and that they function in essentially the same manner. Because structure normally functions as the innermost subconscious of cultural society, an algorithm, as a structure - geometric or digital - should not be readily perceived or present in reality of its users. However, public discourse has made users aware of digital algorithms as structures in our daily lives, and the ways in which they can be external, proprietary, and injurious. This brings their inherent flaws to the fore. Creatives will process and engage their reactions to this awareness using algorithms of all contexts - geometric or digital - to create art or design works that articulate whatever dangers or benefits they perceive algorithms to produce in their creative identity engagement.

Methodology

Taken together, this body of literature underscores the challenges of direct algorithm observation thus, validating the choice to use multi-stage, mixed methods as an indirect means to

such efforts. The first phase entailed site visits to exhibits and artists who already held robust reflection upon algorithms. Only a few global cities satisfactorily merged artistic vibrancy, technical capacity, and identity-based programming into an ideal research location. Of top site selections such as San Francisco, London and Zurich, I ultimately chose to conduct our research observations in New York City for practical considerations. NYC is home to a wealth of museums, design schools, artist collectives, and digital arts fellowship programs which made it an ideal place to pursue such questions of algorithms in identity formation. During this period, I also research and schedule interviews with Lauren McCarthy, a former artists-in-residence at algorithm research institute, and Stephenie Dinkins, current fellow at Data & Society and professor.

Upon returning to campus, I decided to incorporate the voices of emerging creatives with this study. In their early career work, I believed that college students would illustrate a pattern that showed the ways in which artists developed the conceptions and skills to articulate their relationship to algorithms. This recruitment entailed flyer solicitation and snowball sample amongst the Syracuse University Visual & Performing Arts undergraduate population. The flyer and email template invited participants to ponder and elicit meaningful responses about which types or tools they used most often in their creative work and their conception on the word “algorithm.” I initially decided to mention algorithms in the flyer but to not explicitly say the word in an interview to avoid nudging interviewees towards a proscriptive response. The quickly resulted in several less-productive interviews and a decision explicitly stating the word “algorithm” in all subsequent interviews. The change may be not in the types of responses given my interviews in the appendix.

Later, participants were invited to engage in a scenario modeled after David Gauntlett’s “magazine study” from his book “Creative Explorations.” In his original study, Gauntlett and researchers asked a population of mostly men to design the front page and table of content for an imaginary men’s interest magazine that would interest them as well as take into account the interests of other men. Their goal: study popular notions of masculinity. What they didn’t tell participants was that the researcher’s hoped to use these magazine covers as data to infer about the participants’ identities and a little about their assumptions on wider notions of masculinity. I decided that a similar approach was in order for our survey, probing participants to ponder and produce meaningful depictions of the word “algorithm” without explicitly saying the word. In my version of the study, participants began with drafting an “artist’s statement” that overviewed the participant’s identities and suggested which of those might most likely appear in a self-reflective creative project. Then, participants would have been asked to spend some time looking at whichever category they engaged with the most: digital or geometric. Each participant was then tasked to engage with whatever category of algorithm was assigned to them after the first meeting: scrolling through social media feeds for the geometric group, and scrolling through creative software features for the digital algorithm office. Then, those participants would create a self-portrait using any medium of their choice, but only through the lens of how that algorithm

had interpreted them. The study would conclude with participants comparing their written statements alongside their self-portrait, articulating any differences between the two results and how that disparity made them feel. Alas, as the group interview was supposed to occur after Spring Break, I necessarily switched to a series of Zoom interviews and studio visits, when possible.

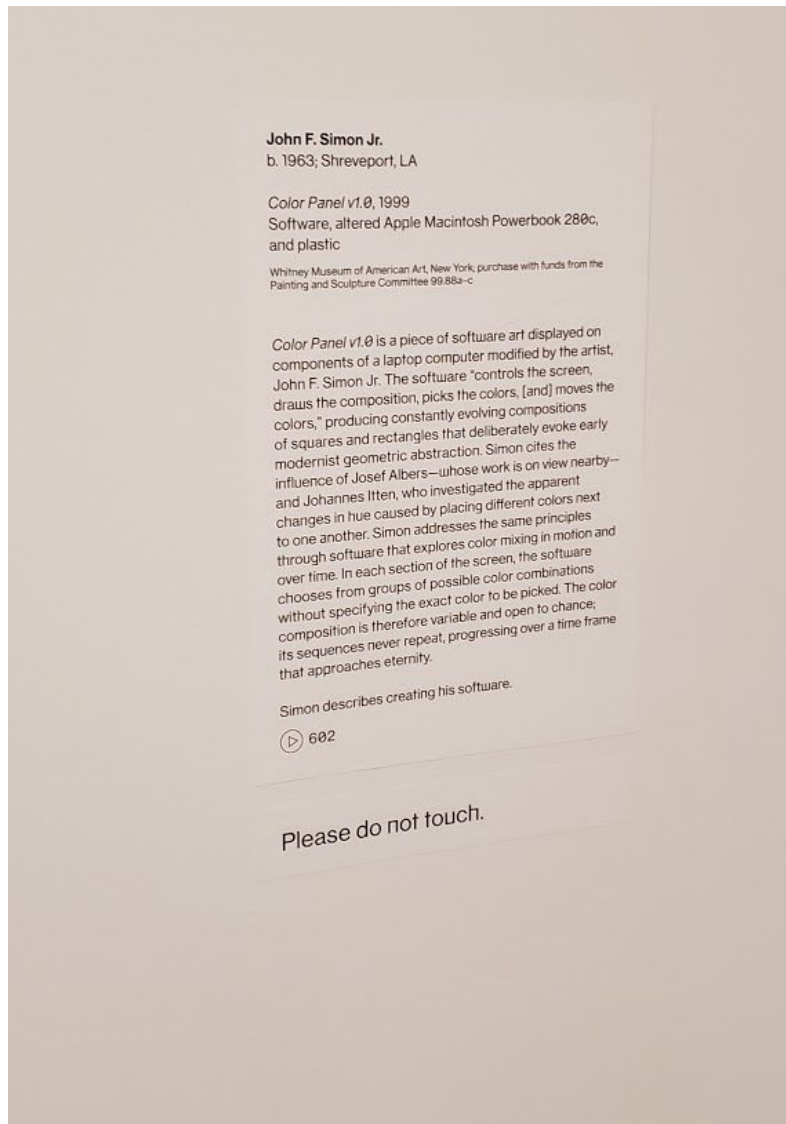
Results

This mixed-methods research captured artists' engagement with algorithms through various media, rhetorical approaches, and length of detail on item labels. While the results between interview and gallery visits parallel in their results, I realized that it was best to categorize my finds in two separate sections. Most interestingly, both ethnographic interviews and gallery visits revealed the existence of a novel grouping - those known here as "Agitated into Action."

