GENERATIONS: CREATIVE COMPUTATION, COMMUNITY, AND THE RHETORICAL CANON

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ABSTRACT

Carly Schnitzler: Generations: Creative Computation, Community, and the Rhetorical Canon
(under the direction of Daniel Anderson)

"Generations: Creative Computation, Community, and the Rhetorical Canon" investigates how computational poets and artists use the intrinsic rhetoricity of generative computational processes for social critique and community-building, through a renewal of the classical rhetorical canon. Computer-generated poetry and art is often created using the same technological mechanisms (full-stack development, procurement and manipulations of 'big data') as the algorithms and social norms it sets out to critique. These conditions of production provide a unique rhetorical perspective for revisiting the classical rhetorical canons—invention, arrangement, style, memory, and delivery. From this vantage point that views classical rhetorical theory in contemporary digital context, I detail ways that computer-generated texts relate to concerns of social critique and enable digital communities. "Generations" demonstrates the rhetorical possibilities and limitations of computer-generated creative texts as artistic correctives in response to specific harms (like neoliberal individualism and data colonialism) of contemporary digital life. It also demonstrates the ways that these texts are created in community with others, a salient feature of the genre that amplifies its capacity for social engagement.

ACCEPTANCES

As much as this dissertation is a scholarly project, it is also a project borne of community. This project, and particularly this section of it, is a place where I can momentarily remember some of my debts to my communities and the people in them who have shaped this project and brought it into being. In calling this section "acceptances," I try to recall the way Stefano Harney and Fred Moten frame debt as social, mutual, and unforgivable, writing in *The Undercommons*: "We feel it in the way someone saves the best stuff just to give it to you and then it's gone, given, a debt. They don't want nothing. You have got to accept it, you have got to accept that" (62).

So, I am indebted, first, to everyone who has spoken at and come to If, Then: Technology and Poetics events over the last three years. This community has come to be such a significant part of my time in graduate school and is somewhat inadvertently this dissertation project's raison d'etre. Thank you all, so much, for sharing your curiosity, creativity, and time. Particular thanks are extended to Lillian-Yvonne, who joined me in organizing If, Then in 2021, and for whose work and support I will be forever grateful.

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I am who I am because of my friends and family who hold deep love and faith in me and who have shared their encouragement and homes with enthusiasm these past few nomadic years and long before. Thank you to Kate and the Healy family; Marissa, Cam, and Dr. C; Emily and Max; Becky, Ralph, and Mary; Lydia, Andrzej, Veronica, and Matt; and Tom for showing me that home exists many places. Jacob, thank you for choosing to build our own home together these past several years. It is the greatest thing in the world. To my sister Jenna and my parents, Kimberly and Fred: thank you for saving the best stuff just to give it to me.

[1] Not to mention this dissertation, which Erin copyedited in its entirety. In homage to your love of footnotes, this first one is for you.

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INTRODUCTION

While awaiting his first assignment at Britain's National Research and Development Corporation in the summer of 1952, British computer scientist Christopher Strachey created a program that generated florid, campy love letters, all signed by M.U.C.—the Manchester University computer.[2] One letter, reproduced below, was later printed in the arts magazine *Encounter* in 1954:

> Honey Dear
>
> My sympathetic affection beautifully attracts your affectionate enthusiasm. You are my loving adoration: my breathless adoration. My fellow feeling breathlessly hopes for your dear eagerness. My lovesick adoration cherishes your avid ardour.
>
> Yours wistfully M. U. C. (Campbell-Kelly 25)

For each love letter, after the greeting the program randomly chose between a longer opening (starting with the phrase "you are…")[3] and shorter opening (seen above, starting with "my…"), following a simple, Mad Lib-esque format for each (Montfort). While there was some syntactic

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[2] This machine was a Ferranti Mark 1, the world's first general-purpose and commercially available digital computing machine. Strachey often used the University of Manchester computing resources—around this same time, he also used the university's Ferranti Mark 1 machine to create what may be the first video game—a game of "draughts" or checkers (Wardrip-Fruin, How Pac-Man Eats 291).

[3] Here is an example of the "longer" version, as defined by the "longer" variable set by Nick Montfort in his 2014 reconstruction of Strachey's program (Montfort):

> "Jewel Moppet
>
> You are my unsatisfied hunger. My eagerness wants your loveable affection. My fellow feeling curiously woos your eager love. My unsatisfied ambition tenderly holds dear your covetous enchantment. My wistful devotion wants your eager ambition.
>
> Yours passionately M.U.C."

variation, all of the love letters contained these sentences at their core: "you are my [adjective] [noun]. my [adjective] [noun] [adverb] [verbs] your [adjective] [noun]" (Roberts). And, of course, all of the letters are signed, "Yours [adverb] M. U. C": wistfully, passionately, curiously, impatiently.

Strachey's M.U.C. Love Letter Generator is widely-cited as the first work of electronic literature (J. W. Rettberg). Electronic literature scholars and historians of computation have made much over Strachey's choice to generate these saccharine, over-the-top love letters with his program. Strachey, a close colleague and contemporary of Alan Turing, was also a gay man in the United Kingdom at a time when male homosexual acts were criminal and punishable offenses. Strachey's generator is, noticeably, genderless, using non-gendered descriptive language and centering only the transient reader as "you" and the M. U. C. as inhabiting the first-person "me." After all, the Manchester University computer, the signatory of all the letters, has no gender and is not concerned with the gender of its program's readers. The letters generated are also comical and campy, a parody of the genre and of the act of declaring one's love in the first place. As Jacob Gaboury writes in "A Queer History of Computing," Strachey's generator is "a queer critique of normative expressions of love, enacted through a kind of generative, computational performance, through a purposefully deficient simulation" (Gaboury). The generator itself is also a procedural critique—the program is "a parody of process," as Noah Wardrip-Fruin writes in "Digital Media Archaeology" (306). Telling someone how much you love them is at once ordinary and absurd, a prosaic task that is nearly impossible to get right in words. Putting the M. U. C. to this task highlights the task's absurdity and impossibility.

Strachey was not just setting the M. U. C. up for romantic failure with his love letter generator, though. He was using what the M. U. C. could do—randomize, generate, calculate, print—to make a creative critique on what humans so often fail to do. As a society, we so frequently fail to support the expansive and often queer nature of human love and, as individuals, we fail,

constantly and flamboyantly, to figure out how to tell those we love how much we love them. Strachey, with his generator, was showing us the role of creative computation in critiquing some of the qualities that make us most human.

With an emerging awareness of what the computational can do for social critique, Strachey and his love letter generator set a tone and a sensibility for the programmers, poets, and artists who sought to use computational processes creatively in the decades that followed.[4] In starting with love and using the M. U. C. to fervently, breathlessly, ardently lay bare the deeply human limitations of expressing it, Strachey's generator makes explicit the rhetorical capacity of the computational to comment and reflect on the social and relational. This—how programmers, poets, and artists mobilize the intrinsic rhetoricity of creative computational processes for social critique—is the central subject of this dissertation.

I am titling this dissertation project "Generations: Creative Computation, Community, and the Rhetorical Canon" for two principle reasons. First, generations are the objects of my research broadly categorized. I am concerned with the outputs of computational algorithms designed to produce poetry and art—with what these algorithms generate and how, mechanically and rhetorically, they do the work of generation. Second, the word generations evokes a sense of history, provenance, and community—something is always generated *from* something else or by or with someone else. It is a necessarily relational term. Its etymology divulges this taxonomic, relational register; " generation" is derived from the Latin verb generare, to beget or create, from the noun genus, kind or race (Online Etymology Dictionary). There is a deep history of relational classification embedded in the term itself. Computational generations become rhetorical through

[4] The syntactic variations and all of the word choices from the original program are preserved in Nick Montfort's 2014 reconstruction of Strachey's program in the programming language Python. Without another generation of Strachey's program, contemporary scholars and creative practitioners would have only archival fragments of the original to turn to, coded with a long-outdated programming language on long-outdated hardware.

relation and classification—connected through algorithmic processes to sources, people and ideas that enable generative, meaningful, and deeply human critique.

Intellectual Parameters: Digital Rhetoric and Creative Computation

In this dissertation, I examine how computational artists mobilize the rhetoricity of generative computational processes for social critique, while also keeping an eye towards the real limitations of creative computational works' capacity for effective critique in sociotechnical systems that are not built for them. I explore two primary research questions: 1) How can computational processes be used to address or remediate societal inequity? and 2) Is there rhetorical capacity for social critique within computational processes themselves? "Generations: Creative Computation, Community, and the Rhetorical Canon" responds to these questions by bringing together digital rhetoric and creative computation to demonstrate how computational poets and artists mobilize the intrinsic rhetoricity of generative computational processes for social critique and community-building.

This is an interdisciplinary project that brings together digital rhetoric and literary studies, through creative computation, in an effort to answer these capacious, interdisciplinary questions and also to acknowledge the fertile ground for collaboration between the disciplines. First and foremost, this project builds on the work of other humanists studying computational processes who argue and advocate for the rhetoricity of data and algorithms. This work calls for a more contemporary and disciplinarily capacious understanding of digital rhetoric. As Safiya Noble, Ruha Benjamin, Joy Buolamwini and Timnit Gebru, and many others[5] demonstrate in their work on algorithmic biases, the technologies we use as tools are not neutral. Behind every algorithm—be it something as

[5] See Safiya Noble's *Algorithms of Oppression,* Ruha Benjamin's *Race After Technology*, Joy Buolamwini and Timnit Gebru's "Gender Shades."

complex as the Google search algorithms, as automated as generative algorithms that can produce other algorithms, or as simple as a randomization library in Python—there are people creating algorithms for a purpose and people training them, using them, and modifying them for others. In other words, there is rhetoric in all the algorithms that surround us. This is not a new idea, but it is one on which my work builds.[6] In addition to those in a wide variety of fields studying algorithmic bias and other social problems of digital technologies, digital rhetoricians have developed an explicitly rhetorical understanding of data, coding languages, and algorithms in their own work. Annette Vee in *Coding Literacy*, for example, argues that literacy tools enable us to comprehend computer programming beyond its technical aspects, by placing it in an explicitly rhetorical and social context. Likewise, Brad and Ashley Mehlenbacher in their article "The Rhetoric of Big Data" locate the concept of big data itself as comprised of rhetorical strategies. "Understood as a form of argument," they write, "data reveals important insights into rhetorical situations, the motives of rhetorical actors, and the broader appeals that shape everything from the kinds of technologies built, to their inclusion in our daily lives" (1).

This project also necessarily builds upon work in digital rhetoric that extends and theorizes classical rhetorical concepts and expands conceptions of authorship in digital environments. In *Digital Rhetoric: Theory, Method, Practice*, Douglas Eyman draws from Richard Lanham and Elizabeth Losh, among others, establishing a broad definition of digital rhetoric as the "application of rhetorical theory, whether as an analytical method or a production heuristic, to digital texts and performances" (13). This is the type of work that continues to dominate the field of digital rhetoric.[7]

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[6] Many, many other publications advocate for the rhetoricity of data and algorithms, from as early as the 1980s, with Langdon Winner's "Do Artifacts Have Politics?"

[7] See also the excellent work of Carolyn Miller, Colin Gifford Brooke, Sean Morey, James Porter, Ben McCorkle, Byron Hawk, Casey Boyle, Damien Pfister, among many others.

This dissertation is a natural extension of much of this work in digital rhetoric, which seeks to update classical rhetorical concepts in contemporary contexts.

Beyond expanding rhetorical concepts, I also demonstrate what rhetoric has to offer to creative computation: a way of understanding the communicative and sociopolitical impact of technical processes used to produce creative work and social critique. Creative computation is, naturally, the other discipline central to this dissertation. I prefer the term creative computation over electronic literature in this project because it prioritizes intent and method, placing more emphasis on the creator and the acts and processes of creation, instead of just the outputs themselves. Though still primarily output-focused, this procedural emphasis is echoed in the Electronic Literature Organization's definition of electronic literature: "work with an important literary aspect that takes advantage of the capabilities and contexts provided by the stand-alone or networked computer" (Hayles, Electronic Literature: What is it?). Starting with Strachey's generator in the 1950s, creativity and creative, literary texts have arisen and evolved alongside electronic, digital computation. Generally, the originary purposes of most computing technologies—hardwares, programming languages, etc.—are not to create literary texts, but rather to do things like automate mathematical equations or tabulate census data. Though these works tend to fall counterculturally in the shadow of the technologies themselves, artists, programmers, and poets have consistently used computational tools to create incisive, thoughtful creative texts. As Katherine N. Hayles writes in her formative article "Electronic Literature: What Is It?," these kinds of texts "test the boundaries of the literary and challenge us to re-think our assumptions of what literature can do and be."

In this dissertation, I focus specifically on born-digital works of computer-generated poetry and visual art, alongside the outputs—workshops, conversations—of communities focused on

generative creative computation. Computer-generated creative work[8] is a subset of electronic literature as a whole;[9] Hayles gives a concise definition of computer-generated creative work "whereby an algorithm is used either to generate texts…or to scramble and rearrange pre-existing texts" (Hayles, Electronic Literature: What is it?). Algorithmic intervention in the rhetorical triad is a central feature of these generative texts, disrupting and expanding the relationships between author, audience, and text. This creates unique affordances for rhetorical study, which motivates my focus on computer-generated creative works in this dissertation. Because these works are computer-generated, they foreground computational processes for rhetorical study. The works reveal how these generative computational processes can be mobilized by artists for social critique, demonstrating that these computational processes operate on two registers: computational and rhetorical. The artist's human, communicative, rhetorical intention, as the originator of the generative work, remains central to this claim.

Methods and Methodology

As Ruha Benjamin writes, "Remember to imagine and craft the worlds you cannot live without, just as you dismantle the ones you cannot live within." This is the call that the computational poets and artists whose work and communities I study seek, in large part, to answer. "Generations: Creative Computation, Community, and the Rhetorical Canon" investigates how computational poets and artists use the intrinsic rhetoricity of generative computational processes for social critique and community-building, through a renewal of the classical rhetorical canon.

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[8] Also known as "generative texts" or "generative digital art" (Hayles, Electronic Literature: What is it?).

[9] Other major subgenres of creative computational work include: hypertext fiction, interactive fiction (IF), site-specific mobile works, AR and VR texts, code work, and others (Hayles, Electronic Literature: What is it?).

Computer-generated art is often created using the same technological mechanisms (e.g. full-stack development, procurement and manipulation of big data) as the algorithms and social structures it sets out to critique. These conditions of production provide a unique rhetorical perspective for revisiting the classical rhetorical canons—invention, arrangement, style, memory, and delivery. From this vantage point that views classical rhetorical theory in a contemporary digital context, I detail ways that computer-generated texts relate to concerns of social critique and enable digital communities. This project demonstrates the rhetorical possibilities and limitations of computer-generated creative texts as artistic correctives in response to specific harms (like neoliberal individualism and data colonialism) of contemporary digital life. It also demonstrates the ways that these texts are created in community with others, a salient feature of the genre that amplifies its capacity for social engagement.

To show how computational poets and artists are using generative computational processes as a strategy for social critique and community building, I look at computer-generated poetry and art and rhetorically analyze the computational processes artists use to create their works, alongside the texts and artworks themselves, and, later, the communities that contribute to making this kind of analysis possible. I use the rhetorical canons as an orienting guide, demonstrating the relevance of both process and output to how canons are shaped and reoriented in computer-generated creative work

This project primarily employs strategies of rhetorical analysis, supplemented by interviews and text analysis methodologies. In my first two chapters, I engage directly with primary texts—creative computer-generated projects and the generating code and technical processes—through deep rhetorical analysis. I also have conducted interviews with their authors (artists Lillian-Yvonne

Bertram and Everest Pipkin) to supplement my findings.[10] These interviews were certified as IRB exempt, since they were uncompensated, completely voluntary, and placed subjects "at no more than minimal risk" (UNC Research). Interviewees consented to having their names and responses used in my dissertation research, along with having full transcripts of their interviews made available in the appendix of my dissertation. The third chapter of my dissertation also employs deep rhetorical analysis, along with computational text analysis methodologies (grammatical classification, relative frequencies, topic modeling) of publicly available transcripts from a working group on creative computation that I started in the Fall of 2020, called If, Then: Technology and Poetics. Brief chapter summaries follow below.

Chapter Summaries

The core of this dissertation is an investigation of how computational poets and artists use the intrinsic rhetoricity of generative computational processes for social critique and community-building, through a renewal of the classical rhetorical canon. Three primary case studies drive this investigation, pairing computer-generated texts—either creative works on their own, or the products of the communities that form around creative computation—with the five rhetorical canons.

The first chapter "Inventing and Arranging with the Full Stack: Considering the Computer-Generated Poem as Social Medium" establishes a portable critical framework for demonstrating how the rhetorical canons of invention and arrangement operate in creative, computer-generated texts. Through an investigation of combinatorial, computer-generated poems from Lillian-Yvonne Bertram's 2019 collection *Travesty Generator*, I show that invention and arrangement are enabled by algorithmic processes, but these processes are deeply social, human ones. For invention, there is a

[10] These interviews are available in full in the appendices of this dissertation.

clear authorial hand in the topoi sourced and questions of stasis posed. Bertram's generative algorithms afford a rhetorical distance from these processes that provide readers with a clearer view of their inner workings. For arrangement, I borrow the "full stack" metaphor from computer engineering to describe how the canon functions in generative, combinatorial texts. Using full stack logic yields a more comprehensive understanding of the rhetorical relationships between authors, sources, readers, and algorithms in Bertram's generative poems, allowing us to see them as simultaneously individual and collective, attributable to many authors in relation to one another while still working towards the same collective rhetorical end. The algorithmic combination of source corpora in the poems of *Travesty Generator* showcases the continuities of Black American life, bridging pasts and presents of individual violence and structural oppression with communal confidence in cosmic justice and Black ingenuity. This approach has implications for contemporary poetics, critical code studies, and rhetorical theory, suggesting the possibilities for creating in community with technology as an alternative to a neoliberal individualist paradigm.

My second chapter "Building the Funhouse: 'Lacework' and the Constraints of Computer-Generated Texts" takes on the rhetorical canons of style and memory through a case study of Everest Pipkin's "Lacework," a computer-generated visual text that aims to remediate the harms of data colonialism. With "Lacework," Pipkin attempts to enact a transformation in the "Moments in Time" dataset, changing it from a dataset of a million videos developed to train AI systems into a decolonial, digital community archive-as-artwork. The original dataset was produced using standard, and ultimately harmful, practices of nonconsensual data-gathering and exploitative gig-work for dataset construction. I argue that through mediated, computer-generated changes to the rhetorical

canon of memory's "ecology of practice"[11] and manipulations of style, Pipkin attempts to remediate the harms of the dataset's initial production and to care for the individuals represented within it. Weaving Pipkin's first-person account as an artist throughout, this chapter explores the ethical and rhetorical boundaries of community-oriented creative computational work. Together, Pipkin and I contend with Audre Lorde's dictum that "the master's tools will never dismantle the master's house." Pipkin's work provides an example in which the tools of data colonialism can be employed in order to call attention to the harms of data colonialism. This case study demonstrates the critical limitations for community-oriented creative computational work, particularly when the harms of data colonialism that the work sets out to critique and remediate are central to the tools used to create the work in the first place.

The third chapter of the project "'Generative Poets, Speculative Reader(s):' Delivery as Affective Community Practice" considers kairotic delivery as an embedded rhetorical outcome when creative computation brings people together in a community context, in and outside of academic institutions. With the term "kairotic delivery," I emphasize that how something is delivered cannot be disentangled from the moment in which it is delivered. Expanding on Sean Morey's work theorizing digital delivery, I argue that the rhetorical canon of delivery is reshaped by affiliation and affect in digital contexts. If, Then: Technology and Poetics, a collaborative, public, and interdisciplinary virtual workshop series that I founded in the Fall of 2020 to promote inclusivity and skills-building in creative computation, is the primary case study for the chapter. Over 300 scholars and artists have come to 30+ If, Then events, and a diverse cohort of about thirty multi-disciplinary faculty members, librarians, graduate students, artists, poets, and creative technologists form the

[11] This is a theoretical framework that I borrow from Colin Gifford Brooke's *Lingua Fracta*. An "ecology of practice" emphasizes the contextual, encouraging rhetoricians to "focus our attention on a temporarily finite set of practices, ideas, and interactions without fixing them in place or investing too much critical energy in their stability" (42).

community core of the working group. To support my argument, I combine rhetorical analysis with text analysis methodologies (classification analysis, relative word frequencies, and topic modeling) in this chapter, using transcripts from all If, Then events as my corpus to recast rhetorical delivery as an affiliatory practice. Groups like the School for Poetic Computation and the Electronic Literature Organization are also explored. These communities can show us a way of creating with technology that is ethical and pro-social, binding the rhetorical and the computational together through a kairotic, environmental renewal of the canon of delivery.

I conclude the dissertation by reflecting on the communal nature of computer-generated creative work, as it led to the creation of this project—a brief, meta-commentary on the wider ecosystem in which this research exists. Poetry and art are human generations, even if computational processes can compellingly and rhetorically intervene.

print(“ YOURS “ + choice(adverbs))[12]

[12] Code generating sign-offs from Nick Montfort’s reconstructed Python 2/3 code for Christopher Strachey’s M.U.C. Love Letter Generator (Montfort).

INVENTING AND ARRANGING WITH THE FULL STACK: THE COMPUTER-GENERATED POEM AS SOCIAL MEDIUM

@Tubman's_Rock

after Nanni Balestrini

"I just wanted the world to see
what they did to my baby" —Mamie Till

$[0]

They tied up Till (steal away)
likely to kill just stay dead
Drove toward Money, Mississippi behind enemy lines
The dead trees will show you the way
See us free like Jesus we just won't stay dead
around your house To Moses, slowly
When the river ends steal away
I just wanted the world to see
the river bank makes for a good road
that Jesus is a friend with friends

—Lillian-Yvonne Bertram

In the early 1830s, when Harriet Tubman was around twelve years old, she saw a man running toward freedom. An overseer told her to stop him, she refused, and as a result, was caught in the crossfire when the overseer threw a two-pound iron weight at the man that missed him and hit her instead. She suffered a severe head injury that, as Sarah Hopkins Bradford writes in 1886, "left [Tubman] subject to a sort of stupor or lethargy at times; coming upon her in the midst of conversation, or whatever she may be doing, and throwing her into a deep slumber, from which

she would presently rouse herself, and go on with her conversation or work" (109-10). Many scholars suggest that this head injury led Tubman to suffer from lifelong narcolepsy, which is often accompanied by vivid dreams and trance-like states. Those who knew Tubman support this claim; Bradford writes that her "trance-like states would last for hours" (59). Tubman attributed her prophetic ability, these trances and visions, in part to this injury—to "[her] rock" (Bradford, 118). A technology of violence claimed. The possessive form of the phrase, "Tubman's rock," is one that poet and scholar Lillian-Yvonne Bertram says has "been with [them] for a very long time, two decades at least" ("Interview"). Bertram imagines the rock hurtling through history to the present and turns the rock into an image which appears in their poetry. "It's become part of [Tubman's] story, part of her lore, [part of] all the enslaved people that she led north," Bertram says ("Interview"). "It's [a] definitive, precipitating incident that continues to reverberate right through history into the present" ("Interview").

Before Bertram's combinatory, computer-generated poem "@Tubman's_Rock" begins its first stanza, these reverberations are at play. A community and lineage starts to form before the text of the poem even begins. In the title, Harriet Tubman, her rock, and Bertram enter in together; they begin to make legible Tubman's legacy, her reclamation of violent technologies, and an enduring belief in the abundant, spiritual futurity of Black Americans. So too, in the dedication "*after Nanni Balestrini*," the poem locates itself in another time, community, and lineage. The poem continues and challenges the legacy of Balestrini, an Italian early pioneer of computational poetics whose 1961 poem, "Tape Mark 1," algorithmically combines texts from Lao Tzu, Michihito Hachiya, and Paul Goldwin into 1,816,214,400 possible sestets. In the epigraph to "@Tubman's_Rock," we hear the insistence of Mamie Till Mobley, Emmett's mother, that "the world…see what they did to my baby" in an open casket at his funeral after he was lynched in 1955. Mamie Till's words become a refrain in the rest of the poem and reverberate throughout the entire collection, at once retaining their original

voice and context while also evolving in meaning through the quotation's various iterations and its combination with other authors' words.

More than reference and citation, the texts preceding the stanzas of "@Tubman's_Rock" prime readers to understand that authorship and subsequent claims to authority exist communally in the poem. The poem is a forum in which different authors' words, contexts, and intentions combine and nuance one another's. Original context is retained in full quotations, such as "I just wanted the world to see what they did to my baby," while the appeals authors make to their audiences change, becoming re-contextualized in a communal existence within the poem and a broader scope of history. "I just wanted the world to see what they did" resonates later in the poem as "I just wanted the world to see."

In this computer-generated poem, we can start to draw parallels between the ways in which claims to authority function, how readers interpret those claims, and how the program generating the poem itself works. Mamie Till's utterance combines with lyrics from spirituals, information from Wikipedia and CNN Money, the words of Tubman's biographer Sarah Hopkins Bradford, the poetry and programming of Lillian-Yvonne Bertram, the verses of Gwendolyn Brooks, and so on. Words from each of these authors stack and recombine with one another, each phrase with its own original context and purpose that is both maintained and evolved in combination with the others. I make the distinction that each of these known or unknown authors' words or utterances are the focal point of this chapter, rather than the authors themselves, to meet the output-oriented logic of the stack that contemporary computer programming is built upon. Combinatory poems in Bertram's *Travesty Generator* put histories of structural violence against Black Americans in conversation with algorithmic structures of rule-following randomizations of language. The poems reflexively emphasize the structural nature of racialized violence, while maintaining and insisting upon voice,

humanity, and futurity with the collective of authors within. Computation and the stack logic underlying the poem provide a lens for looking at these collective voices.

In addition to computational lenses, we can draw from the rhetorical canons of invention and arrangement as we engage with computer-generated texts. Invention and arrangement in *Travesty Generator* are enabled by algorithmic processes, but these processes are deeply social, human ones. The algorithmic combination of source corpora in the poems of *Travesty Generator* makes visible the continuities of Black American life, between pasts and presents of individual violence and structural oppression and an abiding, communal confidence in cosmic justice and Black ingenuity and futurity. In exploring how the canon of rhetorical arrangement works in "@Tubman's_Rock," from Bertram' collection, the "full stack" metaphor from computer engineering can structure these combinations and recontextualize them rhetorically. The logic of the stack can guide us in demonstrating how, through the canon of arrangement, combinatory poetics can refashion a poetic relationship to the communal, allowing more suppleness in understanding the ways text and context shape rhetoric in community-driven, computer-generated, combinatory poetics. This approach has implications for contemporary poetics, critical code studies, and rhetorical theory: there are possibilities for creating in community with technology, as an alternative to a neoliberal individualist paradigm.

Invention and Computer-Generated Poetry

The rhetorical canon of invention is concerned with, as Aristotle writes in his *Rhetoric*, "discovering the best available means of persuasion" (1356a). It is the first canon of the five rhetorical canons, the canon by which all of the others—arrangement, style, memory, delivery—are made possible. Invention is concerned with questions of *what* a rhetor might say. As Janice M. Lauer writes in her comprehensive reference guide to invention, *Invention in Rhetoric and Composition*,

"invention provides guidance in how to begin writing, to explore for ideas and arguments, to frame insights, and to examine the writing situation" (1).

Ideas of stasis and topoi inform the process of invention. Literally meaning a "slowing down" or stopping point, the role of stasis in classical rhetoric is an interrogative "method" for identifying the issue at hand and for leading the rhetors to the topoi appropriate to it (Carter 99).[13] Topoi, then, are the categories, the common places, the "topics of invention" that allow for rhetors to discern relationships among ideas (Aristotle's Rhetoric). Topoi are, literally, "places to find things," sources for invention (Burton, topics of invention).

In a computer-generated poem like "@Tubman's_Rock," we see the stasis and topoi of invention quite readily; in many ways, these aspects of invention are made clearer in this kind of poem than in other, traditionally-composed poems. This clarity on the stasis and topoi of invention is tied directly to the synthesis of source corpora that is an early step in the creation of a combinatorial poem. Bertram poses a question of invention regarding their own creative computational practice in an interview with the School for Poetic Computation. Of their own work, they ask, "If code is a megaphone, what do [I] want to use it to amplify?" (St. James). In this question, Bertram is recognizing a few things about the nature and purpose of invention as it relates to their work. First, code has an amplificatory capacity, something we will discuss in more detail in terms of its effects on arrangement. And second, Bertram's choice as an author of *what* they "want to use it to amplify" is a choice directly related to both identifying the issue of exploration at hand (stasis)—that authors can use computational processes as a method to amplify things they care about—and source corpora (topoi)—the selection of stuff to be amplified. In "@Tubman's_Rock,"

[13] The four basic kinds of stasis-related questions are conjectural, definitional, qualitative, and translative. These help to arrive at the issue at hand in the process of classical invention (Burton, stasis).

we as readers witness a social process of invention, in Bertram's selection of source corpora. Theirs is a process of selection that relies on previously extant texts—Wikipedia articles, quotations from newspapers, source code from other authors, to name a few—to weave together a narrative of Black American life that holds many disparate threads and truths together. This is a text that, through its sources, its topoi, contends with individualized violence and structural oppression alongside a deeply-held faith in justice and futurity all at once.

I bring up this convergence for "@Tubman's_Rock" to indicate that the process of invention is not fundamentally different in computer-generated texts that aim for social critique than it is in more traditional genres of creative works that also have a clear aim for argumentation and critique. In a computer-generated text such as "@Tubman's_Rock," along with other poems in Bertram's *Travesty Generator*, there is a clear authorial hand in the topoi sourced and questions of stasis posed. Invention is not changed radically in this context, but the algorithm affords rhetorical distances that, in turn, allow readers to make out its internal processes more clearly.

Inventing a Computer-Generated Poem

In this dissertation, I separate invention from the other rhetorical canons as a way of clarifying and delineating the roles of computational processes in the creation of these computer-generated works, and the roles of human author-artists. To be clear, I argue that the intrinsic rhetoricity of generative computational processes can be mobilized by author-artists for social critique. The artist's very human, communicative, rhetorical intention is central to this claim, particularly in relation to the canon of invention. The computational processes I will discuss do not invent wholesale; they generate, based on the curated, pre-existing information that our author-artists give to them. In these computer-generated works, questions of stasis and topoi become even more important to understanding the authorial intent for social critique. They also serve to clarify

that the canon of invention is firmly in the realm of the human rhetor, whereas the other, more procedurally-oriented canons move more fluidly between the computational and the human.

Of course, there are procedures for invention, as we see with the ideas of stasis and topoi. But these procedures of stasis and topoi serve to respond to larger "so what?" questions, answering questions of intent and purpose that only humans can give meaning to and make meaning from. When Ruha Benjamin urges us to "remember to imagine and craft the worlds you cannot live without, just as you dismantle the ones you cannot live within," she places a call of stasis: an appeal to identify the issue(s) at hand. The verbs at work here—"remember," "imagine," "craft," "dismantle"—first require an identification of "the worlds you cannot live without" alongside "the ones you cannot live within." This is a very human question of stasis at the core of rhetorical invention, finding the issues at hand and remembering, imagining, crafting, and dismantling in service of those issues.

In *Travesty Generator*, then, between Benjamin's call and Bertram's question posed to themself and others, a central issue at hand is the conflict between Black collectivity and community (a "world [Bertram] cannot live without") and neoliberal individualism (a "world [Bertram] cannot live within"), which is the basis for the social critique posed by the collection of poems as a whole. *Travesty Generator* and its poems emphasize community and connectivity in the structure of the work itself. Bertram builds community in their work in the way of bell hooks, who writes in *Teaching Community*, "to build community requires vigilant awareness of the work we must continually do to undermine all the socialization that leads us to behave in ways that perpetuate domination," an animating principle that serves as a precursor to Benjamin's call, too (36). At the end of *Travesty Generator*, Bertram writes about their impetus for creating the collection—their reason for its invention. "As an unimagined programmer," they write, "I use codes and algorithms in an attempt

[to] create work that reconfigures and challenges oppressive narratives for Black people and to imagine new ones" (76).

This poetic foregrounding of collectivity structurally challenges neoliberal individualism, with a few important consequences. Most importantly, writing in this way operates against neoliberal individualism and its relationship to white supremacy,[14] upholding instead Black American collectivity and voice. In much of *Travesty Generator*, pre-existing combinatory algorithms are manipulated and new source corpora added, generating evocative, revelatory elegies to Trayvon Martin, Eric Garner, and Emmett Till, among other Black lives taken too soon. In the code of "@Tubman's_Rock," Bertram's voice mixes with the voices of Mamie Till; Harriet Tubman; Tubman's biographer Sarah Hopkins Bradford; Nanni Balestrini; Gwendolyn Brooks; the anonymous authors of cotton.org; the Kennedy Center Digital Learning Team;[15] Wikipedia articles on Mamie and Emmett Till, Harriet Tubman, "the rock that struck Harriet Tubman in the head," and "slave patrols;" "a CNN Money article from '16;" and @fanfani, or Wayne Clements, the person who translated and reconstructed Balestrini's algorithm on GitHub (Bertram 52-3). This is in service of creating a work larger than the sum of its parts, one that "dismantles" a world that insists

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[14] The historical links between white supremacy and neoliberal individualism are well-documented. As historian Ronald Kent Richardson writes, the emergence of autonomous individualism came as a result of white supremacist ideology emerging as early as the late seventeenth century. Employed transnationally between Western Europe and the Americas, white supremacist thinking is "connected with the fact that there was something different about European colonialism, including American colonization and imperialism that require[s] justification" (71). In addition to justifying racial oppression, white supremacist ideology arose alongside autonomous individualism, filling, as Richardson writes, "a vacuum created by the socio-cultural-psychological conditions of autonomy" (72). This dynamic plays out in the realm of the digital, too. As the Internet becomes mainstream in the 1990s, so does neoliberalism and the resurgence of the individual as the arbiter of their own power through free-market capital. This wave obscured the white supremacist origins of autonomous individualism, but they were there nonetheless. As Lisa Nakamura writes in *Digitizing Race: Visual Cultures of the Internet*, "It is in this moment that the neoliberal discourse of colorblindness would become linked with the Clinton-Gore administration's identification of the Internet as a privileged aspect of the national political economy" (3). The (white) individual is at the center of social and political life, digital and analog.

[15] The original link in "@Tubman's_Rock" is old and while the resource used still exists, the original link doesn't direct there.

on the primacy of the individual—be it through individualized incidents of racialized violence or creative works of individualized genius—just as it "crafts" a world that insists on the collective and the structural, maintaining and insisting upon voice, humanity, and futurity through the combination of voices within the text (Benjamin).

After an epigraph from poet Terrance Hayes reading, "Are you not the color of this country's current threat," *Travesty Generator* opens with the poem "*#/usr/bin/python/three_last_words*." The phrase "I can't breathe" is at the center of the poem, recalling the voices of Eric Garner, Javier Ambler, Manuel Ellis, Elijah McClain, George Floyd, and others who repeated those words as their last before being killed at the hands of police (11). Over seventy people who died in police custody have uttered these same "*three_last_words*" (Baker). In the years since New York City police officer Daniel Pantaleo killed Eric Garner in 2014, the phrase I can't breathe has become a refrain for the Black Lives Matter movement and related protests of police brutality against Black Americans, chanted at marches and written on signs and hashtags. Linguist Ben Zimmer writes on the phrase's power as a protest slogan, saying:

> To intone the words "I can't breathe," surrounded by thousands of others doing the same, is an act of intense empathy and solidarity. The empathy comes from momentarily stepping into the persona of Eric Garner at that instant the life was being choked out of him. It is a kind of rhetorical tribute to inhabit his subject position, taking on the pronoun "I" and repeating the words he helplessly repeated eleven times. (Zimmer)

I can't breathe is a phrase that is individual and collective all at once. In this way, "*#/usr/bin/python/three_last_words*" sets a clear intention for the collection as a whole, dismantling neoliberal individualism with its white supremacist origins from the very beginning, while holding together the parallel truths of individual experience and collective action in a single phrase, a topos

of invention. In the poem, Bertram runs 15-character permutations[16] of each individual word within the phrase: "I" returns just one ("I"), "can't" returns more, and the printed permutations for the word "breathe" run over the barrier of the printed page in *Travesty Generator*. These permutations make nonsense out of each individual word—"ct'an'tn't" and "rathebratheathe"—and when the full phrase 'I can't breathe' is passed in to the permutations() function, nothing is printed. Instead, we are met with a Python MemoryError, since "the number of possible combinations of the 15 letters in that phrase (1,307,674,368,000) exceeds the available memory on the computer hosting the Python runtime" (Whalen). In its combination with the permutations() function in "#/*usr/bin/python/three_last_words,*" the phrase I can't breathe supports a variety of interpretations: that the machine running out of memory is an analogue to a human lung running out of breath;[17] that the repeated utterances of the phrase in its entirety are senseless and unable to be logically supported in a rational system; and so on. These interpretations, though, are built upon Bertram's inventions of worlds to dismantle and to create. These interpretations exist entirely because of Bertram's invention. With "#/*usr/bin/python/three_last_words*," Bertram is locating the stasis and topoi of invention for the collection as a whole. Bertram answers their own question, "If code is a megaphone, what do [I] want to use it to amplify?" Their program-poem holds the parallel truths of the collective and the individual together in clear defiance of a neoliberal individualism that prioritizes the exceptionalism of the (white) individual. The resolved and desperate optimism of a

[16] 15 character is the number of characters present in the string "I can't breathe." The permutation function Bertram uses is taken from Nick Montfort's "'I AM THAT I AM,' which is itself a version or adaptation of Brion Gysin's permutation poem of the same title" and is a permutation function that only prints permutations that contain all letters present in the source phrase (so, with this function, you would not wind up with the 15 character permutation "ccccccccccccccc" for the word "can't," for example) (Whalen).

[17] From Zach Whalen's "Any Means Necessary to Refuse Erasure by Algorithm" : Lillian-Yvonne Bertram's Travesty Generator" forthcoming from DHQ

collective protest slogan is inextricably bound up with the tragedy of Garner's death, just as the mimicry of algorithmic function is inextricably bound up with its systemic error.

Strategies of Arrangement in Computer-Generated Poetry

Whereas the computational processes involved in generating the socially-oriented, creative works I discuss do not invent—they generate, based on the curated, pre-existing information that our author-artists give to them—the other more procedurally-oriented rhetorical canons (arrangement, style, memory, and delivery) can move more fluidly between the computational and the human. I turn now to these canons, starting with the canon of arrangement as it functions in "@Tubman's_Rock," from Bertram's *Travesty Generator*.