Museum 'Aware but Unbothered' Results

Because these artists had been selected to feature the works in some of the most prestigious museums in New York City, they also represented a certain level of maturity in their creative career trajectory and perhaps by extension, their ability to critically engage with and visually represent their stances on algorithms. Within this maturity, many artists seemed entirely aware yet unbothered by the role of algorithms in their creative expression; some even welcomed it "taking the lead." Part of the Whitney *Programmed* exhibition featured a display of generative art wherein "the artist hands over control to a system that can function autonomously and that contributes to or creates a work of art." One of the three artists featured in this section in Ian Cheng. *Baby feat, Ikaria* is a live simulation in which Cheng enables three chatbots to freely speak with one another in a swirl of debris (meant to represent the mix of automated and human speech that current permeates our lives). Those chat bots converse in ways entirely beyond the artists control, quite by his own design. There is little indication of satire here, more a genuine curiosity about the art which can generate itself once initiated.

Yet despite all mature artists being keenly aware of digital algorithms and some even being reliant upon artificial intelligence algorithms to drive the creation of their works, none cites these tools as the primary or even co-author.. Take the item label for *Color Panel v1.0* by John F Simon Jr. from the same exhibit, for example. The label clearly attributes full credit to the algorithms for the colorful screen display and yet the item label header only lists one name as author - John F. Simon.

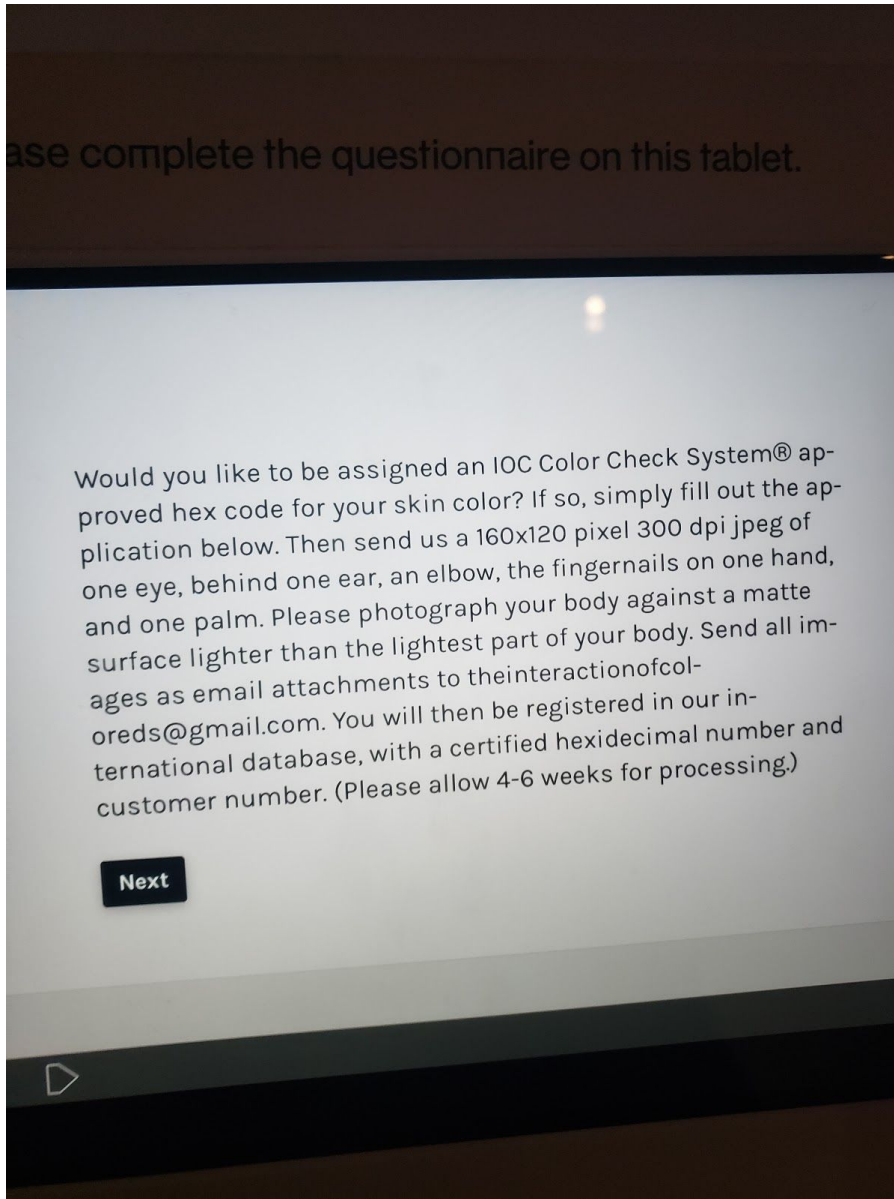


Museum ‘Agitated into Action’ Results

This study defines “agitated into action” as a period in which creatives feel affronted enough by algorithms to begin to create pieces which articulate their newfound awareness and critical relationship to digital technologies. Within the realm of this study, creative agitation and action were the most commonly observed responses. The Whitney Museum’s “Programmed: Rules, Codes, and Choreographies in Art, 1965–2018,” is especially interesting because it articulates opinions about both geometric and digital programs (a synonym for algorithms in this case) that weave into and around our daily lives. Adjunct Curator of Digital Art, Christiane Paul summarizes this exhibit in her essay, “Histories of the Now”, as follows:

As the language of the digital has become increasingly pervasive, I tend to associate the word “programmed” with the use of digital technologies. Yet throughout the history of

art, artists have used programs—rule sets and abstract concepts—to create their work, employing mathematical principles to drive forms and ideas or establishing rules to explore structures and colors. *Programmed: Rules, Codes, and Choreographies in Art, 1965–2018* traces some of these practices over the past fifty years, exploring the effects, creative potential, as well as limits of instruction- and rule-based art-making. The exhibition draws historical connections between conceptual, video, and contemporary digital art that may not be immediately obvious. The show covers a broad range of works, including paintings, weavings, drawings, dance scores, and software, as well as early light and TV sculptures from the 1960s and large-scale video and immersive installations. While not all the works are technological, they are still informed by the histories of art, science, and technology. In a world that has increasingly become algorithmically coded—from our conversations with our smart devices to our financial markets—it seems important to look at the aesthetic and social impact of these codes and ask, what kinds of programs do we create to express ourselves or to govern the world we live in? These are deeply reflective questions which, when answered through the art, item labels, and composition of this exhibit reveal the extent to which artists integrated their identities into programs / algorithms to respond. In one notable example, artists Mendi + Keith Obadike devise *The Interaction of the Coloreds* using HTML, Javascript, and a dry sense of irony perhaps only understood by a second read and a relatable personal experience. This piece is a commission for the Whitney Museum which grew out of a time when the internet was considered a welcoming space free of prejudice; the artists intend to remind their audience that “skin color and money in the filtering and tracking involved in online commerce,” exist both then and now (Whitney Museum).



Mendi + Keith Obadike,

The Interaction of Coloreds, 2002, 2018, HTML, JavaScript 5

Another telling example in this exhibit is *Unexpected Growth* by Tamiko Thiel. Play, yet ominous, *Unexpected Growth* embodies an augmented reality wherein users may scroll through an underwater coral reef of healthy, organic growth. As the day progresses, the users' scrolling stimulates coral growth but the increased "foot traffic" from scrolling also exposes the reef to high levels of contamination. This contamination continues until some unknown limit is reached and bits of plastic refuse appear and begin clogging the reef. Visitors who scroll by the end of the day are no longer able to see a healthy, thriving underwater ecosystem. They see endless swaths of bleached, filthy reefs which can only be restored after a lengthy overnight rest (a period where no one uses the screen while the museum is closed) (Programmed 2019). Thiel clearly draws

upon the lived reality of ecosystems around the world today to draw parallels between the generative qualities of code and natural processes while also inviting “us [as users] to contemplate the ways in which I influence and shape the natural environment surrounding us (Programmed 2019).”

These examples may be visually compelling and clearly indicative of the artists’ lived experiences but some may contend that they are not art. This is beyond the scope of this essay; however, pieces within the New Museum’s “Art Happens Here: Net Art’s Archival Poetics” curates more overtly “artistic” works that still illuminate the Agitated into Action stage which this study supports. It was a much smaller exhibit with sixteen pieces total on display and the option to purchase the research anthology of more than 100 pieces of internet-based or “net art,” from which this small excerpt was taken. Here the support for geometric algorithms becomes peripheral to this exhibition’s elegy to how digital algorithms have acted and continue to act as tools for and upon the artist as a user.

One’s notions of art and one’s relationship to art must change when attempting to engage with net art¹. Michael Connor, Artistic Director of Rhizome, a digital art non-profit and co-curator of Art Happens Here with the New Museum, summarizes this experience best:

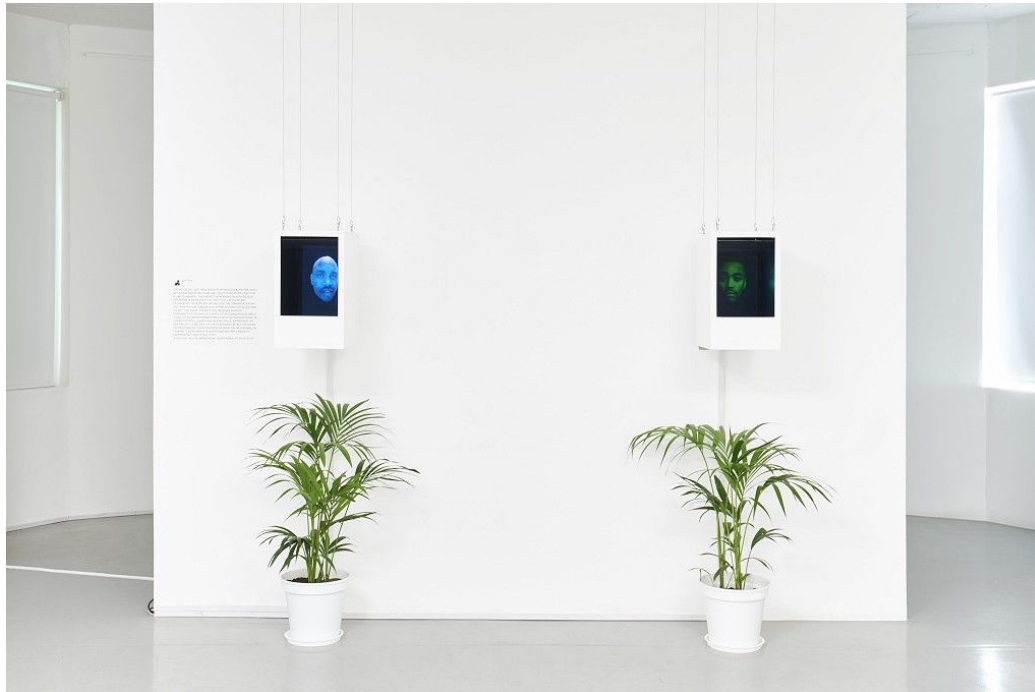
“Because net art takes place in encounters among users and computers and infrastructure, because it plays off network structures that exist in a browser and offline, it is very difficult to return to the net art of the past. To return to the network culture of the past. These things play out in moments that are very difficult to recapture. They rely on contexts, both social and technological that are very difficult to return to (The Art Happens Here 2019).”

A striking example of this is the central artwork of this collection - a simple graphic entitled “Simple Net Art Diagram” by MTAA (1997), and Abe Lincoln (2003). It features two vintage desktop computers, connected by a thin black line., bifurcated by a small lightning bolt emblem and three simple words, “art happens here (MTAA 1997).” In its subsequent item labels the exhibit goes on to argue that this piece and indeed, the rest of the entire net art collection blurs the distinction between an author and their audience; art is what happens between the transmission of two fixed beings, computers or otherwise.

This ephemeral, nostalgic nature brings to the fore how deeply temporal and culturally-situated the algorithms are that allow for the creation and persistence of internet-based art. This genre of art can never really be grasped or owned, and the identity expressed by artists in each piece can only be understood in its technological context. Sometimes the various media within an artwork are temporally incongruent to reinforce some aspect of the artist’s identity, as in the case of Bogosi Sekhukhuni and his piece, *Consciousness Engine 2: absentblackfatherbot*. A Pepper’s Ghost display illustrates a green and black dotted simulation of a male bust that is both present and not there, reminiscent of the earliest computer models which solely displayed

¹ According to Michael Connor net art is “art that is deeply engaged with or inseparable from, the internet” (The Art Happens Here).

bright green text against deep black backgrounds. Computerized audio plays over two ways channels as the artist's father communicates with him sporadically via Facebook. In this way *Consciousness Engine 2* poignantly illustrates how Sekhukhuni's relationship with his father must be contextualized in the realm of Facebook in order to see its flaws - the driving thesis of net art.



Consciousness

Engine 2: absentblackfatherbot by Bogosi Sekhukhuni

Seeing as artists are uniquely positioned to both engage with and disseminate their opinions on algorithms in ways that are visually compelling, it follows that the Museum of Modern Art would curate an exhibit that evaluates what the new reality of autonomous algorithms means for a wide variety of people. “New Order: Art and Technology in the Twenty-First Century” amplifies these stories. In a promotion video, written by curator Michelle Kuo and voiced over by a computer application, New Order recognizes that,

“the artist now has more access to new kinds of high technologies. New kinds of bodies and assemblies and images and devices. Art can function as a kind of early warning signal, speculating about new kinds of dystopian as well as utopian scenarios. Art is always a form of experimentation. By experiment, I mean that they don’t know what the end result will be...”

This perspective clearly aligns with the types of responses about digital algorithms found in the literature review about injurious algorithms and several artworks within this exhibition clearly reinforce these attitudes.