If invention is the rhetorical canon concerned with questions of *what*—What is the issue at hand? What relationships between ideas matter? "What do you want to amplify?"—then the rest of the rhetorical canons (arrangement, memory, style, and delivery) are concerned with questions of *how*. The first of these more procedurally oriented canons is arrangement, a canon interested in how speech or writing is ordered. Words, "artfully arranged," persuade "all people [to be] accordingly moved," Cicero writes in *De Oratore* (195). In classical oration, there is a well-defined, six-part structure for effective speech: 1. Introduction (exordium), 2. Statement of Facts (narratio), 3. Division (partitio), 4. Proof (confirmatio), 5. Refutation (refutatio), and 6. Conclusion (peroratio). Varying rhetorical appeals, per Cicero's *De Oratore*, accompany different parts of this structure. A speaker should establish their authority through appeals to ethos in the introduction, should appeal to logos in the body of their speech, and then should conclude by employing appeals to pathos. This is a structure that appears frequently in persuasive texts, Classical and contemporary, but only considers arrangement in a limited context.

In *Virtual Muse: Experiments in Computer Poetry*, early computational poet Charles O. Hartman writes, "The artist's job is to compose, to place together in a meaningful arrangement a number of independent elements" (29). Computer-generated poetry provides a venue for rhetorical analysis that allows for an expansion beyond the Classical understanding of how arrangement can function in a text intended for social critique. Arrangement of texts in a combinatorial poem is *both* algorithmically determined *and* curated by a lead author-artist, demonstrating the fluidity of authorship within the canon. It does not follow the orderly progression of oration along varying rhetorical appeals. Even still in this context, texts "artfully arranged" persuade "all people [to be] accordingly moved" (Cicero 195).

In describing how arrangement functions in combinatorial texts, I employ the logic of full stack development, both rhetorically and computationally.[18] Full-stack development is a layers-based system[19] that "refers to the entire depth of a computer system application" (University of Toronto School of Continuing Studies). In a fundamental sense, it is a description of how a computer program is arranged. The stack metaphor, for my purposes, operates in two overlapping and

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[18] I use "texts" here to mean both poetry and programs.

[19] In my work, I draw and expand upon the long history of conceptualizing new media environments in terms of their layered composition. Lev Manovich introduces an understanding of new media as consisting of two distinct layers: the "media/cultural layer" and "the computer layer" in his now-canonical 2002 text *The Language of New Media*. This understanding of new media also underpins my rhetorical theorization on computer generated poetry. In these works, there is a rhetorical or cultural layer paired with a literal computer layer; both are necessary for the creation and comprehension of new media works. This sort of thinking gave rise to Critical Code Studies, where computer code is read as one might close read poetry. Manovich writes in 2011 that "We think of software as a layer that permeates all areas of contemporary societies. Therefore, if we want to understand contemporary techniques of control, communication, representation, simulation, analysis, decision-making, memory, vision, writing, and interaction, our analysis can't be complete until we consider this software layer" (Manovich, Software, or the Engine of Contemporary Societies). The "software layer" of the computer-generated poetry is treated as part of the poem itself, inputs and outputs are considered equally. In the poem "@Tubman's_Rock," this treatment of the software layer as part of the poem itself is clear from the beginning, present in the title itself. The "@" sign decorator signals that this is a work meant to be read by both computers and humans. In Python3, a decorator is "any callable Python object that is used to modify a function, method or class definition" (Python syntax and semantics). It is a modification of an object, or an abstract type of data created by a developer, in which the decorator manipulates an original object and returns a modified one. The "@" sign labels the poem as something legible to both the electricity of a motherboard and of our own human minds.

complementary ways: computationally and rhetorically. In computational stacks, layers like operating systems, programming languages, and graphical user interfaces are arranged in sequence to conduct a particular task—randomize a set of strings, for example. In rhetorical stacks, layers like sociohistorical context, individual voices, and quotations as texts are arranged, too, for a particular rhetorical goal, namely, a moving or persuasive effect on an audience. Individual layers within a given stack can be deployed in different contexts; they are movable, modifiable. The stack itself unites them collectively under a common task (or in this analysis, canon). The rhetorical relationships between layers can be understood in their own discrete terms (layer *x* is combined with layer *y* for rhetorical aim *z*) and also in context with other related relationships, as a rhetorical collective. Using the organizing logic of the full stack to investigate both the computational and rhetorical dynamics of arrangement in the generated, combinatorial poem allows for a more fluid, responsive understanding of the complex rhetorical relationships between authors, sources, readers, and algorithms as well as the poiesis that enables all of the above. Investigating arrangement in terms of the full stack lets us see texts as simultaneously individual and collective, attributable to many authors in relation to one another while still working towards the same collective rhetorical end.

The Logic of the Stack

In computing, "full stack" refers to the development of the whole system of a computer, comprising in its fullest sense everything from hardware engineering to the collections of softwares layered on top of hardware that are used to execute a particular task. Simply put, "full stack" means holistic. For instance, in a web-based program tasked with randomizing lines of text, the stack is made up of layered elements, from the technical specifications of the hardware and operating system to the programming language used to code to the APIs interfacing with web-publishing software to the web-publishing software itself, with many other elements above, below, and in between those

layers. Metaphorically, the stack is a seductive concept that has been widely applied outside of computation. Sociologist Benjamin Bratton, in *The Stack: On Software and Sovereignty*, writes about the discrete and totalizing nature of what he refers to as the global Stack, from its mining of raw materials at the bottom to user experience design at the top. The global Stack, he argues, has emerged as "an accidental megastructure, one that we are building both deliberately and unwittingly and [that] is in turn building us in its own image" (5). Broader pop cultural usage of "full stack" has subsequently been co-opted as a capacious, sometimes ungainly metaphor in everything from computing, where it originated, to bodybuilding and politics. Using "full stack" to describe one's fitness and nutrition routine (meal prep, supplements, leg and arm days, and so on) is intuitive, albeit in the cringy neoliberal way of most techno-corporate metaphors ("bandwidth," "programming," for instance) that extend to the personal. *New York Times Magazine* columnist John Hermann cites the "organizing logic of the stack" as the reason for its wide appeal (Hermann). "As a popular term," he writes, "it risks becoming an empty buzzword, used to refer to any collection, pile or system of different things. (What's your dental care stack? Your spiritual stack?)." Hermann echoes the totalizing nature of Bratton's global Stack for the neoliberal individual: "if tech start-ups continue to broaden their ambitions and challenge new industries…then the logic of the stack can't be trailing far behind, ready to remake more and more of our economy and our culture in its image."

Some increasingly popular usages of the term "full stack" refers to individual habits and practices, a rhetorical move that subsumes all claims to authority under one individual or a singular corporate or governmental entity as the master of "any collection, pile or system of different things" (Hermann). Elements of the stack, in some popular rhetorical use, are absorbed under the authority of an individual (the "stacked self," "*your* [fill-in-the-blank] stack"), despite exiting as a result of communal and collaborative effort and infrastructure. The "stacked self" is what can be optimized and controlled; indeed, this self veers towards solipsism. We can see why this is a dominant popular

application of the metaphor: in a world ordered by Bratton's "global Stack," a person can only control themselves, miniaturizing the global Stack to the individual.

The poetic deployment of the stack happening in "@Tubman's_Rock" and other combinatory, computer-generated poetry fundamentally challenges current popular implications in its insistence on the communal. Arrangement done with the logic of the stack in combinatory, computer-generated creative works runs counter to individualism, giving up control for community while still retaining the structural logic of the stack itself. As with the original computational use and with the popular rhetorical uses of the stack metaphor, each component of the stack in a combinatory poem has a purpose or task only it can carry out. The specific arrangements of each discrete layer allow for the stacked whole to come together for a larger purpose or task. The key difference between popular rhetorical uses of the metaphor and this combinatory poetic use, then, is that in the poem, authorial control over each layer in the stack is distributed between voices, texts, and contexts instead of consolidated under one. This is an idea Laura R. Braunstein and Michelle R. Warren begin to take up in the context of public digital humanities work in "Zombies in the Library Stacks," in which they emphasize sociality through citation in a co-extensive understanding of physical stacks (i.e., library stacks), technological stacks, and social stacks. The "visibility of labor," Braunstein and Warren write, "correlates to the attribution of credit, another dimension of the social stack" (76). Citation, consequently, is also the foundation of the combinatory poetic stack; texts come together to create something greater than the sum of their individual parts in the collective.

Rhetorically, we are drawn to the stacking metaphor for its descriptive power and its one-to-one (or more than one) mapping in scale. Unlike comparable terms like "holistic" or "comprehensive," the distinct elements of the full stack allow us to arrange the thing as a cohesive whole without losing procedural nuance. This is the valuable perspective the full stack metaphor lends. As Kenneth Burke writes in his "Four Master Tropes," good metaphors allow us to see

"something in terms of something else" (421). Braunstein and Warren expand on this Burkean impulse in their work on the stack metaphor, writing: "As a rhetorical figure, metaphor shapes what can be thought. When it functions properly, we do not even notice the epistemic shifts that occur when one domain or scale substitutes for another" (71). The stack metaphor moves with its context, working with global geo-political infrastructure just as easily as a combinatorial poem. They continue, "Metaphor serves as software so subtle that it can be mistaken for hardware" (71). There is a slippage here relevant to my own investigation: in combinatorial poetics, the stack at hand is both computational and rhetorical. Stacking and arranging, as rhetorical procedures of organization and order, are one and the same. In the following sections, I trace out elements of the poetic stack as it functions in "@Tubman's_Rock" separately, to parse both computational and rhetorical elements and their impacts on the poem and its meaning. This is ultimately an artificial separation, though, imposed for clarity's sake and to more intelligibly demonstrate the rhetoricity and motility of computational processes, as orchestrated and arranged by Bertram. In the poem, the computational and the rhetorical are coextensive, two parallel and connected stacks that form the double helices of the poem's DNA.

The Computational Stack as an Arrangement Strategy

As most, if not all, computer programs are communally composed, the layers that make up the computational stack of "@Tubman's_Rock" are necessarily built on and arranged by the communal labor of many authors, with Bertram's curatorial prowess ordering the iterations that wind up in the final printed poems of *Travesty Generator*. In a standard computational stack, there are two coextensive sides that compose the stack, the backend (or server side) and the frontend (or client side), in order to complete a particular task. Many visualizations illustrate the stack as if it were actually two stacks rather than one, with the internet as the most common recursive go-between

connecting the backend and frontend. This relationship is often represented by a graphic like the one depicted in Figure 1, in which the server-side—composed of an operating system, a web server, a database, a programming language, a web framework, for example—is connected to the client-side—composed of personal computing hardware, markup languages, native applications, and so forth—through the internet.

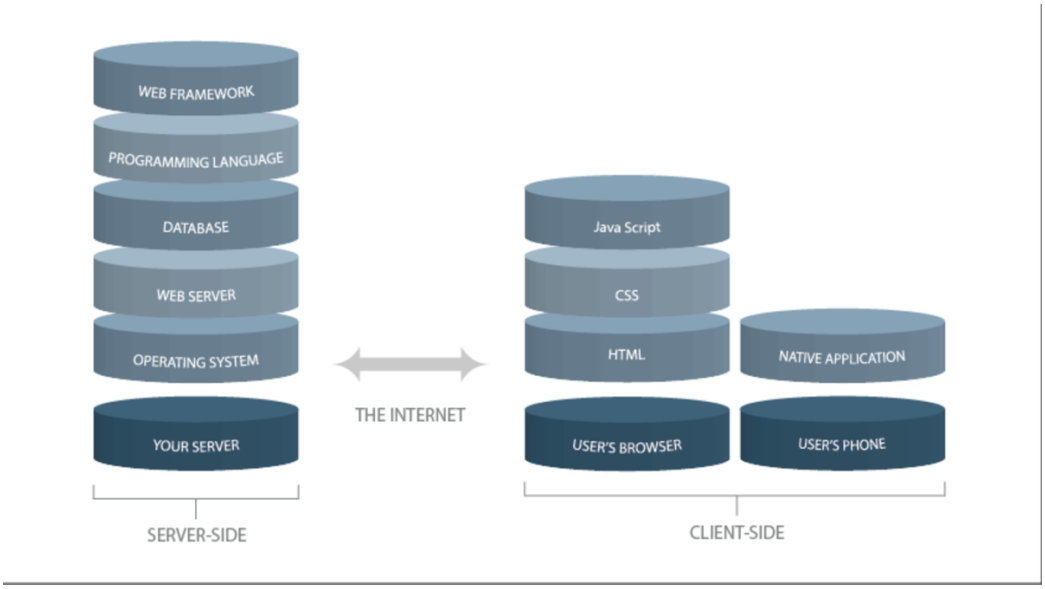

Figure 1: Illustrative diagram of a standard computational stack (Server-Side and Client Side Graphic)

Computational stacks are intrinsically task-oriented and must be arranged in a certain way in order to get a desired output. That is, there is a clear order of operations, a clear directive for how layers are to be arranged in the stack. The computational stack for "@Tubman's_Rock," a Python program written in a Jupyter Notebook on Bertram's personal computer is no different. Its task is the iterative generation of poems, and like all computer programs, it relies on a backend and a frontend stack to accomplish this task. Depicted in Figure 2 is the high-level visual overview of

architectural relationships in the Jupyter Notebook stack,[20] from the database level up to the web frameworks. Underneath these layers in the backend stack are the user's Windows operating system and Jupyter's web server, where all of the backend stack is hosted.

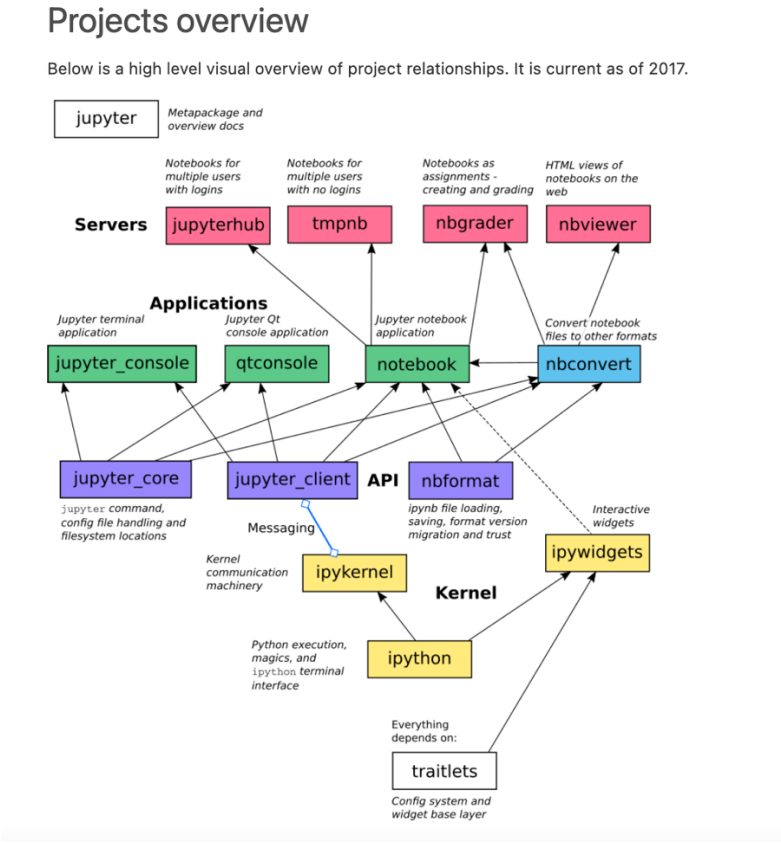

Figure 2: Projects overview of stacked relationships for Jupyter (Jupyter)

The frontend or client side of the computational stack for "@Tubman's_Rock" can then, at least partially, be traced backwards from the Jupyter Notebook development environment on Bertram's personal computer. The programming language, Python, was installed on their PC, then Jupyter's integrated development environment with the Python extension and interpreter allowed

[20] Because "@Tubman's_Rock" was composed in a Jupyter Notebook development environment on Bertram's personal computer, the backend or server side of the poem's computational stack is well-documented by Project Jupyter, an open-source software, standards, and services developer for interactive computing, that developed the Jupyter Notebook environment.

Bertram to use built-in programming tools on top of the code editor (like code completion aids, debuggers, interface testing, etc.) to aid in crafting error-free, portable code. The computational back and front-ends here all serve to mediate and diffuse Bertram's agency as lead author-artist. The creation of the combinatorial, computer-generated poem plays out here, arranged through the computational stack.

Bertram's code for "@Tubman's_Rock" was a modification and translation of the Perl code that artist and programmer Wayne Clements wrote in 2013, as a reconstruction of Nanni Balestrini's 1961 computational poem "Tape Mark 1," a work that is a significant early example of computer-generated poetry. The original code for "Tape Mark 1" is unavailable, which prompted Clement's 2013 Perl reconstruction, shared as a text file online (Balestrini and Clements, Tape Mark I). Bertram copied this code, from the online text file, into the Jupyter Notebook on their computer, translated it into Python (their programming language of choice) and changed it for their own purposes.

Other than variations between Clement's reconstructed code and Bertram's partially printed code for "@Tubman's_Rock" published in *Travesty Generator*, then, the primary differences between the programs are in source text corpora, stanza length, and punctuation between lines. Each program draws on different bits of source text, split up into phrases to be spliced together by the program. Clement's reconstruction of Balestrini's program draws on three sources—the *Tao Te Ching* by Lao Tzu, Michihito Hachiya's *Hiroshima Diary*, and *The Mystery of the Elevator* by Paul Goldwin.[21] Bertram's modification of the program draws on many more and more communal and ephemeral sources—Bertram's own poetry, quotations from Mamie Till and Gwendolyn Brooks, articles from cotton.org and CNNMoney.com, educational resources on "Codes and Phrases Used on the Underground Railroad" from the Kennedy Center Digital Learning Team, common Google queries

[21] The *Mystery of the Elevator* is a bit of a mystery itself—no one has been able to track down this book since it was mentioned by Balestrini, leading to speculation that the text is an invention of Balestrini's (Fischer).

about Harriet Tubman, and Wikipedia articles on Mamie Till, Emmett Till, Harriet Tubman, "the rock that struck Harriet Tubman in the head," and "slave patrols," among others (Bertram 52-53). Another noticeable difference between the programs is the setting of stanza length—Bertram's stanzas are longer than the stanza's generated from the Balestrini reconstruction and more varied in length—between 10 and 13 lines—whereas Clement's and Balestrini's are consistently 6 lines. So too, Clement's reconstructed Balestrini code is seemingly more concerned with inserting punctuation between snippets of source texts while Bertram uses minimal punctuation that is integrated into source text snippets themselves, instead of applied as an external variable in the code.

When the Python program for "@Tubman's_Rock" was finished, Bertram ran it in the user interface of the Jupyter Notebook, subsequently curating, copying, and saving stanzas that combined the texts embedded within the program in a way that drew out the complexity and nuance of a collective Black American contemporary existence and speculative future. This section from stanza $[10] of "@Tubman's_Rock" demonstrates this curatorial complexity at the frontend of the poem's computational stack. Phrases from source texts combine to become larger than the sum of their parts, thematically entangling white supremacist ideology with American currency and monetary policy, insisting on collective Black futurity, alongside the particulars of Tubman's individual legacy.

> Treasure secretary "in no rush[22]
> People also ask *why is Harriet Tubman important to the world?*
> people also ask *what is Harriet Tubman*
> *most most famous for?*[23]
> The dollar hasn't changed[24]
> Money, Mississippi[25] $$$$$$

[22] Likely from 2018 CNN Money article "Mnuchin still won't commit to putting Harriet Tubman on the $20 bill" (Borak).

[23] These are algorithmically generated, common Google queries Bertram used as source text, filling in the prompts: "*why is Harriet Tubman…" and "what is Harriet Tubman…"*

[24] Adapted from CNN Money article (Borak).

[25] Location of Emmett Till's lynching

Now, of course, we are looking at the text generated by the program on the frontend of the computational stack. This component of the computational stack is also a part of the rhetorical stack we will discuss momentarily, but is necessarily included here as the execution or output of the original task of the computational stack for "@Tubman's_Rock": to generate a poem.

My focus on the computational stack of "@Tubman's_Rock" attends to the material conditions of composing in a computer-mediated environment. N. Katherine Hayles, in her "Print Is Flat, Code Is Deep: The Importance of Media-Specific Analysis," calls for such attention, encouraging a "medium-specific analysis" of text, especially in the context of computational poetry. "Materiality is reconceptualized as the interplay between a text's physical characteristics and its signifying strategies, a move that entwines instantiation and signification at the outset" (67). She goes on to put forth her definition of the role of the lead author in an electronic text:

> The electronic author who types the same sentence then goes on to consider what behaviors and animations should attach to the words, in what font and color they should appear, on what background and over (or under) what layers, to what other texts or structures they should be linked, and so forth. *In all these activities, the hardware and software are active partners, facilitating and resisting, enabling and limiting, enacting and subverting. The labor needed to program these effects must be seen as intrinsic to the work of creation.*[26] Like the creator of an artist's book who manipulates an Exacto knife to make delicate cutouts in heavy white Italia paper and painstakingly sews the pages together, the writer of an electronic text is intensely aware of the entwining of intellectual, physical, and technological labor that creates the text as a material object. (81)

I take Hayles' claim that "the hardware and software are active partners" in the composition of a computational poem a bit further (81). The computational stack is specifically arranged to allow for the completion of a particular task—in our case, the generation of a poem. There is a very particular order of operations that must be followed computationally—a clear way to arrange the stack in order to achieve the desired output. There is an entire computing infrastructure that must exist

[26] Emphasis mine

before "@Tubman's_Rock" can. An operating system, a web server, a database, a programming language, a web framework, personal computing hardware, markup languages, native applications, the internet (and so on) necessarily provides the basis for the existence of the poem, arranged in such a way to make the poem—an output of a Python program in Bertram's Jupyter notebook—possible. The computational stack as a communal organizing structure of the poem embeds a community, in all of its ethical complexity, into its material composition. Just as conditions of production of the individual components that make up the computational stack are material, so are the conditions of living that inform the authors' many compounded choices in each layer of the computational stack. As Safiya Noble, Ruha Benjamin, Joy Buolamwini, Timnit Gebru and many others demonstrate in their works on algorithmic bias, technology as a tool is not neutral. The authors of the hardware and software that are active partners in the composition of the poem have their own ethical impetuses which are deployed through the use of their technology. This is an awareness that Bertram captures at the end of *Travesty Generator*. They write: "This work responds to the fact that even though computer code constitutes the hidden back-end of almost all the technology we interact with, like Google search, this technology is presented as neutral, driven only by objective numbers" (76).

Bertram, in my interview with them, reflected on the material conditions of composition for their collection: "[*Travesty Generator*] has served to amplify marginalized voices through code in a way that I did not anticipate," they say. "But that shows me the power and the possibility [of code]." This is relevant to both sides of our investigation—to the arrangement both computational and rhetorical stacks—attending to Hayles's call for a "medium-specific analysis," while also emphasizing the community of authors, with their myriad identities and priorities, that enables the existence of the text from both sides. The computational stack is the work of many diffuse authors, their voices winding up in their texts, and the hardwares, and softwares that allow for such a poem to exist.

Many individuals authored the layers going into the computational stack of the poem, from the nameless developers of Microsoft's proprietary Windows OS to the five hundred and thirteen (and counting) contributors to the development interface project, and all of the many other engineers, developers, and authors around and between. The obscured but ever-present authorial choices embedded into the carefully-arranged layers of the computational stack of the poem strengthen Bertram's answer to their question of stasis: "What do [I] want to use it [code] to amplify?" In relying on infrastructure that is collaboratively composed and arranged to create a poem, Bertram amplifies, through the poem's conditions of production, the necessity of communal work.

The Rhetorical Stack as an Arrangement Strategy

Like the computational stack, the rhetorical stack can be understood as having both back- and frontends, that come together through the poem. The backend of the rhetorical stack includes all of the individual texts—be they Wikipedia pages, quotes from a newspaper article, or other sources—that give the poem-generating algorithm something to work with. This also includes the texts of the computational stack—the operating system, GUIs, Jupyter notebooks, and the generative algorithm itself. Under these texts, we see the authors behind them and their individual context, along with the sociohistorical context in which they exist. The backend and frontend are connected by the generations and curations of the lead author-artist alongside the poem-generating algorithm, linked in a recursive relationship where the texts and contexts of the backend can change and make their way into continually new iterations of the poem on the frontend.

We access the rhetorical frontend of the computer-generated poem through the poem as it comes to us, its audience. In the case of "@Tubman's_Rock," this is as a printed poem on pages 41 to 53 of the collection *Travesty Generator*. This is where layered arrangements of texts come together to make complicated, communal rhetorical appeals to their audience. The individual voices from

within the source texts of the combinatorial poem want from their audience many things, only some of which are listed here: for realities to be believed ("I just wanted the world to see what they did to my baby"); for answers to be given ("*What was Harriet Tubman's life like?"*); for advice to be heeded ("the river bank makes for a good road"); for hope to persist ("*a friend of a friend of a friend sent me*"); for the challenges of creating systemic change to be grasped ("to holler down the lions in this air"); for greatness to be recognized ("to put Tubman on the $20 bill"); for Black futurity to be considered inevitable ("we won't stay dead") (Bertram 41-53). The authors[27] creating these texts have the rhetorical authority to make these calls based on their identity and context, as ethical appeals typically function. When algorithmically arranged, these appeals combine too, becoming greater than the sum of their parts in the poem through two main rhetorical mechanisms produced by both the algorithm and Bertram themself: randomization and amplification.

import **random as Arranging with the Stack**

The fragments of code and commentary that we have for "@Tubman's_Rock" are minimal. Per my interview with Bertram, "the reason why there isn't more code [in the book] is a very parochial answer, which is that I lost it [when] the computer died." Between Clements's program and the commentary and code fragments for "@Tubman's_Rock," though, we have enough code to see how the computational and rhetorical come together, through the canon of arrangement. We see at the top of the code printed after "@Tubman's_Rock" in *Travesty Generator* that two modules are imported before source text is embedded and before the poem-generating algorithm is written:

[27] In consecutive order from the list above: Mamie Till, Google searchers, African-American spiritual, Harriet Tubman, Gwendolyn Brooks, CNN Money article author, African-American spiritual.

"**import** random, textwrap"[28] and "**import** sys"[29]. These modules are prefabricated chunks of code that a programmer can bring into their project to make certain tasks easier. The "random" module is one that many works of combinatorial poetry written in Python use (and has functional equivalents in all other widely-used programming languages). The first line **import** random give us plenty to work with. The **import** random module in Python provides access to functions that support randomization operations. It allows the program to pick randomly from integers, lists, etc. It itself is a computational strategy of rhetorical arrangement.

Though not written in Python, Nanni Balestrini's original "Tape Mark 1" poem had an identical function in the code central to its operation, a central reason why the **import** random module made its way into the "@Tubman's_Rock" Python version of the program. As a poet, Balestrini reveled in the serendipitous, combinatory, surreal aspects of computer-generated poetry. He says in a 1962 interview about his "Tape Mark 1": "Poetry is all made of combinations. In poetry the verses, the syllables, the verses are combined…The game of coincidence is also related to poetry. The surrealists said, 'Mix verses in a hat, then pick them randomly, [and] make a poem built by accidentally combining verses.' And this operation had very much to do in my opinion with the history of poetry."

In his work, Balestrini emphasizes the accidental, seeking pure randomness and chance. The randomness of a computer program given fixed source texts (or even a hat with verses in it), though, can only be so random, something Balestrini recognizes implicitly in his selection of source texts for "Tape Mark 1," but noticeably deemphasizes in his statements around his practice. In contrast, the

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[28] This module was most likely imported for formatting reasons—it wraps lines of text, capping them at a particular determined character limit.

[29] This module is one that allows environmental access to most other Python modules and is necessary for the use of the other imported modules.

limits of randomization, instead of the randomization itself, are the focal point of Bertram's combinatorial work, as a result of the rhetorical limitations of the algorithm with its fixed set of curated source texts. Bertram's work pushes against the nature of purely chance poetic encounters, while simultaneously relying on algorithms that randomize what they are given, allowing for a more deeply nuanced configuration of ethical relationship within the frontend text. Evie Shockley's blurb for *Travesty Generator* is illuminating in this regard. Shockley writes, "In the wake of a racist microaggression, two people of color might look at each other and say, "That was random"—ironically meaning it was anything but." She continues, *Travesty Generator* "use[s] computational processes to demonstrate that randomness offers no escape from the patterns that grief and outrage form in black lives." Since "@Tubman's_Rock" and many of the other poems of *Travesty Generator* are combinatory works with defined sets of source corpora, true randomness is constrained. It cannot be expressed fully in these works, just as true randomness in bad behavior or violence towards others is incongruous with racism. Randomness cannot offer an escape in these poems, since it was never really there in the first place.

The constrained randomization that is there, enabled by the **import** random module, offers us something else, though. The **import** random module enables Bertram some rhetorical distance in the arrangement of the pieces of text. With the module doing the work of arrangement (instead of Bertram directly controlling how texts are arranged and combined), the combined truths and appeals of the texts within are raw and forthright. Tasking the module with randomization provides both a procedural system for poetic implementation and a critique of a community's existences within structural oppression, mirrored by the fixedness and repetition of themes that emerge in the source corpora through disparate texts. The use of the randomization module on this particular source corpora makes clear the variabilities of Black American life, alongside its continuities. No individual

voice alone (in this case, Bertram's) can hold within it the experiences of a community, but together, there is a deep communal truth in their algorithmic combination, randomly arranged.

The rhetorical appeals of the source texts' individual authors—for realities to be believed, answers to be given, advice to be heeded, hope to persist, the challenges of creating systemic change to be grasped, greatness to be recognized, Black futurity to be considered inevitable, and so on—flow together, gaining cohesion, force, and momentum in their constrained, random combination with one another. Elements of the source corpora for the first iterative stanza "$[0]," taken separately, for example, have the desires of their authors embedded within them, certainly. Most of these elements, though, are fragmented and partial, separated by Bertram for their eventual algorithmic combination.[30]

> They tied up | Till | (steal away) likely to kill | just stay dead
> Drove toward | Money, Mississippi | behind enemy lines
> The dead trees | will show you | the way
> See us free | like Jesus | we just won't stay dead

As component pieces, much of this partial stanza is bits of a Wikipedia article on the lynching of Emmett Till,[31] phrases from the coded spirituals of the Underground Railroad,[32] or Bertram's interpretation of the Wikipedia article[33] or the spirituals.[34] In decontextualizing and chopping up these original texts within the source corpora for use and recombination by algorithm,

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[30] I put bars [|] between the independent elements or phrases in the first five lines of stanza "$[0]"

[31] see the phrases, "They tied up," "Till," "Drove toward," "Money, Mississippi," "likely to kill"

[32] from "Steal Away (to Jesus)" we see the phrases, "(steal away)" and "like Jesus," and from the spiritual "Follow the Drinking Gourd" we have the phrases, "the dead trees," "will show you," and "the way" (Steal Away to Jesus) (Bresler).

[33] see the phrase, "behind enemy lines"

[34] see the phrases, "See us free," and "we just won't stay dead"

Bertram's process reflects on the histories and realities of violence and estrangement that slavery, racism, and systemic oppression forced upon Black Americans. Separately, each of these textual elements has its own author and context, and an ethical appeal to an audience to go along with it. But, they are so short and fragmented on their own that the individual ethical appeals are often either somewhat obscured or shallow in comparison to the collective, stacked ethos of "@Tubman's_Rock" as a whole.

"They tied up" as a phrase is excerpted[35] from a 2018 version of a Wikipedia article with 2637 semi-anonymous crowdsourced editors, and counting (Emmett Till). It reads as a presentation of fact, with the ethical appeal of its authority as fact resting on collective capability of the thousands of Wikipedia editors of the article who together enacted a thorough process of citation and fact-checking. It is a chilling recitation of fact, one that refers in part to the horrific individual violence perpetrated by Roy Bryant and his half-brother J.W. Milam, the two men primarily responsible for the lynching of Emmett Till. On its own, though, it merely conveys what happened to Till. It does not, as the whole of the algorithmically randomized poem does, make visible the continuities of Black American life, only one moment of one life. As an individual statement, the line exists as a retelling of past violence done to one boy. As an individual line, "they tied up" certainly does not demonstrate an abiding, communal confidence in cosmic justice and Black futurity.

Randomized with other lines from other authors under the constraints of the curated source corpora in the algorithm, though, other voices chime in to inflect, inform, contrast, and nuance the line "They tied up." This line becomes re-contextualized in combination and (re)arrangement with others. In this stanza, the line retains its original context as a statement of crowdsourced and cited fact in a Wikipedia article about the lynching of Emmett Till, particularly through its combination

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[35] Full sentence from the Wikipedia article: "They tied up Till in the back of a green pickup truck and drove toward Money, Mississippi " (Emmett Till).

with Mamie Till's quotation in the epigraph directly preceding it. So too, though, the phrase's ambiguity in subject and object allow it to take on additional meanings, layers of rhetoric, in its new poetic context. This line interacts with the phrase three lines down —"The dead trees"—in a particularly evocative way. The original context of the line comes from the fourth stanza of the spiritual "Follow the Drinking Gourd": "The dead trees will show you the way / Left foot, peg foot, travelin' on." In this original context, the "dead trees" refer to trees marked with "charcoal or mud of the outline of a human left foot and a round spot in place of the right foot" by alleged Underground Railroad operative Peg Leg Joe[36] as a navigational tool for enslaved individuals escaping to freedom along the Underground Railroad (Bresler). With "They tied up" three short lines removed from "The dead trees," the two lines initially seem to contrast one another in the messages and ethical impetuses they aim to convey and the primary audiences they aim to reach. "They tied up" Emmett Till in "the back of a green pickup truck and drove toward Money, Mississippi," Wikipedia editors write and edit and factcheck and reword and check again, for users of the Internet writ large. "The dead trees will show you [an enslaved person] the way," the spiritual goes, a coded message in song and in physical environments for enslaved folks to use in order to escape to the North.

Taken together in their new context in the first stanza of "@Tubman's_Rock," though, on the frontend of the poem's rhetorical stack, underwritten by the combined textual, authorial and sociohistorical contexts of the backend, these lines become re-contextualized by their randomized arrangement with one another through the algorithm. Because each line has undetermined referents in the context of the first stanza of "@Tubman's_Rock," we can see them start to shift in reference

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[36] Peg Leg Joe and the origins of "Follow the Drinking Gourd," first published as a song by amateur folklorist H.B. Parks in the *Texas Folklore Society* in 1928, remain largely a mystery and according to music historian Joel Bresler, "there has been speculation for decades that the song was a clever fabrication" (Bresler). Regardless of the song's origins, marked or "dead" trees as navigation tools were a well-documented phenomenon along the Underground Railroad.

to one another. "They tied up" in combination with "the dead trees" could shift its valence to mean that Underground Railroad operatives or folks escaping to freedom tied up the trees as a code for others escaping. It was a common practice for operatives to tie ribbons to trees and break branches, in order "to deliver coded messages" (Hudson, 64). The valence and referents of "the dead trees" can shift the other way too, in combination with the line "They tied up." Dead or dying trees, with the bodies of lynched Black folks hanging from them, are an undeniable visual symbol of white supremacist violence in the post-war and Jim Crow era. In a harrowing image that Billie Holiday made familiar: "Southern trees bear a strange fruit, blood on the leaves and blood at the root. Black bodies swinging in the Southern breeze, strange fruit hanging from the poplar trees" (Meeropol).

The rhetorical arrangement of these lines obscures direct timelines—moving from antebellum to postbellum or vice versa—in service of conveying the parallel truths of "they tied up" and "the dead trees" in combination. Because the randomized shuffling of the algorithm partially blurs the original referents and combines the contexts of these lines, together they begin to create a conglomerated ethos in the poem that unevenly and authentically surfaces the realities of Black American life, from pasts and presents of individual violence and structural oppression and also from rhetors' abiding faith in cosmic justice and Black ingenuity and futurity. Randomization, enabled through the parallel computational and rhetorical stacks is what lets audiences see the forest, as it were, made up of "the dead trees."

print **stanza and: Bertram's Curation as an Arrangement Strategy**

Just as the **import** random module functions as a computational strategy of rhetorical arrangement in "@Tubman's_Rock," so does the most basic of computational functions that shows up at the end of the program generating the poem. **print** stanza is the Python function in "@Tubman's_Rock" that enables the poetic output at the frontend of both computational and

rhetorical stacks. The print function in Python takes in any number of parameters—in the case of "@Tubman's_Rock," the "stanza" variable that randomizes lines from the source corpora and punctuates and arranges them into a 10-12 line stanza—and prints whatever is specified to one's screen, making the output of the selected variable visible to a reader-programmer. In this way, the print function is a mechanism of rhetorical delivery, a channel for imparting a given message. But, because there is another step involved in the creation of the poem of "@Tubman's_Rock," Bertram's curation, the print function *with* Bertram's curation of printed stanzas in this poem operates more as a strategy of rhetorical arrangement.

The print function brings to the surface what the algorithm has arranged and delivered as stanzas, which in turn gives them raw material from which to curate a poem of collected stanzas. In his essay in *The Bloomsbury Handbook of Electronic Literature*, Aden Evens writes that "Electronic literature stakes its claim in the gap between the principle of its generative concept and the accidents of its actual production" (219). Combinatory works like "@Tubman's_Rock" place definitive parameters around this gap. The poem can only be so surprising, since it draws on a program with specific instructions for a certain printed formal output, using pre-selected source texts as the data that the algorithm, as Scott Rettberg posits, can "modify or substitute" (72). Combinatory works are ultimately discrete: a "closed rather than open system" where "every combination has already been realized even before the code is executed" (Evens, 226). Randomization and quantitative limits constrain the possibilities of creativity or argument. This makes the role of Bertram's curation and arrangement of stanzas all the more important.

In his forthcoming review of *Travesty Generator* for *Digital Humanities Quarterly*, Zach Whalen also emphasizes the curatorial responsibility Bertram takes on in structuring their work as they do, as poems in a physical codexical collection. He writes:

> Computer code executed in the memory of a machine is characterized by its speed, ephemerality, and volatility, and digital poetry involving combinatorics can easily create a scenario such that any individual poem has a vanishingly small probability of existing. Thus, a poet's decision to inscribe the output of a computer program into the pages of a book is an act of curation as much as composition.

This echoes Charles O. Hartman's earlier emphasis on the compositional, curatorial role of the lead author-artist in computational poetics, whose job it is "to compose, to meaningful[ly] arrange a number of independent elements" (29). Whalen collapses composition and curation. Hartman emphasizes the role of the lead author-artist for a work of computational poetry. In most combinatorial works, there is a lead author-artist who originates the project and who serves as a coordinator for the other texts and subsequent voices and authors they draw in. For "@Tubman's_Rock" and the other poems in *Travesty Generator*, the lead author is Lillian-Yvonne Bertram. Of course, each of the "independent elements" the lead author-artist arranges are texts with their own authors and embedded authorial voices. These elements are, in this essay's nomenclature, layers—collectively arranged in the computational or rhetorical stack of the poem. For Christopher Funkhouser in his *Prehistoric Digital Poetry*, this passage from Hartman "identifies what works of digital poetry are in their broadest sense" (31). They are, he writes, "arrangements of self-regulating (sometimes user-regulated) elements" (31). Each layer is discrete, "self-regulating (sometimes user-regulated)," a text with its own author, original context, and rhetorical aim. The authors' voices persist within. The lead author-artist is the architect of the stack, computational and rhetorical. They organize layers into a "meaningful arrangement," where discrete voices engage recursively with the collective in the stack (29). Within the stack of combinatory works, the individual is just as important as the collective and vice versa.

In the "stanza" variable that is printed in "@Tubman's_Rock," strings of source text are concatenated, or linked together after their randomization. Based on the Python source code printed after "@Tubman's_Rock" and the reconstructed "Tape Mark 1" Perl code that

"@Tubman's_Rock" is based on, individual strings (or the split up phrases that comprise the texts of the source corpora) are not given any instruction[37] on their placement or inclusion within a stanza—that is left up to the randomization function. In "@Tubman's_Rock," however, Bertram selects printed stanzas that make visible the paradoxes and possibilities of Black life—past, present, and future—in America. They choose, too, not to publish the iterations that were nonsensical or that "fell flat" (Interview). They likely did not even read all of the possible iterations of the "@Tubman's_Rock" program, since it can generate over a billion potential poems. Instead, they curated what "reverberated," arranging and further amplifying the thematic emphasis on the collective that was already present in the source corpora.

The phrase "I just wanted the world to see," for example, functions as a refrain throughout the stanzas, as a direct result of Bertram's curation of the final poem. In the eleven stanzas that comprise "@Tubman's_Rock," the phrase "I just wanted the world to see" shows up in nine, in addition to its inclusion as Mamie Till's attributed quote in full ("I just wanted the world to see/ what they did to my baby"), which precedes the poem. The phrase "I just wanted the world to see" is statistically overrepresented in "@Tubman's_Rock"—if randomization alone were responsible for creating the poem, it would appear much less across the selected stanzas. The phrase "will show you" appears twice, and "when the wind blows" three times, across the stanzas of the poem. The phrase "trouble the water" only surfaces once. A poet with a deep understanding of the role of repetition in making and transforming meaning, Bertram strategically arranges the generated stanzas across the whole of the poem, with a clear consideration of the placement of the repeated line "I just wanted the world to see." In the first stanza, labeled $[0], "I just wanted the world to see" ushers in the conclusion of the verse, as the third-to-final line:

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[37] Safeguards against repetition of a particular phrase within individual stanzas are coded into the stanza variable, though. This is why there are no repeating phrases within a particular stanza.

I just wanted the world to see
the river bank makes for a good road
that Jesus is a friend with friends

Here, the stanza points toward what an anonymized "I" "just wanted the world to see"—a historical path of escape for enslaved folks ("the river bank makes for a good road") and a faith and trust in God's hand working through others ("that Jesus is a friend with friends"). In its separation from its original context, the singular "I" of Mamie Till's original words becomes fragmented and plural. We as readers are left without a clear referent for an "I" within the context of each stanza—Is the "I" still Mamie Till? Or is it Bertram? Is the "I" whoever is reading the poem, or the speaker of the poem? In the context of this first stanza, for example, we can even imagine Harriet Tubman as the "I," saying that she "wanted the world to see" the path to freedom and the faith to get folks there. The phrase reveals itself as extremely versatile as it echoes and generates possibilities throughout the rest of the poem for "the world to see": stanza $[2]—"To holler down the lions in this air," stanza $[3]—"Till tied up, stolen away /Patterrollers spread throughout the colonies / toward promised land / — what they did to my baby," stanza $[4]—"flying bondsmen on French leave steal away," and so on (Bertram, 42-53).

The arrangement of the first stanza foreshadows the making of the phrase "I just wanted the world to see" into the poem's refrain, through Bertram's arrangement of the stanzas delivered to them by the rhetorical and computational stacks of the poem. The last three lines of the verse are a tercet making known an unknown "I"'s desire to have "the world see" a route to freedom and a confidence in faith. The phrase does not appear in the second stanza, $[1], but reemerges in stanzas $[2], $[3], and $[4]. In these stanzas, the phrase "I just wanted the world to see" gains momentum, but not necessarily heft; since the call, "I just wanted the world to see" is at the beginning of the stanzas, there is more thematic emphasis on what follows the phrase, a build-up of the variety of the

things "to see." This shifts dramatically in stanza $[5], in which the phrase "I just wanted the world to see" concludes the verse as its final line:

$[5]
People also ask *what is Harriet Tubman most famous for?*
Flying bondsmen on French leave steal away
They drove Emmett Till toward Money, Mississippi
Behind enemy lines
our Moses never lost a passenger
People also ask *why is Harriet Tubman important to the world?*
Tracks pressed south to north She often said *a friend*
of a friend of a friend sent me & when the wind blows
& the first quail calls
the river bank makes for a good road
I just wanted the world to see

In stanza $[5], after readers have gathered that there are many possibilities "to see," the phrase concludes a stanza, made from a combination of search engine queries, of violence, and of means to escape. In having "I just wanted the world to see" at the end of the verse here, Bertram is asking us to hold all of these things together, to "see" all of the possibilities of things to be seen all at once. For the rest of "@Tubman's_Rock," the phrase "I just wanted the world to see" moves to the ends of the verses in which it appears. In the second half of the poem, "I just wanted the world to see" cements itself as a refrain, now gathering heft alongside momentum with its every repetition and recontextualization. The voices within "@Tubman's_Rock" want their audience to witness, to "see," many things all at once. They wish for realities to be believed ("I just wanted the world to see what they did to my baby"); for answers to be given ("*What was Harriet Tubman's life like?*"); for advice to be heeded ("the river bank makes for a good road"); for hope to persist ("*a friend of a friend of a friend sent me*"); for the challenges of creating systemic change to be grasped ("to holler down the lions in this air"); for greatness to be recognized ("to put Tubman on the $20 bill"); for Black futurity to be considered inevitable ("we won't stay dead") (Bertram, 46). Getting the "world to see" these things, arranged here, reminds us that witness is power, and this power grows in collectivity,

when the "world…see[s]." This reminder emerges from the cultural, computational, and rhetorical stacks that brought fractured voices together and from Bertram's arrangement that delivers them to the reader.

The last stanza of the poem, $[10], returns the phrase to its original context and speaker, after having journeyed through its algorithmic combination with the words and desires of many, many others.

> *I just wanted the world to see*
> drove toward Money, Mississippi $$$$$$
> *what they did to my baby*

After holding the "want[s]" of many potential "I"s for "the world to see" many different things, Mamie Till's words become her own again, a mother's heartbreak shared with the world. Here, and throughout "@Tubman's_Rock," Till's words are still her own, but we also can see them as bigger than her now, too, at the end of the poem. In their choices of which generated verses to include and how to arrange them within the poem, Bertram acknowledges the communal efforts enabled by the stack. When interviewed about their choice to use combinatorial code in the production of a text focused on racial injustice, on Black futurity, Bertram says "I wanted the book to amplify some of the central concerns in my writing that people had been missing [in my previous books]." So, with *Travesty Generator*, Bertram aimed to take on issues of racial injustice and promote an expansive Black futurity "head-on, but with a method that is not head-on." This "method" has at its center the stack as a communal organizing structure, both computationally and rhetorically.

As we have seen, combinatorial code has an amplificatory rhetorical capacity, tied to both its programmatic randomization and, as we have now seen, the amplificatory curation and arrangement of printed variables by the lead author. This is captured by Bertram's earlier question: "If code is a megaphone, what do you want to use it to amplify?" Combinatorial code, in this formulation, is a

rhetorical tool akin to a megaphone; it makes louder and clearer the rhetorical appeals of the stacked backend rhetorical inputs, after it does its work of randomization. Constrained randomization and curatorial amplification are both prerequisites to the rhetorical efficacy of algorithmic amplification ("what do *you* want to use it to amplify?"), but algorithmic randomization and amplification is only one component of combinatorial, computer-generated poetry. To generate a coherent, meaningful combinatorial poem, the rules-based algorithm cannot rely on just randomization as a primary technical mechanism. The randomized elements of source corpora within the algorithm must also reference and relate to one another in a meaningful way. There are many ways to technically accomplish this with varying levels of complexity,[38] but the rhetorical effect is consistently one of amplification of the curatorial impulses of the lead author, the effectiveness of arrangement to create meaning instead of noise, and the communal ethos lying within the source corpora.

Travesty Generating

Travesty Generator, before it was a 2019 poetry collection, was a text generation program, developed in 1984 by Hugh Kenner and Joseph O'Rourke in Pascal to "fabricate pseudo-text" (129). A proto-Markov chain, "a Travesty Generator for Micros" generates language "such that each n-length string of characters in the output occurs at the same frequency as it does in the source text" (Whalen). By combining source texts from different authors—for Kenner and O'Rourke, Henry James and James Joyce—the resulting text seems grammatically correct and consistent, but the randomness of the assembly process produces often humorous outputs of "haunting plausibility" (Kenner and O'Rourke, 131). The novelty was the point for Kenner and O'Rourke, as it had been

[38] Some basic examples include organizing elements by line or syllable count—see many sonnet or sestina generators, sorting elements by part of speech either manually or with natural language processing toolkits, using conditional logic within the algorithm to keep elements grammatically correct based on user input or order and call elements internally—i.e. "only show element x after element y"

for Balestrini. As Zach Whalen notes, Kenner and O'Rourke's Travesty Generator for Micros was "a formal curiosity or at best an insight into a specific author's writing style" (Whalen). Even still, their original Travesty Generator retained this amplificatory rhetorical capacity, their "haunting plausibilities" a product of the internally referential program that combined specifically randomized elements of source corpora (131). The algorithmic effect of the original Travesty Generator program is the production of burlesque, a genre defined by amplification and exaggeration. This is reflected in the name Kenner and O'Rourke chose for their program; claiming that their work 'generates travesty' takes on the lighthearted, literary burlesque valence of the term. For Bertram, though, in their *Travesty Generator*, the travesties generated by the poems are the failings of systemic justice for Black Americans, travesties caused by white supremacy as a founding value in a society where "all men are created equal." Mechanically much the same as the amplification happening in Kenner and O'Rourke's, the amplificatory rhetorical capacity of the combinatorial code in poems like "@Tubman's_Rock" in Bertram's *Travesty Generator* holds more ethical weight as a result of the shift in source corpora in the rhetorical backend and arrangement made to mediate the rhetorical back and front ends.

Bertram as the lead author-artist of *Travesty Generator* answers Amiri Baraka's 1969 call to Black creators to "See everything fresh and 'without form'—then make forms that will express us truthfully and totally and by this certainly free us eventually." They refine the expansive form of combinatorial poetics, which can do this work of "truthful" and "total" communal expression on a structural level when the authority of community is prioritized over that of the individual for ethical aims that center justice and futurity for Black folks in the U.S. The rhetorical mechanisms that enable this, segmentation, randomization, and amplification via algorithm and curation as strategies of arrangement, are structurally present throughout Bertram's collection. Through the combinations moving through the stacks, we see communal voices and rhetoric arranged into something larger

than the sums of individual parts. As much as Ruha Benjamin's call to "remember to imagine and craft the worlds you cannot live without, just as you dismantle the ones you cannot live within" is a call for rhetorical invention, *Travesty Generator* is a call for rhetorical arrangement. In demonstrating how the canon of arrangement functions in a computer-generated poem like "@Tubman's_Rock, I seek to establish *how* Bertram is crafting a world they "cannot live without" just as they "dismantle the ones [they] cannot live within" (Benjamin).

In response to this call, we might imagine randomization and amplification—present throughout works of computer-generated poetry and art[39]—can serve to prioritize a plurality of voices in community over the individual. This has localized implications for the works' relationships with their audiences, in the form of the kinds of rhetorical appeals that can be made, and, perhaps, broader significance for socially-engaged computer-generated poetry and art as a genre. Throughout the rest of this project, I seek to further demonstrate how artists are using the intrinsic rhetoricity of creative computational processes for social critique and community-building. Computer-generated

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[39] These rhetorical mechanisms of arrangement—algorithmic randomization and algorithmic and curatorial amplification—operate similarly in other works of combinatorial computer-generated poetry, though with different embedded communities and rhetorical aims. Stephanie Strickland's 2020 collection, (Strickland), is another example of a combinatorial, computer-generated collection that relies rhetorically on randomization and amplification to create powerful ethical appeals communally. The collection uses a Python coded algorithm to perform all the permutations of change-ringing, an homage to 17th century English bell-ringing, where "ordinary folk…sought to ring all 7! permutations—all the different arrangements or 'changes' possible—with seven bells." Six of Strickland's bells are primarily based on one source each, the seventh is a medley of other sources. Bells are rung algorithmically in different mathematical permutations, the voices of the authors within giving us a cacophonous, strategic reminder of the changes that need to be rung socially and societally—changes for the increasingly volatile climate, racial inequity and injustice, among others. Though Bertram's *Travesty Generator* and Strickland's *Ringing the Changes* make particularly strong ethical appeals because of their ethical orientation towards social justice and backend relationship to sociohistorical context, all kinds of combinatorial, computer-generated works have a long-held tendency towards the creation of communal ethos through these rhetorical mechanisms of randomization and amplification. We see these rhetorical mechanisms replicated to a similar effect in the original combinatorial works folded into the computational and rhetorical backends of *Travesty Generator*—Balestrini's "Tape Mark 1," Kenner and O'Rourke's "Travesty Generator for Micros," Nick Montfort's "#!". They are also present in a long and evolving list of other combinatorial, computer-generated works that use source corpora from multiple authors and/or texts, including Nick Montfort and Stephanie Strickland's *Sea and Spar Between,* Jim Andrew's "Correspondence," Montfort's "#!," "Thomas Browne's Commonplace Book, or A Network of Texts, or The Garden of Cyrus algorithmically recultivated" by Stephen M. Pentecost, and many, many other combinatorial, computer-generated works that fold in source corpora from multiple authors.

poetry has long lingered somewhere between "medium,"[40] "form," and "contextual framework."[41] In addition, though, it has distinct, community-oriented social and rhetorical features that artists use as mechanisms of creative generation. Through this emphasis we will see computer-generated poetry's exigence or social motivation[42] to prioritize communal voice over the individual throughout these chapters. We can begin to understand how artists making computer-generated poetry and art use their work for social good, showing us a way of creating with technology that is ethical and pro-social, binding the rhetorical and the computational together.

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[40] From Carolyn Miller's "Genre as Social Action (1984), Revisited 30 Years Later (2014)": "Early uses of new media tend to obscure the distinction between medium and genre" (65).

[41] From Talan Memmott's "Digital Rhetoric and Poetics: Signifying Strategies in Electronic Literature": "Rather than a genre of poetry, or a formal definition of a specific object or application, digital poetry is a contextual framework, a lens if you will, through which a variety of creative technological applications can be considered" (26).

[42] I am using and updating Carolyn Miller's definition of genre, from her 1984 article "Genre as Social Action." Per Miller, genre arises out of rhetorical situation, which has exigence at its core. "Exigence must be located in the social world, neither in a private perception nor in material circumstance. It cannot be broken into two components without destroying it as a rhetorical and social phenomenon. Exigence is a form of social knowledge—a mutual construing of objects, events, interests, and purposes that not only links them but also makes them what they are: an objectified social need" (158).

BUILDING THE FUNHOUSE: "LACEWORK" AND THE CONSTRAINTS OF COMPUTER-GENERATED CREATIVE TEXTS

Completed in late 2020 by computational artist and teacher Everest Pipkin, "Lacework," as we viewers see it, is a continuously looping series of dreamy-looking videos of blurred faces and fluidly moving objects paired with action verbs and source file names. The verbs and videos have been adapted and altered from the MIT "Moments in Time" dataset, a large-scale dataset intended "to help AI systems recognize and understand actions and events in videos." This dataset is composed of one million, three-second videos that have been matched to one of 339 "frequently used and semantically diverse verbs"—building, crying, opening, etc.—by Amazon Mechanical Turk workers (Monfort et al.). The million videos, found by searching video metadata, were pulled from sources like "YouTube, Flickr, Vine, Metacafe, Peeks, Vimeo, VideoBlocks, Bing, Giphy, The Weather Channel, and Getty-Images" (Monfort et al.). Researchers randomly cut 3-second clips from the videos sourced from across the internet in 2017, roughly matched them with one of the 339 verbs, and sent them in batches of 64 to Amazon Mechanical Turk workers for "annotation." Turkers used the interface in Figure 3 to determine the primary action within the video clips:

Figure 3: Screengrab showing the annotation interface for pairing videos with action verbs (Monfort, Andonian and Zhou)

The workers were given binary choices for classification: Is there **cooking** happening in a video of rice sizzling in a pan? Is there **barking** happening in a bloody dog fight? Is there **rubbing** happening in a chef rolling a pin over dough? Is there **arresting** happening in a brutal use of deadly force by the police? **Flowing** happening in Flickr stock footage of Niagara Falls? **Pressing** happening in a moving image of a giant index finger over a screen? For the Turker annotating these videos, the answers to all of these questions, replicated and measured as statistically significant by the researchers, was 'yes.' So, into the dataset they went: cooking and barking and rubbing and arresting and flowing and pressing, along with hundreds of thousands more videos for 333 more verbs. The researchers control what metadata is linked with the clips—decontextualizing the actions—in creating the training dataset. The workers were responsible, through their annotations in statistical aggregate, for making binary decisions about predefined actions, shaping how memory gets stored and registered in the dataset.[43]

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[43] The binary action classification system of the original Moment's in Time dataset was later complicated by the same research team, with a project called "Multi-Moments in Time: Learning and Interpreting Models for Multi-Action Video Understanding," in which videos could be labeled with multiple actions. I.e. In the video of a chef frying rice seen in Figure 3, "cooking" and "frying" and "stirring" describe separate parts of the action occurring in the video. Though

Pipkin, a well-regarded game developer, writer, and computational artist from central Texas who now lives and works on a sheep farm in southern New Mexico, watched the entirety of the videos in that dataset ahead of their creation of "Lacework" (Bio). In an essay accompanying the piece, they describe in detail their experience of watching the million clips in the "Moments in Time" dataset:

> When I first started watching the dataset I assumed that the team of researchers who had put it together at MIT had seen the bulk of it, but I'm now convinced that assumption was wrong. This is because so much of the archive is so, so hard to watch. This is partly to do with time. The videos in Moments in Time have a severe, automated cut (3 seconds, sharp) that severs these moments, sometimes chopping them in the middle of the action which they are meant to describe. I eventually found that I had to mute the videos to keep watching at all- that the images could dissolve into colors and shapes but the jarring severance of the sound remained distinct and pointed no matter how much I watched.
>
> The difficulty of watching is also partly to do with consent. Moments in Time severs the relationship between recorded action and original maker. The researchers did not ask for permission to use these videos, and all ownership of—and control over—the image is pulled away from the person who held the camera, and from what that camera depicts.
>
> In the archive, there are moments of extreme emotion and personal vulnerability—tears, screaming, and pain. Moments of questionable consent, including pornography. Racist and fascist imagery. Animal cruelty and torture. And worse; I saw horrible images. I saw dead bodies. I saw human lives end. (On Lacework: watching an entire machine-learning dataset)

Pipkin watched all million clips in that dataset and sought a different end for the troubling videos. They were not using it to train a computer to recognize or understand anything, but instead wanted to use the computer and generative processes to create art that allows people to recognize themselves and others, while also challenging the systems that brought about the creation of the dataset. They saw it all and from it, curated around 1500 of the most beautiful and least invasive or

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more complicated than the original dataset, the focus remains on decontextualizing actions within videos for AI training purposes. (Monfort, Pan and Ramakrishnan)

traumatic clips for slowing down, interpolating, and upscaling into what would become "Lacework." With "Lacework," they wanted to be optimistic about caring for data, about making art that comments on the social, political, and economic conditions that lead to the creation of such a dataset, while compassionately acknowledging the individuals captured within it. They asked of themselves: "How do you accumulate the information of others at scale, and still make it materially theirs right not being made fun of not being elevated, but instead cared for?" ("Interview").

In Pipkin's "Lacework," the selected three-second videos from the dataset were initially shrunk to a very small resolution, to 32 pixels or about the size of a postage stamp, and were slowed down to fifteen seconds. They were then put through a computational interpolation process alongside an AI-mediated upscaling process. Shrinking the clips to a 32 pixel resolution worked toward Pipkin's goal of creating abstract representations of these "moments in time," instead of individually identifiable people or places. In stretching the original three-second clips to fifteen seconds, there's a need to add in additional frames, while blurring sequential frames together and smoothing the motion occurring within. This interpolation process is driven by older computational processes and is in direct response to the elongation of the clips—it keeps clips from being choppy, creating instead smooth, fluid graphics and movement. Pipkin ran the upscaling process that followed interpolation on Topaz Lab's proprietary software AI Gigapixel, a software that bills itself as "us[ing] deep learning to get better photo quality while enhancing detail" (Topaz Labs). This process is in direct response to the initial shrinking of selected clips and allows the final videos both to exist at higher resolutions, and is central to the aesthetic and critical exploration of the piece. Each clip went through several rounds of upscaling: from "80 pixels to 160, from 160 to 320, 320 to 640, and finally to 1280" ("Interview"). In each round of upscaling, the AI algorithm imagines detail where there is none. It, as Pipkin would later say in our conversation, "catches on its own artifacts, on things that it thought it saw four upscales ago." Where images would have been hyper-pixelated,

without the AI upscaling, the images of "Lacework" have pixels that have been transformed into blobby, kaleidoscopic lace, an "odd combination of texture and light."

Figure 4: Screenshot stills of "knitting" and "celebrating" clips from "Lacework"

The 15-second clips of "Lacework" look as if an abstract collage was turned into slow, fluid motion. Because of the upscaling process, individual pixels are indistinguishable, as are faces and other identifying features. It often takes one a moment (actually, probably right around three seconds, to the MIT researchers' credit) to figure out what one is looking at; sometimes the images and actions are more obvious than others. A softened, fluid figure languidly serving what seems to be a tennis ball for "hitting" is clear. So are the fingers, transformed into the hands of a mannequin, all shapes and joints, holding thin, bone-colored knitting needles on a blurred textile background for "knitting." The subtle blur of figures slowly moving around one another, silently interacting in a nondescript outdoor public space for "celebrating," is perhaps less so.

At the time of publication, Pipkin's artist bio asserted that "through the use of online archives, big data repositories, and other resources for digital information, they aim to reclaim the corporate internet as a space that can be gentle, ecological, and personal" (Unthinking Photography). I had suspected this aim had changed, having followed their work for the then two years since "Lacework" was published. Pipkin, a prolific and curious artist, had taken a clear pause in their artistic practice after the publication of "Lacework," then turned clearly into devising speculative game worlds in their 2021 "Roblox Dream Diary" and 2022 "World Ending Game." This suspicion was confirmed when, less than five minutes into our interview in June of 2022, after an explanation of the technical details of the work, they said: "Even when I proposed the work [in early 2020] I was feeling a little weird about using datasets like this in my own process. I was trying to figure out a way to engage with this work in some way that felt, if not ethical, at least like I wasn't perpetuating harm. I don't think I succeeded." Pipkin continued, "Frankly, this work was useful for me because now I don't work with big data."

This chapter engages with both the successes and failures of "Lacework," as an artwork that attempts to enact a significant rhetorical transformation of the original "Moments in Time" dataset through the rhetorical canons of style and, more meaningfully, memory. Through mediated, computer-generated changes to the rhetorical canon of style and the canon of memory's "ecology of practice," Pipkin initiates a transformation in the "Moments in Time" dataset, seeking to change it from a training dataset into a decolonial digital archive-as-artwork. Investigating how this process of transformation happens rhetorically can show us both the possibilities and limitations of creating with computational processes within the digital cultural record.

Style and "Lacework"

Just as the canon of invention, as we learned in Chapter One, continues to rely heavily on a clear human, authorial hand that determines the source texts and computational processes to be used, the canon of style similarly depends on the rhetorical priorities of a singular author. Control over this canon certainly can be impacted by computational processes—the helices of the computational and rhetorical stacks are at work here too, in the production of Pipkin's "Lacework." Ultimately, though, Pipkin bears the primary responsibility for articulating the style of their work, even as it is impacted and co-constituted by the computational processes they use. Style is another of the rhetorical canons concerned with questions of *how*; style, as described in the *Silvae Rhetoricae*, "names how ideas are embodied in language and customized to communicative contexts." Virtues or norms of style arose early in classical rhetoric, originating with Aristotle's students Theophrastus and Demetrius and later refined by Cicero and Quintilian. Book eight of Quintilian's *Institutio Oratoria* offers a clear and comprehensive overview of these five virtues: correctness, clarity, evidence or emotional resonance, propriety, and ornateness.

In a computer-generated creative text that is primarily visual, like "Lacework," these virtues of style are present, but are achieved in a hybridized manner, Pipkin's essay working alongside the creative visual text to articulate the style of the piece. There is a clear (a stylistic virtue) visual coherence or ornateness (another stylistic virtue) to "Lacework" as a visual text. Selected, disparate videos are—through the slowing down, shrinking, interpolating, and upscaling processes—given stylistic coherence through these processes. This aesthetic style is that of blur, fluidity, and obfuscation; the particularities of figures, items, and places within the clips are not meant to be discerned. What matters is the motion and the moment in time. These stylistic priorities are further evidenced both procedurally and emotionally (another stylistic virtue) in the accompanying essay written by Pipkin, "On Lacework: Watching an Entire Machine-Learning Dataset." Pipkin selected

videos "with a lot of texture to them, with subjects at a distance, in shapes or colors that were already confusing. I wanted compositions that the AI upscaling could catch onto and drag against, pulling a cloud into a mountain or a face into a coastline." Also in the essay, they recount the processes of watching the entire "Moments in Time" dataset, prior to the generation of "Lacework," from a personal vantage point that stylistically evidences and emotionally motivates both "Lacework" and its accompanying essay: "I see the subjects of the videos, the people living their lives. I meet their dogs, I see their homes. I see wild animals, strange weather, places I'll never get to visit, video games I haven't played. I see so much life." Pipkin cares—a move towards stylistic propriety—about the people whose videos wound up nonconsensually in the dataset, about the people who worked to sort and annotate them, about privacy, fairness, and respect. The combined stylistic virtues from both "Lacework" and its accompanying essay show us that much.

I bring up these stylistic virtues as they appear in the computer-generated creative text "Lacework" and Pipkin's essay "On Lacework" to demonstrate a clear authorial hand—Pipkin's—in their very appearance in the texts. The computational processes involved in generating "Lacework"'s style serve Pipkin's rhetorical intentions, while also bringing their own rhetoricity to the fore, as we have seen previously with the canon of arrangement and Bertram's curatorial hand. Pipkin articulates a clear stylistic vision through black-boxed computational processes,[44] bending the unwieldy rhetoricities of these various processes to their stylistic will in service of a clear, coherent, authorially-defined style in their work. The canon we now turn to, memory, interacts with both Pipkin's authorial intentions and the generative computational processes involved in the creation of "Lacework" in a much more complex manner.

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[44] The procedural ambiguity of how computational processes are making stylistic decision is particularly present in the AI upscaling process Pipkin uses—the specific pixels that are output change iteration to iteration, but ultimately still cohere to Pipkin's rhetorical vision and intention.

The Treasure-House: Memory and "Lacework"

"Now let me turn to the treasure-house of the ideas supplied by Invention, to the guardian of all the parts of rhetoric, the Memory." Attributed to Cicero, this section of the *Rhetorica ad Herennium* introduces the fourth rhetorical canon of *memoria* as distinct from the other canons. Memory is a canon of rhetoric, yes, but it also safeguards and enables all the others. This section of the *Rhetorica* also introduces the concept of the memory palace, a mnemonic device presented to Classical orators and used by them and contemporary poets alike to aid the memorization of speech, placing phrases and ideas in spatial relation within one's mind. Memory not only stores information, but guides orientations of how that information is ordered (arrangement) and how it comes out (style, delivery). In its role as a guardian to "all the parts of rhetoric," memory becomes much more than rote oral recollection (though its easy elision with mechanical rote-ness is of note too). Memory is, as librarians and archivists know deep within their bones, all about the organization, storage, and retrieval of information too.

With the mention of librarians and archivists, we have moved from the oral to the textual, a shift that is classically registered, but takes us decidedly toward contemporary discussions of the fourth canon and rhetoric more broadly. Digital rhetoric, as a discipline and practice, relies on this shift and reapplication of classical rhetoric from speech to written text. For some, this shift has had some serious implications for memory, as it was initially construed in the *Rhetorica*. Storing memory through writing, as Plato saw it in the *Phaedrus*, was a threat to effective oral communication and to memory as part of the rhetorical canon. "If men learn this, it will implant forgetfulness in their souls;" Plato recounts to Socrates, "they will cease to exercise memory because they rely on that which is written, calling things to remembrance no longer from within themselves, by means of external marks." Seeing writing as a storage system, for some, renders memory irrelevant, it erases it as a productive rhetorical canon. Edward P. J. Corbett confirms this Platonic notion in his *Classical*

Rhetoric for the Modern Student: "After rhetoric came to be concerned mainly with written discourse, there was no further need to deal with memorizing." He continues, "There will be no consideration in this book of this aspect of rhetoric" (38).

This narrow view of memory is not one that is widely held by contemporary rhetoricians, digital or otherwise, in large part because writing is so much the basis of our work. But the Platonic admonishment still has present-day implications. As Colin Gifford Brooke writes in his 2009 monograph *Lingua Fracta: Towards a Rhetoric of New Media*, "The vast externalization of memory represented by a range of media from page to screen has become an accepted and even integral part of our society, but we still have not shaken the effects of Plato's critique" (146). Brooke offers another way forward. Reducing memory to mere storage, he argues, preserve it as a "binary of presence/absence," where "little thought [is] given to the effects that various media might have on what is being remembered" (147). Instead, he advances an understanding of memory that foregrounds the role of media in its creation, spoken or written, analog or digital. Borrowing N. Katherine Hayles's dual axes of absence/presence *and* pattern/randomness as a way of understanding phenomena in media, Brooke argues that memory is an ecology of practice, not mere storage. The role of media in memory has deep rhetorical and practical implications. Brooke cites the 1992 trial of LAPD officers for use of excessive force against Rodney King, an unarmed Black man who was brutalized by police during his DUI arrest as an example of how media impacts memory. A bystander filmed the police beating King, but during the trial, the defense team turned the video footage evidence into photo stills, a "form of interpretive violence" that came to legally justify the police brutality (149). This, as Casey Boyle writes in a review of *Lingua Fracta*, "reveal[s] memory as involved in an ecology of practice." An ecology of practice is intrinsically relational, between human and non-human rhetors, between environments and contexts, media or otherwise. An ecology of practice takes into account this relationality and context-sensitivity and its

constitution of the canon of memory. Memory not only safeguards rhetoric in storage but also enables it in organization and retrieval.

This becomes particularly relevant in a digital context, with a seeming overabundance of textual data that is in existence and continually being created. Here, Brooke situates memory-as-practice in a building and maintaining of patterns across texts and interfaces. Brooke's frame creates a helpful jumping off point for a contemporary theorization of memory in the rhetorical canon, particularly as it relates to what is known as "big data" and its attendant ethical issues. We can see this theorization of memory at work throughout our digital existences. Data is the primary digital commodity, the thing(s) to be remembered-in-practice. Google's mission statement—"to organize the world's information and make it universally accessible and useful"—implicitly takes up this idea of memory as an ecology of practice, with its emphasis on organization (pattern-seeking) and access (retrieval) and not on mere storage. For questions of "big data" as the subject of memory, Brooke's framework of an "ecology of practice" is helpful: Why is data the thing to be remembered? Who is meant to be doing the remembering? What implications does this have? What issues arise when a plurality of ethical motivations is considered? And so on.

To begin to answer these questions, it is important to note that rhetorical approaches to big data are well-established, and data is part and parcel of digital rhetorical processes. E. Johanna Hartelius emphasizes the rhetoricity of big data in her chapter "Big Data and Global Knowledge," noting that despite promises of objectivity, "big data obfuscates its own constructedness as a human measure" and is, in fact, deeply human and deeply rhetorical (84). Brad and Ashley Rose Mehlenbacher in "The Rhetoric of Big Data: Collecting, Interpreting, and Representing in the Age of Datafication" echo Hartelius's call to foreground the rhetoricity of data. They write: "Understood as a form of argument, data reveals important insights into rhetorical situations, the motives of rhetorical actors, and the broader appeals that shape everything from the kinds of

technologies built, to their inclusion in our daily lives, to the infrastructures of cities, the medical practices and policies concerning public health, etc." (1).

With the mention of "motives," we are reminded of rhetoric's classical ties to normative ethics; Quintilian's foundational definition of an orator is a "good man speaking well." In the tradition of Cicero and Quintilian, the rhetor should be indebted to the public good. Cicero's concept of decorum is, as Gary Remer writes, tied to societal accountability, contextually checking the rhetor to "play by the rules of [their] community, in a moral sense" (30). When thinking about the rhetorical actors in a large data set, ethics gets complicated very quickly; there are, potentially, so many different rhetors with so many different motives, some acting ethically in context, some not. Reconsidering the rhetorical role of memory as an "ecology of practice" can help us think about big data and associated ethical concerns by encouraging us to seek out the rhetorical patterns within a particular dataset and to consider the effects that various media might have on what is being remembered by whom (or what) in applications of the data. Within "Lacework"'s canon of memory, we see Pipkin's rhetorical intentions and the rhetoricity of generative computational processes clash and recombine, co-creating the canon of memory's ecology of practice through specific procedural steps I tease out in shortly in the chapter.

Technologies of Memory

Archives, analog and digital, are both "technologies of memory" and technologies of colonialism (de Jong 4). As with analog archives, digital archives are their own memory palaces, repositories of collective, systemically-gathered data, created by a group of people within a particular context who choose what to remember, why it belongs, and how it should be classified. Digital archives can both replicate and remediate colonial archival violence. As Roopika Risam writes in her *New Digital Worlds*, "digital archives hold both the risk of reaffirming colonial discourse and the

promise of challenging it through the development of new archives and design practices" (47). Risam cites the Early Caribbean Digital Archive and the Bichitra Online Tagore Variorum as examples of postcolonial digital archives, both of which "resist colonial violence in content and method, mediating in the gaps and silences in the digital cultural record that can be filled with extant sources" (48). The content and method of both the decolonial archives Risam cites revolve largely around the inclusion of sources (like the collected works of poet Rabindranath Tagore) that were previously excluded from large national archives and the recontextualization of sources (like colonial settlers' images of Indigenous peoples of the Caribbean) as objects worth reconsidering in terms of their histories of and contributions to colonial violence. Pipkin's "Lacework" can broadly fit into the second methodology for decolonial archival creation—the recontextualization of sources. But because the work of recontextualization is not done through researched, written précis for individual objects or new metadata tags, as it is in the Early Caribbean Digital Archive, and is instead literally remediated through various generative, computational processes, new complications and rhetorical configurations are introduced into how algorithmic recontextualization as decolonial archival method happens. In the coming pages, I will investigate five computational methodologies "Lacework" uses to do this work of recontextualization—archival selection, slowing down, shrinking, interpolation, and upscaling—in terms of what is happening rhetorically to the ecologies of practice that govern the canon of memory.

First, though, I need to clarify the relationship between digital datasets and archives. Digital datasets are created primarily for use by computers, to manipulate, process, and learn from. They are "a collection of related sets of information that is composed of separate elements but can be manipulated as a unit by a computer" (American Legal Publishing). We see the training use case for digital datasets at work in the "Moments in Time" dataset, with its intent "to help AI systems recognize and understand actions and events in videos" (Monfort et al.). Digital archives, on the

other hand, are created primarily for people. This rhetorical orientation shows up in many definitions of archives, exemplarily, the U.S. National Archives defines the term as "a place where people can go to gather firsthand facts, data, and evidence from letters, reports, notes, memos, photographs, and other primary sources." The high-level difference between digital datasets and digital archives, then, is a rhetorical one, their content is comparable, but because they serve two very difference audiences their rhetorical situation is not.

Both digital archives and datasets are, potentially and materially, sites of colonial misappropriation in which institutions claim the information of individuals as their own or seize it with varying degrees of consent or non-consent. Both digital datasets and archives use raw data—or data that has not undergone any sort of processing[45]—as the material to be organized, stored, and retrieved. The ways in which this happens for both can be different—for example, digitized archival entries for the British Museum's contested "Nigerian antiquities" underwent a completely different acquisition and entry process than the Common Crawl training dataset used to train OpenAI's ChatGPT. For both digital archives and datasets, though, data acquisition can happen either (somewhat) consensually, i.e., through agreed to but never read Terms and Conditions on privacy and data use on various platforms, or nonconsensually, i.e., through the scraping and seizure of images and video for use in training datasets and other use cases (see Flickr and the MegaFace AI training dataset, for example). Purdue's Critical Data Studies Collaborative Glossary provides a helpful definition of data colonialism that can begin to ground this discussion: data colonialism is "the process by which governments, non-governmental organizations, and corporations claim ownership of and privatize the data that is produced by their users and citizens" (Der, Chen and

[45] It is important to note that even raw data is not objective. From Purdue CDS: "Although "raw data" can refer to any type of data that hasn't been processed, it can still be equally as biased and should be evaluated with caution" (Dueñas, Bruns and Garrison).

Chen). Though their methods can differ in practice, both digital archives and digital datasets can perpetrate colonial violence through data colonialism.