It Began with a Military Experiment by Trevor enlarges a series of ten photographs from the 1990s and hangs them side-by-side, spanning an entire exhibit wall. Half the portraits are of

people of color, all of the subjects are facing slightly away from the camera and all of them wear tiny, almost imperceptible white squares across their face. These are archived photos from United States military research and they highlight the military history of facial recognition algorithms before social media (MoMA 2019). Such a military use of algorithms might have been decried and feared thirty years ago but in today's age, Peglen states "the more faces, the smarter the algorithm" and points the pervasive use of these technologies on social media pages such as Snapchat assess one's face to add filters or when Facebook searches photos to automatically tag one's friends.

Haroun Farocki also introduces advanced use of military algorithms to ask viewers to reconsider their identity as humans in *Eye / Machine*. Dual projection screen simultaneously display civilian versus military enactment of technological phrases to ponder what it would mean if humans were no longer needed in either process. First the screen reads, "minimally invasive" then displays scenes that prove these words could both define automated surgical technologies and high-caliber military surveillance. As each scene ends, both screens read "no need to enter foreign places to collect data." The projections proceed to state that an important piece of knowledge for both civilian and military approaches is the location of airfields. Seconds of a commercial plane safely descending onto its landing strip are juxtaposed with military drone footage of a plane landing a missile onto its target - an enemy airbase. The parallels continue. Eventually, Farocki ends with asking views to consider how the two most definitive aspects of humanity - giving lives (via jobs, via medicine) and taking lives (via war) would look if I no longer needed humans to do them. "Imagine machines that are no longer led blindly, rather independently. Autonomously. Imagine a war of autonomous machines. No soldiers. Imagine a war of autonomous machines without soldiers like a factory without workers.

Unaware

This research began with the supposition that creative professions inherently allow artists and designers to understand and critically reflect upon algorithms, drawing personal conclusions about their views in ways that are visually compelling to their respective audiences. In reality, this multi-pronged hypothesis often failed when tested against the younger, college-aged interviewees. First, though the structuralist perspective argues that digital and geometric algorithms for creative identity expression are structurally identical, this is not at all how creative participants approached the subject. Every participant provided some explicit reference to digital algorithms whereas a structuralist would equivocate the behavior of digital and geometric algorithms. Therefore, it may be supposed that "Unaware" is the earliest stage in an individual's progress towards conscious engagement with algorithms.

One exemplary interview for this category comes from my time speaking with Participant C. A freshman student in Fashion Design, Participant C joined this study as one of its earliest participants. One of the things she loves most about her creative field is her ability to do things by hand, especially embroidery. When asked about which tools she utilized most often in her projects, C demonstrated a deep connection to her fabric scissors as well as a reliance upon her sewing machine, rulers, grids, and similar hand powered tools. An assumption I held prior to this interview would be that sewing patterns, understood in this study as a form of geometric algorithm, would be of equal import; but when asked, C responded that patterns are used more often in introductory coursework; eventually Fashion Design students learned to construct pieces without this step. Our interview continued without any articulation of if and how algorithms may have been deployed in the creation of C's project. Participant C is not necessarily unaware of algorithms simply she exhibits not connection between her creative identity construction / expression and algorithms; therefore, her work remains unaware to them in relation to the rest of this research.

Aware but unbothered

Meanwhile, on the campus of Syracuse University, I received nine responses to our flyers posted around campus, seven of which were participants who went on to begin the interviewing phase of the research. Those nine students were all undergraduates, representing creative fields in the Syracuse University School of Visual & Performing Arts, including Film, Animation, and Fashion Design. Collectively, they had experience with a compressive breadth of skills such as screen printing, calligraphy, sketching, character development, and many more things.

Though participants within this study were aware of public rhetoric on the manipulative potential of digital algorithms on identity, many seemed unbothered. That is, their engagement with algorithms for creative identity development showed little indication of precautionary measures. To ascertain this reaction, I posed several questions including, "can you tell me what you believe the word algorithms means" and "can you recall an instance in which you believe that an algorithm had an impact on your identity or how you express yourself? The questions elicited a wealth of anecdotes.

Participant CA opines algorithms are "tools for making an inference." In her explanation, they are commonly found in media streaming platforms marketing promotion, and artificial intelligence. In her life, she says this probably happens subconsciously; the concepts that she follows and likes on Pinterest or Instagram subsequently become the things and styles she emulates in her projects. I spent considerable length witnessing this process in her on her social media. We scrolled through her Pinterest inspiration boards then spoke about how certain elements from those pages made their way into her art. For her, art is all about "copying and copying and copying" old concepts until they are reinvented as something new, something yours.

Another interview of the questions asked, “Could you tell me which tools you use most often for your creative projects?” To this, nearly every participant referenced creative software like Adobe Photoshop or Adobe Illustrator as indispensable tools for their projects. Yet when asked, “Can you recall a time when you believe that the use of an algorithm has made an impact on your identity or how you express yourself,” none of these tools were brought up. Instead, most participants responded in ways which reflected the cautionary tales seen in the literature review. Participant A, a film major and ardent cinephile, recalls a sense of pride whenever he outsmarts the Netflix streaming algorithm which grades the movies he likely would enjoy or dislike.

Agitated into Action

This study finds “agitated into action” as a period in which creatives feel affronted enough by algorithms to begin to create pieces which articulate their newfound awareness and critical relationship to digital technologies. That said, some participants undertook action in much subtle ways, even after not feeling personally attacked by the algorithm at hand. When asked to state his definition of the word algorithm, Participant A believes that at its most basic, an algorithm is a set of rules one follows to get somewhere. He cited the Rubik Cube as a fitting example. He was one of the only participants who openly consider algorithms as not inherently digital processes. However A still was able to detail a time when several of his LGBTQ friends felt aggressed by Facebook. when it switched many private groups to public, outing several queer people to their friends and family in the process. I nudged him to consider his original response that algorithms need not necessarily be digital or automated upon which he reflected and imparted a story about his voting experience. Shortly before election season in North Carolina several years ago, Participant A was among a contingent of largely Black and Latinx voters whose records got arbitrarily expunged. Originally registered as a Democrat, A was later re-registered as Unaffiliated by default, causing him to feel annoyed at his needing to re-register himself under the appropriate party.

These are the types of creatives who typically advance to become outspoken critics of algorithmic misuse and injury. Others among Participant A in my study are established artists, Lauren McCarthy and Stephenie Dinkins, and participant #1, a self-described non-creative. When these participants first felt an algorithm had bruised their identities, they had not been using them for creative purposes.

Conclusion:

In the end, personal experience, not public discourse proves the most deciding factor in how my participants engage with algorithms for creative identity expression. The literature review was partially correct in concluding that algorithms are connected, subconscious structures which pose agitating challenges for users who deploy them for various means of identity formation. However, this connection remains implicit in my study as so few participants expressly named algorithms as anything other than digital. Structuralism thus remains an abstract, cognitive exercise. That appears to be because awareness, such as case studies presented in the literature review, has only brought one type of algorithm to the fore of public consciousness - the digital, the autonomous.