In Pipkin's essay accompanying "Lacework," they use the terms "dataset" and "archive" interchangeably in reference to the "Moments in Time" dataset. When describing the dataset, they write:

> One million videos is not a particularly large *archive* in the world of big data, but it is still a number meant for machine comprehension, not human. The first time I opened the *dataset*[46] I got dizzy. One million moments, placed in folders named simply—sleeping, slicing, sliding, smelling, smiling. I felt like I'd been placed down somewhere on the surface of the earth, and told to walk home. (On Lacework: watching an entire machine-learning dataset)

Pipkin's elision between the terms sheds light on the relationship between digital datasets and digital archives. Pipkin is computationally and rhetorically transitioning from one to the other, with decolonial intent. Pipkin, in their mere consumption of the dataset, initiates this transition. They transgress the rhetorical intentions of the dataset, by watching and engaging with data configured for machines and not for people. By being a person consuming a dataset meant for machines, Pipkin does two kinds of reading—computational and rhetorical—at once.

They then begin to initiate the first of the four computational processes that "Lacework" deploys to do this work of recontextualization, from dataset to decolonial archive. They watch the dataset, then they begin to select an archive. Pipkin writes:

> In this *archive* of actions, I want to perform action. I become grateful to wake up every day knowing how I will spend it. I'm not building a cathedral, but I think about what building a cathedral would let me do, how it would allow me to move my hands in a task and see something monumental grow very slowly, with immense care. A bricklayer understands brick in a way that is devotional.
>
> Repetition is devotional.

---

[46] Emphases my own

> Very slowly, over and over, my body learns the rules and edges of the *dataset*.[47] I come to understand so much about it; how each source is structured, how the videos are found, the words that are caught in the algorithmic gathering. (On Lacework: watching an entire machine-learning dataset)

By consuming the entirety of the "Moments in Time" dataset, Pipkin internalizes, as a person, what was once prioritized for computational audience, its "rules and edges." "I learned what it was to be a sorting algorithm," they said to me in our interview. "I learn[ed] the exact length of three seconds," they write. Their elision of terminology, between archive and dataset, is indicative of their unique positionality as human audience for the dataset and computational artist for the decolonial archive. To them, at the time they set out to complete this project in 2020, the "Moments in Time" dataset is both—a colonial dataset designed for training AI systems and an archive for people to engage with, to be recontextualized and decolonized by Pipkin's "Lacework."

Archival Selection

The first step in this transformation is archival selection. Archival selection from the dataset is probably the least computationally-mediated process of the four methods used for recontextualization, though it too relies on generative computational processes like randomizing clips for selection. Pipkin created an interface for archival selection much like the one MIT researchers created for the Amazon Turk workers to classify and "annotate" video clips for the "Moments in Time" dataset. Pipkin says their archival selection interface had an "unsettling resemblance" to the one created for dataset creation, indicating the mechanical similarity between the two processes. "Both contain only two options—include, discard," they write. "No ability to report a video, reclassify it or clarify its inclusion, no middle ground." In replicating the labor

[47] Emphases my own

conditions of the Amazon Mechanical Turk (MTurk) workers who were essential in classifying and annotating the million videos in the original dataset, Pipkin, who previously worked as a Turker themselves, seeks to both humanize the processes of dataset creation and make visible the exploitation of workers and lack of contextual nuance that is obscured within the creation of datasets. The Moments in Time dataset is not unique in its use of Amazon Mechanical Turk workers. Many researchers, from computer science to psychology to computational linguistics to management studies use Turkers for dataset creation.[48] The first use case advertised for "Requesters," or those requesting a task to be done, on the Amazon Mechanical Turk website is for Ground Truth Plus, "a turnkey data labeling service that enables you to easily create high-quality training datasets without having to build labeling applications or manage the labeling workforce on your own." This, of course, is exactly what was used to create the Moments in Time dataset.

The concerns Pipkin is raising with Mechanical Turk through their replication of labor conditions in archival selection—exploitation of workers and a lack of contextual nuance within data—are not new ones. Since its public launch in 2005, Amazon Mechanical Turk has garnered deserved criticism for worker exploitation. Most workers are paid a few cents to complete simple, repetitive tasks. Turkers, like most gig workers, are considered independent contractors, which exempts their coverage from the Fair Labor Standards Act, which guarantees workers minimum wage and other benefits. In 2018, the same year much of the MIT Moments in Time dataset was annotated, a study presented at the Conference on Human Factors in Computing Systems analyzed 3.8 million tasks completed by 2,676 Amazon Mechanical Turk workers to reveal a "median hourly wage of ~$2." "Only 4% of workers," the study's conclusion continues, "earn more than $7.25 [per

[48] Journals from various disciplines have all done discipline specific analyses of the use of MTurk in their respective fields: see comprehensive studies from computational linguistics, management, psychology, and computer science, as examples (Fort, Adda and Cohen) (Aguinis, Villamor and Ramani) (Walter, Seibert and Goering) (Layman and Sigurðsson).

hour,] justifying concerns about non-payment of the minimum wage" (Hara, Adams and Mill). The service also functions to dehumanize workers, separating Requesters and workers with an anonymizing interface. This starts with the name of the platform itself, a reference to the late 18th century automaton chess player, in which a human chess master hid inside of a machine that was alleged to operate on its own. In his 2013 book *Who Owns the Future,* computer scientist Jaron Lanier observes that the design of Amazon Mechanical Turk "allows you to think of the people as software components" (76). So too, the binary classification system ("Is there [cooking, barking, arresting] happening in this video, yes or no?") that structured the annotations for the "Moments in Time" dataset is both necessary and reductive, for the purposes of the AI training dataset. As Pipkin observes earlier, other actions within the video are not classifiable[49] and moments of "extreme emotion and personal vulnerability" are not able to be flagged as sensitive, violent, or contextually problematic content. After all, there is barking happening in a video of a bloody dog fight, and kissing happening in violent pornographic acts. Through ignoring the contexts of these sorts of videos, the dataset is serving to teach AI systems that barking and kissing can be destructive and cruel actions, withholding the context from the verbiage. And they certainly can be; after all the videos were scraped from real people's uploads. But, without the nuance of event context (or even a flag for violent, disturbing content), the dataset elides the barking of a happy puppy running around in a field, for example, with the barking of a tortured dog made to fight another. Interestingly, the "Terms of Use" for acquiring the dataset include a checkbox for "You will treat people and animals appearing in this data with respect and dignity." The actions captured within the dataset do not have

[49] Again, this specific concern was later partially amended by the original MIT research team, with a project called "Multi-Moments in Time: Learning and Interpreting Models for Multi-Action Video Understanding," in which videos could be labeled with multiple actions. I.e. In the video of a chef frying rice seen in Figure 3, "cooking" and "frying" and "stirring" describe separate parts of the action occurring in the video. Though more complicated than the original dataset, the focus remains on decontextualizing actions within videos for AI training purposes.

to meet those same standards, though, something that goes unaddressed in the paper supporting the dataset and its future use cases.

The "Moments in Time" dataset is not exceptional in its means of creation or the standards applied to them—it follows all contemporary industry norms. These concerns of labor exploitation and data quality are not unique to this particular dataset either; pretty much every dataset made for training AI systems could raise these same concerns. The way Pipkin engages this exploitation and violence, though, is novel, as it reproduces and highlights the concerns as part of the process that is linked with memory. The interface reproduces the memory of the annotation process done by MTurk workers. And then remakes it through their own, computationally-mediated process of assembling memories in "Lacework." These two processes play out together in memory's "ecology of practice," elements to be related and remembered, coexisting as computational and human memory along with the material bits of memory moving between dataset and archive.

As Colin Gifford Brooke notes in his *Lingua Fracta*, the "ecologies of practice" that make digital memory something rhetorically beyond mere storage treat "interfaces rather than texts as our sites and units of analysis" (147). The selection interface Pipkin built operationalizes archival memory on both of the axes Brooke discusses—absence/presence *and* pattern/randomness. In making the selection interface the mediator of what is archived in "Lacework," Pipkin foregrounds the role that selection takes in constructing archives, linking the interface—what is absent or present—to the final archive-artwork. This serves two purposes for their work: first, in being methodical about their selection, in combing through all million three second videos in the same way Turkers did to initially annotate them for the dataset, Pipkin (as we've seen) evokes labor concerns. The process is also dehumanizing as it depends intrinsically on the presence of three groups of people overlooked in the initial creation of the dataset—the people in the videos, the people making and posting the videos, and the Amazon Mechanical Turk workers choosing how the

actions in the videos are annotated for the dataset. The interface also makes the process rhetorical, as when screening the videos from the dataset in this way, Pipkin is able to select videos that meet their criteria for inclusion in the archive. Videos must be anonymizable and must not depict obvious harm or trauma—rules to determine what is absent or present in memory's ecology of practice. Here, the interface also operates along the axis of pattern and randomness in the rhetorical canon of memory. If the absence/presence axis attends to memory as a function of storage in space, the pattern/randomness axis attends to memory as a function of practice in time. As Colin Gifford Brooke writes, "the reinscription of the axis of pattern and randomness into memory allows us to retemporalize this canon, a move that highlights memory's status as practice" (149). He continues, "although it may not be particularly controversial to suggest that we construct our memories, construction has not been an emphasis in our considerations of the rhetorical canon of memory" (151). Yet Pipkin's interface is a tool for construction of archival memory.

The presence/absence axis regarding the selection interface has to do with *what* is being remembered. The pattern/randomization axis links rhetorical concerns of *how, why,* and *by whom* to the selection process and archival memory construction. There is clear and significant overlap between these axes, and the *what* is always in conversation with the *how, why,* and *by whom*. In choosing through the computer-mediated interface what is remembered—*what* is present or absent—Pipkin attends to the three groups of people overlooked in dataset creation. They wish to see and prioritize the people in the video, "the hands of the person who held the camera, and the hands of the workers who first sorted the videos." In the original paper for the "Moments in Time" dataset, none of these groups of people were explicitly mentioned as relevant constituencies for the dataset, save for one reference to the "AMT workers" in a sentence-long description of how videos were annotated (Monfort, Andonian and Zhou). The prioritization of care for these three overlooked groups is the *how* and *why* informing the archival selection interface at work in the

practice of digital memory construction. These concerns shape patterns for inclusion in the archive of "Lacework." The videos are beautiful, are anonymizable, are not exploitative or traumatic in what they depict. The interface and its selection processes ensure the rhetoricity of the memories gathered in "Lacework"'s archive.

Slowing Down

After archival selection, each selected clip is slowed down. This is the second computer-mediated change to the "Moments in Time" dataset that Everest Pipkin initiates in "Lacework." Again, the process is both computational and rhetorical. Originally a choppy three seconds in length, the clips are extended temporally, via simple computer-mediated processes, to fifteen seconds, five times their original length. This is the change to the dataset with perhaps the clearest audience implications—slowing the selected clips down reorients them toward a human audience, instead of one made for machines. Pipkin writes in their piece accompanying "Lacework" that one of the reasons watching the entirety of the "Moments in Time" dataset was so hard was because of the "severe, automated cut…that severs these moments, sometimes chopping them in the middle of the action which they are meant to describe." The whitepaper associated with the original dataset asserts that "three seconds is a temporal envelope which holds meaningful actions between people, objects and phenomena" (Monfort, Andonian and Zhou). And I don't disagree—after all, "meaningful actions" are in fact captured in the dataset. But, of course, the dataset is oriented towards teaching computers the content of these "meaningful actions," giving clear boundaries to actions that we humans simply do not need. Slowing the original clips down in "Lacework" makes it abundantly clear that Pipkin is seeking to reorient the original dataset for human consumption (and appreciation).

First, by slowing the clips down, it makes them largely unusable for AI systems training purposes. Slowing down the "meaningful actions" to a fifth of their original speed divorces them from the time it takes to computationally read them. If the elongated versions of the clips were used to train AI systems to recognize "meaningful actions," the systems would waste processing cycles. Because contemporary artificial intelligence programs are incredibly literal, probability-based systems that are reliant on training data with bounded, discrete meaning outcomes, for them "meaningful actions" take around three seconds to recognize.

The process does make the "meaningful actions" depicted in the dataset much more watchable for humans. Neuroscientist David Eagleman has studied human time perception in relation to slow-motion videos. He proposes a few primary reasons why slow-motion video is so "successful and engaging" to people. First, giving events more time to unfold in slow-motion is a "proxy for denser memories. Eagleman sums up his scientific findings in a blog post for *Sentient Developments*, writing:

> Our studies suggested that the impression of slowed time is a trick of memory: denser memories are laid down during salient events, yielding more than the normal amount of detail when read back out. So one can speculate that slow motion video gives a proxy for this extra-dense memory: by presenting a scene slowly, one can enjoy a rich experience with plenty of time to dwell on all the details that normally leak away from us.

Now, we can translate this rhetorically. Because an event is given more time to unfold in slow-motion, there is more time to construct memor(ies) along the pattern/randomness axis. There is more time to find more pattern, dwell on more randomness—for a person to construct a denser memory of a particular moment in time. A three second clip of a person *hitting* a tennis ball gives a computer (or Turk worker) ample time to register an action being performed. A fifteen second clip gives humans time to dwell—to find the physical patterns of the player's steps before and after they hit, to meditate on the arc of the ball, hoping it goes over the net, finding satisfying the patterns of

things behaving as they should. *Hitting*. The second reason slow-motion is effective neurologically is intimately related to the first: it "extends human perception by unmasking hidden data" (Eagleman). The technology of slow-motion allows "us to extend our senses beyond their natural capacities. It allows the revelation of data hidden in the folds of time" (Eagleman). The pattern of steps, the arc of the ball would have otherwise gone unnoticed in a real-time version of the clip. Pipkin's slowing down effectively demonstrates Brooke's earlier call to "retemporalize [the] canon" of memory by emphasizing remakings of time and resultant recognitions along the axis of pattern/randomness as crucial ways of constructing and densifying memory (149).

For computers, the data "hidden in the folds of time" is more likely to result in noise that limits the efficiency of the reading (Eagleman). For the AI systems being trained on the "Moments in Time" dataset, an action is either there or it isn't, it is present or absent. Here, "data hidden in the folds of time" does not register. Computers and, specifically, the AI systems being trained on datasets like "Moments in Time" are designed to recognize and predict patterns, but their recognition and prediction of patterns is based on probabilistic reasoning, the aggregated memory of the presence or absence of many, many different parameters[50] that is then converted into predictive ratios or likelihoods. Their recognition and prediction of pattern is complex, yes, but based off of this single, binary axis of memory,[51] even when multiple perceptual modalities (spatial, auditory, temporal) are in the mix, as they are with the videos of the "Moments in Time" dataset. Now,

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[50] The "Moments in Time" research team tested the dataset on multiple models of spatial, temporal, auditory, and multiple combinations therein. They "show results for three modalities (spatial, temporal, and auditory), as well as for recent video classification models such as Temporal Segment Networks and Temporal Relation Networks. We further explore combining models to improve recognition accuracy" (Monfort, Andonian and Zhou).

[51] This topic could be a whole dissertation in and of itself, but my assertion that computer memory rhetorically operates on just the presence/absence axis is most clearly demonstrated by the lingua franca of AI systems, like the ones the "Moments in Time" dataset is intended to train—probability.

certainly, there are patterns of presence and absence—these are exactly the probabilities that AI systems trained on datasets like "Moments in Time" use.

However, the rhetorical canon of memory's axis of pattern/randomness enables persistence, which Brooke defines as "an ability to build and maintain patterns" across time and texts and interfaces; we humans are able to recognize *hitting* in a video in real-time or slowed down, in a verbal description we read after watching a clip, in the sound of a ball striking racquet when walking home later by a neighborhood court. Time is a data point for machines, whereas it is crucial for the construction of human memory; it is what enables our memories to participate in "ecologies of practice" that persist across contexts and interfaces. Time can hide or reveal information to us that contributes to our memory as practice, in a way that it simply cannot for machines. By slowing down the selected clips from 3 to 15 seconds, Pipkin through their computer enacts a massive rhetorical shift, changing the audience, creating new affordances for recognizing data, and constructing and practicing memory on the dual axes of presence/absence and pattern/randomness.

Shrinking

So too, clips are shrunk, using a simple computer-mediated process, to a 32x32 resolution, rhetorical move that prioritizes the human perspectives of the people in the clips and the people making the clips. Namely, this move enables future anonymization, a way Pipkin seeks to combat the nonconsensual representation of people within the dataset. The profound shrinking of the clips is a community-oriented stylistic choice with future implications, to be soon addressed, for the rhetorical canon of memory in the work's ecology of practice.

Interpolation

The selection, slowing, and shrinking of the clips are all computer-mediated processes that begin the shift from dataset to decolonial archive. Here, I wish to briefly define the difference between computer-mediated processes and computer-generated processes rhetorically, since both are involved in this transformation, with somewhat different implications. The computer-mediated processes of selection, slowing, and shrinking use computation to largely the same extent as I am using computation to type out this sentence right now. That is, there is a clear author with clear authorial intent and the computational processes enabling the selection, slowing, and shrinking can be seen as tools to carry out that authorial intent, without significant reshaping by the computational processes themselves. Computer-generated processes originate with a clear author and clear authorial intent, but the processes themselves begin to shift or displace the creative agency from the human author to that of the software or program being used. We saw this generation earlier with the programmatic randomization of source corpora in Lillian-Yvonne Bertram's "@Tubman's_Rock." The next stage in the conversion from dataset to decolonial archive in "Lacework" is a computer-generated interpolation process. As indicated earlier, stretching the original three second clips to fifteen seconds creates a need to add frames, while blurring sequential frames together and smoothing the motion between them. This interpolation process is in direct response to the elongation of the clips—it keeps clips from being choppy, creating instead smoother, fluid movement. In the still of a clip in Figure 5, we can see the difference between a non-interpolated slow-motion clip and an interpolated one, compared at the exact same time in the clip. The non-interpolated clip on the left has a slower frame rate, making it appear like a stop-motion scene, whereas the interpolated clip on the right has more fluid transitions between frames.

Figure 5: Side-by-side clips of non-interpolated slow-motion clip versus interpolated slow-motion clip of a cat playing with a toy mouse[52] *(Drummyfish)*

Interpolation necessarily involves computer-generated processes, since new frames are being generated by software to fit between the original ones in the slowed-down videos. The interpolation impacts the ecology of practice of memory, adding more content to be remembered by both machinic and human rhetors. In *Lingua Fracta*, Brooke argues that new media interfaces "help us move from the abstracted, single perspective of the reader of a static text or the viewer of a painting to the multiple and partial perspectives necessary for many forms of new media" (114). The computer-generated mechanism of interpolation approximates the fluidity of actual motion, albeit slowed, instead of the choppiness of slowed-down video, creating something that is easier for a person to watch. In doing so, it offers a kind of new perspective. This rhetorically links the perspectives of both the computational and human agents, even as it emphasizes the human viewers of the clips, the humans portrayed in the clip, and "the hands of the person who held the camera" (Pipkin, On Lacework: watching an entire machine-learning dataset). This change further

[52] Stills, instead of video, make the differences between non-interpolated and interpolated clips harder to discern. We can see, though, that at the same exact moment in the video in Figure 5, the still from the interpolated clip on the right has smoothed and blurred the motion of the cat's paw.

complicates the shift in audience orientation happening in Pipkin's "Lacework," from machine to machine-assisted human.

Upscaling

The penultimate step in the conversion of the "Moments in Time" dataset into Pipkin's attempt at a decolonial archive is upscaling. Upscaling is a computer-generated process in which, as previously mentioned, low-resolution (or shrunk) clips are made larger by an AI-powered software predicting detail in an image where there previously was none. Pipkin used a proprietary software from Topaz Lab called AI Gigapixel, a tool in a suite of similar products, presumably trained on millions of images to "maximize image quality on autopilot" (Topaz Labs). The images in Figure 6 are screengrabs from the Topaz Lab website, demonstrating the intended use of the product. We can see that a pixelated image of a woman's face is given significantly more detail and clarity after it is run through the upscaling software.

Figure 6: Screengrabs from AI Gigapixel's website, showing a woman's face before and after upscaling (Topaz Labs)

Pipkin's shrunken clips, though, serve to intentionally confound the software in some ways. First, they are video, second they have been reduced to such low-resolution (32p), and third Pipkin put them through five rounds of upscaling, moving them from a 32p resolution to 1280p. AI Gigapixel claims to be able to upscale photos by "up to 600%"; Pipkin is tasking the software with upscaling low-resolution video by 4000%. Pipkin is asking the software to do more than it is able to do, which is how we wind up with the anonymized, fluid, kaleidoscopic clips of "Lacework," their "odd combination[s] of texture and light."

The rhetorical effects of this kind of extreme upscaling on the clips is profound; in many ways, all of the previous mechanisms, the selection, slowing down, shrinking, interpolating, all lead up and contribute to this one. Whereas the previous mechanisms had a primary effect on either memory or style as they function in "Lacework," Pipkin's upscaling process has effects on both. By overextending the capacity of the upscaling program, Pipkin causes it to do exactly the opposite of what it was intended to do. That is, the software exists to clarify and sharpen images; all of the exemplary uses of AI Gigapixel are of faces coming into more detailed focus, sharp crags of mountaintops piercing the sky. There is nothing sharp, clear, or detailed about the visuals of "Lacework," however. Pipkin uses the upscaling process to anonymize and obfuscate—its effects on memory—and also to lend visual cohesion to the selected clips as a group—its effect on style.

The software (like the dataset before it) is being repurposed with completely different rhetorical results. Upscaling is a process that relies on extant information, data recalled from the storage mechanisms of the machine in the form of pixels, shapes, colors, and movement, to extrapolate the most likely detail to images or videos larger than the original. By not giving it much to work with in the first place *and* dramatically overextending the software's capabilities, Pipkin forces the software to speculate wildly as to the particulars of the moving images, causing the fluid, hazy, dream-like visuals of "Lacework," instead of the crisp, clear images advertised on the

software's website. The move creates a kind of memory gap. That is, because the software was not given much to work with in the first place, in terms of detailed images, it uses its own upscaling predictions as data constitutive of the actual image—in this process the machine is filling in memory in the form of its own predictions and them remembering those inscriptions, as more upscaling takes place. Pipkin says of the process: "it starts to catch on its own artifacts, on things that it thought it saw four upscales ago. It brings those out until you have these really weird leaks, what would have been pixelated, but each pixel has transformed into this odd combination of texture and light" ("Interview").

The rhetorical effect of the upscaling process on the clips of "Lacework" is dependent on all of the other changes that came before it. Pipkin sees the final upscaling processes as the culmination of all the changes to the dataset—mechanical and rhetorical. This process started with archival selection and extended into the slowing down, shrinking, and interpolating phases. "I was looking for videos with a lot of texture to them, with subjects at a distance, in shapes or colors that were already confusing," they write. "I wanted compositions that the AI upscaling could catch onto and drag against, pulling a cloud into a mountain or a face into a coastline." In addition to reorienting the clips for human viewership, the slowing down, shrinking, and interpolation processes serve to confound the upscaling software to produce the memorial and stylistic effect Pipkin wanted in their final artwork.

Further, the effect of the upscaling that Pipkin did on the clips is largely one of anonymization and obfuscation. Faces, places, and identities are completely obscured; what is left is a slow flow of action. This remediates some of the harms of data colonialism within the original dataset. Pipkin uses this upscaled memory of the machine as an asset for our human perception of memory; it transforms the video clips from particular instances in a particular individual's life into pure action, "moments in time" divorced from the identifying particulars of the individual

experiencing it, capturing it, uploading it. "These odd moving planes of color and texture and detail are still recognizable as motions, as moments, as the action verbs [the original dataset] was trying to capture. For all that I poke fun at the whitepaper in its attempt to [empirically capture] 'What is a moment in time? How do we make a dataset of those things?,' they *do* capture these actions" ("Interview"). The upscaling process then serves to distill the clips into *just* the action they are seeking to represent. Anonymizing the individuals within the clips through the upscaling process fundamentally changes what is remembered from the archive of selected clips; the slow flow of action is the only thing to be focused on and remembered.

Changes to the rhetorical canon of style through the upscaling process also shift how the archive of selected clips is remembered. Putting all the selected clips through the same extreme upscaling process coheres them visually. They are all fluid, all anonymous, all kaleidoscopic, all lacy. They can be remembered as a coherent set of actions, instead of the choppy, hard-to-watch clips of the original dataset. Returning to Brooke's perspective as it relates to style continues to emphasize it as part of the "ecology of practice." Brooke recognizes the interface as multiple—"[t]o paraphrase Heraclitus," he writes, "we never use the same interface twice" (133). Brooke's move, as Casey Boyle writes in his review of *Lingua Fracta*, "troubles the assumed stability of the interface while also allowing for a category to help explain perspective and positionality as a site of style." Considering perspective and positionality as aspects of style can be extended to include motion and action through the interplay of computer-mediated and computer-generated shifts. Pipkin initiates a change in what could be a video of your friend playing a game of tennis against an on-again, off-again boyfriend at the park in your old neighborhood into a blurred, anonymized figure of someone hitting a ball over a net, "hitting." The changes Pipkin makes to the dataset prioritize the creation of a coherent archive of actions in addition to attempting to remediate some of the original individual, auxiliary violations of data colonialism enacted by the original dataset. Because Pipkin cannot undo

these violations (non-consensual data use, identifying information about non-consenting individuals, etc.), creating visual coherence and anonymization is their next best option to break the cyclical perpetuation of harm in dataset use. The harms perpetuated by the dataset creation are collateral damage, but in their remediation, Pipkin shows that *it doesn't have to be this way*, that easiest (nonconsensual use of scraped video, Mechanical Turk) is not always best. For Pipkin, these stylistic changes are their way of adding care and intervention into processes that they do not agree with. They say of their process, that "at least there can be some amount of individual human care or intervention" (Interview). For viewers of the work, like myself, the stylistic changes cohere the work visually, clearly orienting it towards a human audience, with a clear eye towards trying to fix some of the sticky problems of non-consensual data use, through the anonymization of individuals within the clips.

From "Moments in Time" to "Lacework"

Because of the changes Pipkin enacts to the "Moments in Time" dataset, "Lacework" is a categorically different genre from the dataset of its source corpora, whether or not it is fully ethically or rhetorically successful. The dramatic shifts in the audience and purpose of the dataset, enacted by Pipkin as an artist and enabled by the generations of their machine, make "Lacework" an artwork and decolonial archive of moments and action. The clips within are anonymized and visually cohered in order to emphasize their collection as part of data colonialist practices. The artist remediates the colonialist dataset aggregation and annotation through this anonymization of the individuals within the clips and their visual coherence. As Roopika Risam writes in *New Digital Worlds*, "there are significant opportunities to develop digital archives that remediate colonial violence, write back to colonial histories, and fill gaps in knowledge that remain a legacy of colonialism" (47). In drawing upon data colonialist source corpora and making significant technical

changes with rhetorical repercussions that remediate the original colonialist harm of the dataset, "Lacework" certainly take's up Risam's call for the first two kinds of opportunities. There is a case to be made that "Lacework" also "fill[s] gaps in knowledge that remain a legacy of colonialism" by making visually explicit that nonconsensually using personal information for AI-systems training is harmful to individuals and social systems (47). In the changes it makes to the original dataset, "Lacework" says the quiet (and harmful) parts of the "Moments in Time" dataset loud—that individuals' data are gathered nonconsensually, annotated by systemically exploited gig-workers, and used to train ambiguously defined AI-systems[53] to understand human action.

In addition to being a decolonial archival artwork, "Lacework" could also be considered a form of speculative visualization. A branch of speculative design, speculative visualization uses visual representation methods in order to, as defined in the Purdue Critical Data Studies glossary, "present data in a way that promotes awareness and community action" (Gerard, Palomar and Harber). In their article "Speculative Visualization: A New Rhetoric for Communicating Public Concerns," Tanyoung Kim and Carl DiSalvo characterize this new realm of research in their rhetorical investigation into speculative visualization as "crossing visual design, rhetoric, and visualization community" (12). Citing examples like "Smog is Democratic," a 2008 digital installation that visualizes air pollution data by pixelizing video clips of Atlanta-area highways based upon air quality, smog, and particulate matter data from Georgia's Department of Natural Resources, Kim and DiSalvo argue that speculative visualization as a category "represents socially and politically meaningful data in aesthetic ways to provoke viewers' interpretation and further elicit discussions" (10). The involvement of viewers in this definition of speculative visualization echoes the necessity of audience involvement in "Lacework" as a result of the rhetorical changes made to the original

[53] We do not know what these systems are or how they will be used practically

dataset's canons of memory and style. In speculative visualization (and visual rhetoric writ large[54]), "the audience is characterized not as a reader but as a dynamic participant in an argument," Kim and DiSalvo write (10). In "Lacework," because of the changes made to the canons of memory and style through the technical mechanisms discussed, the audience shift toward humans (instead of the AI systems the original dataset was meant to train) is an argument the work is making. Further still, the audience can now enact their own "ecologies of practice" of memory and style in reference to the archival artwork, based on the visual vernacular of "Lacework." The reorientation of the "Moments in Time" dataset allows artists and audience members to create meaning out of visual content and interact through a "common visual language which constitutes a rich and powerful channel of communication and allows differences to be assessed and ambiguities reduced" (Gerard, Palomar and Harber). I introduce the genre of speculative visualization here, as it further emphasizes the role of the audience in "Lacework" as decolonial archival art, giving us as viewers both awareness and agency regarding the data colonialist practices Pipkin is working to draw attention towards.

The language of speculation—of prompting the imagination of worlds with and without the problems "Lacework" draws attention to—also calls to mind Risam's synthetic argument about what digital decolonial archives can (and cannot) do. She writes:

> If the archive itself is a technology of colonialism, can the creation of new archives resist reinscribing its violence? Verne Harris positions archiving as a form of "justice and resistance to unjustice," while Cheryl McEwan argues that resistance is possible through the proliferation of alternative postcolonial archives based on material that is excluded, bringing in narratives that expand belonging. Engaging in this work in the digital milieu has promise for challenging the epistemic violence in which archives participate, even with the knowledge that the digital cultural record will never be "complete." The proliferation of new world

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[54] From Kim and DiSalvo: "Although visual communication does not function as a means of direct persuasion such as oral rhetoric, images are more vivid than text or speech and therefore more easily manipulated toward visceral responses. In order to fill the lack of the direct persuasion visual rhetoric requires visual "arguments" to "supply us with reasons for accepting a point of view" (Bogost 22). The field of visual rhetoric explores the many ways in which visual elements are used to influence people's attitudes, opinions, and beliefs through the analysis of photographs, drawings, graphs, tables, and motion pictures. A designed message communicates by effectively ordering and representing the common visual languages of society. Therefore, it possesses great potential to affect viewers."

> pictures—new worlds—in the digital cultural record is one way of mediating this irreparable damage. (50)

The damage has been done with the dataset's initial creation and it is "irreparable" (50). The role of an intervention like "Lacework," then, can only be speculative; it can only intervene by producing "new worlds." The changes Pipkin makes to the "Moments in Time" dataset, re-classifying it as a decolonial archival artwork and speculative visualization with a new audience, new visual style, new ways of engaging with the canons of memory and style, succeed in producing these "new worlds." These "Lacework" worlds, where both anonymity and humanity are foregrounded, highlight what Risam calls "an important dimension of postcolonial digital humanities" (51). To orient digital humanities and digital archives toward justice and away from colonialist practice, projects focus "on uncovering and remediating the ways that digital humanities has contributed to the epistemic violence of colonialism and is implicated in colonial forms of knowledge production" (51).

The Master's Tools

There are a few wrinkles in this effort to turn a dataset characterized by colonialist practices into a decolonial archive—the reasons I (and Pipkin too) keep using the language of 'attempt' or 'aim' instead of categorizing it as a wholesale success. A few practical shortcomings of "Lacework" lead to some larger theoretical ones. First, and perhaps smallest, is that Pipkin includes the file name in the bottom left of the video, degrading some of the anonymity that the upscaling processes afford the individuals within the videos. While it would take considerably more effort to seek out the original video clip from viewing it's file name in "Lacework"—you would have to download the whole "Moments in Time" dataset and search through it—including file names reduces the rhetorical efficacy of anonymization on the canon of memory. The second, and more substantive, criticism is that Pipkin is still using software powered by data colonialist practices to do the work of

interpolation and upscaling, not to mention the ethically-fraught provenance of the hardware of their machine and the other softwares that enable it to run. This is AI-powered software built and trained upon countless datasets much like "Moments in Time"—datasets that were likely gathered nonconsensually, using people's faces and bodies and intimate moments to train an AI-system to recognize which particular kind of pixels are most likely to go a particular kind of place in order to make images clearer, crisper, and more detailed. Pipkin is subverting the purpose of the software, yes, forcing it to create what it was not meant to (blurred and obscured images) for a purpose it was not intended for (anonymization, visual cohesion among a large set of artifacts). But that does not change the fact that the software itself and the original "Moments in Time" dataset as source corpora exist as a result of data colonialism, and therefore, "Lacework" exists both in concept and in execution as a product of data colonialism, even with its efforts to remediate and confront it.

This is a complicated concern that will take up the rest of the chapter. We must grapple with the impacts on rhetoric and ethics from using flawed tools in creative computation in an effort to do socially just work. Here we have two major questions that "Lacework": 1) What is the relationship between the computing technologies (like those used in "Lacework") and systems of surveillance capitalism and data colonialism? And, 2) What kind of intervention or remediation of oppressive digital systems is possible in a digital context? These questions speak to the entangled limitations and possibilities of using the creative computer generation of texts in an effort to, as Risam writes, "uncover and remediate the ways that digital humanities has contributed to the epistemic violence of colonialism and is implicated in colonial forms of knowledge production" (51).

Audre Lorde's dictum that "the master's tools will never dismantle the master's house" comes up a lot in discussions of the possibilities (or impossibilities) of trying to remediate or reverse the exacerbatory harms of technology in and on society. And for good reason—computing technologies writ large have done a lot to make oppressive systems worse. We see this borne out in a

wide variety of scholarly texts: the essays in *Your Computer is on Fire* demonstrate that "technologies that centralize power tend to weaken democracy;" the subtitle of Safiya Noble's now near-canonical book *Algorithms of Oppression* is "how search engines reinforce racism"; Meredith Broussard's *Artificial Unintelligence* is a deeply researched counterpoint to ideologies of technochauvanism and technoutopianism; Virginia Eubanks argues that "automated decision-making in social welfare provision is just the latest in a long history of measures that profile, police and punish poor people" in the US in her *Automating Inequality*. [55]

Let us now look at the Lorde's quote in context. Originally published in 1981 in *This Bridge Called My Back: Writings by Radical Women of Color*, a feminist anthology edited by Cherríe Moraga and Gloria E. Anzaldúa, Lorde's essay "The Master's Tools Will Never Dismantle the Master's House" invites readers to confront her assertion that problems of oppression cannot be resolved using the tools of a system of oppression. The "master's tools" in Lorde's original essay are discrimination towards "difference"—anti-Black racism and homophobia are explicitly named as "the master's tools" in her essay. She writes:

> For the master's tools will never dismantle the master's house. They may allow us to temporarily beat him at his own game, but they will never enable us to bring about genuine change. Racism and homophobia are real conditions of all our lives in this place and time. I urge each one of us here to reach down into that deep place of knowledge inside herself and touch that terror and loathing of any difference that lives here. See whose face it wears. Then the personal as the political can begin to illuminate all our choices. (108)

Computing technologies are "inherently political" due to the nature of their production and often serve to exacerbate the systems of oppression that they are "strongly compatible with" (Winner, 123). Langdon Winner argues in his 1980 article "Do Artifacts Have Politics?" that there are

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[55] These texts listed are just a small sample of many, many well-researched, interdisciplinary scholarly texts that demonstrate that computing and algorithmic technologies have worsened existing systems of oppression.

inherently political technologies, or "manmade systems that appear to require, or to be strongly compatible with, particular kinds of political relationships" (123). Winner cites Friedrich Engels's "On Authority," which argues that complex technical systems, like factories, can be a means to reinforce centralized control. As technological systems get more complex, "central control by knowledgeable people acting at the top of a rigid social hierarchy would seem increasingly prudent" (129). The political relationship(s) computers require and/or are "strongly compatible with"—linked with their hardware and software—is complex to say the least. The specifics of this relationship and how computer hardware and software are "inherently political" are the subject of the many scholarly works mentioned above. There is a strong argument to be made that computers as hardware and the combined softwares used for creating the decolonial archival artwork that is "Lacework" are, in Winner's verbiage, "inherently political technolog[ies]" (123). In "Lacework," the technologies used for the work's production are very compatible with (and do in fact use) extractive, colonialist systems for both the material production of hardware and the informatic production of software that rely on "rigid social hierarchies" outside of the purview of the individual using their machine.

Putting these two texts together brings up the salient question: Are the computing technologies the master's tools themselves, or is there a small, but perceptible gap between the master's tools of "racism and homophobia" (and other systems of oppression, discrimination, and hate, the "terror and loathing of any difference") and the computing technologies that often reinforce and exacerbate them? After all, "data colonialism," the primary focal point of this chapter, is a contemporary, modified form of a long-existing societal ill; colonialism existed long before "big data" and computing entered the picture historically. Lorde's initial provocation is designed to invite us to confront the impossibility of eliminating a problem using the same instruments that were designed to create the problem. "Terror and loathing of any difference" cannot dismantle, cannot implicate, cannot resolve systems of oppression to bring about "genuine change" (108). In the

context of computing technologies, the master's tools are not computing technologies themselves, but the "terror and loathing of any difference" that these technologies often reinforce. Noticing and widening this gap between computing technologies, "inherently political" as they may be, and "the master's tools" of discrimination and oppression is the job of socially-conscious work in the digital humanities. This is something Angel David Nieves writes on, in his essay for *DHQ*'s special issue on Black DH "'For the master's [DH] tools will never dismantle the master's house': An Alternative Primer for a Critical Black DH Praxis." Even as he conflates computing technologies with "the master's tools," he asks:

> So, what is possible when those who have long been the victims of racial hatred, violence, and segregation learn to harness the "master's tools"? I urge us to consider a new way forward, for a Black DH, that as a social movement and as a political project once again challenges the still white-dominated field of digital humanities without hesitation or apology – and is unapologetic about its commitment to racial justice. Black DH, as Moya Bailey, Kim Gallon, and Jessica Marie Johnson[56] have argued elsewhere, should be simultaneously experimental, analytical, computational, speculative, and have unique design capabilities as a series of practices and in shaping the field's future.