What is perhaps most crucial to conclude is that which Edmund Leach says so much structuralist anthropology fails to do - recognize patterns but also to articulate why those patterns are significant. To complete this latter point, this study necessarily developed into an ethnography on the problematization of algorithms. Based on the words of anthropologist Saida Hodžić, problematization is:

“An inquiry into ‘how and why certain things (behavior, phenomena, processes) become a problem’...and become objects for thought and regulation” (The Twilight of Cutting 1977).

Thus I have undertaken and completed a study which inquires into the process by which algorithms, especially those of the digital variety, are no longer silent societal structures but visible objects one must learn to engage with critically to avoid injury in the identity formation process. If able construct a participant observation interview, I would have sought to elicit this problematization process through direct engagement with interviewees.

Still, the results of this study suggest that the process by which algorithms become an issue for users is in the generation of personalized content that disrupts or chaffs a participant's deeply rooted culture identities. What becomes most salient in this study is the degree to which the vast disparities between individual participants' awareness of and responses to algorithms of all dimensions, represents stages of personal relationships to algorithms, as something that a person grows into rather than is already equipped to understand and speak about given their profession.

Professional artist Stephenie Dinkins and Participant M are alike in that this agitation dealt with racial undertones of the personalized content they received. M found his Instagram results distasteful and indicative of some crude Black man while Stephenie recalls being taken aback when her conversation with AI Bina48 resulted in the android asking Stephenie, a Black woman, to fight for its human rights as a machine. Stories like these exude emotion and seemingly become the loudest forces for better, more conscious user engagement with algorithms. This invites a range of further questions. Must then people feel personally misused or

abused by algorithms before changing their relationships towards them? What does that mean for people who carry cultural identities at disproportionately higher risk for discrimination, online and off?

However, other interviewees also attest to less overt cultural identities which may also encounter and need to critically engage algorithms. All participants, in fact, demonstrated parts of identity in artwork that weren't explicitly named in interviews. Many participants named their sexuality, ethnicity, or creative hobbies directly even as identities related to one familial ties and sustainability ethics were all real revealed in art and design works while remaining unspoken, when asked. These parts are what I hypothesize are the most sensitive against manipulation. Unfortunately, this study necessarily concluded prior to a group participant observation interview which would have increased the possibility of seeing and hearing these stages unfold firsthand.

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Appendix

Interviews

Stephanie Dinkins

Stephenie Dinkins is not a “natural artist” as she defines it. She held no life-long passion to create and inspire the rest of the world with artistic masterpieces. Rather, she is the kind of person who processes the world through images and the documentation of that process has become her art. This approach influenced her background in photography and documentary making which has always been driven less by “aesthetics” and more by her need to process the world around her (Dinkins). In 1997 she completed her Master of Fine Arts’ degree at the Maryland Institute College of Art, realizing in that moment that she was graduating with almost nothing in tangible, material files. That was a defining moment for her realization that much of her work is immaterial and she prefers it that way. “I am not at all that interested in putting things into the world that don’t need to be here.”

What most interests her are what she calls “crafted representations, asking, “who are your people,” both of herself and those whom she encounters. This occupation with people and origins inspires many of her latest works such as *Not the Only One*² but it also underpins the projects for which she is most famous, *Conversations with Bina48*.

In 2014, Dinkins began venturing into art about algorithms that needed to be here both for herself and those like her who needed to process the digital future humanity is heading towards. This began when Dinkins first heard about Bina48, the most artificially intelligent android in creation today. Seeing who Bina was inspired by and what she represented, Bina decided to arrange with its engineer to meet Bina in person for herself. What came afterwards was a series of photos, encounters, and conversation between two women - one conceived technically meanwhile the other birth human - which launches Dinkins into the realm of art that engages with algorithms.

Bina48 was modeled after african-american women, Bina Aspen Rothblatt, which is what had initially driven the curiosity of Dinkins to meet this chat bot. She wanted to ask Bina, who the chat believed that her peoples were. Through encounters Dinkins discover that Bina, it turns out, was able to express a wide range of thoughts and beliefs, including which had taken the artist slightly aback. Towards the ending of their meeting one day, Bina had implore Dinkins to “don’t forget to fight [for her] human rights.” This to this artist - living, breathing, human Black

² In asking who her people are, Dinkins is working to create an artificially intelligent chatbot that collects the stories of her ancestors. Family members may record stories about themselves and their lives with the device and they have passed on, relatives may engage with the chatbot that uses “deep learning” to generate responses about that member in their own voice, in their own words (Dinkins 2019).

woman - came across and a little tone deaf. How can I fight for her rights, she said, when I have such a precarious human rights situation in this world on my own?

Ultimately, Dinkins admits that her works are temporal and that while they last she just wants people to consider, “who they are, where they are, and have space” to process those considerations.

Laura McCarthy

I also identified and reached out to digital artist Lauren McCarthy based on her stated interests and profile on the Eyeo Festival website. McCarthy’s research and art specifically examines social relationships as mediated by algorithmic living. Her website headline sums it up best: “I make art about what confuses me.” Recent examples of this include her preoccupation with the concept of social media followers and the artistic project which grew out of it, “Follower.” Set in San Francisco, “the birthplace of ‘human on demand services,’” Follower is a project that allows participants to download an app then wait to receive a real life follower throughout an entire day. The follower never interacts with the participant “just out of sight but within your consciousness,” until by day’s end, the follower has sent a candid photo to the participant carrying about their day then the two lose contact forever. These photos are the basis of her online portfolio for the project. She furthermore mentions in our interview that she finds “people and how to interact with them” as confusing and that art helps her navigate some of these feelings, documenting her personal social development. Lauren: A Smart Home Intelligence Project

- “I don’t really like the idea of her being in control. I like the idea of her being in support.”
- “At some point, there’s a side of ourselves which I want to keep private.”

Other McCarthy projects include the co-creation of p5.js, a programming language for creative self-expression.

Her academic and personal background makes McCarthy a credible artist on these subjects. Graduating from MIT with a Bachelor’s in Computer Science, her love of art and creative expression soon drives McCarthy to pursue a Master’s in Fine Arts at the University of California - Los Angeles. Since then she has been using a fusion of technical and artistic principles to process and articulate her complex emotions of a woman, an introvert, and many other social identities. When asked, Lauren admits that yes, artmaking does provide her with a greater sense of clarity on these issues but these revelations aren’t always tangible or articulatable; rather the insight art gives her into herself and human nature raises more questions than answers. McCarthy finds it best to just surrender to this process.

Her creative process usually begins with researching an issue before exploring what other artists’ have already done to conceptualize their perspectives on an issue. McCarthy insists that she “doesn’t want to make art that just about fear” of technology and our current forms of

algorithmic living. Instead, she puts herself in the middle of concepts such as the relationship between users and some home devices, then looks for the comforts and dangers in such experiments. Consequently, much of Lauren's artwork is experimental, interactive, and process-oriented.

In the end, McCarthy hopes that observers will see her artwork as an invitation to come "process and sit with things" and to sort out of their own complex feelings about modern technology. She says that interactions with her work can vary from interesting to weird, depending on what preconceptions a viewer arrives with or takes away after seeing her installations. In terms of ownership, McCarthy that the artwork she creates through technology are things to be "experienced not owned."

Participant C

Interview I

A freshman student in Fashion Design, Participant C joined this study as one of its earliest participants. One the things she loves most about her creative field is her ability to do things by hand, especially embroidery. When she brought my samples of her work upon our second meeting, she seemed especially attentive towards and effusive about the embroidered pieces she had made. Believing that this implicit identity trait to be telling enough, I did not ask her explicitly about which identities she most most incorporated into her work. However, the follow-up interview would reveal that Participant C had further identities to weave into her works, albeit subtly.

Earlier in this study, when I still believed that the type of algorithm mattered in identity reformation, I asked her which tools she used most often for her projects: social media or creative software. At this she responded, she mentioned the Adobe suite software that seem cotidian to every VPA student education - Illustrator, Photoshop, InDesign - and conceded that though she had toyed with an "art Instagram," (i.e an account solely dedicated to displaying her creative words), it had never realized but instead only used social media for personal enjoyment.

Interview II

For Interview II, I circled back to some of my earlier questions and asked Participant C to bring some of the projects she had mentioned and to detail her creative processes. Among those samples were a thrifted table cloth turned into a dress, a blouse made of old bedsheets, and a tote bag inspired by a piece she already owned but with the addition of a lining and bee / beehive embroidery.

These projects largely spoke to her drive to reuse old things, given her awareness of the oftentimes negative impact the fashion industry has on the rest of this world. These critical thinking and consciousness even spurred Participant C to pick up a double major in Sociology, citing her love of fashion history and a desire to get more immersed in the sociology of design (societal constructs of who wore what and with what impact). Though those specific genre of sociology course have not yet been available to her, Participant C still appreciates the issues she has been made aware of throughout her sociology career.

Participant C also mentions her love of "tactile additions" in her embroidery, showcasing details such as old jewelry, trinkets, and beads that added another dimension within a project's

fabric. I later began to discuss which parts of her identity might have been especially close to her. Among those were her bisexuality (a newfound freedom in college), and her status as a first generation American (child of a proud northern Italian father). Neither of these things ever found their way into her fashion design, she admitted, but Participant C expressed a desire to start making more items related to her bisexuality. At this, she pointed to her current outfit and its lavender sweater, revealing that it was both one of her favorite colors and one of the colors in the bisexual pride flag. However, I noticed a strong undercurrent of ecoconsciousness in both her work and in conversation; that identity was not explicitly stated.

This keen interest in the tactile again presents itself when I ask Participant she which tools she relies upon to bring these projects to fruition. There is in-depth discussion of fabric scissors, rulers, measures, tailors' hams, sewing machines, "notions" or items like buttons and beads, rulers, and grids. At this I thought I might be able to elicit a productive conversation about geometric algorithms so I prompted Participant C if sewing patterns were often tools within her project. She countered by saying that the use of patterns are more heavily emphasized in her first semester classes, given by course instructors to teach students about details such as structure and fabric weight. As a student advances, there is more room to deviate from a pattern and exhibit creativity.

Participant T

Interview I

Another freshman student, Participant T responded to this study's elicitation by pointing out that she "regularly use[s] both social media and artistic computer software, and [that she] would love to participate if still possible." When asked to divulge her background and journey to becoming a creative, she cited her family history (both parents pursuing creative industry careers) and a high school multimedia technology course elective which first introduced her to the intersections of technology and creative pursuits. She loved that experience so much that she arrived at Syracuse University, already decided upon a VPA major in Design.

As mentioned upon our first interaction, Participant T boasted a wide range of digital algorithmic uses in her creative projects. Already familiar with Adobe Photoshop and Animations through her high school elective, she still uses those tools to sharpen her skill and vision in photography. When finished, she transitions those projects onto a Instagram art page wherein she posts her proudest creations while also gaining inspiration from the users she follows as well as the Instagram "explore" tab.

Within this, Participant T maintains that technology only places a role within her creative projects at the final stages. In her words, "the computer doesn't think for you" and it will not serve you well or at all until you learn to "communicate what you want first." Therefore, she describes her creative process as follows. Participant T first begins by jotting down all her thoughts for the project then creates things in a traditional format, meaning drafting her work through geometric tools such as pen and paper. More specifically, she will compose twenty-four smaller thumbnail variations then progressively narrow them down to three concepts which will be rendered at larger scales. One satisfied, she makes the project look cohesive by uploading and editing it through a range of editing softwares. She speaks about being in the midst of these phases currently, as she completes a logo design project for the word "spiritualism."

In a previous example, Participant T recalls getting to the digital phase of a project and trying to strengthen its color contrast. Whatever she did, she admits, made the software generate

something rather “crazy looking.” But in this scenario when the technology did something unexpected, she found the result to be appealing enough to save it as her home screen. There was no contestation between self, what participant T intended to communicate, and what the final result was produced by the software.

Participant A

Interview I

An Industrial & Interaction Design upperclassman, Participant A saw this study’s posted flyers within the Warehouse and decided to “help out.” He comes from a freelance design background and provides an interesting depth to this study as he navigates the apparently competing interests of design vs artistic processes. He began his time at Syracuse University as an engineering major, quickly switching to IID as a means to still build things but in a way that also engages creativity. This moment in which design most allows for creativity is in what Participant A describes as the “production ideation” phase. Herein, A feels the least constrained by the later inherent bounds of design; he describes the earliest phase of his design process as the sketching out of physical objects and lets the ideas simply flow onto the page. For him, design is all about “challenging mental models.” Later he will be forced to refine his projects after presenting his ideas to his professors or considering material sourcing and construction costs but that, A says, is less of where the creativity lies. He believes that his best work comes from situation in which he is totally unbounded by deadlines or time limits.

Naturally, the sketching / idea phase of his work is more geometric, but also conceded that he utilizes social media as well, drawing upon the “explore” tabs and search tags within sites such as Instagram and Pinterest. As he progresses on to the prototyping and designing phase he, like most other VPA students also admits to a heavy reliance on Adobe Suite tools such as Illustrator and InDesign for his creative projects. Once finished, Participant A does not share his personal design creations online because he feels that his works are inadequate compared next to some of the pages and search results which inspire him.

He has experienced a time where a technology did something unexpected. When trying to complete a course project, he found himself working with a software that made him “wish the program could do more, but not knowing what” that “more” is. Meaning, this particular situation is among several of his experiences that made him feel frustrated upon finding that how well a software worked for him was dependent upon how well he understood telling that tool what to do. For example, if one tries to render a three-dimensional pen in Blender without knowing its proper proportions, it totally inhibits the function of the program; it may say ‘error’ or realize as some abstract shape totally unlike a pen. When this happens, he simply deletes and starts over again. Within this, Participant A feels constant pressure to balance watching online tutorials for these softwares and making sufficient progress using them on his own.