The mere existence of Black DH as a field (along with other fields of social justice-oriented digital praxis) is predicated on the widening of the gap between "inherently political" computing technologies and "the master's tools" of discrimination and oppression. It is a "political project" that challenges the inherent and often oppressive politics of computing technologies in order to affirm a "commitment to racial justice." That sort of challenging could not happen without the gap between the two. That is, Nieves's harnessing of experimentation and speculation with computing technologies is an accurate one that evokes the possibilities of engaging with computing

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[56] see *Misogynoir Transformed: Black Women's Digital Resistance* by Moya Bailey, "Making a Case for the Black Digital Humanities" by Kim Gallon, and "Markup Bodies: Black [Life] Studies and Slavery [Death] Studies at the Digital Crossroads" by Jessica Marie Johnson

technologies with a clear "commitment to racial justice," while challenging "the still white-dominated field of digital humanities." Lorde urges folks to do similar work in her essay:

> Difference is that raw and powerful connection from which our personal power is forged. As women, we have been taught either to ignore our differences, or to view them as causes for separation and suspicion rather than as **forces for change.**[57] Without community there is no liberation, only the most vulnerable and temporary armistice between an individual and her oppression. But community must not mean a shedding of our differences, nor the pathetic pretense that these differences do not exist. (107)

The celebration of difference is a force for change. The acknowledgement of the personal as political is a force for change. And change, as it relates to this discussion, is all in the forceful widening of the gap between "master's tools" and creative and political agency. This is another powerful counterpoint to the "stern advice" Langdon Winner's contention for the inherent politicality of technologies argues against. The primary common disagreement with "the notion that technical artifacts have political qualities" is that "what matters is not technology itself, but the social or economic system in which it is embedded" (122). Winner argues for a "both, and" perspective that I take up too; both the "inherently political" technologies and the "social or economic system[s]" matter. The gap, however small, between them is what gives works like "Lacework" rhetorical legs and makes them interesting objects of study in our understanding of using problematic tools in an attempt to do socially-good critical work.

[57] Emphasis my own

The Master's House, The Treasure-House, and the Funhouse

This discussion begs the questions: What kind of intervention(s) or remediation(s) of oppressive digital systems are actually possible in a digital context? When talking about digital technology, can tools created by and under the systems of surveillance capitalism and data colonialism be used for critique of those systems through creative computational output? How effective is this? Two years after finishing "Lacework," Pipkin is a hard "no" or "not at all" to both of these latter questions. In our interview, Pipkin says:

> There is no amount of criticality that you can embed into a work that uses the tool and its process, and not have it be a validation of the tool, right? That is simply the way that art works. I can't make a drawing with ink about the conditions of ink production and have it not also say, 'But look, I made this drawing with this thing.' It's just not possible. And so, ultimately, with all of this work, the best thing to do is to not [do it]. I'm glad I'm there, finally. ("Interview")

In our conversation, Pipkin made reference to related concepts from physicist Ursula Franklin's lecture series *The Real World of Technology* as influential in their understanding of creating with computational processes. These references serve to clarify and support Winner's assertion that there are inherently political technologies, particularly in reference to the computing technologies that Pipkin uses in the production of "Lacework." Franklin distinguishes between holistic and prescriptive technologies. Holistic technologies are artisanal in nature, they allow an author-artist to control their own work from start to finish; Franklin cites a potter working with clay here, with clay as the holistic technology. Prescriptive technologies "organize work as a sequence of steps requiring supervision by bosses or managers," like a factory's assembly line (18). Pipkin uses this distinguish to meditate on and nuance how they see their own use of computation in their artistic practice. "As someone who works with computers," they say in our interview, "you never have an entirely holistic relationship with your tool." Pipkin goes on to assert that computers themselves are prescriptive technologies "through and through." "They are technologies that are built in ways you don't

understand, that operate invisibly behind their comfy user interface, that snitch on you to data gathering systems that track everywhere you go." There is a significant "but," though. "But," Pipkin continues, "there are little moments where I can have a holistic relationship with my computer." "Thinking through the work I'm producing through these lenses has been very useful to me," they assert. This kind of thinking allows them to ask "What type of process am I in right now? What am I enabling?"

I bring this distinction between holistic and prescriptive technologies in to offer a way to think through both the individual rhetorical processes within the production of "Lacework" and the work as a whole. Its step-by-step transition from dataset to decolonial archive uses inherently political, prescriptive technologies to do the work of this rhetorical transformation. But, Pipkin pushes for a holistic relationship with their chosen (inherently political) technologies of production. Their agency in the production of computer-generated and computer-mediated work is key here. Each of the individual steps taken in their transformation of the "Moments in Time" dataset—selection, slowing, shrinking, interpolation, and upscaling—enable "little moments" of holistic interaction with an otherwise prescriptive technology. Pipkin's description of their interaction with interpolation and upscaling in their accompanying essay reveals a shifting in control towards the holistic, even with the most fraught and computer-generated parts of their creative process: "I memorize qualities of the pattern; light, color, noise, compression, blur, frame-rate. I know how these aspects will interact with the interpolation and the upscaling. I don't have to think about it anymore—it is all automatic."

The choices Pipkin makes in order to craft rhetorical change and the shift from a dataset meant for training machines to an archive meant for human reflection and remediation of harm through the use of computational technologies and processes are central here. Pipkin's perspective is valuable in adding nuance and depth to this conversation, but as Brooke reminds us, returning to

the rhetorical ecology of practice unearths another perspective that qualifies Pipkin's skepticism. Pipkin's agency in recontextualizing style and memory within the "Moment's in Time" dataset as an "ecology of practice" directed towards humans in "Lacework" shifts the "specific social arrangements" necessary for the functioning of the "inherently political" technologies they are using to generate "Lacework." In Winner's "Do Artifacts Have Politics?," he directs much of his attention to the choices concerning adoption of "inherently political" technologies. "Within a given category of technological change," Winner writes, "there are, roughly speaking, two kinds of choices that can affect the relative distribution of power, authority, and privilege in a community" (126). These choices are: a) the decision of whether or not to adopt a new technology and b) the "second range of choices" that open up when a particular technical arrangement has been adopted. This "second range of choices" is all about the particular 'how's' of implementation after adoption, particularly in the early stages, since that often sets a precedent for use. Winner writes: "By far the greatest latitude of choice exists the very first time a particular instrument, system, or technique is introduced" (127). In "Lacework," Pipkin very purposefully a) chooses technologies ("Moments in Time" dataset, AI interpolation and upscaling softwares trained on similar datasets) with particular political dynamics, namely that they rely on data colonialist practices and b) implements these technologies in a way that seeks to draw audience attention to the gap between the "master's house" of oppressive systemic exploitation and the "treasure-house" of human memory that "Lacework" seeks to construct in its reorientation of memory and style.

In these mixed house metaphors, "Lacework" is a funhouse version of the very-not-fun "master's house" of discriminatory data colonialism. The rhetorical changes made to its memory and its style are distortions to the "master's house" of discriminatory data colonialism, not for meant for whimsy or wonder, but for critical reflection on the "master's house" by way of changing our memory (and the machines' too) in the ecology of practice of the treasure-house. In the same way

one might look at their reflection in a funhouse mirror and react, "I don't really look like that, do I?" And no, you do not, but you do notice the bulges of your hips or protrusion of your eyes more in a regular mirror more after being confronted by them in the distortions of the funhouse. The work of the funhouse is one of destabilization and reorientation—it affects one's perception and memory of reality as much as it affects one's perception and memory of fantasy.

But they are in the same neighborhood and they are, in all practicality, made up of the same materials (datasets and AI trained softwares for computer-generated work), though the tools of power themselves (the ideologies driving the project) differ immensely. "Lacework" as a response to Ruha Benjamin's call to "imagine and craft the worlds you cannot live without, just as you dismantle the ones you cannot live within" falls somewhere in between those two poles. It is a distorted and wholesale-reoriented version of a world Pipkin (and they hope others in their audience) cannot live within, gesturing towards a speculative world that is slower, more considerate, and more humane.

The thing about a funhouse is that everyone can enter; it is built for a public and designed for interaction. Stephen Ramsay and Geoffrey Rockwell argue that "building [is] a distinct form of scholarly endeavor" in a digital humanities context. The work that is built, the rhetorical choices made in the building—for "Lacework," archival selection, slowing down, shrinking, interpolating, and upscaling in service of a generic redefinition of a dataset—has "political and ideological ramifications (Ramsay and Rockwell). But, sharing what has been built may be more important. Expanding on Ramsay and Rockwell, Mark Sample positions "sharing" over "building" in a blog post on his scholarly website. "With the digital humanities, we have the opportunity to distribute [the] future more evenly," he writes. "We have the opportunity to distribute knowledge more fairly, and in greater forms. The "builders" will build and the "thinkers" will think, but all of us, no matter where we fall on this false divide, we all need to share. Because we can."

For Pipkin, their work was not enough. But does begin to show us what is possible and what is impossible (in our society as it exists now) with computer-generated creative work. Rhetorical analysis of the mechanics of "Lacework" reveals practices and ecologies in play as the computer-generated artistic work seeks to escape dominant social systems. "Lacework" clearly does not escape all of the many traps and pitfalls of extractive capitalism and data colonialism. But, in its attempt to escape or evade, it does other things that rhetorically reorients the "Moments in Time" dataset: it distorts, it speculates. The funhouse starts to strip the master's house of propriety and the privacy and control extracted at the expense of untold others. The funhouse give us, its audience, treasure in our treasure-houses of memory. It shows us that there is a step between a "world [we] cannot live without" and a world we "cannot live within" (Benjamin).

"GENERATIVE POETS, SPECULATIVE READER(S):" DELIVERY AS AFFECTIVE COMMUNITY PRACTICE

One afternoon in October of 2020, I made my way to UNC's Digital Innovation Lab on the fourth floor of Greenlaw Hall, a brutalist concrete building with a maze-like interior that I had become fond of during my first two years of graduate school, but hadn't actually been in for over six months. COVID-19 had, at that point, killed 223,000 Americans and quickly forced UNC back into remote learning for the fall semester, after an ill-advised attempt at in-person instruction in August that the student newspaper colorfully deemed "a clusterfuck" (CDC) (*The Daily Tar Heel)*. The door to Greenlaw was unlocked, though I was sure I was the only one inside that afternoon. I made my way up the four flights of stairs, breathing heavier than I wanted to through my mask and noticing the dust and dirt pooled in the corners of landings. I pulled open a text message on my phone that held the door code for the Lab, from a colleague in the department I hadn't seen or talked to in months. After getting my bearings with the keypad, a green light flashed and let me in.

Being there felt so strange, as everything in the fall of 2020 did. It was a moment of crisis, a word that my friend Erin recently reminded me was borrowed from the Greek krisis, meaning "decision." In Middle English, the word crisis was first used in a medical context, indicating the moment when a disease turned either towards recovery or death (OED). A turning point. I liked this reminder from antiquity much better than how I had heard the word used recently—journalists, academics, lawmakers, and medical professionals dwelling in "a time of intense difficulty, trouble, or danger," a contemporary definition of the word (New Oxford American Dictionary).

They did this for good reason. It was an unprecedented time, after all, but this usage also seemed to obscure the agency of the original definition. When there is a crisis, there is also a decision.

I finished coursework for the Ph.D. as COVID-19 was starting in the spring of 2020. Instead of meandering to grab coffee after class with a friend or someone I wanted to be a friend, after these last classes I wandered around my parents' suburban Greensboro neighborhood, letting petals from cherry trees rain down on my sneakers and marveling at just how quickly podcasters had started to make episodes about the pandemic. I was lucky to be home; I was lucky not to be alone. I was lucky to teach online and ease into plodding exam preparation in a place with a quiet, sunny patio. I was startled by the sudden fragility of my parents, immunocompromised by the various medications they took for other chronic conditions. I was startled by the first time I wore a bandana over my mouth and nose to the grocery store, my reflection snagging on car windows in a Trader Joe's parking lot. I was afraid, deeply, of the specters of loneliness and death and politicization and brittleness that lay thick upon any interaction I had. The separation between myself and other people became a source of fear and longing in a way I had never experienced.

The events of that summer were those of many crises happening at once: surges in COVID cases and deaths, Derek Chauvin's murder of George Floyd, the resulting protests and curfews. I read and read and read. I called my advisor in August, after I had moved back to Chapel Hill, renting a room from Tom, a kind and fascinating man who had converted part of his 1970s ranch into a studio apartment. I wanted to start something, a group on digital poetics, with the goals to create something larger than myself, to disturb the fears the pandemic levied upon my interactions with others, and to ground my work in something that felt more real than my feverish reading and notetaking alone on a secondhand e-book reader that didn't hold a good charge. "What if you called it 'If, Then,'" my advisor suggested, "like a conditional statement in programming." The name itself was a decision. I began planning. After some smaller interest meetings and discussions over Zoom, I

invited poets and professors Lillian-Yvonne Bertram and Nick Montfort together for a conversation on "Hacking Against White Supremacy," saying they would "explore how identity makes and breaks algorithms and how computational poetics offers new ways of dealing with trauma, memory, and history" (Bertram and Montfort).

The internet at Tom's had proven unreliable with the fall's overly active hurricane season, so I asked my advisor permission to use the Lab space for these events. I remember vividly that I had put on makeup for the first time since March, in preparation for being seen by the over 70 people who had planned to come to the talk, more people than I had ever addressed at once. I remember looking at my image on the Zoom screen before the event, nervously fussing with my hair, and fiddling with the spacing on the introductory script I had prepared. Bertram and Montfort joined me on Zoom, their friendship and collaboration clearly pre-existing this conversation with references to common texts and a meeting that was to take place "right after this." They put me at ease, these two people whose work I had admired from afar, now up close. Their conversation was flecked with real brilliance about how technology can intervene in issues of social justice and was well-attended. After I closed my laptop, I felt an assuredness emerge from the depths of my stomach that I had not felt for a while, a feeling of turning and of having decided what to do.

Since then, over 330 scholars and artists have come to over thirty If, Then events; additionally, a diverse cohort of about thirty multi-disciplinary faculty members, librarians, graduate students, artists, poets, and creative technologists have formed the community core of the working group. If, Then remains a group born of crisis and of kairos, out of a small moment in my life that needed a decision, porous to the significant crises of the world around me.

Kairotic Delivery

In this chapter, I look at how kairotic delivery works when creative computation brings people together in a community context, in and outside of academic institutions. Kairotic delivery is central to creative computation as a genre; it gives creative practitioners a place to "contend with [their] desires," as Sean Morey says, and to elicit desire within their audience[s] (3). Live community lends room for cares and desires to be tried on, to be solidified, to be encouraged to evolve. In this chapter, I use If, Then: Technology and Poetics, the collaborative, public, and interdisciplinary virtual workshop series that I founded in the fall of 2020 to promote inclusivity and skills-building in creative computation, as the primary case study. I use my own experiences organizing If, Then to recast rhetorical delivery as an affiliatory practice. I also explore groups like the School for Poetic Computation and the Electronic Literature Organization as components of the same rhetorical practice.

We will take as our starting point here that delivery is "styled action,"[58] "a kind of physical eloquence."[59] In classical rhetoric, delivery as action relies on the physical capacities or properties of an orator; how a speech is delivered contributes to how it is received by its audience (and how appeals to ethos, pathos, etc. are made). Delivery, from its classical origins to its present applications in digital rhetoric, is perhaps the most consistently technically oriented of the rhetorical canons in its concern with the technicalities of the *how*. How do we get our ideas and arguments that we have worked so hard to craft and convey—through the other four canons—to our audience of choice? By what means do we do the work of transmission? In what way?

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[58] From Quintilian, *Institutio Oratoria*

[59] From Cicero, *De Oratore*

Delivery's concern with the technical has lent it purchase in digital rhetoric since the development of the field, despite the canon's fluctuations in prominence or regard in rhetoric writ large over the millennia. Ben McCorkle traces this history in his *Rhetorical Delivery as Technological Discourse*, arguing for a broader, more media-oriented understanding of delivery throughout history, as charted through "given technologies of writing and communication"[60] entering the cultural sphere (3). Our contemporary moment, McCorkle contends, is not "the only time when rhetorical theory has had a hand in shaping the design, form, and extra-textual features of the nonverbal rhetorical text; it is just the first time we have acknowledged it and explicitly situated such manipulations within the domain of delivery" (3). For the purposes of this chapter, McCorkle's "design, form, and extra-textual features" are clarified by the work of the WIDE Research Center Collective in a 2005 *Kairos* article. "In the digital realm," they write, "delivery refers to issues related to matters of appearance, material design, access, interoperability and interactivity, and the politics and economics of information distribution. It is of central concern to the writer who wishes to communicate with their online audience."

These five properties of digital delivery inform the development of what I call kairotic delivery, in an attempt to explicitly connect the classical rhetorical concept of kairos with the canon of delivery. One of two words[61] used for "time" in ancient Greece, kairos is a qualitative measure of time, referring to the right time to do something, the opportune moment for speech or action. Quintilian was among the first to explicitly draw a connection between kairos and delivery (alongside memory) in the eleventh chapter of his *Institutio Oratoria*. "No one can speak with aptitude and propriety," he writes, "unless he considers not only what is to the purpose, but also what is

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[60] i.e. "chirography, print, television, hypertext" (3)

[61] The other is chronos, or measured, quantitative time

becoming" (11.1.8). A good delivery considers the rhetorical aims of the rest of the four canons, yes, but also the emergent moment in which it is delivered, "what is becoming" or appropriate for that particular moment. The emergent moment heavily and distinctly informs "matters of appearance, material design, access, interoperability and interactivity, and the politics and economics of information distribution" (The WIDE Research Center Collective). Rhetorical concepts are intrinsically interrelated and co-applicable, of course; the distinctions between the canons themselves are for largely theoretical and pedagogical purposes and necessarily co-exist and co-mingle in practical application. My goal with the term and concept "kairotic delivery" is one of emphasis, not of wholesale redefinition. How something is delivered cannot be disentangled from the moment and context in which it is delivered. Understanding context through both an examination of the techniques of delivery and the moment of delivery lends both a richer understanding of the rhetorical act and of the canon of delivery itself.

Emphasizing the role of kairos in the canon of delivery through the term "kairotic delivery" bolsters the work of Sean Morey, who in his *Rhetorical Delivery and Digital Technologies,* presents a redefinition of delivery attuned to the particularities of the digital. Morey takes McCorkle's extension of delivery toward medium—from "orality and the body as medium in classical Greece; [to] literacy and the text as medium in the age of print and writing"—and through this historical evolution, provides evidence for a return to the body as medium in the digital age (McGregor). Morey writes:

> What delivery best delivers is not an information of literate logic, but affect produced by a larger network of associations between bodies, objects, and environments. This affect is not the same as feeling or emotion, which are learned responses (though these, too, are at play), but sensation, unconscious intensities. As a rhetorical canon, **delivery contends with desires, providing an interface for affect to produce a particular kind of communication designed to solve problems.**[62] (3)

[62] Emphasis my own

Just as we understood memory as an ecology of practice in the previous chapter, so too, this chapter will consider this concept of embodied, kairotic, digital delivery as an ecology of practice. The body as medium operates between networked human and nonhuman nodes of communication, fluidly between analog and digital realms. As with memory, delivery's ecology of practice (1) prioritizes action and process over outcomes, (2) relies on the interactions of human and nonhuman nodes that co-influence one another, and (3) recognizes the dynamic nature of understanding something as a practice, which embeds an acknowledgement of emergence and evolution into the concept itself.[63] It is here that I pick up where Morey leaves off, extending a practical framework of the ecology of practice to delivery and exploring the properties of digital delivery in a particular rhetorical context. The synthetic, networked nature of live community events, focused around a particular type of creative practice, provides "an interface for affect to produce a particular kind of communication designed to solve problems" (7). So, too, do computer-generated texts based on the outputs of these events, something I will explore through text analysis and topic modeling of the corpus of If, Then event transcripts. Expanding on Morey's work in order to produce a framework for what kairotic delivery looks like in practice within digital communities, I seek to do a few things in this chapter. First, I seek to articulate what elements inform an ecology of practice for delivery within a digital community context; the focus of this effort will be delivery's twinned interests in care and desire. This articulation will serve to extend James Porter's topoi for digital delivery, and create robust, practical criteria for furthering an understanding of how kairotic delivery works in contemporary digital contexts. My aim is to demonstrate that creative computational community and its outputs can show us a way of creating with technology that prioritizes the ethical and pro-social, binding the

[63] This plays well with theories du jour in both academic study of literature and rhetoric, like actor-network theory and theories of emergence—theoretical backdrops that both Morey and Brooke write about. I will not be detailing these theories for reasons of focus, relevance, and concision, but would like to acknowledge that they do complement one another well.

rhetorical and the computational together through a kairotic, environmental renewal of the canon of delivery.

"Delivery occurs at the level of desire," Morey writes, "and the rhetor must deliver desire, but a productive desire invested in the needs and wants of the audience" (82). In aggregate, the community cares and desires for and around creative computational work are highly socially-oriented ones, if a bit banal in their creative universality. Authors want their work to provoke thought, to challenge expectations, to expose injustices, to demonstrate ingenuity, to be used to reflect and to teach.[64] The desires of those creating creative computational work do not differ dramatically from authors of most creative work; they are social and rhetorical in nature. What differs, then, is how these cares and desires manifest in the work itself and how they are produced and "invested in," for both creators and audiences (82). As we have seen in the works highlighted in the previous two chapters, computer-generated creative work can compellingly respond to fraught societal issues often exacerbated in digital contexts—white supremacy, neoliberal individualism, exploitative capitalism, etc.—as a result of the form of the work and its computer-generated means of production. These works encourage an evolved understanding and application of the first four rhetorical canons—invention, arrangement, style, memory—for this contemporary context. So too, theorizing the rhetorical delivery of these individual works requires a nuanced understanding of the context in which they are delivered—the interacting desires of rhetor and audience. While I'm expanding outside of individual texts in this chapter, the frameworks within can guide an understanding of the rhetorical delivery of the previously discussed works. The first two chapters examine how creative computation interacts with society within the confines of a text; this present

[64] To begin discerning these authorial cares and desires, I did a series of background interviews with folks who regularly attend If, Then events and who consider creative computation a significant part of their creative practice. These wants written here are ones that came up repeatedly throughout the interviews.

chapter looks outside of individual texts at the communities who care about creative computation and seeks to sketch a network of human and non-human nodes of interaction that inform the affiliatory landscape of care and desire. Care and desire, in relation to kairotic delivery, is both a starting point and a goal.

The ELO and SFPC in Context

Communities that form around genre-based expression are only part of the story of kairotic delivery and creative computation here, but I focus on them for a few reasons: in them, there is clear articulation of "productive desire," live, built-in dynamics between rhetors and audiences, exposure to new ideas and methods, encouragement of experimentation, built-in feedback mechanisms (Morey, 82). While I will look at If, Then meetings as sites of delivery in more rhetorical detail, a number of communities are engaged with creative computation. Each of these communities serves distinct but overlapping constituencies, with significantly different programming for different rhetorical ends and goals.

The Electronic Literature Organization (ELO) is the central academic organization for those engaged with creative computation. Founded in 1999 by Scott Rettberg,[65] Robert Coover,[66] and Jeff Ballowe,[67] the ELO has become "central to the practice of e-lit in the United States and its establishment as an academic discipline" (S. Rettberg). The ELO has done an admirable job of

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[65] Rettberg is a professor of digital culture in the department of linguistic, literary, and aesthetic studies at the University of Bergen, Norway.

[66] Robert Coover, from his bio on the ELO site, is "widely regarded as one of America's most influential living writers, author of some fifteen groundbreaking books of fiction, including Pricksongs & Descants, The Public Burning, and most recently Ghost Town. Coover has for the past decade been teaching experimental courses in hypertext and multimedia narrative at Brown University. His 1992 essay on hypertext in the New York Times Book Review, "The End of Books," galvanized electronic literature fans around the world" (ELO).

[67] Ballowe is an early Internet business leader who "led the initial ZD/Softbank investments in Yahoo!, USWeb, GameSpot and Herring Communications" and serves on several corporate advisory boards for tech companies (ELO).

articulating their purpose within the field, taking leadership roles in preservation, circulation, and discovery of electronic literature and in critical scholarly work about electronic literature. Practically, this takes various shapes. First, the ELO runs a complex archival operation in partnership with organizations like Creative Commons, Archiving the Avant Garde, ArchiveIT.org, and the Library of Congress "to ensure the open circulation, attributed citation, and preservation of works, without which no field can develop" (ELO). The collection and circulation of important works of electronic literature in their Electronic Literature Directory, Electronic Literature Collection, and in the Library of Congress Archive-IT initiative is of central importance to their mission. So too, the ELO hosts an annual international conference, with both traditional and experimental scholarly sessions: "keynotes, panels with paper presentations in parallel tracks, lightning talks, debates and experimental labs" (ELO). And, as with many scholarly organizations, the ELO is affiliated with multiple universities,[68] funding institutions,[69] publications,[70] and other scholarly organizations[71] which solidifies their position as a scholarly authority both in academia and within communities of creative computation.

The ELO takes an emphasis on the scholarly; it is a legacy organization intended to legitimize and further "the investigation of literature produced for the digital medium" and is the only scholarly body in the U.S. devoted to that specific pursuit (ELO). Theirs is a mission of evangelism, of legitimization, of preservation, and of circulation—the desires driving their delivery.

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[68] UCLA, Duke, UMD, Washington State University Vancouver, MIT (ELO)/

[69] Ford Foundation, Rockefeller Foundation, the National Endowment for the Humanities and the Social Sciences and Humanities Research Council of Canada (ELO).

[70] *electronic book review* (peer-reviewed journal), *Electronic Literature* book series, published by Bloomsbury Academic Press (electronic book review) (Bloomsbury).

[71] Digital Humanities Summer Institute (DHSI) and, previously, the New Media Consortium (NMC) which shuttered in 2017 (Lederman).

Because of its scholarly emphasis and its organization as a specifically academic group, the ELO's audience or base of participation is in some ways the most tightly constrained of the groups I explore. Members of the ELO are almost entirely professional academics and independent researchers and scholars.

Other organizations that exist around communities of creative computation have different, though often complementary, desires. Founded in 2013 as an experimental school to support "interdisciplinary study in art, code, hardware and critical theory," the School for Poetic Computation (per its updated mission statement) "is a place for unlearning and learning." The statement continues:

> Our programs challenge the capitalistic, heteronormative and patriarchal canon of social and computer sciences. Participants are treated as collaborators and we formally encourage the power they have to determine their experience and education. The special culture of our institution is one grounded on communal care and solidarity across social differences. Our school is a platform for people who are Black, Indigenous, of color, trans, gender non-conforming, queer, disabled, survivors, living with and/or from low-income backgrounds, and oppressed to feel empowered that their ideas are important, necessary and central. (SFPC)

The School for Poetic Computation was co-founded in 2013 by artists, educators, and coders Zach Lieberman,[72] Taeyoon Choi,[73] Amit Pitaru,[74] and Jen Lowe.[75] Each of these co-founders came to the

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[72] Zach Lieberman's work explores the relationship between the body and tech, with a focus on translating haptic movement and gesture into visual representations, using code. With a team, he created the eyewriter, a low-cost, open source eye-tracking platform that will allow amyotrophic lateral sclerosis (ALS) patients to draw on a screen using the movements of their eyes (MoMA).

[73] Taeyoon Choi ran much of the day-to-day operations of the School for Poetic Computation, prior to the leadership shift in 2020. He spent his time, in the early days of SFPC teaching and doing a substantial amount of the organizational administration. His larger body of work is focused on education, particularly around the distribution of care in a network (see the Distributive Web of Care) and digital advocacy for those who are deaf or hard of hearing (see Errantic Poetry workshops) (Choi).

[74] Amit Pitaru came to the organization with a background in interactive and graphic design. He most recently worked with a collaborative team on developing the Paper app, a drawing, design, and publishing software (SFPC).

[75] Jen Lowe is a data scientist, first and foremost, whose work focuses primarily on creative data visualizations. From 2014 to 2016, Lowe shared her heartbeat online at One Human Heartbeat (SFPC).

School for Poetic Computation with different expertise and artistic focus that are represented in the offerings of the School to its students; courses examine and provoke relationships between the body and technology, questions of analog-digital translation, disability advocacy and accessibility, networked care, human-centered design, hardware computing, and data visualization. Prior to the Spring of 2020, the School ran ten-week residency programs each fall and spring and, over the summer, held a variety of more focused, topic-oriented one- and two-week programs. Past courses taught in the ten-week residency programs include Handmaking Computers, Critical Thinking of Technology, and Code Poetry, Introduction to Natural Language Processing and Word Vectors, Creative Games with AI, and many more. Guest arts educators teach and collaborate with the small (15-25 students in each residency) group for each course. Past summer sessions have focused on topics like Machine Learning Literacy, Radical Computer Science, and Code Ecologies (SFPC, "Participate"). Through each of these residency programs, the School for Poetic Computation has worked with over four-hundred students from a diversity of demographic, professional, and experiential backgrounds.

At the onset of the COVID-19 pandemic and during the ongoing Black liberation movement, the spring and summer of 2020 necessitated an evolution of the culture, priorities, and leadership of the SFPC, in order to address concerns about structural inequity, anti-Blackness, and financial transparency. SFPC teachers and staff implemented a pause on the school's programming in order to restructure and envision work towards a "beautiful school" (Aliyu, Anderson and Artist). Between August 2020 and February 2021, previous administrators stepped down. A group of around fifteen cooperative stewards now lead the new SFPC. These stewards lead the school in "draft[ing] a new Code of Conduct, offer[ing] anti-racist and accountability training as professional development for all staff, and provid[ing] transparency about SFPC's 2020 finances" (Aliyu, Anderson and Artist). The work and programming of the school includes more flexible classes

ranging from three to ten weeks, both online and in-person, mutual aid work "to create a learning environment where no one is ever turned away due to their inability to pay tuition," creative publications, archives, and exhibitions (Macdonald, Bomani and Hoff). Applications and tuition are required to enroll in SFPC programs.

There are other organizations both academic and non-academic—babycastles, MIT Media Lab's Lifelong Kindergarten, NYU Interactive Telecommunications Program, Brown's MFA in Digital & Cross Disciplinary Literary Arts—that engage with creative computation as a potential path of study or auxiliary interest. I focus primarily on the ELO and SFPC, though, because they are the ones that foreground creative computation for artistic or literary purposes as the focal point of their organizing work. The ELO lends scholarly credibility to the discipline and the SFPC creates revolutionary spaces for intensive engagement, "learning and unlearning." Both of these organizations require significant buy-in in order to be in community and proximity with other members, both literally in terms of time (such as applying to and attending conferences, editing journals, attending multi-week workshops, creating work for archiving) and money (with membership, registration, and tuition fees), and in terms of one's own commitment to the discipline. One would not likely invest the time and money necessary in order to engage, if they were not sure they had the skills, interest, time, and resources to engage. Of course, there are easily accessible resources available for free online—the stellar archival work of both of these, for instance—but visiting a webpage, no matter how transformative, is not the same as talking to someone, or being in a space with other people curious about similar things.

If, Then: Technology and Poetics in Context

If, Then: Technology and Poetics was created to fill another role in this landscape. If, Then as an organization and community attends to both the disciplinary specificity of creative computation towards social and artistic ends and to people from all walks of life, with varying disciplinary interests, levels of engagement, and technical skills. As I often say when promoting events, If, Then: Technology and Poetics is a collaborative, interdisciplinary working group and workshop series promoting inclusivity and skills-building in creative computation for artists, scholars, and teachers (Schnitzler). Because events are free to attend, over Zoom, and run as 90-minute sessions every month of the academic year, barriers to entry are low,[76] creating conditions for strong attendance from a diverse cohort of academics, librarians, graduate students, artists, poets, and creative technologists. Events have ranged from technically-oriented workshops on creating with unsupervised learning algorithms and generating a novel for NaNoGenMo to teaching-focused sessions on p5.js and Twine. There are often demos of creative works-in-progress; we have held sessions on a visual programming language (ColorCode), a platform that publishes poems in the form of interactive time lapses (Midst), and a set of data exploration tools that remix Hip hop lyrics and Black scholarly texts (LiteraryDJ) (Archive). In early 2022, If, Then held its first symposium, a long weekend on disability studies and speculative world-building called "Speculative Lessons/Just Futures: Creativity and Accessibility in Computational Poetics." We also hold regular community open mics. Lillian-Yvonne Bertram asked if I wanted to have them come on as a co-organizer in the fall of 2021, after being granted funds through their institution to support work in digital poetics and creative computation, eliciting a quick and resounding "yes" from me. They and I curate events with

[76] The term "low-stakes" came up independently in every single interview I conducted with If, Then participants, as a reason for coming to sessions.

the aim of exploring the capacity of creative computation to show us something deeply human,[77] to speak truth to power,[78] to demonstrate ways of subverting oppressive systems,[79] and to reimagine completely new ones.[80]

Care, Desire, and Delivery's "Ecology of Practice"

In the top left of the SFPC's website, there is a carousel of definitions of "poetic computation." Poetic computation is: "when technology is used for critical thinking and aesthetic inquiry," "is transforming binary through feeling," "engages the computer as a medium for critical and artistic expression," "is an act of resistance against utilitarian notions of progress and efficiency," "can't be separated from its historical, political, and social impact," "is both an aesthetic and affective experience of code," "begins with the interfacing between two or more beings," "is a relational practice organized around communal study," "is when technology is used for critical thinking and aesthetic inquiry." These crowdsourced definitions reveal the goals of anonymized individuals as the desires of the group, community in action. In the diversity of events we hold, If, Then seeks to do the same thing: demonstrate the plurality of what it means to create art with computational technologies while remaining grounded in our human contexts and desires.

At the core of this work is care, in addition to desire, exploring and preserving a deep and enduring humanity as a community of artists whose medium (code, computation) is oft-entrenched in capitalist systems of profit, productivity, and exploitation. Care is to be taken and given.

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[77] see "Captioning on Captioning" with Louise Hickman and Kevin Gotkin and "Visualizing the Remix with LiteraryDJ" with Andrew Smith (Hickman, Gotkin and Schnitzler) (Smith, Schnitzler and Bertram).

[78] see "Hacking Against White Supremacy" with Lillian-Yvonne Bertram and Nick Montfort (Bertram and Montfort).

[79] see "Weird Programming Languages" with Sukanya Aneja and Brandee Easter (Easter, Aneja and Schnitzler).

[80] see "Gaming as Speculative World-Building" with Alexandra To and Chris Martens and "The Distributed Web of Care" with Taeyoon Choi (To, Martens and Schnitzler) (Choi, Schnitzler, and Bertram).

Borrowing definitionally from Hi'ilei Julia Kawehipuaakahaopulani Hobart and Tamara Kneese's recent work "Radical Care: Survival Strategies for Uncertain Times," care here is "theorized as an affective connective tissue between an inner self and an outer world, care constitutes a feeling with, rather than a feeling for, others. When mobilized, it offers visceral, material, and emotional heft to acts of preservation that span a breadth of localities: selves, communities, and social worlds" (2). I want to pay particular attention to the actions around care in both this definition and in its colloquial use: we take care, we mobilize it in service of "preservation" (2). To care is to guard against losing something, to keep something safe. Maybe the something here is humanity, respect, collectivity, art that seeks to make an impact. We all have a capacity to care within us, as humans, that we need to be reminded to guard, to take. Take care. To take care is to reflect, to pause, to put your own oxygen mask on before helping another. It lights up an internal circuitry in which, despite starting and ending in the same place, each connecting component part is valued and seen.

I situate both "care" and "desire" as co-constitutive of the "ecology of practice" that determines rhetorical delivery in digital community contexts around creative computation. Both are theorized by their relationship to affect by various scholars. For Hobart and Kneese, care is a means of delivery "between an inner self and an outer world," "an affective connective tissue" (2). For Moray, delivery provides "an interface for affect" by contending with desire (3). In many ways, "care" and "desire" are synonymous in this context: both locate the wants of a rhetor in method, in what is given attention and in how wants are communicated to and for an audience. I choose to bring both into the fold here, though, because both terms serve to emphasize something slightly different in the ecology of practice that constitutes how delivery happens in creative computational communities. "Care" is defensive, "desire" is offensive. Care is internally concerned; it situates more of its focus on the rhetor(s). Desire, conversely, is externally concerned and situates more of its focus on the audience. It is the difference between asking "Can we?" and saying "we can." It is this

negotiation that sits at the center of these communities and the creative, socially-engaged work the artists in them produce with technologies more often used for profit, productivity, and exploitation. Central to these organizations is the practice of holding both care and desire at once, two overlapping "interfaces" through delivery "between an inner self and an outer world" (Hobart and Kneese, 2).

Text Analysis as Rhetorical Inquiry

To better understand the topical priorities of the group—member cares and desires—and the connections between these topics, I conducted a basic text analysis of all of the If, Then: Technology and Poetics event transcripts from monthly group workshops and meetings. Text analysis, as defined by data visualization librarian Lorin Bruckner, "is the process by which meaningful information is extracted from unstructured text data." The "meaningful information" I seek to extract is the rhetorical particulars of how the group understands and discusses the goals, priorities, and the various purposes of their creative computational work. The words that are used most frequently (term frequencies), the types of words used to discuss creative computational work (grammatical classification analysis), and the topics or areas of interest that emerge from the events in aggregate (topic modeling) reveal the aims and anxieties about the role of creative computation in a socio-technical context. Extensive research has been done in linguistics, computation, and psychology to support using language "for inferring psychological patterns," and tools that analyze linguistic corpora along categorical lines (grammar, topics), like the Linguistic Inquiry and Word Count (LIWC) are widely accessible[81] (Boyd, 165). With his recent chapter "Psychological Text

[81] A summary of LIWC, from Boyd's "Psychological Text Analysis in the Digital Humanities": "At its core, LIWC consists of two parts. The heart of the application is its dictionary that, in many ways, is similar to the dictionaries of older text analysis paradigms. The LIWC dictionary contains word-to-category mappings for around 80 categories of words, including both common content words (e.g., words about family, emotions, biological processes) and function

Analysis in the Digital Humanities," Ryan L. Boyd has extended this psychometric research to a digital humanities context, offering up tools like the LIWC to begin "to establish the psychological properties of a person or group of people in an objective, reliable manner" (161). All said, I aim to mobilize my findings from an analysis the If, Then transcripts towards supporting a deepened understanding of what the group desires and what and whom they care about. This is in service of binding the rhetorical and the computational together through a kairotic, environmental renewal of the canon of delivery.