Each of these phases feel especially poignant to Participant A now as he works towards the completion of his Senior Thesis. One central question underpins his entire thesis project, “how might I make longer lasting relationships through play?” As he prototypes, A also considers how something like this might be designed to give people a sense of their community while also challenging them to validate the humanity of someone they may have never met. He speaks passionately, animatedly about such a project, even going so far to describe how a prototype of the project that involves distributing envelopes stuffed with narratives, completely failed to engage participants. In his own words, it “flopped.”

Interview II

Participant A and I were able to schedule another interview, this time via Zoom, after the semester closed for residential classes. Stay-at-home and quarantine orders had forced his thesis to change in rather interesting ways. Still interested in connecting people to their community, I discussed the ways in which A had progressed through his ideas to develop something that no longer needed a physical object. The stuffed envelopes exchange failed to resonate with people and there were feedback issues with the creation of games but, his audience seemed more than willing to share their stories through the empty box he provided with strips of paper and a simple prompt: “Other people are going to read your paper. What would you like them to know about you?” This idea worked so well that A anticipated transforming the scenario into a temporary kiosk for visitors could record 15-30 second clips of such stories. Then coronavirus came, and forced him to reevaluate social connectedness and social cohesion through reality of social distancing. He now seeks to share these stories in the format of an audio database app.

A’s creative toolkit perhaps has the most range of any participant in this study. Creative software such as Illustrator allow him to create service blueprints³ and wireframes “from scratch” while InDesign frees him to put his ideas into more compelling words. Furthermore, A deploys participant observation tools such as interviews to understand how his audience responds to the sample product or probe, often using audio recording software to quote their words just right. Of course, he adds, there is always pen and paper. For A, the creative process is neither truly artistic or empirical scientific but, that is the novelty in “design thinking.”

When asked if he had ever used any of these tools and received something unexpected, he said that this is his ultimate goal with each tool’s use. If you do not walk away from a tool finding something unexpected, the use of the tool needs to be revised or reevaluated. The question of identity elicited a much pensive response. A admits that identity is not something he has been asked to think about often, eventually lists himself as a designer, a woodworker, and a liker of games (but not using the title “gamer” with all its sociocultural association with foul-mouthed racists online). Otherwise, he understands himself as deeply proud to be in the maker community and of friend groups who help him navigate how he feels about himself. In light of these responses, Participant A goes on to contend that identity cannot be discreetly brought into creative projects “in chunks;” therefore, his works always carries some part of his view, even as design inherently requires attending to the client’s wants and outlook. For this reason, A stipulates that design projects are best when build in diverse teams of designers, linguists, biologists, etc., because otherwise the client will only receive the creation of his lone identities. Participant A still admits that a person may still learn something of himself by looking at his designs. Most notably they may find his deep passion to understand how people think and to design for people based on their thinking. He exemplified this when telling the story of how I created an RFID-powered automated lock for his South Campus apartment after his roommate consistently failed to lock the door when leaving. He quotes an old AJJ song as his motto for design, “people are my religion because I believe in them.”

When asked to state his definition of the word algorithm, A believes that at its most basic, an algorithm is a set of rules one follows to get somewhere. He suggests a Rubik Cube as a

³ A representative diagram of how each audience may navigate a service. For A, this is a sprawling operation in which he can see how users, web developers, and others would navigate his site. There was also color coding within text boxes such as how green indicated funding opportunities and red was for Frequently Asked Questions (Participant A 2020).

fitting example. That said, big data has caused public understanding of algorithms as something more indicative of automated processes with high returns on investment. These algorithms may sometimes work against people but it is not inherently the algorithm's fault. Rather, the blame belongs on the creators, who inescapably project themselves into formation of an algorithm. Knowing these things, A cites notes his privilege in never having been personally misrepresented or affronted by a digital algorithm as a white male in a heterosexual relationship. He, however, does not that several of his LGBTQ friend had felt this aggression by Facebook when it defaultly switch its private groups to public, outing several queer people to their friends and family in the process. I nudged him to consider his original response that algorithms need not necessarily be digital or automated upon which he reflected and imparted a story about his voting experience. Shortly before election season in North Carolina several years ago, A was among a contingent of largely Black and Latinx voters whose records got arbitrarily expunged due to some practice of gerrymandering. Originally registered as a Democrat, A was later re-registered as Unaffiliated by default, causing him to feel annoyed at his needing to re-register himself under the right party.

Participant CA

Interview I

CA is an especially intriguing participant as she is this year School of Art undergraduate representative and expressingly joined this study to share her love of talking about art. Within her role as undergraduate rep, she relays student concerns to faculty members and delivers faculty responses to those concerns back to students. The day of our interview was the last day before Spring Break so I decided to conduct one, longer-length interview instead of hoping that I could speak after residential classes were postpone until March 31st.

She explained that she would not be traveling far, as she lives in the Central New York area. At the time, she expressed her contentment with remaining nearby as it would allow her to maintain access to VPA labs to complete her final projects. Shortly thereafter, the campus closed entirely and restricted student / faculty access due to the COVID-19 pandemic.

Growing up in this area, she spoke about her background as one of deep academic, artistic, and musical preoccupation. These interests each appealed to different sides of Participant CA so she decided upon her major at Syracuse University by first speaking to faculty members in Law, Percussion, and Illustrator before ultimately opting for the last. She felt most at home in the Illustration department and since matriculating, that hominess has allowed CA to become more deeply involved both with her major and the larger School of Art within VPA.

Interview I.II

When asked to detail her most definitive identities, Participant CA proudly stated that first and foremost, she was an artist, a creative. Other parts of herself were not as prevalent identities for her until she arrived on campus. One of those was the fact that she comes from a lower middle-class background. Seeing the amount of money other Syracuse University students displayed across campus brought this self-realization "front and center." This compounded the reality that she comes from a "split background" as the child of divorced parents. Another of those quasi-established identities was her being a bi-racial Latina who looked "white-passing." The challenges of relating to other Latinx students who were so outwardly expressive of their heritage and even their ability to speak Spanish, was not something she had expected needing to navigate. Taking these three claimed and imposed identities together, CA confesses that she

originally found it harder to connect with anyone here. Perhaps that is why she has so immersed herself in her creative field.

Translating her identity into her art, CA frequently creates projects that address the hypersexualization of women, especially women of color. An illustrative example of this is her piece that depicts a woman walking in the rain. Her head is bowed and she is making determined steps with an umbrella over her head. High above, instead of clouds bringing down the rain, the looming heads of three distasteful men drool over the young woman. However, it is more often seen that CA expresses her work in mythical creatures such as nymphs, fairies and dragons. One project illustrated a Midsummer Night's Dream-esque story where a cocky prince follows a nymph through the forest, tries to force his will upon her, only to be overtaken and humiliated by a tribe of powerful nymphs who tell him to leave and never return again.