Distant reading through methods of text analysis becomes useful at a particular scale, with a larger volume of text than one can read, analyze, and interpret on their own. This catch-all term for empirical or quantitative treatments of literary works and history, as Ted Underwood writes in "A Genealogy of Distant Reading," is "not a new trend":

> The questions posed by distant readers were originally framed by scholars (like Raymond Williams and Janice Radway) who worked on the boundary between literary history and social science. Of course, computer science has also been a crucial influence. But the central practice that distinguishes distant reading from other forms of literary criticism is not at bottom a technology. It is, I will argue, the practice of framing historical inquiry as an experiment, using hypotheses and samples (of texts or other social evidence) that are defined before the writer settles on a conclusion. (2)

Strategies of distant reading can differ dramatically in context and scale. I am working in a different context and scale than Underwood's distant readers, literary historians who have learned to compare thousands of volumes at a time. My modest aim in taking an approach of distant reading towards the If, Then event transcripts is not to chart trends in literary history or to analyze the ebbs and flows of rhetorical devices across a particular literary coterie (though these too are very interesting projects that can and have been done with text analysis methods). Geoffrey Rockwell has addressed the

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words (e.g., pronouns, conjunctions, articles, etc.). For example, the 'cognitive processes' category contains words like 'think,' 'understand,' and 'analyze,' and the 'articles' category contains the words 'a,' 'an,' and 'the'" (165).

origins of digital text analysis in the practice of concordance. "The concording does not bring unity to the new text; interpreting the concordance does," he writes. Rockwell continues, "We should therefore think of our tools as creating possibilities for interpretation. Some possibilities are discarded; some experiments are interesting" (213-4). My corpus is small—transcripts of twenty-six If, Then sessions from YouTube or forty-two hours of content and 165,091 total words—and spans a little over two years (Fall 2020-Spring 2023). I deploy a "sprint-distance" reading strategy that uses text analysis to supplement applications of rhetorical theory, taking with it the same ethos Underwood argues underpins distant reading as a practice. I experiment with the corpus based on the hypothesis that this entire dissertation aims to prod and support: that the rhetoricity of generative computational processes can be mobilized by artists for social critique.

Many of the artists, poets, and programmers doing creative computational work are motivated by a desire for social justice and critique and care deeply about communities of creativity and identity. These artists see creating with computational processes as a means of satisfying these twinned desires and cares. These desires and cares are evident, as they both usually are, in moments of delivery. Delivery operates in a process-oriented community, where the priority is not necessarily in sharing the finished works themselves, but in sharing how the works are made. In these live community contexts, there is a clear articulation of "productive desire" alongside objects of care, built in live dynamics between rhetors and audiences, exposure to new ideas and methods, encouragement of experimentation, and built-in feedback mechanisms that speak to the methods and aims of creative computational work.

Text Analysis Methods

The corpus for my text analysis consists of the twenty-six meeting transcripts from If, Then workshops, starting in September 2020 and ending in January 2023.[82] All events have taken place on Zoom and have been recorded and uploaded to our YouTube archives, so there is a full record of everything that has taken place in the group. I used the auto-generated captions on YouTube as the source of raw data for the transcripts and manually reviewed transcripts to correct errors in the auto-transcriptions. I used the YouTube transcripts and not the auto-generated ones from Zoom (despite having those as well, from the auto-captioning that I enable during meetings) because they are significantly more accurate.[83] This method of data collection and cleanup, though certainly not without error, mitigates mistakes and social harm done by the auto transcription service, which has variable quality and "might misrepresent the spoken content due to mispronunciations, accents, dialects, or background noise" (YouTube). This method is consistent with the recommendations of YouTube, too. They write in their Help Center: "These automatic captions are generated by machine learning algorithms, so the quality of the captions may vary. YouTube is constantly improving its speech recognition technology…You should always review automatic captions and edit any parts that haven't been properly transcribed."

The transcripts themselves are certainly not a perfect accurate measure of how the group understands and discusses the purpose of their creative computational work. It is a limited context, most often focused on one primary workshop leader or speaker on a particular topic; I typically direct speakers to allot forty-five minutes for sharing their project and process and then thirty

[82] I stopped collecting and analyzing transcripts following the event on January 13, 2023 the month I commenced writing this chapter.

[83] A 2022 Consumer Reports study found an average of five transcription errors for every hundred words in YouTube auto-transcripts, versus eight transcription errors for every hundred words in Zoom (Waddell).

minutes for an experimental workshop component or a Q&A session. These transcripts also do not include anything from the chat feature on Zoom, which is lively and frequently includes supportive comments, questions, and relevant other materials from a greater diversity of participants, particularly those with disabilities and other access considerations. As part of my work in making meetings accessible as a facilitator, though, I tend to read aloud significant comments or questions from the chat during the session for those who cannot see or easily interact with the chat function live. So, these written comments often find their way into the transcripts. This practice or technique, like much care and access work done live, is imperfect, idiosyncratic, and reliant on my attention and discretion as a facilitator and organizer. But, it does provide a workable solution to incorporating chat commentary into session transcriptions, a fortunate consequence[84] of my care and access standards as an organizer.

To prepare the corpus of event transcripts for text analysis, then, I put the edited transcripts into a simple Excel sheet by event, with the header row: Session Title, Date, and Transcript. Voyant, the text analysis software I chose to use as a starting point, works best with tabular data. After uploading the file to Voyant, I had to do some further cleaning, particularly around stopwords. Since Voyant is typically used to work with written texts and not transcripts of speech, I had to amend the default list of stopwords, since the original word frequency cloud in Figure #7 featured filler words like "um," "like," and "really" as the most commonly used.

[84] That is all to say, because I did not know I would be studying transcripts from the group's sessions at the outset in the Fall of 2020, I did not do this work of reading chat messages aloud with the intention of making fuller and more accurate transcripts. The aim in doing this is and was primarily for access and care for a diversity of participants within the sessions.

Figure 7: Word cloud representing most frequently used words from the If, Then event transcript corpus, before modifying the stopword list

Most of the manually added stopwords were common conversational filler words, proper names, pronouns, and common contractions. After cleaning up the stopword list,[85] the word frequency cloud looked quite a bit different, as demonstrated in Figure #8.

Figure 8: Word cloud representing most frequently used words from the If, Then event transcript corpus, after modifying the stopword list

[85] Manually added stopwords: um, like, uh, know, just, it's, kind, I'm, really, right, yeah, that's, sort, things, going, there's, lot, little, actually, you're, we're, bit, I've, okay, I'll, they're, oh, got, gonna, come, we'll, hi, what's, Kevin, Carly, you've, hey, hi, we've, I'd, Andrew, Chris, mark, Louise, dr, gotkin, Lillian, nick, here's, aren't, you'll, Natalie, David, won't, Bertram, Allison, they've, Yvonne, November, jess, Hickman, Jennifer, it's, I'm, that's, there's, way, you're, we're, I've, I'll, They're, Doing, That's, I'm, It's

The word 'think' here may also be a considered a filler word; i.e., as it is used in the common phrases from the corpus "let me think" and "…, I think," as a way of ending or completing a thought. I leave it in this word cloud to show its prominence in the corpus, but I ultimately updated the stoplist to include the word 'think,' removing it from frequency calculations. Figure #9 shows the final resulting word cloud.

Figure 9: Word cloud representing most frequently used words from the If, Then event transcript corpus, after second modification of the stopword list to include 'think'

Text Analysis Methods: Term Frequencies

As we see in the word clouds above, relative term frequencies can give us a broad sense of the common vocabulary of the group. Relative term frequencies show us how often a particular word shows up in the corpus, per every one million words (Voyant). Relative frequency is conceived of as a probability, marginally more useful in this context than simple frequency (a raw rate of occurrence), because it considers the corpus as a whole, adding more context to the numbers generated. Figure #10 shows a list of word counts and relative frequencies for the fifteen most commonly used terms in the corpus:

Rank	Term	Count	Relative
1	people	402	0.0024350206
2	want	401	0.0024289633
3	work/working (#16)[86]	378/175	0.0022896463/0.0011
4	time	315	0.0019080386
5	different	305	0.001847466
6	make	259	0.0015688317
7	project	221	0.0013386556
8	use	216	0.0013083693
9	text	214	0.0012962548
10	thinking	207	0.0012538539
11	good	201	0.0012175103
12	say	194	0.0011751095
13	code	194	0.0011751095
14	maybe	191	0.0011569377
15	words	189	0.0011448232

Figure 10: Table showing word counts and relative frequencies from the If, Then corpus

As we can see, the most relatively frequent terms in the corpus are "people," "want," and "work/working;" simple and convincing evidence that If, Then, as a group focused on creative computation, cares about the processes and the people involved in the community and implicated by its work.

Text Analysis Methods: Grammatical Classification Analysis

On top of this term frequency analysis, I layered a simple grammatical classification analysis of the hundred most relatively frequent words in the corpus, first using Voyant, then using LIWC-22.[87] This added a layer of semantic structure and meaning to our term frequencies, making them a bit simpler and clearer to interpret. Breaking down the most frequently used nouns, verbs, and adjectives in the corpus is surprisingly revelatory, literally telling us how we talk about what we do,

[86] I've collapsed "work" and "working" together, in a practice known as stemming (Source).

[87] Linguistic Inquiry and Word Count (LIWC) "reads a given text and compares each word in the text to the list of dictionary words and calculates the percentage of total words in the text that match each of the dictionary categories. For example, if LIWC analyzed a single speech containing 1,000 words using the built-in LIWC-22 dictionary, it might find that 50 of those words are related to positive emotions and 10 words related to affiliation. LIWC would convert these numbers to percentages: 5.0% positive emotion and 1.0% affiliation" (LIWC).

the actions we take to do it, and the words we use to describe our objects of creation, study, and interest.

This method of inquiry follows the attentional view of verbal behavior and extends it into a rhetorical, digital humanistic contexts. Starting as early as the 1960s with the "General Inquirer," a massive computer programmed with software to "score texts for psychosocial phenomena," scholars in the field of psychometric language analysis focused on a simple principle; that "word frequencies represent attentional habits" (Stone, Dunphy and Smith) (Tausczik and Pennebaker 32). Softwares like the LIWC rose to prominence in this field and further cemented this attentional view as the standard for verbal analysis. Texts are parsed into categories of words, informed by psychological theory (i.e., emotional words, social words, agentic words, cognitive words) and "the relative frequencies of each category, then, are typically interpreted as reflecting a person's relative focus on each domain—something of an eye tracker, but for a person's words" (Boyd and Schwartz, 25). Parts of speech are always part of these categories within this methodology, telling us what content areas, actions, and descriptors are paid attention.

So, with all of this, we will start first with our group of nouns, which make up 36 of the 100 most frequently used words in the corpus. Looking at nouns can tell us about the most common subjects of our conversations, the "what" in our conversations. The most common noun, and the second most frequently used word in the entire corpus with 374 occurrences, is "people." Across a series of events focused on projects-in-progress and using different softwares as teaching tools, the clear priority is community and the people in and around our own. Other relationally-oriented nouns are also found in the most common nouns list: chat, group, students, experience, and conversation all make the list, with high relative frequencies. From the list of nouns we see a few other themes emerge as frequent subjects of group conversation. If, Then is work focused; nouns "work" and

"project(s)" are notable because of how high they are on the list, numbers 4 and 8, respectively.[88] Other subjects of conversation are perhaps more unsurprising, based on the purpose of the group, formed to be practical and process-oriented around the themes of creative computation. Process-oriented nouns included words like "question(s)," "idea," "guess," "process," "sense," "thought." Their presence as a cluster tells us that the group, in aggregate, is interested in questions of *how* to do something and *why* to do it. This indicates a concern with motive, desire, and method. So too, linguistic and poetic terms ("word(s)," "text," "language," "poem/poetry," "terms") appeared alongside computational terms ("code," "screen," "computer," "data," "program(ming)," "technology") in equal measure.[89]

A brief analysis of the most frequently verbs tells us what actions the group prioritizes, what is stated, affirmed, or asserted. The two topical clusters that arise from this group of verbs are cognitive/creative verbs and relational/communicative verbs. Cognitive and creative verbs—like "think," "make," "work," "create," "try"—as a topical cluster indicate the group's focus on poiesis, on creativity and thoughtful experimentation. So too, relational and communicative verbs—words like "want," "say," "talk," "share," "thank," "love," "need," "show"—as a topical cluster indicate the group's focus on service to and engagement with people, what Pennebaker's LIWC-22 dictionary deems, broadly, as social (LIWC). These types of verbs are used in relatively equal measure to reference the people immediately interacting with a given speaker: the other people in

---

[88] "Projects" is also on the list as a separate entry, #77

[89] Averaging the relative frequencies of these clusters of linguistic and computational terms, in order to compare my hypothesis that that really do show up in the corpus in almost equal measure. The average relative frequency of the linguistic cluster, or the likelihood that any given word in the corpus would be a linguistically-oriented noun, was .000773. The average relative frequency of the computational cluster, or the likelihood that any given word in the corpus would be a computationally-oriented noun, was .000779. Now, this is a very small number—because it is an average representing one word and also because I only averaged a small sample of nouns from the hundred most frequently used words—but it also shows us that these topical priorities really do exist in equal measure.

the If, Then session, the colleagues and students with whom the speaker engages often, and people who a speaker wishes to reach with their creative work.

Finally, looking at the most frequently used adjectives helps us to raise and answer the question: how does the group describe texts, situations, and/or the subjects of our interest? In short, positively, with a notable bias towards novelty and unconventionality. "Different" is the most frequently used adjective, with "interesting" shortly following behind. Positive adjectives like "good," "cool," "great," "exciting," show up in equal measure alongside taxonomizing ones like "creative" and "computational." None of the most frequently used adjectives have negative associated sentiment.

Text Analysis Methods: Topic Modeling

The final text analysis method I used on the corpus moved out of Voyant and into topic modeling with the Topic Modeling Tool.[90] This tool is a user-friendly interface for MALLET (MAchine Learning for LanguagE Toolkit), a "Java-based package for statistical natural language processing, document classification, clustering, topic modeling, information extraction, and other machine learning applications to text" (McCallum). The goal of topic modeling a corpus is to give us (writers, researchers) an understanding of the term clusters or topics contained within that text. In a topic model, words in each document from the corpus are randomly assigned to a user-driven number of topics (I chose fifteen). The algorithm then goes through a number of iterations (I chose 100) and tries to refine the model, determining which terms are best suited to which topics, based on their co-occurrence in the documents (Voyant). This method, as with relative term frequencies and grammatical classification, can give us a sense of the common vocabulary of the group. But, instead

[90] I used this tool, as opposed to the Topics tool built into Voyant, because it can work with the whole body of document texts, not just the first thousand words of them, as the Voyant topic modeling tool does.

of the words we use and think about most often, these are the words we think about and use together. (Kirilloff)

The utility of distant reading through computational methods like these, as Gabi Kirilloff writes in her article "Computation as Context: New Approaches to the Close/Distant Reading Debate," is not that of solidifying fact or statistical validity or of providing a more quantitatively sound or true alternative to interpretive close reading. Rather, the value of distant reading is in its "provo[cation of] further acts of interpretation," which includes, and certainly does not foreclose, a close reading methodology (1). This is the ethos with which I approach topic modeling—most simply, as a way, through an algorithm's distant reading, to generate something new to close read.

It is important to note that topics generated by this model are different each time the model is run; so, the topics below would likely not show up in their precise format again. But every time the model is run, the topics do have some internal coherence; thus, the priorities of the group become clear. Below is a list of standout topics, with my suggested tags for a cluster or category name in italicized brackets alongside the outputs:

> Topic 0: kind sort things people lot work thing bit text thinking cool interesting questions talk screen computer language chat *[This topic mirrors word frequencies we saw from Voyant—THE BASICS]*
>
> Topic 3: project make terms show create today talking computational long poem folks black software poetics film familiar place pronouns easy sound *[AUTHORSHIP]*
>
> Topic 7: technology taking big series python relationship possibilities function single visual phrase events generative poets speculative reader talked met laughs *[RELATIONALITY/RELATIONSHIPS BETWEEN AUTHOR, TECH, AND AUDIENCE]*
>
> Topic 8: categories agree based equitable scene integrate encourage stack headphones assumptions phonetic bathroom cases reach information place automata universal checking horizontally *[EQUITY AND ACCESS]*

Topic 10: missing face brings visuals shape names longer apply organizing activist folk combination exploring scale spot growing designed abstract represented *[ORGANIZING AND ACTIVISM]*

Topic 13: art editing politics generally unique navigate players speak mention toe glitch creating allowed sorts blowing grammars equity smart broad *[PROCESS]*

Topic 14: working word game interested gonna projects point experience creative background started poem context tools means interactive *[ENGAGEMENT AND INTERACTIVITY]*

After running the model a few times, I was surprised by the nuance in the generated topics and the relative consistency of topical clusters between iterations. The clusters formed started to make sense around discourses like the relationships between author, technology, and audience (Topic 7) and how audience and author engage with one another using creative computation (Topic 14). If, Then is concerned with social justice and the ways computational technology can be a means of both reinforcing and potentially combatting social inequities. This shows up in clusters around equity (Topic 8) and accessibility (Topic 15), along with more explicit topics around organizing and activism, and the role of the artist (Topic 10).

Ted Underwood writes in his post "Topic modeling made just simple enough" that "as a literary scholar, I find that I learn more from ambiguous topics than I do from straightforwardly semantic ones." Exploring ambiguous topics that are not linked by a single referent, Underwood writes, often reveal "a discourse or a kind of poetic rhetoric" more interesting and nuanced than one might ascertain from close reading alone. The primary affordance of using topic modeling, for Underwood, is to "point me toward something I don't yet understand…I almost never find that the results are too ambiguous to be useful."

In the case of the topics generated from the If, Then transcripts, I was moved and surprised by the nuance in the topics. With this corpus of transcripts, I have the advantage of having organized and attended every event, making this exercise of topic modeling potentially redundant or

unnecessary. That is, I could have probably told you that it was my aim, as an organizer and community member, to address these areas of discourse without the use of the topic modeling program. But seeing these topics emerge, however ambiguous, confirmed my hopes as an organizer. It was surprisingly emotional; we are doing what I hoped would happen with this group, I thought. Even MALLET can "see" it, though, it does not know what any of it means, just that these words are related to one another and come up often.

If we look at Topic 8, for example, what I've labeled a cluster focused on equity, we see terms that relate directly to a thematic core—equitable, assumptions, categories, integrate, encourage. We also see words that could fit into different identified categories (reach, based, information) and words that, at first pass, seem random when clustered under the category of equity (headphones, phonetic, bathroom, automata, horizontally).

> Topic 8: categories agree based equitable scene integrate encourage stack headphones assumptions phonetic bathroom cases reach information place automata universal checking horizontally

MALLET works by using Latent Dirichlet Allocation (LDA), a generative statistical model and "shorthand for a broader family of 'probabilistic" techniques'" (Underwood, Topic modeling made just simple enough). The Dirichlet model, named for German mathematician Johann Peter Gustav Lejeune Dirichlet, describes the "pattern of the words that are repeating together, occurring frequently, and words [that] are similar to each other" (Seth). If we, as Ted Underwood suggests, take terms within topics as representative of a "discourse or a kind of poetic rhetoric" within a particular textual corpus, then we can understand these terms as working with one another in service of a "discourse," a "poetic rhetoric." By doing the work of distant reading, MALLET gives us something to close read and rhetorically analyze.

At first pass, a word like "bathroom" seems potentially out of place in a topic cluster that is concerned with equity. But, if we look how equity as a value happens in practice during meetings of If, Then, "bathroom" as a term contributing to an equity-centered discourse makes more sense. The word "bathroom" comes up often—in 19 of the 26 event transcripts—at the beginning of events. After introducing If, Then as a group and the workshop leader for the day's session, I often include a note on care and accessibility; after explaining the digital access measures I have put in place (recording and captioning, encouraging visual description, etc.) I include something along the lines of "please feel free to take breaks as needed throughout the session, go to the bathroom, get a snack, turn off video, etc." The phrasing is not the same every session, but this is the context in which all 19 uses of the word "bathroom" is mentioned across the corpus of transcripts. Generally, I, as the group's primary organizer, am the only one mentioning the word "bathroom," though it has been reiterated by session leaders a few times.

To see the word "bathroom" listed alongside "equitable" and "universal" in Topic 8 (and other terms like "headphones," understood as an assistive audio tool) indicates an emphasis on practicality and lived-experience in discourse around equity and access. The verbs in the topic—"integrate," "encourage," "reach," and "checking"—are all widely applicable across a potential variety of discourses. In context with the other words in the topic, though, these actions prioritize equity, positivity, and practicality in how folks relate to one another (see especially "encourage" and "checking").

Miriam Posner writes in a post on interpreting results from topic modeling that topic modeling tools are a "surprisingly effective way of getting a new perspective on a body of work." She continues: "topic modeling is not a way of revealing any objective 'truth' about a text; instead, it's a way of deriving a certain kind of meaning—which still needs to be interpreted and interrogated." We could do a similar analysis for all of the topics output by MALLET,

understanding each as a discourse centered on a particular theme. We "derive…a certain kind of meaning" from these topics—which change in their terminological specifics with each run of MALLET—by looking at "the rhetoric that binds this topic together" (Underwood) (Posner, Wallace and Borovsky).

In looking at Topic 8, the implicit, "bind[ing]" rhetoric is practical, focused on people in their bodies interacting with their built environments (physical and digital) and one another. This is what the equity and access discourse is built upon, particularly as I interpret it from this particular topic. Further nuancing Underwood and Posner's interpretive guidelines for topic modeling, then, it is important to consider the canon of delivery specifically and unpack its role in crafting a discourse and a "rhetoric that binds" (Underwood).

Discerning Cares and Desires via Algorithmic Delivery

All communication begins and ends in delivery, "the public presentation of discourse, oral or written" (Burton, delivery). Delivery is a repetitive, circular, and ecological practice. That is, all that we study as rhetoricians necessarily goes through a process of delivery. Delivery is how texts reach their audiences, a conductive bridge between people and their arguments and ideas. This chapter considers delivery as an ecology of practice that (1) prioritizes action and process over outcomes, (2) relies on the interactions of human and nonhuman nodes that co-influence one another, and (3) recognizes the dynamic nature of understanding something as a practice, which embeds an acknowledgement of emergence and evolution into the concept itself. As a result, we see care and desire as primary motivations in each of these constituent, definitional parts. What we want (as an author, as an audience) informs how we deliver.

Members of communities organized around creative computation care about delivery from both computational and human rhetors as a basic premise of our communal identity. As this project

has shown, there is an intrinsic rhetoricity of generative computational processes and arguments that these processes change worldviews are worth engaging in, particularly when creators and artists use them to make social critique with computationally-generated poetry and art. In keeping with the spirit of the rest of this dissertation, which engages rhetorically with computer-generated texts, I will now turn to a rhetorical analysis of a specific topic modeling output as a way of revealing emergent cares and desires in moments of delivery and also as a moment of delivery itself. This methodology seeks to demonstrate two things: first, the applicability of the rhetorical analyses I have built to all manner of computer-generated texts, and second, that topic modeling outputs are worth analyzing rhetorically, because of their capacity to show us how connected themes point to the cares and desires of the multiple rhetors involved.

In "Recovering Delivery for Digital Rhetoric," James E. Porter offers a "re-theorization" of the canon of delivery in a digital context, outlining the "chief features" of digital delivery (208). Porter identifies five koinoi topoi—or common topics—of delivery: body/identity, distribution/circulation, access/accessibility, interaction, and economics.[91] Using these topoi, along with an understanding of digital delivery as an ecology of practice, we can sketch a network of human and non-human nodes of interaction that substantiates the motivating cares and desires linked with socially-engaged work with computational processes. Porter intends for these categories

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[91] Porter defines each of these topoi as follows:

- "Body/Identity—concerning online representations of the body, gestures, voice, dress, and image, and questions of identity and performance and online representations of race, class, gender, sexual orientation, and ethnicity
- Distribution/Circulation—concerning the technological publishing options for reproducing, distributing, and circulating digital information
- Access/Accessibility—concerning questions about audience connectedness to Internet-based information
- Interaction—concerning the range and types of engagement (between people, between people and information) encouraged or allowed by digital designs
- Economics—concerning copyright, ownership and control of information, fair use, authorship, and the politics of information policy" (208).

to "operate heuristically and productively across multiple situations to prompt rhetorical decisions regarding production" (208). In short, for Porter, these topoi "help you write" (208). For us, as we aim to expand a rhetorical conception of delivery in computer-generated texts and seek to discover the motivations behind their creation, these topoi shed light on care and desire as they enable an understanding of the "rhetorical decisions regarding production" (208).

Looking closely at Topic 8 reveals a discourse focused on equity and access, wherein communal care—ensuring fairness, ease, understanding, and safety for folks within the group—is prioritized. Again, we follow the attentional view of verbal behavior from psychometric research—which in its simplest construction says that what people talk about acts as a relatively accurate proxy for what they care about—and extend it into a rhetorical, digital humanistic context. The role of the topic modeling tool, as we extend it from this approach, is to surface the cares and desires of the group and organize them by concern. It can show us groups of related terms that come up from the corpus that we, as a community, care about.

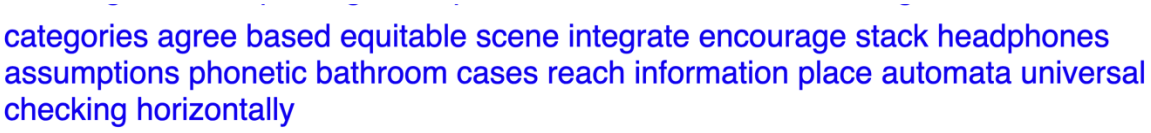

Figure 11: Screengrab of Topic 8

The topics generated by MALLET have been delivered to multiple audiences, multiple times—once at the level of utterance in If, Then sessions, again in the corpus as dataset, and a third time via the outputs of a topic modeling algorithm tasked with finding links and co-occurrences between terms in a corpus. Extending Porter's topoi to these three separate instances of delivery will demonstrate how, as we've previously said, the body as medium operates between networked human and nonhuman nodes of communication, moving fluidly between analog and digital realms. It will also extend the capacity of delivery specifically to some of these nonhuman nodes of

communication, as part of delivery's ecology of practice. Porter asks us to create "a robust rhetoric of digital delivery to understand how to be an effective rhetorical participant" (213). We do so by using topoi to create differentiations between rhetors and outputs. This distinction becomes meaningful when digital delivery is layered, stacked with multiple rhetors making digital deliveries to multiple audiences, human and non.

Case Study: Identity and Appearance

The first of Porter's topoi—what I will call identity and appearance—will serve as an example of how we can use these topoi to explore the communal aspects of a topic modeling output from If, Then events through a nuanced, layered rhetorical analysis. Topic 8 reveals community cares for fairness, safety, ease, and understanding—cares that are very much wrapped up in concerns of identity and appearance. I will conduct a rhetorical analysis through the lens of identity and appearance two ways. First, I will focus on the cares and desires as they come through the appearance of the tool itself and the identity of its creator. I will then turn to my own cares and desires in my identity as a researcher, as mediated through the appearance of the topic modeling output for Topic 8.

First, though, we must deepen our understanding of Porter's topoi of "body/identity," before extending it into this novel context with a computer-generated topic modeling output. This topos can also be rephrased in contexts of digital delivery as "appearance." In his essay, Porter maintains focus on the human as digital deliverer, on how people represent themselves in "virtual spaces," invoking Hayles's and Haraway's notion of the "cyborg" and posthuman notions of digital self-representation (213). "The machines that we use to write and speak are closely merged with our flesh-and-blood bodies," he writes, "if you think about how we are connected to our cell phones and our computers" (213). Contemporary work like Data and Society's 2023 session "Digital

Doppelgängers: A Workshop on Our Digital Others" indirectly and intuitively borrows from Porter's conception of the role of identity and appearance in digital delivery. Organizers Livia Garofalo and Ireti Akinrinade add nuance to the role of identity in digital self-representation and delivery by introducing concepts like "a person's 'data double,'" or how facets of our human identities[92] are quantifiably delivered to corporations and other entities. This facet of digital delivery explains how delivery occurs via our own identities, helping to create what is known as big data with our often-unconscious self-representations. So too, false or manipulated representations of identity through technologies like artificial-intelligence powered deep fakes[93] serve to further nuance Porter's notion of body, identity, and appearance in digital delivery, through intimate forms of digitally-mediated deception. Human deliverers in digital environments[94] contain multitudes and deliver to many audiences, which is why I am emphasizing the importance of studying the acts of delivery themselves. As Garofalo and Akinrinade write, "we live in a world where digital selves are ubiquitous yet often untrustworthy." What Porter's topoi are formed on, though, are acts of delivery themselves—avatars, headshots on personal websites, smiley face emoticons. So, for my purposes, the proof of care and desire is in the deliveries themselves, a distinction we can start to see clearly below.

Going beyond digital representations of a human self, this section seeks first to explore how the tools and machines we use to understand how we "write and speak" have a limited capacity for acts of delivery in their own right, as the immediate or direct deliverers of the desires of their creators (making the creators themselves indirect deliverers). With this, I argue that the same

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[92] Our demographic information, our interests, the time we spend on particular pieces of ever-ubiquitous content, etc.

[93] Deep fakes are "a video or sound recording that replaces someone's face or voice with that of someone else, in a way that appears real" (Somers).

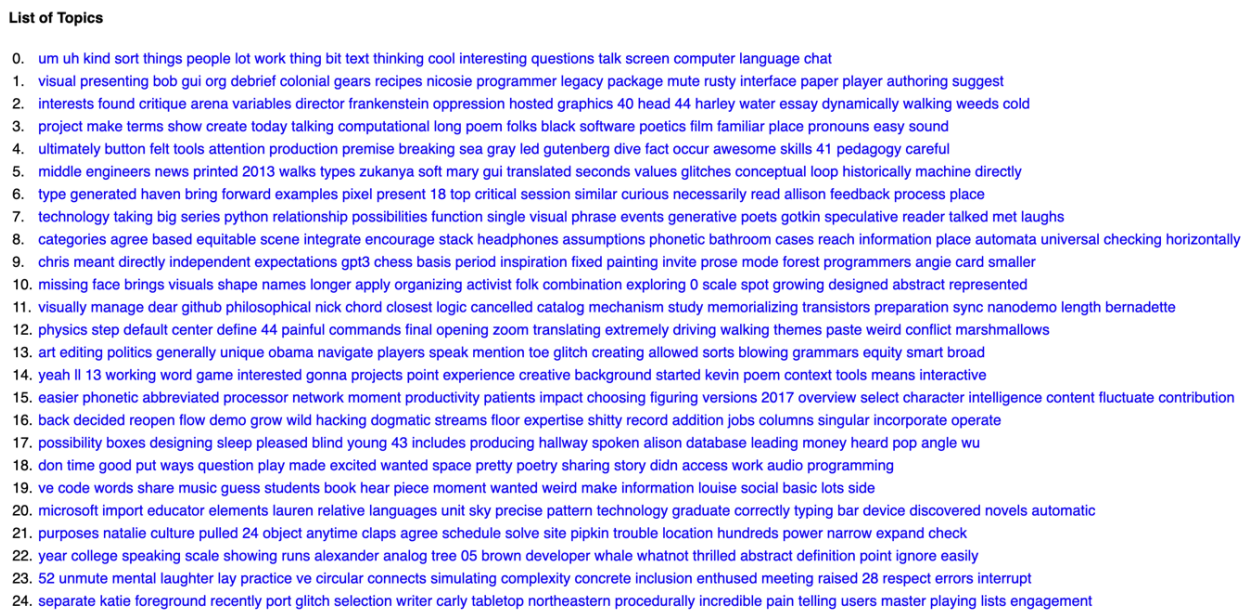
[94] Representations of human selves in differing environments of digital delivery can and should be studied in more depth

"questions of identity and performance" can be extended, to some degree, to non-human acts of delivery, and then, of course, to human ones. I will dwell longest and most thoroughly on the topoi of identity and appearance in order to enable a deeper understanding of the "rhetorical decisions regarding production" of a text (208). Going through the minutiae of how these deliverers interact along a particular aspect of digital delivery is helpful in understanding the many, layered rhetorical decisions and priorities driven by cares and desires. I will focus on the topoi of identity and appearance for Topic 8 because it is the category of digital delivery most readily wrapped up in issues of equity and access, the emergent concerns of Topic 8. The cares and desires evident from the topoi of identity and appearance in Topic 8 are focused on ease and understanding, something that we see arise from multiple layers of "rhetorical decisions regarding production" (208).

For Topic 8, there are three major degrees of deliveries and deliverers in the mix. At the top of the stack of deliveries, we see the algorithmic output of the tool as it was delivered to my computer screen in an HTML file. To make this delivery happen, though, my own identity as an initiator of the topic modeling and an organizer of the group, is also in the mix. I—Carly Schnitzler, graduate student researcher, community organizer, and deliverer—created the spreadsheet of If, Then transcripts (secondary delivery) to be used in the topic modeling tool (tertiary deliverer). And finally, at the primary 'level' of delivery in this example, we have the speech (delivery) of participants in If, Then sessions (deliverers). These are the words of 300+ possible people jumbled together over the course of three academic years, shared over Zoom. It is also worth considering that I created the If, Then group in the first place, preceding the primary delivery of the original speech. Between these three categories of deliveries that went into getting us Topic 8, that is a whole lot of deliverer cares and desires to contend with, and make sense of, through their acts of delivery.

We will start first, then, with care and desire as mediated through the appearance of the Topic Modeling Tool' s delivery, the HTML file seen in Figure #12 below. This is a document, first

and foremost, concerned with ease. The tool delivers in a file format that is in the markup language of the tool itself, not having to translate between file formats. The appearance of the output—blue linked HTML text on a white background—relies on pre-existing defaults of the HTML markup language. The appearance of the HTML file output by the Topic Modeling Tool reflects the algorithmic workings of the Tool, which uses Latent Dirichlet Allocation (LDA)[95] as a primary technique, to generate topics for use and interpretation in a common, legible and easy to use format–HTML. At my request as a user, the tool generated twenty-five topics, which we see listed in order by topic in the figure below. Topics are in a seemingly random order and in a simple list, in blue sans-serif text.



List of Topics

0. um uh kind sort things people lot work thing bit text thinking cool interesting questions talk screen computer language chat
1. visual presenting bob gui org debrief colonial gears recipes nicosie programmer legacy package mute rusty interface paper player authoring suggest
2. interests found critique arena variables director frankenstein oppression hosted graphics 40 head 44 harley water essay dynamically walking weeds cold
3. project make terms show create today talking computational long poem folks black software poetics film familiar place pronouns easy sound
4. ultimately button felt tools attention production premise breaking sea gray led gutenberg dive fact occur awesome skills 41 pedagogy careful
5. middle engineers news printed 2013 walks types zukanya soft mary gui translated seconds values glitches conceptual loop historically machine directly
6. type generated haven bring forward examples pixel present 18 top critical session similar curious necessarily read allison feedback process place
7. technology taking big series python relationship possibilities function single visual phrase events generative poets gotkin speculative reader talked met laughs
8. categories agree based equitable scene integrate encourage stack headphones assumptions phonetic bathroom cases reach information place automata universal checking horizontally
9. chris meant directly independent expectations gpt3 chess basis period inspiration fixed painting invite prose mode forest programmers angie card smaller
10. missing face brings visuals shape names longer apply organizing activist folk combination exploring 0 scale spot growing designed abstract represented
11. visually manage dear github philosophical nick chord closest logic cancelled catalog mechanism study memorializing transistors preparation sync nanodemo length bernadette
12. physics step default center define 44 painful commands final opening zoom translating extremely driving walking themes paste weird conflict marshmallows
13. art editing politics generally unique obama navigate players speak mention toe glitch creating allowed sorts blowing grammars equity smart broad
14. yeah ll 13 working word game interested gonna projects point experience creative background started kevin poem context tools means interactive
15. easier phonetic abbreviated processor network moment productivity patients impact choosing figuring versions 2017 overview select character intelligence content fluctuate contribution
16. back decided reopen flow demo grow wild hacking dogmatic streams floor expertise shitty record addition jobs columns singular incorporate operate
17. possibility boxes designing sleep pleased blind young 43 includes producing hallway spoken alison database leading money heard pop angle wu
18. don time good put ways question play made excited wanted space pretty poetry sharing story didn access work audio programming
19. ve code words share music guess students book hear piece moment wanted weird make information louise social basic lots side
20. microsoft import educator elements lauren relative languages unit sky precise pattern technology graduate correctly typing bar device discovered novels automatic
21. purposes natalie culture pulled 24 object anytime claps agree schedule solve site pipkin trouble location hundreds power narrow expand check
22. year college speaking scale showing runs alexander analog tree 05 brown developer whale whatnot thrilled abstract definition point ignore easily
23. 52 unmute mental laughter lay practice ve circular connects simulating complexity concrete inclusion enthused meeting raised 28 respect errors interrupt
24. separate katie foreground recently port glitch selection writer carly tabletop northeastern procedurally incredible pain telling users master playing lists engagement

Figure 12: Raw HTML text output from Topic Modeling Tool

[95] "A tool and technique for the Topic Modeling Tool, Latent Dirichlet Allocation (LDA) classifies or categorizes the text into a document and the words per topic, these are modeled based on the Dirichlet distributions and processes. The LDA makes two key assumptions: 1) Documents are a mixture of topics, and 2) Topics are a mixture of tokens (or words) And, these topics using the probability distribution generate the words. In statistical language, the documents are known as the probability density (or distribution) of topics and the topics are the probability density (or distribution) of words" (Seth).

The Topic Modeling Tool reflect its creator's desires, too, for an ease of use by its users. The identity of the builder is linked to the appearance of the tool. We can see the Topic Modeling Tool itself as its own kind of digital delivery, which is a precursor to the delivery of Topic 8. With his Topic Modeling Too, creator Jonathan Scott Enderle made an easy-to-use topic modeling tool and overlay for the MALLET algorithm. There is a prioritization of ease—for rhetors and users—evident through appearance, both of the HTML and the tool itself. The Tool is a simple graphical-user interface (GUI); with this, we see a care for the person making the tool, alongside a desire to be easily used by its audience (in this particular case, me). In its reliance on defaults (colors, fonts, file format, etc.), previous iterations of the tool with a very similar appearance, and readily visually interpretable and accessible platforms for dissemination (GitHub), there is clear care for Enderle's ease of creation and desire for users' ease of use. Enderle writes in the Acknowledgments section of the tool's GitHub page:

> This version of the tool was forked from the original version by David Newman and Arun Balagopalan. Previous work on the GUI for MALLET has been supported by a National Leadership Grant (LG-06-08-0057-08) from the Institute of Museum and Library Services to Yale University, the University of Michigan, and the University of California, Irvine. The Institute of Museum and Library Services is the primary source of federal support for the nation's 123,000 libraries and 17,500 museums. The Institute's mission is to create strong libraries and museums that connect people to information and ideas. Work on this version of the tool has benefited from the support of Penn Libraries and the University of Pennsylvania's Price Lab for Digital Humanities. (Enderle)

In just looking at both the GUI of the tool as deliverer and at its output, we do not immediately see Enderle as a person, with a body and an identity, represented in the tool at all. The tool does what he designed it to do, though, his ideas, values, and intent make the tool what it is: an easy-to-use, open source topic modeling tool and graphical overlay for MALLET. But so too, we cannot say that Enderle himself delivered our exemplary Topic 8. We are again looking at multiple deliveries and deliverers. So, looking at the appearance of the Topic Modeling Tool's GUI allows us to infer

Enderle's cares and desires via his delivery of the tool via GitHub. In the simple GUI of the tool, we see that the five manipulatable buttons all have a clear purpose and provide clear directive for their users—working top down: Where does the tool get its input? Where do you (the user of the tool) want the topics to be output? How many topics do you want the tool to generate? Once these questions are answered and input, then users can press the largest button on the tool to "learn topics." And then, users can, "clear console" and do it all over again. Ease is what is prioritized here, evident through the care given to ensure the rhetors' ease and the clear desire for an audience's ease of use.

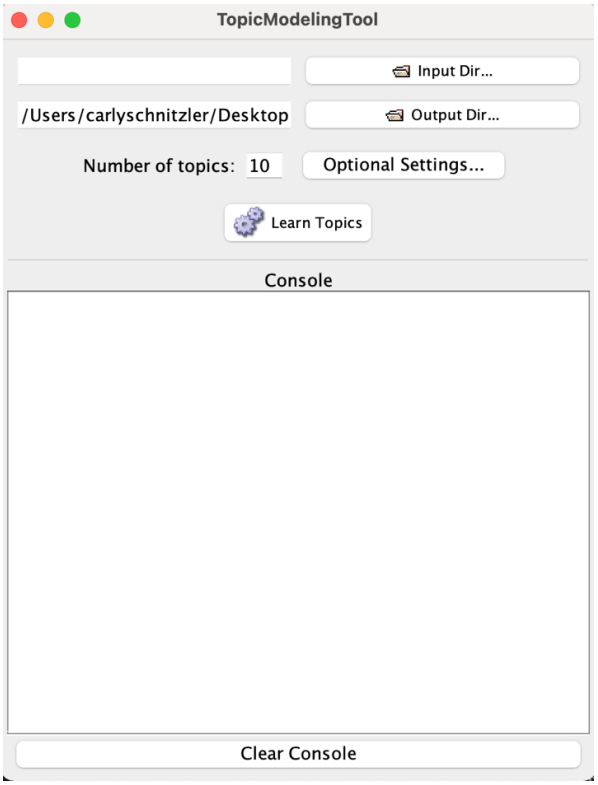


Figure 13: GUI of Topic Modeling Tool (Enderle)

From the stacked deliveries embedded within Topic 8, my cares and desires as a researcher mediated via appearance take shape, at least superficially, as operational ones focused on utility and legibility—the appearance and organization of the spreadsheet (secondary delivery) fed into the

Tool,[96] the diligent recording and transcription of all of the If, Then sessions (primary delivery).[97] My research focus on how Topic 8 itself as a delivery mediates identity and appearance, though, allows for expansion on my own cares and desires when using the tool.

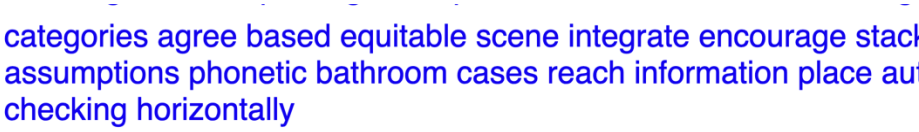


Figure 14: Screengrab of Topic 8

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[96] My cares and desires as a deliverer show up in the secondary and primary degrees of delivery in very different ways. In the secondary degree of delivery—the spreadsheet I created to feed into the Topic Modeling Tool—my care is oriented towards my own clarity and understanding of what the spreadsheet needs to do and my desires as a deliverer are oriented around the functionality of the tool. I am delivering my spreadsheet to a non-human rhetor, tasked with algorithmically pulling out topics from a 'bag of words' style text. I, as Enderle did with his creation of the tool, am not putting my own identity and appearance on the line in my creation of this delivery, but my cares and desires are apparent—to use this tool as it was intended to seek understanding and find meaningful topics from these collected transcripts.

In this case, my appearance as a rhetor is completely irrelevant—I am not directing my speech towards an entity that cares about "questions of [my] identity and performance" as a human rhetor. It is the appearance of my delivery, not myself, that matters. In directing my delivery to a non-human entity, the Topic Modeling Tool, we can determine how appearance in delivery matters, isolating Porter's topoi in application to the act of delivery. There is a gap between delivery and deliverer that this analysis allows us to see. The component of appearance that the Tool, my audience, does 'care' about, then, is how the delivery is formatted, how it appears to the tool. In requiring a particular type of file (a .csv or .xlsx), with a particular, well-defined appearance—tabular textual and numerical data, cells separated by rows and columns—the Tool is determining what kinds of deliveries it accepts, what kinds of deliveries are legible to it based on formatting and appearance. In order to make the happenings of the If, Then sessions legible to the Topic Modeling Tool, then, I had to make them into text-based transcripts, clean up the transcripts, as previously noted, and collate them with their session name and date into the tabular cells of the Excel sheet.

[97] First and finally, then, we reach the primary delivery of the If, Then sessions—the words spoken during sessions—which we have seen transformed into textual data in a spreadsheet, transformed into parsable topics by the Topic Modeling Tool. The appearance of this delivery, then, is aural, spoken by any number of 300+ people during an If, Then session. Their visual appearances or images—containing within them choices to turn on or off video on Zoom, use a photo or an avatar, use a filter, etc.—their actual physical appearance and gestures—are some of the innumerable traits attributable the topoi of appearance that are irrelevant in this particular context. What matters is the 'appearance,' defined as perceivability in this particular context, of the sound of their voices, able to be picked up (or not) later by the auto-transcription service on YouTube. In sharing aloud, there is a care from these rhetors to have their ideas represented well and a desire to share them with a broader audience. Volume, accent, and enunciation are some of the aspects of aural appearance that affect deliverability in this context. What matters is the sounds of voices saying words to a live audience, that are then picked up by the YouTube auto-transcription service. These voices must be perceivable to both a live audience *and* the auto-transcription algorithm, through their reasonable volume, 'standardized' and legible accent, and clear enunciation to both be understood during the live event and accurately picked up in the final transcript. So, the speakers in these sessions—the rhetors—must take care to represent themselves and their ideas legibly and accurately through the way they use their voices. Very relatedly, these rhetors also desire for their voices to be understood, by primarily the live audience, but then later by the auto-transcription algorithm. In this, we see can more clearly see the subtleties of distinction between care and desire—the goal of both care and desire in this circumstance is accuracy, legibility, and understanding through particular qualities of voice, but the orientations are different. Rhetors care about representing themselves and their ideas well, rhetors desire that their ideas and their identities be understood by others.

I focus on this topos in this specific delivery to reveal patterns that I would not otherwise recognize; the appearance of the tool, its stacked inputs and outputs, and the delivery of Topic 8 itself reveal emphases on ease and understanding from all the rhetors involved. My identity as an open-minded researcher, being willing to follow this act of extension where it leads, is implicit in this analysis and in stopping on Topic 8 as an object of study itself. I identify as a scholar who values the voices of the people I am in community with and research and this tool helps with this, in its simple presentation of what is there. It is this identity that motivates this rhetorical analysis, this whole chapter, and this whole dissertation.

Articulated through complementary cares and desires, the goals, the rhetorical cares and desires of ease and understanding that we see coming out of the identity/appearance topoi, are of course partial. Other goals will emerge out of a close rhetorical analysis of the other topoi[98] from the stacked delivery that we see happening with Topic 8, a generated topic modeling cluster loosely gathered around the orienting goals of equity and access that arose from cumulative If, Then sessions. An analysis of the topoi of distribution and circulation for Topic 8 can reveal conflicting desires around circulation between the Topic Modeling Tool, which outputs new, randomized outputs with each click and myself as a writer of this dissertation, making the ephemera of the Topic Modeling Tool more permanent by putting it through a rhetorical analysis. An analysis of the topoi of interaction for Topic 8 can reveal harmonious cares for a rhetor's own ability to choose when to interact with various platforms and people—such as the Topic Modeling Tool itself, or the meeting platform Zoom—in service of the co-creation of a delivery with other rhetors. As we can see, each topos can offer different insights into the "rhetorical decisions regarding production" of a

[98] The other topoi—distribution/circulation, access/accessibility, interaction, and economics—can serve in the same kind of rhetorical analysis. These categories help us to focus our analysis, revealing other emergent cares and desires from a particular text, in our case, the computer-generated Topic 8.

computer-generated text, derived from the words of a community that arose around creative computation (208). This extension of Porter's topoi into a new rhetorical context lends the categories a suppleness in their application. Creative computer-generated texts, and the people who care about them in a community context, insist on this flexibility in a rhetorical context, another value demonstrated by this kind of analysis of the mechanics of delivery in the first place.

"Generative Poets" and "Speculative Reader(s)"

I titled this chapter "Generative Poets, Speculative Reader(s)," a phrase drawn from another topic modeling output—Topic 7:

> Topic 7: technology taking big series python relationship possibilities function single visual phrase events **generative poets speculative reader** talked met laughs[99]

I loosely classified this topic as one concerned with relationality, the associative links and connections between authors, technologies, and audiences, with an implied common text between them. In other words, this is a topic about, appropriately, the rhetorical canon of delivery's "ecology of practice," concerned as it is with kairos and affiliation, intersecting rhetorical cares and desires. Generative poets care for networked relationships between multiple rhetors, source texts, inputs, outputs, and audiences. The poets who employ creative computation as a method themselves are generative and generated too; their identity as poets relies, at least in part, on the method of generation. Generative poets, as we see through the variety of events and works showcased via If, Then, desire that their speculative readers explore the capacity of creative computation to show us

[99] This is not without my light editing: in the raw output of the topic model (pictured below), the surname of one of the speakers, "gotkin," was inserted between "generative poets" and "speculative reader." I tried to add most names to the stoplist, but this is one that I missed. I continue on with this particular analysis in this way, though, because it was my intention to have all names on the stoplist and this is how the Topic 7 would have read if it with a full stoplist applied.

all something deeply human, speak truth to power, demonstrate ways of subverting oppressive systems, and reimagine completely new ones. From the poets' perspectives at the moment of generation, their readers, like most readers of any texts, are speculative: they are unproven and yet to materialize in full. Readers necessarily are emergent after generation. Readers, too, can be the ones speculating for themselves on how they care about what authors desire of them and how to explore the capacity of creative computation to show us what we have seen. As readers, our cares and desires in our own hands, as are our orientations towards issues of social justice, our deep humanity, our speaking truth to power, our demonstrating ways of subverting oppressive systems, and our reimagining of completely new ones.

Now, of course, the LDA algorithm that powers the Topic Modeling Tool does not consider word order in either input or output (Seth). The ordered phrase as a whole that I drew from Topic 7 ("generative poets speculative reader") is pure serendipity, a series of four individual words that happen to work together as a phrase. When I read these words in sequence, I am reminded of an aphorism attributed to French microbiologist Louis Pasteur: "chance favors only the prepared mind." What emerges from chance is what is generated from time, circumstance, cares and desires. What emerges from chance is what is delivered from kairos. It is the responsibility of both the generative poet and the speculative reader to imbue it with cares and with desires and to, in some circumstances, turn chance into fortune, aptitude, and propriety. I again recall the words of Quintilian, who said in his *Institutio Oratoria* that "It cannot be too earnestly inculcated that no one can speak with aptitude and propriety unless he considers not only what is to the purpose, but also what is becoming" (11.1.8). "Becoming" takes on two slightly difference valences in this context. It is (in modern parlance) reading the room for Quintilian, who is concerned primarily with "the observance of decorum" (11.1.8). "What is becoming" can also be seen as what is emergent from a particular moment in time, an attunement to the cares and desires of poets and readers—inclusive of

a sensitivity to decorum, but ultimately larger than just decorum, observant of and attendant to many cares and desires all at once (11.1.8). With this, I am encouraging more fluidity, more suppleness in the relationship between my research with creative computer-generated works and communities and the artists' mobilization of the intrinsic rhetoricity of computational processes in the work I study. The two are not so different: we both are generative poets and speculative readers.

CODA: METADELIVERY

Backing up a bit, we can see this chapter, and this dissertation on the whole, as an act of kairotic delivery as it happens through communities and methodologies of creative computation, particularly those that emerged from my creation of If, Then. In a significant way, this dissertation would not exist as it currently does without If, Then. This dissertation is a text reliant on kairos past and present, on decisions about what was or is delivered in a particular moment. I must clarify here that I did not set out to create If, Then as a way to furnish my dissertation project. My cares, particularly at the beginning of If, Then in the fall of 2020, were much more emotional than intellectual. I was lonely and wanted to do something about it. I wanted to feel that my academic life could exist outside of myself. I was preparing for exams; at that time, my exams preparation and reading was focused on the related, but decidedly different topics of labor and technological infrastructures and automated poiesis, as informed through a lens of digital rhetoric. My desires were complementary to my cares, in my general resistance of academic solipsism. I wanted to share work that I thought was fascinating, timely, and important with other interested folks. I wanted to make a space where others could connect, too. These wants, cares and desires, illuminated the deliveries of If, Then in our monthly sessions from the start.

Emergent from these wants, from my prior job experience producing and editing a conversation series at small digital media startup Heleo,[100] and from the physical and material

[100] Heleo was a small, big-hearted digital media startup I worked at for two years prior to starting graduate school. One of my responsibilities at the time was to help produce and edit their Heleo Conversations series. Heleo Conversations were live events between mostly commercial nonfiction authors on a particular subject. From an archived description of their website about page: "Our Heleo Conversations series features lively, unscripted, in-depth dialogues between great

constraints of the ongoing COVID-19 pandemic and a $1000 annual budget was the early conversation-style format of If, Then events, held on Zoom as all If, Then events have been. During the first year, I hosted one big conversation between two invited and paid guests per semester, with the other monthly sessions framed as more informal and led by unpaid volunteers.[101] The first major conversation in fall 2020 was between Lillian-Yvonne Bertram and Nick Montfort on "Hacking Against White Supremacy," in which *Travesty Generator* featured centrally. The second major conversation in the spring of 2021 was between Everest Pipkin and Allison Parrish, on "Intimacy in the Digital Archive," in which I, along with many of the attendees, first encountered Pipkin's "Lacework."

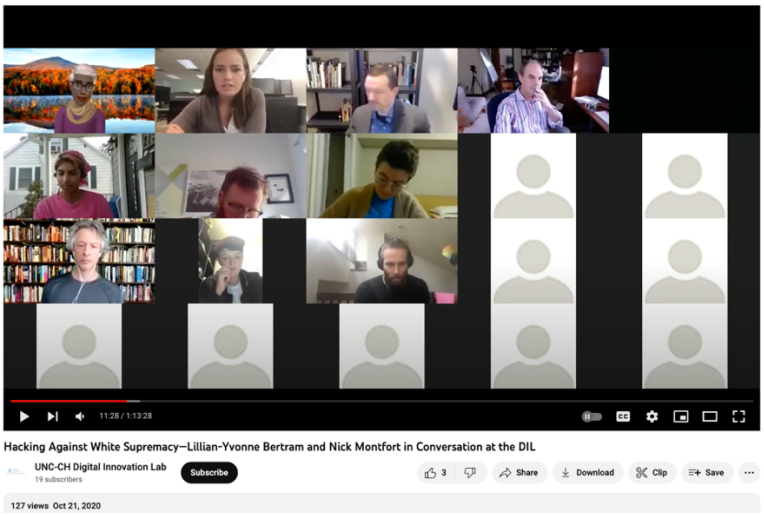

Figure 15: Screengrab of the October 21, 2020 YouTube upload of the recorded Zoom conversation between Lillian-Yvonne Bertram and Nick Montfort, entitled "Hacking Against White Supremacy" (Bertram and Montfort)

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thinkers. We agree with Socrates: there is nothing like the dialectical method—vigorous conversation—to help us get at the truth." Heleo has since 'pivoted' away from this type of content production and is now called The Next Big Idea Club, but producing Heleo Conversations was certainly a formative experience contributing to my creation of If, Then.

[101] In the second and third years If, Then has been running, Lillian-Yvonne Bertram came on as a co-organizer and generously devoted some of their research and lab funding from UMass Boston and Northeastern Universities, in order to help compensate monthly presenters for their labor and allow for an expansion of who we invite to lead sessions. Because of this, we rely much less on volunteer labor for the organized monthly sessions—the only sessions where presenters volunteer their time and work is during the open mic sessions each semester. We, Lillian-Yvonne Bertram and myself, have always volunteered our time in organizing If, Then. Budgets are explicitly designated for invited speaker compensation. Our funding model will inevitably continue to evolve across different organizer institutions and community wants, but this is how we have managed our budget during the first three years of If, Then.

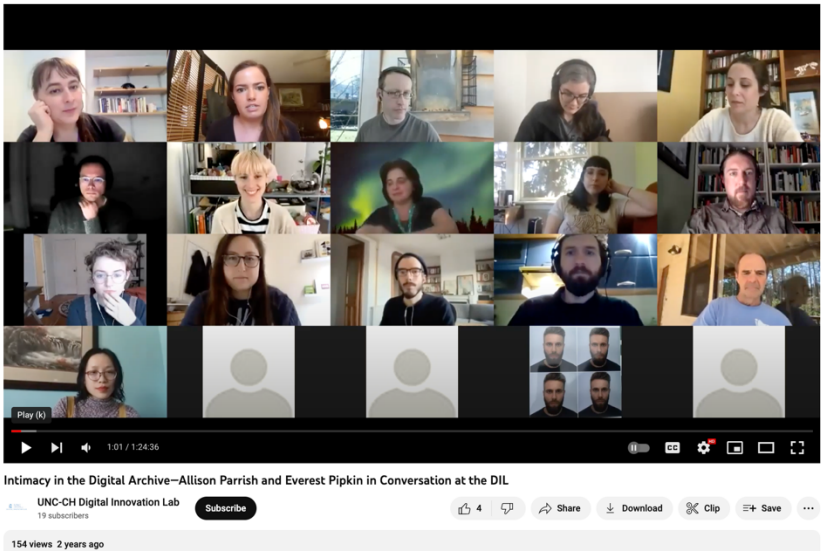

Figure 16: Screengrab of the March 19, 2021 YouTube upload of the recorded Zoom conversation between Allison Parrish and Everest Pipkin, entitled "Intimacy in the Digital Archive" (Parrish, Pipkin and Schnitzler)

The inclusion of these texts as central foci in the first two chapters of this dissertation is certainly not a coincidence, but evidence of the impact of kairotic delivery,[102] with its attendant cares and desires, at work. From the first two chapters of this text, we see artists creating with computational methods that mobilize the intrinsic rhetoricity of computational processes in service of social justice and critique. Communities that arise around creative computation create avenues for this kind of delivery, necessary for a work's capacity for rhetorical impact. These communities—If, Then among them—evidence a way of creating with technology that prioritizes the ethical and pro-social in a directly social environment, binding the rhetorical and the computational together through their kairotic, environmental renewal of the canon of delivery.

Ruha Benjamin's reminder to "Remember to imagine and craft the worlds you cannot live without, just as you dismantle the ones you cannot live within" has served as a refrain of sorts

[102] Both of these events took place prior to the development of this dissertation project. I developed a prospectus from mid-March through May 2021 for a nascent version of my dissertation following the completion of my exams in February. I defended my prospectus on May 13, 2021, which included both *Travesty Generator* and "Lacework," as central texts for the first two chapters, though with significantly different framing than they have now. This third chapter has changed substantially in its orientation, from my original plans in the prospectus.

throughout this dissertation. This is what we—the artists who create socially engaged and critical work with computational processes and the members and organizers of the communities that arise to support and share this creative, critical work—are trying to do. How this works rhetorically has been the central concern of this dissertation. Benjamin's call is a demanding one, but in it, we see the real need for community arise alongside art—the two need one another to even attempt to meet all parts of this call. Asking "How do we not only imagine new systems, but bring them into being?," is the responsibility not of art, but of community. If creative computational work can destabilize and start to dismantle systems that harm and oppress and imagine gentler, more just and humane ones, then it is the responsibility of community to "craft."

APPENDIX A: INTERVIEW WITH LILLIAN-YVONNE BERTRAM

February 2, 2022
transcript edited and condensed for clarity, original audio recording available upon request

Carly Schnitzler: One of the things that excites me most about this kind of work is that you can talk to the authors that you're reading and [whose work you are] putting a lot of thought into, which is kind of incredible. I'm really grateful. Alright, so in the afterward to *Travesty Generator*, at the end of at the end of the collection, you cite your positionality as an unimagined coder in response [and] in addition to Harryette Mullen's "unimagined, unexpected reader." So, [my] first question is, What is your relationship to the poems in *Travesty Generator*, both as an author or coder or creator, and also as a reader of your own poems?

Lillian-Yvonne Bertram: Hmm. That is a good question. My relationship to them? I was an unimagined coder to myself, in addition to [being one] in the scheme of things. So when the poems started happening, when I was able to actually do it, I was like, "Oh my gosh." In some ways, I made this book to kind of see if I could do it. My relationship to [the poems] is as one of surprise. Because the outcomes to me [were] not expected. When I was working with the code initially, I didn't know enough about code to [predict] what's going to happen. So, a lot of it was just shock and amazement and surprise when I started to see the output. But also, the methods of composition and the output already align with and reflect what I value about poetry, which is largely the element of surprise, juxtaposition, and new combinations, things kind of working together.

CS: That's really helpful. And really interesting, because it seems like you're coming to your own text primarily as a reader first, in a lot of ways. Would you say that's an accurate characterization of what's happening?

LYB: I think so. Yeah. I mean, I can [even] remember where I was sitting when stuff started to work. I was like, "Whoa, this is fascinating. This is really interesting and surprising." I came to it as a reader, because I did not know what was going to happen. So I had to read what was happening and make an assessment of it

CS: One of the reasons that I was drawn to your work is because the poems in the collection are really good poems [that] can stand alone as is, which I don't think is [necessarily] the case for at least a strong minority of computer-generated works, which I think are more about a proof of concept, like a lot of conceptual poetics are. So, it's interesting to hear you say that [you] just wanted to experiment and see if this would work. Because, to me, one of the things that drew me to your work was the poems themselves are quite grabbing and powerful and really, really good as poetry in a way that stands out in the in the field. So my thesis of sorts is that you're an obviously gifted poet, but [also] really good at picking source texts. So how, how did you pick the texts that you included in your work?

LYB: So the source texts that I used, I mean, some of them are my own. A lot of them, I was looking at the code, and was like, "Well, okay, this code requires the manipulation of 20 lines [of] writing, so, let me just go through my journal and pull out whatever poem was in draft form that I was working on." And then [writing involved], putting that into the code and writing along with it.

And, in the case of a poem like "@Tubman's_Rock," some of those sources come from general information sources, like an article website, Wikipedia, that sort of thing.

CS: The poems that draw on your own work are "Counternarratives," or "A New Sermon [on the Warpland]," poems like that?

LYB: Yeah, "Counternarratives," "Husband Stories," "Coming of Age Stories," "Incidents." "Incidents" was a pantoum from 15 years ago now. "A New Sermon on the Warpland" borrows from "A House of Dust" [and] includes words and phrases from Gwendolyn Brooks. Aside from "@Tubman's_Rock," that might be the only poem that has some definitive source texts.

CS: That's interesting. So, I'm writing now on close readings of two of your poems, "three last words" and "@Tubman's_Rock," which are maybe the poems in the collection that have the most citation external to you in them. So with the caveat that I'm picking out the texts that are the most conversational and citational in a lot of ways, how do you think about your relationship to the source texts you use in those couple of poems?

LYB: In the case of "Tubman's_Rock," it's also very much inspired by the source texts that are no longer there, which [are in part] Nanni Balestrini's "Tape Mark" poems. I don't remember what came first with that poem. If anything, the title, the phrase "Tubman's rock," has been with me for a very long time, like two decades at least, as something that's been kicking around in my head. That's the oldest part of that poem. I must have gone down some rabbit hole at that time, too. That was a code that required a lot more manipulation in some ways. And by that point, I had greater facility with coding and I was thinking very deliberately around the concept of code and code switching. I was thinking a lot about social codes and algorithms, code switching and black codes, and Jim Crow codes and secret codes and slave codes and, you know, codes being shared amongst [the] Underground Railroad; that other language, hiding in plain sight. That motivated me to do more research. Whenever that CNN Money article came out, that also stuck in my head right with Harriet Tubman. And so there was an interesting landscape of ideas that were percolating. I did some research into it and that's how I came across the texts that I would use. I wanted the poem to be very deliberately circulating around Harriet Tubman and all that comes with thinking [about] Harriet Tubman and also Emmett Till and thinking about money [and capital], all that serves to circulate.

CS: The idea of circulation really apt in in a lot of ways, particularly around getting the CNN Money article and getting Harriet Tubman on the $20 bill, and imagining a future both within [and] beyond the voices that you're bringing in already. I'm wondering if you can talk about the title a little bit more for "@Tubman's_Rock" specifically. You mentioned that "Tubman's rock" was a phrase that you had been thinking about for a long time. Is that a phrase that you heard from somewhere? I'm curious specifically about the possessive and the focus on the rock as a technology of violence.

LYB: I want to say that phrase probably came to me [in] 2003 or 2004. I know this because I was in some class in college and I specifically remember having a conversation with someone about "Tubman's rock," which is not actually a rock, but it depends on what story kind of go by. I think Wikipedia says that an overseer threw a piece of steel or something at another slave, and it hit her in the head. And after that, she blacked out, and after that she had seizures and visions. This [story] is something that I think was referenced in a book I was reading, [maybe] *Black Chant* by Lynn Nielsen. That incident was formative in her life, right? This is something that she recounted, and it made its way into this essay or article [that I was reading], and made its way into my mind, and it made its way

into a conversation with someone. This idea of "Tubman's rock," wasn't hers, right? It was something that was thrown not at her, but that that eventually hit her. I enjoyed it as a phrase to be thinking about. This is a place where where Harriet Tubman has landed, even though it's kind of the reverse of what actually happened. But she credited, unless I'm getting the story wrong, that injury with a prophetic ability; like and visions and a spirituality and a connection to a great beyond or something larger than herself. Right?

CS: Yeah, you're definitely right. I've read a little bit of her official biographer's account of [the incident] and it's all there.

LYB: Okay, so that tracks right? So, you have this moment, this precipitating incident in history that reverberated in ways that cannot be quantified. So, "Tubman's rock" is, again, in my mind, the very personal mind of the writer. This rock or steel or this piece of something that has hurtled through history. It's become part of her story, part of her lore, part of every single person she encountered, and everything that she did, and all the enslaved people that she led north. The title has a lot of meaning and a lot of weight because it makes me think of a definitive precipitating incident that continues to reverberate right throughout history into the present. It's like the conversation about putting her on the dollar bill, like that's part of it. "Tubman's rock" has an almost planetary force, like it's orbiting, it's spinning, it's like still going. If it hadn't been the case, it wouldn't have stuck with me for 20 some years, right?

CS: I'm just really struck by—and correct me if I'm taking this connection too far—but I was struck by the incorporation of an act of violence that caused all of this prophetic visioning [with] imagining a future that's beyond [her] current circumstance, and better for her and other black and enslaved people, creating a legacy that moved beyond her life and immediate orbit. I was also drawing some sort of connection—obviously, it's not on the same individual level at all—but there's a similarity between the impact of the rock that hit Harriet Tubman in the head to computing and to what's happening in the aftermath of Safiya Noble's *Algorithms of Oppression* (and other work on algorithmic bias). The reclamation of a technology of violence in a way that imagines to futurity. That connection is what initially really drew me to the poem.

LYB: Absolutely. It's interesting you mention futurity. Yes, it's this technology of violence. Slavery is [also] a technology of violence. Harriet Tubman was very spiritual and she believed in God as an ally of enslaved people, so there's also a way in which visions or what someone interprets as visions also work quite well with the technology of religion, and the promised land, and leading people out of captivity and into something else, and so on. There's definitely ways in which religion helped tape the seams of a lot of things and brought them into a worldview alignment that made a kind of sense to something that didn't make a lot of sense. And then, fast forward to these other technologies—I don't want to keep with enslavement, because that's an improper analogy, but there are certainly other kinds of technologies of oppression. One of the things that Safiya Noble and Ruha Benjamin make clear is that the codes and technologies of specifically anti-Black oppression have changed. They've gotten smaller and more invisible, but what they are in service of has stayed the same. Their motivating impulse is still the same. It's like a machine that does one thing. It's just a matter of: Does it do that one thing slowly and efficiently, like enslaving people? Or does it do it faster and more efficiently, like a surveillance society? But it's still the same dumb machine with one goal and one purpose.

So yes, I think you're right with the multiple reads of the poem there, there are multiple things going on in it—things I also discover at different times. When I was working with the code and that poem was being composed, I was just like, "Wow, this is putting together things that I had a hunch are connected." There's a relationship between these things, like a positive charge, almost. The code acted like a magnet, pulling the things together, in such a way where the relationships that I was [previously] loosely interpreting were all brought together in this one instance of combination that I could see. Whether or not that that experience makes its way to a reader, I can't say. *Travesty Generator* is also very personal—that it came together for me was enough. If it makes it to a reader, "Hurray," if it doesn't, it doesn't. That's always the risk you take, right?

CS: Well, you are your first reader and most important, so…

LYB: Yeah, the project was very much for me. That's the risk that you take with anything that verges on the conceptual and I was comfortable with that limitation.

CS: One of the things that's really striking about "@Tubman's_Rock" and one of the things that drew me in was how Mamie Till's epigraph acts as a refrain. "I just wanted the world to see what they did to my baby" got broken up in different ways that both retained the original context of what she was saying, that she wanted the world to see what they had done Emmett Till at his funeral. But then, it became "I just wanted the world to see" in other instances throughout the poem, which opened it up into a kind of defiant optimism, like an insistence on presence that many Afrofuturist kind of texts have. I'm wondering if you could talk specifically about that quote and how you decided to break it up or not to break it up? What did the editorial process look like when you were selecting iterations of the poem that included or didn't include versions of her of her words?

LYB: Part of it is that it was broken up by the program. It's funny, [I was wondering] "Do I even have a copy of that program anymore?" I probably don't. It's kind of thing where I was manipulating the code and not necessarily knowing what was going to happen. If I were to do it again today, would it look the same? Probably not—I probably would be a bit more creative with the spacing or other kinds of like visual manipulation. For me, the splitting up of that phrase is indicative of how things change throughout history—things get shuffled and shifted. They're connected, but they get broken up over time, the connections get weaker and stronger, and stuff gets rearranged. Things do and don't track in like a very linear way throughout time.

So, having all the stuff broken up, for me was reflective of scattered things coming together. They're coming together to be taken apart, to be reformed and deformed. But they're not coming together with the purpose of, like, "Here is the full, completely clear, understandable, syntactically grammatically correct line or image." They're the pieces of a puzzle. And you can see how they would fit together if you put them together, but this poem is not putting them together for you. That's the work that you'll have to do on your own, if you want to do it. I want the world to see all of these connections.

CS: Yeah. I think it's beautiful and incredibly effective, as it reflects a refrain throughout the poem. It's a continual kind of seeing of history.

LYB: You can fit whole history [of Black America] right there.

CS: Yeah. I have a couple more questions, if that's okay. You did an interview for the School of Poetic Computation a number of years ago where you asked "What happens when you take multiple narratives and combine them? How can we breathe new life into underrecognized voices using code? If code is a megaphone, what do you want to use it to amplify? What kind of work do you want your work to do in the world?" I'm wondering about how you see code as a megaphone? And how do you see it amplifying voices? The second question I have is related to that: What is the relationship between this amplification and the power of code to amplify different voices and reshuffle and recombine and recontextualize sources and voices?

LYB: Oh, that's such a huge question. It's also related to my work, more broadly speaking. Sometimes I get asked, "What is the relationship of *Travesty Generator* to the rest of your work?" I was previously the kind of writer who would have never described my books as projects, or say that I was working on a project. I thought that was silly, mostly just because I was young. In the universe of literary poetry, my work, I think, had circulated in a way where, if it was known at all, it was known as being kind of inaccessible, experimental, kind of obscure, and very much on the margin and fringe. In the landscape of Black poetry and Black poets, I circulated in that world, but that wouldn't be what people would have associated my work with prior to *Travesty Generator*. There are Black poets and there are experimental poets, but a Black poet is not an experimental poet.

There was this idea in scholarship that those were two circles of a Venn diagram that didn't overlap. Where they did, it was like a very small overlap. But that's actually just not the case. This tunnel vision, myopic approach to scholarship, where experimental writing is not political or cultural in any way—it's just pure concept and doesn't touch anything that's related to the actual world—all of that is bogus. We know this. But that was the prevailing wind for a long time. So my work was not really talked about, if it was talked about at all, in the context of Black poetry or Black poets. In fact, I don't have any author photos on my books and that's deliberate. And so when I would give readings or visit a class, there are a lot of times where I get follow up from the instructor where students were like, "Oh, I had no idea that like, this is a Black writer." I feel like if you reread [my previous work] through the lens of Blackness and race, you'd see it's all there, but it's coded. Forgive me if I'm losing the thread…

CS: This is great. This thread is great.

LYB: So this idea of working in codes and coded language has always appealed to me. All of which is to say, this was what I was thinking about when I was putting together *Travesty Generator*. I was like, "Well, okay, this project with code is going to be unmistakable." If people read my [previous] work and they didn't think that I'm amplifying or megaphoning these questions of representation, marginalization, Blackness, and gender, it's not their fault because I was writing very deliberately inaccessible and obscure work.

But with *Travesty Generator*, I don't want there to be any mistaking what I'm on about. Like, you're not gonna miss it, you're not gonna think it's something else. It is going to be unmistakable. But at the same time, I thought, "Well, it's code, it's computation—that's very inaccessible. No one's gonna read this anyway." So, it'll be unmistakable, but nobody will read it. Because, to be perfectly honest, my books do not enjoy wide readership. So I did not expect a readership for *Travesty Generator*. I just didn't. But *Travesty Generator* has done the best out of anything I've written. I want to say my second book sold 120 copies, maybe, and that's a book that also actually does elements of computation, algorithmic thinking..

CS: *A slice of the cake [made of air]*?

LYB: Yes, exactly. So what I've tried to explain to people is that *Travesty Generator* is an evolution of my writing process. But it's a different kind of project in that I wanted it to be unmistakable. But my writing is such that it doesn't address things head on, right? I'm going to address it head on, but in a method that is not head on because that's just what interests me as a writer. So I did not expect *Travesty Generator* to do as well as it has done. And it has served to amplify marginalized voices through code in a way that I did not anticipate. But that shows me the power and the possibility of code.

In some ways, *Travesty Generator* is a proof of concept, right? But the concept was very private, like, "Can I do this? And can I do this in such a way that there's a cultural project? And two, that that cultural project is unmistakable?" No one can walk away from this book and be like, "I wonder if this is about race?" You are not going to miss it. If anything, what I wanted the book to do was to amplify and megaphone some of the central concerns in my writing that people had been missing.

CS: Absolutely. In writing *Travesty Generator* the way that you did, there's both a personal corrective to the public perception of your work and also a clear focus on a larger social project and a large communal project. Like, "these are the voices that I think are important. Here they are, here's a way to access them in a way that they haven't been accessed before." *Travesty Generator* was a corrective to the idea of computational poetry and writing as mere proof of concept.

LYB: Yes. I [also] didn't want it to exist in some very niche space where you felt like you were reading computer poems. Which is why I wanted to publish it with a literary poetry publisher, [Noemi Press].

CS: I do have one more question just about logistics and composition. How did you choose or not choose to include code fragments in the printed version of your book? For "three last words" and "@Tubman's_Rock," there's code fragments for both, but not for others?

LYB: For "three last words," the code is part of the poem and vice versa. But more generally, the reason why there isn't more code in the book is a very parochial answer, which is that I lost it. It's that simple. I lost them because the computer died. I had been keeping them on a Jupyter notebook, not in the cloud. And that machine had a breakdown. And I learned a lesson from that. So the only one that I had access to, that I actually saved to like a OneDrive or something was "@Tubman's_Rock."

CS: And otherwise, you think you would have included the code behind most of the poems?

LYB: I would have wanted to, yeah.

CS: Okay, one more question. For "@Tubman's_Rock," specifically, there's a couple of broken links, there's a couple of Wikipedia pages that are cited, there's a couple of articles that have been changed or corrected over time. How do you respond to the fact that some of your source texts are not what they are now, in the three years since you've published?

LYB: I'm not surprised. The thing that is meant to persist is the book. Digital stuff gets sunsetted all the time. With a lot of these [poem] generators, infinite numbers of drafts were produced. But I looked at something, I ran it again, and it disappeared. So, I got very comfortable with loss, or the ephemeral nature of what gets produced with the code. I feel like that's part of it, right?

APPENDIX B: INTERVIEW WITH EVEREST PIPKIN

June 8, 2022
transcript edited and condensed for clarity, original audio recording available upon request

Carly Schnitzler: I'm coming from an English department, I know a little bit of code, [but] am not a programmer by any stretch of the imagination. So to start, some technical explanation might be helpful in understanding how you wound up with the final videos and images in what we see as "Lacework" on the website.

Everest Pipkin: Yeah, sure. From a from a very technical standpoint, "Lacework" is a cycle of video works. It's both a piece of video art and also about 1500 different component pieces of 20 seconds worth of video art. Each of those pieces are pulled from MIT's "Moments in Time" dataset, which is a large scale data set of 1 million videos annotated with verbs towards particular actions: like resting, snowing, praying, etc. Those videos are quite small already; many datasets—especially datasets of things in action, especially historical datasets—are pretty compressed as far as images and videos go. This is a generally technical limitation; training takes time and costs energy and costs money because, you know, energy costs money. And so there is often some desire to work with the most compressed or smallest amount of data that you can get a meaningful result from, which is still enormous. But these videos are 256 by 256, I believe.

When I was envisioning this work, I was thinking about a couple of things. I was like, "Okay, I want to really slow down these moments." Three seconds is really short, little kind of guttural moments of actions sliced generally from longer videos. I was interested in [a few questions]. What to a dataset feels like a moment? Where's the clear line, the start and finish [of] moments? The "Moments in Time" whitepaper and some of the [other] papers around it are really weird and fascinating, because they're trying to define this very poetic thing. Like, what is a single action? What is a moment in time? Which is not something that a computer scientists can tell you, nor could anyone tell you. And they come up with this very darkly funny limit of, "Oh, yes, it's three seconds of something happening." Oh, thanks for figuring it out.