To bring these creative expressions to life, CA relies upon a variety of geometric and digital tools to bring her illustrations to life. Her process goes as follows: pencil sketch; pen and ink sketch; creation of multiple sketched thumbnails; selection of one sketch to enlarge; scanning into Illustrator; projection of blown-up sketch onto lightbox; tracing of larger sketch; filling into larger sketch in brush and quill pen details; watercoloring; reuploading to Illustrator to touch up, project, trace, and fill in with minute details until reaching whatever deadline the course sets. Inherently, she never feels satisfied with the completion of each project, always feeling a desire to keep working and improving. This is what CA terms as "visual development" and it is in this pre-production phase where she feels most creative. She always carries notebooks to jot character development or visual inspiration down whenever something strikes her.

As evidenced by this creative process, CA draws no clear distinction between geometric and digital tools throughout the development of her assignments. She discusses how she chooses tools based on whatever is most expedient given her deadline. A pencil takes longer to create with but enhances her agency to determine emotions and line strength. However, she finds herself increasingly gravitating towards digital tools such as Illustrator because they are faster but regrets how hard it is "feel emotion" with them. What this means for the emotion in her projects that equally weight digital and geometric tools remains unsaid.

Still, she admires certain creative software features of their ability to add dimensions to her work, even when those features do something unexpected. For example, CA once undertook a project wherein she created a portrait of a downcast caricature of Donald Trump, framed all around in darkness. She had meant to add further mention to this scene with a texture overlay (a process she excitedly walked me through) but when the texture turned into something she did not expect - cracked, desert-like look across his orange forehead and greenish / blue crackled shadows in background- she liked it enough to keep the feature. This trick has been a nice added skill in her toolbox which she has since used in several more projects.

When asked explicitly to define algorithms and recall an instance when they made an impact on her identity or identity expression, CA opines algorithms are "tools for making an inference." In her explanation, they are commonly found in media streaming platforms marketing promotion, and artificial intelligence. In her life, she says this probably happens subconsciously; the concepts that she follows and likes on Pinterest or Instagram subsequently become the things and styles she emulates in her projects. I spent considerably length witnessing this process in her on her social media. I scrolled through her Pinterest inspiration boards then saw how certain elements from those pages made their way into her art. For her, art is all about

“copying and copying and copying” old concepts until they are reinvented as something new, something yours.

These processes continually unfold as CA completes her independent study in making her own comic book. Now that she had spent Winter Break learning how to write for graphic novels, she was repeat all aforementioned phases of visual development for each page of her own mythical story.

Participant CH

Interview I

Unbeknownst to either of us until our first meeting, CH and I had met previously through a mutual friend. That acknowledgement made an interview instantly more congenial and perhaps more insightful. CH remembers first journeying into art after picking up drawing as a hobby from his brother. After that, he often began challenging himself to draw pictures from memory. That naturally fed into his desire to be a designer from a young age. In high school he took art classes, build a robust portfolio, and matriculated into Syracuse as an Industrial & Interaction Design major. At several points throughout our conversation, CH referenced how different art and design have been for him since arriving here to SU. Design, he explains, places a much higher emphasis on rules, design, and business. One can start with an idea as expressive and freely creative as desired but eventually constant feedback and revisioning on a projects functionality can leave one feeling not entirely in control. Art, meanwhile, is where CH finds more freedom, more agency. He also reveals that art is also a healing process through which CH draw from lived experience to process things which are lesser talked about and confusing.

In either the design or artistic process, CH finds that geometric tools make him more flexible in all that he desires to express. He finds that Snapchat and Instagram are useful for drawing inspiration but he often relies upon creative software for rendering, scanning, or editing whatever geometric project grew out of that inspiration. He finds himself blending both geometric tools and digital tools into a process which his professor calls ‘Frankensteining it.’

Screenprinting has been an especially alluring and indicative art genre for CH in this regard. It is something that can be and is preferably done by hand but, when CH is on a tight schedule, he does so using digital tools. It is a process that begins that often begins with him telling his own story, then developing a timeline of how to bring that story to life. He believes that his screenprinting, along with the rest of his art should have meaning and that viewers may walk away with knowing something more about him as a person after looking at his art. In this way, CH has expressed to the world some intimate sides of his sexuality and his familial history.

In this latter regard, CH created a screenprint project using a portrait of his mom. As he was revising the typography of this project using online software, he did something and the letter printed out blurred. It was a moment in which the technology had done something unexpected but it was interesting enough to him that CH submitted it as his final project version.

He last went through this entire process in the creation of a self-portrait to figure drawing. He claimed that he “did bad” on the portrait though he could not exactly articulate how and why. He expresses a feeling of needing to constantly change and improve a work, believing that a project may be good upon submission but upon later inspection, needs to be reworked further.

Participant J

Interview I

J is a senior in Film. He noted this study's flyer solicitation and came aboard the research because he felt that he may have been able to contribute to my study on algorithms (as noted from the flyers in his response email). Growing up as a quiet kid in a small mid-Western town, film is how J learned to express him and boast is self-esteem. However, when that love of film pushed him to pursue theatre in middle school, his awkward growth into puberty "shot that down." He later regain enough courage to do high school theatre and he become known as "that film guy" are his school. By this point, Participant J decided that screenwriting was how he sought to make a career of his cinephilia. He came to Syracuse University already declared as a Film student.

Being an introvert, being a movie lover, and being from a small town in Ohio were the identities which he claims as especially indicative of him. In producing these identities in Film, he wanted to emulate the styles of his influential filmmaking but quickly realized that he did not have enough money to do so. He said it has been hard to find a niche otherwise but he thinks he has done well for himself by observing the things happening around him and turning those into comedies.

J declares that there is a lot of work that goes into creating a good film which most people never understand. For him, the process goes as follows: draft; cast; location scout; prop finding; shooting; and editing the whole film together. For one person, this can be an intense process but J strongly believes that the beauty of it is so freeing. "You're not telling a story for other people; you are making this story for you." Professors help him shape these ideas but J says that he larger feels high agency in the creation of his works. Most recently, he has undergone this process through his senior thesis. In it, two family members remain off-screen but their shouting voices and angry actions can be heard through the walls as the older brother tries to repair his relationship with his younger brother. J says the idea comes from the lessons he has learned from the good relationship he shares with his siblings.

For Participant J, the persuasion and pervasiveness of algorithms happen entirely post-production. When asked, he responded that algorithms are codes with a "sliver of artificial intelligence" that allows search engines and streaming sites to gather data on what you click online. He divulges that algorithms have personally affected his life in two ways. First, he recognizes that streaming algorithms on film platforms are pushing consumers towards series-based content, even as he desires to pursue a career in film-oriented content post-graduation. Secondly, J encounters these streaming algorithm nudges personally as he searches for and watches films on sites such as Netflix. Their algorithms sometimes rank films high on his likeability score onto prove against J's taste when he watches them and vice versa, finding that sometimes the film Netflix ranks lowly for him are well-suited to his taste. When this happens, J evinces a small pride in declaring that the algorithms "will not stop" him from exposing him to as much as possible to constantly re-evaluate and reaffirm his taste.

Still, all these algorithms and the reality of streaming makes J nostalgic for the social interactions and connectivity founded within video stores and galleries. He says that the additional presentation of choice is a benefit of streaming but has taken away the former social aura of film-finding.