So I was interested in zooming in time on those moments, slowing them down, letting them unfold in this leisurely, slow way. And then also playing with reinscription; ways in which you can reinscribe the imagined detail. I made "Lacework" in 2020 and I proposed it in 2019. So, this is an era where a lot of the high-tech focus of AI was on image generation, [particularly] on upscaling— like, "Oh, we can make bad images look good. We can upscale really low resolution stuff into crisp vector images" or in ways that are just as problematic, like "We can colorize images from the 1940s and see what like historical life looked like colored through modern lens," which is of course, not a process that you can do on the past through [a] machine and get meaningful result. It from a scientific or study-based way, right?

Then ["Lacework"] met this other directive or personal need, which is that I really felt like at the time, I was really in the toils about [the question of] "How do I use people's data that has been ripped from them without consent, without just putting them on blast and putting their face in our work?" Anonymizing data is largely a fake idea—it's not something that you can really do, right? These are still videos that were pulled from people's lives. I'm not saying I succeeded, but part of the goal in going into this process was like, "Okay, well, maybe I can compress them again, reduce them

in size and scale enough that they no longer become identifiable as what they were." You can no longer look at someone and be like, "Oh, I have met that person or oh, I recognize that house."

So from the process standpoint, what's happening is [that] I selected several thousand videos from the dataset of one million. We'll talk more about the process of selection in the future, because ultimately, that was probably the work more than the output of the work ["Lacework.] But, yes, I shrunk them down to 32 by 32 pixels, I think—really, really small, something postage-stamp size, almost unidentifiable. Then, I stretch them in time. I moved them from three seconds to 10 or 15 seconds, I believe. I [also] added a bunch of interstitial frames. So rather than just changing the frame rate from 30 frames per second down to 6, I created these flow frames through another computational process, not an AI process, but just using older technologies of frame blurring, and motion smoothing, and adding in new frames. And then I ran an upscaling process for every one of the frames for every one of the videos. I would upscale it from 64 by 64 to 128 by 128, 256 by 256, etc. Every time you do this with an AI process, it imagines detail that isn't there, it starts to catch up on its own artifacts, on things that [it] thought it saw four upscales ago. It brings those out until you have these really weird leaks, what would have been pixelated, but each pixel has transformed into this odd combination of texture and light, the sort of thing that in AI trained on images and video moving high definition video would reinscribe into something like pixel compression.

You get these odd moving planes of color and texture and detail which are still recognizable as motions, as moments, as the action verbs that it [the dataset] was trying to capture. For all that I will poke fun at the whitepaper about "What is a moment in time? And how do we make a dataset of those things?," they *do* capture these actions. And you can see them when you watch the work, but with a lot of that initial detail obfuscated and then reinscribed through the lens of an AI process that has been trained on far vaster media than even in this dataset, which is huge. And then, of course, the interface for watching ["Lacework"] pulls one from this bucket and shows you the model forever.

CS: There was quite an intense selection process happening behind there, as you alluded to. So how did you how did you select the videos [from within the dataset] that you gave this treatment to?

EP: I watched the whole dataset, which took me about three months, it was a disaster. Unsurprisingly, a million videos is not that big for a machine learning dataset, [it] is actually on the smaller side of things. It is at a scale that one human being, over the course of a few months, can engage with. Basically what I did, day in [and] day out for months, with small breaks for other work and teaching at the time. But yeah, this was early pandemic and I was indoors anyway.

I had made "Default Filename TV" the year before, which is a piece [that] uses YouTube to surface videos that never had any edits to their file name. And I was like, "Oh, the process of making that work and watching that work is so meditative." It feels like having these little windows in the world on to other people's lives. It bolsters the spirit, even when the videos that [it] serves are strange or concerning, there is a certain level of connection that I feel with other people or felt with other people. And I was like, "Maybe it'll be like that. Maybe it'll be good for me, stuck indoors in the early pandemic [to] watch these echoes of human life through these really reduced moments." And it wasn't, of course, because no data set is made for human eyes, none of it is.

It was all filmed by a person originally and the material inside of "Moments in Time" is scraped from all over the place, mostly nonconsensually. It's hard to even know because the videos have been so divorced from their original context, or some of the material that they're scraped from is not even there anymore. [It] has a lot of stuff from Flickr—Flickr [went] through a massive overhaul and lost a lot of the media on it. It also picks from Tumblr and YouTube and Getty Images, just this grab bag of moving media. It was not a fun process. Even when I proposed the work, I was feeling a little weird about using datasets like this in my own process. I was trying to figure out a way to engage with this work in some way that felt, if not ethical, at least like I wasn't perpetuating harm. I don't think I succeeded. Frankly, this work was useful for me because now I don't work with big data.

CS: Let's see, are you still there?

EP: Maybe? Sorry, my internet has been real bad, I think partly because the fires interrupted a lot of the lines.

CS: If it helps [with] bandwidth to turn off video, then that's fine too.

EP: It's just the wind, I think. It's fine, it will stutter every once in a while. Tell you what, I'm gonna go fiddle with my router, I'll be back in like a minute.

CS: Okay, fingers crossed.

EP: It often helps for a spell, but it's hard to know whether it's the wires or the router.

CS: We have an old router that we got off Freecycle and it's currently held together by a chip clip. So yeah, I feel that.

EP: Internet physicalized

CS: But, yes, you were saying how you don't want to work with big datasets in your in your work anymore

EP: [Let's stay] on the process of things, and then we'll get to the rest—I won't let you leave without telling you about it because that's where my head's at now.

Anyway, so I was like, "Well, I can watch this whole data set." And then at least there can be some amount of individual human care or intervention in what videos get selected for my super violent algorithmic process that is turning it into an artwork, which is the bare minimum, but whatever I did it. So I sat down and started watching the dataset. It took months and months and months. I was really trying to select against videos that I felt like I had truly no right to be seeing, much less using in a work. On top of that, I was looking for things that matched the upscaling process in a way that I thought would be interesting—things that would unfold in compelling ways where I could see how the process would engage with detail or flat spaces or sort of reinscribe that that detail in ways that I felt like were useful or compelling aesthetically or framed in such a way that was simply beautiful.

I probably could have stopped at a certain point and been like, "Oh, here's some videos." However, I did feel like in using the dataset, I had made my bed in that [I needed] to watch the whole dataset, I really do need to understand this thing that I am using materially in the work. I wrote an essay about the process of making it, of watching this data set and what it did to me as a person, what it has done to the labor. [The dataset] is built on the other people who are already in that process, but many of them who were annotating this videos in the first place [on] Mechanical Turk, in the gathering process of those videos; what [does each] captures and why, thinking about the keywords in which it matches, and the meanness and scarcity of language. When you're simply asking someone if a video matches "biting," or "barking," or "punching," the type of videos that can become gathered under that reveal choices. This was very useful to me as a person, if not an artist, and was embedded in the process of watching all of these things.

CS: That relates to a question that I had already written up; I'm going to do the annoying thing and read some of the stuff that you already said back at you. This is from your talk with Allison Parrish, last March. I believe that you were talking about your process, similar to what you were just doing here. You said: "I began to see not just the patterns inside of the datasets construction, but also the patterns inside of the AI process, the image scaling process that I was using on the videos, to learn to anticipate patterns and shadows, and the ways in which those things will build over time is very useful to me, I hope to never do a project like this again. But I was very grateful to learn what it was to be a sorting algorithm for just a brief moment." You alluded to this, but I maybe want to make it more explicit. What is the impact of watching the data set as a whole? How do you see that represented in the final product or do you just see it in the in the companion essay that you wrote alongside?

EP: Man, the selection process is the project, right? There is no separating them. If I hadn't done that process, it would be a very different piece. I wouldn't have produced "Lacework" without watching the dataset. But what that mean to a viewer is nothing; it's not apparent. And that's not necessarily a failure. But, yeah, you can't pull them apart. There's no project without the process of watching the dataset that went into it. But it doesn't wear that process on its sleeve.

CS: Alright, so these next couple of questions are about your relationship as an artist to the individuals in the data set and individuals right to their own data in the data set. "Lacework" is a piece that's really concerned about the politics of managing and maintaining and caring for others via their data, that was received largely non consensually. What is the relationship of a person to their data and to their image, as it stands in the "Moments in Time" dataset, and then how do you see "Lacework" changing that relationship, if at all?

EP: Had you asked me at the time?

CS: Yeah, this could be like a then-and-now.

EP: I had been doing some other work with AI and machine learning and AI generated images. A lot of it was wrestling with what it means to be an artist working with data at a scale that you can't personally understand. When I came into "Lacework," I came to the conclusion that it wasn't at a scale that I couldn't personally understand it. So I *will* personally understand it.

I come from a drawing practice. I'm used to having a material relationship with my medium, I understand how the ink works. I have years and years, decades of practice of how paper takes ink. It's not to say that both of those things don't have production realities that I do not understand—I can make my own ink, [but] I don't, I buy ink at the art store in bulk. It is produced by hand somewhere else and I don't have access to that production necessarily. That's what capitalism has done for us. There's a distance between me and my methods and materials, but it's much smaller. Even though you could abstract that forever, even though you could be like, "Well, but what about the trucker? And what about the paper pulp?" Even though you can do that forever, that's the condition of being alive. One of the best things about living on this earth is how intimately you're connected with other human beings and things inside of it. It is still a relationship that is abstracted through commerce and distance and one that I don't always have a material "in" on, however, from [a] medium standpoint, it is easier for me to predict how the paper will take the ink or even conceptualize the process of ink production.

The more computation you have in your process, and particularly the more computational processes predicated on big data and data gathering—because you have the amassed lives of so many individuals that are cut up and trained into machines—[the more] difficult to predict an impact. So I was going into "Lacework" [with] questions of, "Does this stuff have a place in my practice? How do I use material like this at scale without furthering harm? Or at least without building towards shiny tech futurism?"

I think if you'd asked me at the time, I would have told you some stuff about trying to figure out my place as an individual that is also caught in these processes, that also uses these processes in my work. I am both material and source, like as any individual is in these systems. I might have cited some stuff about street photography and documentation and other histories of capturing moments and trying to unpack aspects of the human condition through discursive work that is also abstracted or that like engages with abstraction. And, you know, my own attempts to be an if not a kind hand, at least a generous hand or compassionate hand and guiding sort of the selection of videos for this work. But I just don't think it's possible, is the thing, and maybe I had to go through that to arrive here.

Following "Lacework," I made "Shell Song," which is the last piece I made with any type of big data. I mean, not any type of big data. We all live in a world that's predicated on data constantly. I write and I use game engines, in my practice. I also use online banking, right? Like it's in my life. But it's the last piece predicated on machine learning. "Shell Song" is a piece about AI, vocal cloning, and the datasets that go into their construction and what it is to be a body seen through a dataset and reflected by a dataset that uses a vocal clone. I trained [it] on my own voice. Rather than the work and the process and the essay [as discrete elements], it's all washed in there. There is no reading or playing through "Shell song," [which is] a cross between a video essay and a game, without getting the full context of the piece. It's a very a deeply critical piece that talks about histories of voice construction and fantasies of voice construction, and gender, and the way that gender gets meshed up inside of that stuff. And my own history as an Amazon Mechanical Turk worker, somebody who has been on both sides of those tagging processes, and someone who knows that my own voice and my own images [are in] a lot of these data sets. That was my primary employment for many years, when these things were beginning to be constructed at scale from 2011 through 2014. It moves through all of this.

And despite the [critical nature of the project]—and no shame to this person, I was, in some ways touched to hear from them—I got an email from someone who worked at Resolume, who was like, "That's so interesting, what you did with our software, I've never seen anybody make art with it. Let me know if you make anything else." And I was like, "Okay, there is no amount of criticality that you can embed into a work that uses the tool and its process, and not have it be a validation of the tool, right?" That is simply the way that art works. I can't make a drawing with ink about the conditions of ink production and have it not also say, "but look, I made this drawing with this thing." It's just not possible. Ultimately, with all of this work, the best thing to do is not and I'm glad I'm there, finally. And it's a shame, it's taken me several years to arrive there.

CS: I did have a question about your relationship—and in many ways you've already addressed it, but if you want to expand on it—with Audre Lorde's provocation that "the masters tools will never dismantle the master's house."

EP: Yeah, they don't. In fact, I made myself a Post-It note that's [says], "The master's tools applies to you, you asshole," and it sat on the corner of my desk for six months or something until I was like, "No, I've internalized this." I'm sure I'll fall down on this again. It is difficult to unpack the way in which tools and technology sit over every aspect of contemporary life. I don't know if you've read Ursula Franklin at all, do you her? She's great.

CS: What should I read? *The real world of technology*?

EP: Yeah, it's a really interesting series of lectures from 1989. I grabbed the book because I've listened to the lectures, which are on archive.org, several times, but realized I've never read the expanded version [and] was like, "Oh, I should do that." Partly because she has some really useful frameworks about the ways in which tools and technologies sit in our society. She's a metallurgist and physicist who was teaching in the 50s through the 90s. She talks about craft versus control technologies, which is a pretty easy concept, right? A craft technology is a technology that you can understand and influence from start to finish as an individual person. So, for her, a person who makes a pot is engaged in a craft technology, even if you don't go and gather the clay yourself, you are in this relationship with every aspect of its construction in that you are making in situ decisions about. Whereas control technologies are take this backward. Prescriptivist technology sits over processes. Prescriptivist technology is one, that means you're doing one little component part, but don't necessarily [or] can't control or even don't even have to understand the bits of component processes that are on either side of you. [A] classic example is the factory line. But she expands this to talk about technologies that also sit inside of society, things like tax forms and prayer. And the ways in which the tools and technologies are so much broader than a computer.

This framework that has been useful to me, because as someone who works with computers, you'd never have an entirely holistic relationship with your tool. They are prescriptivist, control technologies through and through. They are technologies that are built in ways you don't understand that operate invisibly behind their comfy user interface, that snitch on you to data gathering systems that track everywhere you go. Computers and [the] communication technologies that they enable are not holistic technologies. They're not craft technologies. But there are little moments where I can have a holistic relationship with my computer, or a craft relationship with the things I make on my computer. And thinking through the work I'm producing through those lenses has been very useful to me, because it's not a framework that tends to get applied either to tools and technology, or to the outcomes of tools and technology, [at least] right now. It's not one that is picked up by anybody

by computer science or by people who write about computation. It's been useful for me to be like, "What type of process am I in right now? What am I enabling?" And sometimes the answer is quite clear.

She has this quote, which goes with Audre Lorde really well, let me see if I can find it. Ursula Franklin says, "As I see it, technology has built the house in which we all live, the house is continually being extended and remodeled. More and more human life takes place within its walls so that today, there's hardly any human activity that does not occur within this house, all are affected by the design of this house, by the division of its space, by the location of its doors and walls. Compared to people in earlier times, we really have a chance to live outside this house and the house is still changing. It's still being built as well as being demolished. In these lectures, I'd like to take you through the house starting with the foundation and examining…" Etcetera, etcetera. Which I think is a really interesting quote, in companionship with Lorde. Because it's hard to live in this house and see beyond the Masters tools, which is what Franklin is writing about—that technologies and tools sit themselves so seamlessly over the substrate of human culture that it's difficult to see beyond the edges. It's difficult to imagine a different house. I'm trying, I'm trying.

So I don't want to be like, "I'm never going to make that mistake again," because I'm sure I will, I'm sure I am right now. In any creative practice where you are someone who is engaged in an act of building futures, for better or for worse, you are making things that are going to exist in the future world. Now. And it's particularly important in computation because there's just so much money and power in computation and the ways in which new media artists have been historically so complicit in building futures for the powerful.

CS: Can you give me an example of what a holistic moment creating with your computer might look like?

EP: Looks like? Yes, it's so weird. It's a weird thing. I'm actually writing about this right now for Pioneer Works's *Software for Artists*. Although I have not yet written this paragraph, so…

CS: Rough draft

EP: For Franklin, everything moves in and out of prescriptivist and holistic technologies. Nothing's pure, but it's a little easier to [say] the potter is having a holistic relationship with the thing on the wheel and a worker on a factory line is having a prescriptivist relationship with the car that they're building. Computers are weird because they are unfriendly systems made friendly. They are in and of themselves the factory line of component parts that are automated, and then [also] present a user interface that you can engage with. And so you're always in these two threads of making in time decisions about what I'm doing on my computer and what my computer is doing for me, as well as your computer making an infinity of its own decisions. And so, to even talk about the act of computation as holistic versus prescriptivist, you have to break down what you [are] talking about [at] the very baseline. The ways in which binary code functions is so distant from the choice I've made to send email. What aspect are we looking at?

But within computation, [you] have the possibility to create what seem to me distinctly holistic or craft oriented tools. In particular, a lot of my work is building or maintaining resources for digital artists, tools, weird Lo Fi tools, things that are often made by one person towards one purpose, tools that have kind of in-built aesthetics. Tools that do strange things. Tools that are maintained often by are absolutely a weird little holistic technology carved out of prescriptivist and control technology. Anyway, that's a very broad answer. But computers are weird in this framework and I find it fascinating.

CS: Yeah, I do too. That's, I think, why we're both here. I see "Lacework" as about your relationship to process and technology. That's what drew me to the project initially—I don't think I would have been as drawn to it had I not read your essay. And hearing you talk about your process more, it's very clear to me that ["Lacework"] is working through these relationships.

EP: Probably working through some personal trauma of what it is to be an Amazon Mechanical Turk worker for many years, to be a person who's both in datasets and uses datasets.

CS: Yeah, I'm curious if you've seen any works that use technology effectively and escape the master's house paradigm…

EP: The exception might be protest tools, tools that are made to be used to produce a working world. I think of all of the work I've seen—and I'm less hard on other people's work than I am on my own—I think a lot of it exists in the world without furthering any harm, but I'm not sure whether or not it fixes anything.

Okay, actually, here's an answer, I found one in my brain. Sam Levine's ICE dataset is a dataset scraped off of LinkedIn of names and images of ICE Immigration officers. Sam got the death threats for this work, had to leave his home. There was a very immediate response from the fascist and far right and was part of that conversation around like doxxing and what it is to be doxxed on the internet. It ultimately got removed from GitHub. That's a work that is engaged with datasets, with big data, is making datasets. It certainly punches up and might even punch out right of the house. But it's a pretty rare. It's a pretty rare exception. And I do think that falls under that category of protest tools.

CS: Yeah, that makes a lot of sense to me. So, ["Lacework"] was two years ago and clearly [your] thinking has evolved significantly in the intervening two years.

EP: And the world has changed a lot…

CS: So I guess I'm curious where you're at with using computation in your own work? How has your experience with "Lacework" informed your ongoing work in practice?

EP: I have also really shifted a lot of my practice over the last couple of years. I am trying to make things that are less critical of the world and more oriented towards building a world that I want to live in. Whether that is tools and tool making, resource construction, or even things like storytelling games, tabletop games, thinking about low tech futures, or futures that are not predicated on big data, as well as thinking about things that contain within them a politics of hopefulness, which is not quite the right word. I'm in this place partly because of "Lacework" and the work around it.

I am not making things that think that by simply talking about the material conditions of the world in which we currently live, they will get better, but rather, attempting to make it better. That is both in my practice, in tools, construction, and, but also more in my life. I had some big lifestyle changes since making this work. [I] moved out to the country, I live in a really small town, I spent a lot of my time volunteering in the community gardens and working with my neighbors, I'm on my computer a lot less. And in some ways, I'm not trying to make my arts practice produce that world. Because ultimately, I'm not sure if it's capable of doing so. Art is the reward, not the means. It's the thing that hopefully everybody gets to do. A creative practice of some type is the thing that hopefully everybody gets to do in a space where we're not all constantly pulled in a million directions trying to survive. It's not the thing that gets us there. That's something that you do with community and in place, and for the people around you, and with the people around you.

WORKS CITED

Aguinis, Herman, Isabel Villamor and Ravi S. Ramani. "MTurk Research: Review and Recommendations." *Journal of Management* (2021): 823-837.

Aliyu, Zainab, et al. *A Beautiful School* . 20 April 2021. May 2023. <https://sfpc.study/blog/a-beautiful-school>.

Amazon Mechanical Turk. *Amazon Sagemaker Ground Truth Plus*. 2023. May 2023. <https://requester.mturk.com/signin_options>.

American Legal Publishing. *Chapter 6: Open Data Portal*. 2019. May 2023. <https://codelibrary.amlegal.com/codes/saltlakecityut/latest/saltlakecity_manual_ut/0-0-0-2705>.

Aristotle, Lee Honeycutt and W. Rhys Roberts. "Aristotle's Rhetoric." 27 September 2011. *Kairos*. May 2023. <https://kairos.technorhetoric.net/stasis/2017/honeycutt/aristotle/index.html>.

Bailey, Moya. *Misogynoir Transformed: Black Women's Digital Resistance*. New York: NYU Press, 2021.

Baker, Mike. "Three Words. 70 Cases. The Tragic History of 'I Can't Breathe'." 29 June 2020. *New York Times*. May 2023. <https://www-nytimes-com.libproxy.lib.unc.edu/interactive/2020/06/28/us/i-cant-breathe-police-arrest.html?searchResultPosition=1>.

Balestrini, Nanni and Wayne Clements. *Tape Mark I*. 2013. May 2023. <http://www.in-vacua.com/tapemark_code.txt>.

Balestrini, Nanni. *Tape Mark 1 - a reconstruction* Computer Museums MIAI. 1962.

Baraka, Amiri. *Technology and Ethos*. 1969. May 2023. <http://www.soulsista.com/titanic/baraka.html>.

Benjamin, Ruha. *Race After Technology*. Cambridge: Polity, 2019.

—. *Ruha Benjamin*. 2021. 4 May 2023.

Bertram, Lillian-Yvonne and Nick Montfort. *Hacking Against White Supremacy—Lillian-Yvonne Bertram and Nick Montfort in Conversation at the DIL*. 21 October 2020. Then: Technology and Poetics If. May 2023. <https://www.youtube.com/watch?v=KmToDKBcTV4>.

Bertram, Lillian-Yvonne. *Interview with Lillian-Yvonne Bertram* Carly Schnitzler. 2 February 2022.

—. *Travesty Generator*. Blacksburg: Noemi Press, 2019.

Bloomsbury. *Electronic Literature*. 2023. May 2023. <https://www.bloomsbury.com/us/series/electronic-literature/>.

Borak, Donna. *Mnuchin still won't commit to putting Harriet Tubman on the $20 bill*. 12 January 2018. May 2023. <https://money.cnn.com/2018/01/12/news/economy/mnuchin-harriet-tubman-20-dollar-bill/index.html>.

Boyd, Ryan L. and H. Andrew Schwartz. "Natural Language Analysis and the Psychology of Verbal Behavior: The Past, Present, and Future States of the Field ." *Journal of Language and Social Psychology* (2021): 21-41.

Boyd, Ryan L. "Psychological Text Analysis in the Digital Humanities." Hai-Jew, Shalin. *Data Analytics in Digital Humanities* . Springer Cham , 2018. 161–189.

Boyle, Casey. *Review of Lingua Fracta: Toward a Rhetoric of New Media*. November 2010. May 2023. <https://kairos.technorhetoric.net/15.1/reviews/boyle/#content_persistence>.

—. *Rhetoric as a Posthuman Practice*. Columbus: Ohio State University Press, 2018.

Bradford, Sarah H. *Harriet, the Moses of Her People: A Biography of Harriet Tubman*. MacMay, 2008.

—. *Scenes in the life of Harriet Tubman*. W.J. Moses, 1869.

Bratton, Benjamin H. *The Stack: On Software and Sovereignty*. Cambridge: The MIT Press, 2016.

Braunstein, Laura R. and Michelle R. Warren. "Zombies in the Library Stacks." Anne B. McGrail, Angel David Nieves, and Siobhan Senier. *People, Practice, Power. Digital Humanities Outside the Center*. Minneapolis: University of Minnesota Press, 2021. 70-82.

Bresler, Joel. *Collection Story*. 2012. May 2023. <http://www.followthedrinkinggourd.org/Collection_Story.htm>.

Brooke, Colin Gifford. *Lingua fracta: toward a rhetoric of new media* . Cresskill: Hampton Press, 2009.

Broussard, Meredith. *Artificial Unintelligence: How Computers Misunderstand the World*. Cambridge: The MIT Press, 2019.

Bruckner, Lorin. *A Gentle Introduction to Text Analysis*. 2023. May 2023. <https://unc-libraries-data.github.io/Intro-to-Text-Analysis/intro_text_analysis.pdf>.

Buolamwini, Joy and Timnit Gebru. "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification." *Proceedings of Machine Learning Research* (2018): 1-15.

Burke, Kenneth. "Four Master Tropes." *The Keyon Review* (1941): 421-438.

Burton, Gideon O. *delivery*. 2016. May 2023. <http://rhetoric.byu.edu/Canons/Delivery.htm>.

—. *kairos*. 2016. May 2023. <http://rhetoric.byu.edu/Encompassing%20Terms/kairos.htm>.

—. *stasis*. 2016. May 2023. <http://rhetoric.byu.edu/Canons/Invention/Stasis.htm>.

—. *style*. 2016. May 2023. <http://rhetoric.byu.edu/Canons/Style.htm>.

—. *topics of invention*. 2016. May 2023. <http://rhetoric.byu.edu/Canons/Invention/topics_of_invention/topics.htm>.

Campbell-Kelly, Martin. "Christopher Strachey, 1916-1975: A Biographical Note." *Annals of the History of Computing* (1985): 19-42.

Carter, Michael. "Stasis and Kairos: Principles of Social Construction in Classical Rhetoric." *Rhetoric Review* (1988): 97-112.

CDC. *COVIDView Summary ending on October 10, 2020*. 16 October 2020. May 2023. <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/past-reports/10162020.html>.

Choi, Taeyoon. *Distributed Web of Care*. 2018. May 2023. <http://taeyoonchoi.com/soft-care/distributed-web-of-care/>.

—. *Errantic Poetry*. 2023. May 2023. <http://taeyoonchoi.com/poetic-computation/errantic-poetry/>.

Choi, Taeyoon, Carly Schnitzler and Lillian-Yvonne Bertram. *2.9—Speculative Lessons/Just Futures: Workshop with Taeyoon Choi on the Distributed Web of Care* . 7 March 2022. May 2023. <https://www.youtube.com/watch?v=R9DBeZVQAEg>.

Cicero. "De Oratore." 2 March 2021. *Attalus*. May 2023. <http://www.attalus.org/old/deoratore3C.html>.

Cicero, Bill Thayer and Harry Caplan. "Rhetorica ad Herennium." 8 July 2008. *Rhetorica ad Herennium*. May 2023. <https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Rhetorica_ad_Herennium/home.html>.

Corbett, Edward P. J. and Robert J. Connors. *Classical Rhetoric for the Modern Student*. Oxford: Oxford University Press, 1998.

de Jong, Ferdinand. "At work in the archive." *World Art* (2016): 3-17.

Der, Matthew, Haoyuan Chen and Jia-Lin Chen. *Glossary: Data Colonialism*. November 2019. May 2023. <https://purdue.edu/critical-data-studies/collaborative-glossary/data-colonialism.php>.

Digital Humanities Summer Institute (DHSI). *Digital Humanities Summer Institute (DHSI)*. 2023. May 2023. <https://dhsi.org/>.

Drummyfish. *Interframe motion interpolation*. 2 March 2019. May 2023. <https://en.wikipedia.org/wiki/File:Interframe_motion_interpolation.webm>.

Dueñas, Sarahy, et al. *Glossary: Raw Data*. November 2019. May 2023. <https://purdue.edu/critical-data-studies/collaborative-glossary/raw-data.php>.

Eagleman, David. *Why do we love slow motion video?* 2 February 2009. May 2023. <http://www.sentientdevelopments.com/2009/02/why-do-we-love-slow-motion-video.html>.

Early Carribean Digital Archive. *Decolonizing the Archive: Indigenous People and Survivance*. 2013. May 2023. <https://ecda.northeastern.edu/home/about/decolonizing-the-archive/decolonizing-the-archive-indigenous-people-and-survivance/>.

Easter, Brandee, et al. *2.4—Brandee Easter x Sukanya Aneja on Weird Programming Languages* . 28 December 2021. May 2023. <https://www.youtube.com/watch?v=aBKpT0bXQ_c>.

electronic book review. *electronic book review*. 2018. May 2023. <https://electronicbookreview.com/>.

ELO. *Biography: Jeff Ballowe*. 2002. May 2023. <https://www.eliterature.org/state/bio-BalloweJeff.shtml>.

—. *Biography: Robert Coover*. 2002. 15 May 2023. <https://eliterature.org/state/bio-CooverRobert.shtml>.

—. *ELO 2022 International Conference and Media Arts Festival*. 30 May 2022. May 2023. <https://www.elo2022.com/>.

—. *ELO History*. 2022. May 2023. <https://eliterature.org/elo-history/>.

—. *The Role of the Electronic Literature Organization*. 2022. 15 May 2023. <https://eliterature.org/what-is-e-lit/>.

Emmett Till. 2023. May 2023. <https://xtools.wmcloud.org/articleinfo/en.wikipedia.org/Emmett_Till>.

Emmett Till. 2023. May 2023. <https://en.wikipedia.org/wiki/Emmett_Till>.

Enderle, Jonathan Scott. *Topic Modeling Tool: An updated GUI for MALLET's implementation of LDA*. 10 April 2017. May 2023. <https://github.com/senderle/topic-modeling-tool>.

Engels, Frederick and Robert C. Tucker. *On Authority*. 1872. May 2023. <https://www.marxists.org/archive/marx/works/1872/10/authority.htm>.

Eubanks, Virginia. *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor*. New York: St. Martin's Press, 2018.

Evens, Aden. "Combination and Copulation: Making Lots of Little Poems." Tabbi, Joseph. *The Bloomsbury Handbook of Electronic Literature*. London: Bloomsbury Academic, 2020. 129-152.

Eyman, Douglas. *Digital Rhetoric: Theory, Method, Practice*. Ann Arbor: digitalculturebooks, 2015.

Fischer, Frank. *We're looking for hints: Anybody know a writer #PaulGoldwin & his work "The Mystery of the Elevator" ("Il mistero dell'ascensore"), attributed to him by Nanni Balestrini? He claimed in 1961 to have used this text as source for his computer-generated poem* . 2 December 2019. May 2023. <https://twitter.com/umblaetterer/status/1201430189722525696?lang=en>.

Fort, Karen, Gilles Adda and K. Bretonnel Cohen. "Amazon Mechanical Turk: Gold Mine or Coal Mine?" *Computational Linguistics* (2011): 413-420.

Franklin, Ursula M. *The Real World of Technology*. Toronto: House of Anansi Press, 1999.

Fry, Alexander Bastidas and Louis Pasteur. *Chance Favors the Prepared Mind* . 5 July 2012. May 2023. <https://www.lindau-nobel.org/chance-favors-the-prepared-mind/>.

Funkhouser, Christopher Thompson. *Prehistoric Digital Poetry: An Archaeology of Forms, 1959-1995*. University of Alabama Press, 2009.

Gaboury, Jacob. "A Queer History of Computing: Part Three ." 9 April 2013. *Rhizome*. 4 May 2023.

Gallon, Kim. "Making a Case for the Black Digital Humanities." Klein, Lauren F. and Matthew K. Gold. *Debates in the Digital Humanities 2016*. Minneapolis: University of Minnesota Press, 2016.

Garofalo, Livia, et al. *Digital Doppelgangers: A Workshop on Our Digital Others*. May 2023. May 2023. <https://datasociety.net/announcements/2023/02/08/digital-doppelgangers/>.

Gerard, Nikita, et al. *Glossary: Speculative Visualization* . November 2019. May 2023. <https://purdue.edu/critical-data-studies/collaborative-glossary/speculative-visualization.php>.

Google. *Our approach to Search* . 2023. May 2023. <https://www.google.com/search/howsearchworks/our-approach/#:~:text=Google's%20mission%20is%20to%20organize,height%20of%20the%20Eiffel%20Tower.>.

Hachiya, Michihiko and Warner Wells. *Hiroshima Diary*. Chapel Hill: University of North Carolina Press, 1955.

Hara, Kotaro, et al. "A Data-Driven Analysis of Workers' Earnings on Amazon Mechanical Turk." *Conference on Human Factors in Computing Systems* (2018).

Haraway, Donna. *A Cyborg Manifesto*. Minneapolis: University of Minnesota Press, 2016.

Harney, Stefano and Fred Moten. *The Undercommons: Fugitive Planning & Black Study*. Brooklyn: Minor Compositions, 2013.

Hartelius, E. Johanna. "Big Data and Global Knowledge: A Protagorean Analysis of the United Nations' Global Pulse." Kennerly, Michele and Damien Smith Pfister. *Ancient Rhetorics and Digital Networks*. Tuscaloosa: University of Alabama Press, 2018. 67-87.

Hartman, Charles O. *Virtual Muse: Experiments in Computer Poetry*. University Press of New England, 1996.

Hawk, Byron. *A Counter-History of Composition: Toward Methodologies of Complexity*. Pittsburgh: University of Pittsburgh Press, 2007.

Hayles, N. Katherine. "Electronic Literature: What is it?" 2 January 2007. *Electronic Literature Organization*. 4 May 2023.

—. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: The University of Chicago Press, 1999.

—. "Print Is Flat, Code Is Deep: The Importance of Media-Specific Analysis." *Poetics Today* (2004): 67-90.

Heleo. *About Heleo Conversations*. 2016. May 2023. <https://www.creativitypost.com/contributor/5012>.

Hermann, John. "New Technology Is Built on a 'Stack.' Is That the Best Way to Understand Everything Else, Too?" 11 April 2017. *New York Times Magazine*. 7 May 2023.

Hickman, Louise, et al. *2.7—Speculative Lessons/Just Futures: Louise Hickman x Kevin Gotkin on Captioning on Captioning* . 7 March 2022. May 2023. <https://www.youtube.com/watch?v=uhaX-gWbFkc>.

Hill, Kashmir and Aaron Krolik. "How Photos of Your Kids Are Powering Surveillance Technology." *The New York Times* 11 October 2019.

Hobart, Hi'ilei Julia Kawehipuaakahaopulani and Tamara Kneese. "Radical Care: Survival Strategies for Uncertain Times." *Social Text* (2020): 1-16.

hooks, bell. *Teaching Community: A Pedagogy of Hope*. New York: Routledge, 2003.

Hudson, J. Blaine. *Fugitive Slaves and the Underground Railroad in the Kentucky Borderland*. McFarland & Co., 2009.

Johnson, Jessica Marie. "Markup Bodies: Black [Life] Studies and Slavery [Death] Studies at the Digital Crossroads." *Social Text* (2018): 57–79.

Jupyter. *Architecture*. n.d. May 2023. <https://docs.jupyter.org/en/latest/projects/architecture/content-architecture.html>.

Jupyter Interactive Notebook . 6 May 2023. May 2023. <https://github.com/jupyter/notebook>.

Kenner, Hugh and Joseph O'Rourke. "A Travesty Generator for Micros." November 1984. *Archive.org*. Byte Magazine. May 2023. <https://archive.org/details/byte-magazine-1984-11/page/n129/mode/2up>.

Kenty, Joanna. "Review of Ethics and the Orator." *Bryn Mawr Classical Review* (2018).

Kim, Tanyoung and Carl DiSalvo. "Speculative Visualization: A New Rhetoric for Communicating Public Concerns." *Design and Complexity - DRS International Conference* (2010): 1-11.

Kirilloff, Gabi. "Computation as Context: New Approaches to the Close/Distant Reading Debate." *College Literature* (2022): 1-25.

Lanier, Jaron. *Who Owns the Future?* New York: Simon & Schuster, 2014.

Lao-Tzu. *Tao Te Ching*. Vintage Books, 1997.

Lauer, Janet M. *Invention in Rhetoric and Composition*. West Lafayette: Parlor Press and The WAC Clearinghouse, 2004.

Layman, Lucas and Gunnar Sigurðsson. "Using Amazon's Mechanical Turk for User Studies: Eight Things You Need to Know ." *IEEE* (2013): 275-278.

Lederman, Doug. "New Media Consortium Suddenly Folds ." *Inside Higher Ed* 19 December 2017.

LIWC. *How It Works*. 2022. May 2023. <https://www.liwc.app/help/howitworks>.

—. *LIWC Analysis*. 2023. May 2023. <https://liwc.app/help/liwc>.

Lorde, Audre. "The Master's Tools Will Never Dismantle The Master's House." Moraga, Cherríe and Gloria E. Anzaldúa. *This Bridge Called My Back*. Watertown: Persephone Press, 1981. 94-101.

Macdonald, Galen, et al. *Winter 2023 Community Fundraiser*. 5 December 2022. May 2023. <https://sfpc.study/projects/fundraiser-winter-23>.

Manovich, Lev. "Software, or the Engine of Contemporary Societies." July 2011. *Cultural Software*. May 2023. <http://manovich.net/content/04-projects/070-cultural-software/67-article-2011.pdf>.

—. *The Language of New Media*. Cambridge: The MIT Press, 2002.

McCallum, Andrew Kachites. *Mallet: MAchine Learning for LanguagE Toolkit* . 2002. May 2023. <https://mimno.github.io/Mallet/index>.

McCorkle, Ben. *Rhetorical Delivery as Technological Discourse: A Cross-Historical Study*. Carbondale: Southern Illinois University Press, 2012.

McGregor, Bree. "Becoming the Shaman: A Review of Rhetorical Delivery and Digital Technologies by Sean Morey ." *enculturation* (2017).

Meeropol, Abel. *Strange Fruit Lyrics*. n.d. May 2023. <https://genius.com/Abel-meeropol-strange-fruit-annotated>.

Mehlenbacher, Brad and Ashley Mehlenbacher. "The Rhetoric of Big Data: Collecting, Interpreting, and Representing in the Age of Datafication." *Poroi* (2021): 1-33.

Memmott, Talan. *Digital Rhetoric and Poetics: Signifying Strategies in Electronic Literature*. Malmo University, 2011.

Miller, Carolyn R. "Genre as social action." *Quarterly Journal of Speech* (1984): 151-167.

—. "Genre as Social Action (1984), Revisited 30 Years Later (2014)." *Letras & Letras* (2015): 56-72.

—. *Rhetorics and Technologies: New Directions in Writing and Communication*. Colombia: University of South Carolina Press, 2012.

Milner, Adam. *On MIT's Moments in Time (and Being Dead-Alive)*. London, 30 June 2020. Essay.

MoMA. *EyeWriter*. 2009. May 2023. <https://www.moma.org/collection/works/145518>.

Monfort, Mathew, Aude Oliva and et. al. *Moments in Time Dataset*. 2018. May 2023. <http://moments.csail.mit.edu/>.

Monfort, Mathew, et al. "Moments in Time Dataset: one million videos for event understanding." *IEEE Transactions on Pattern Analysis and Machine Intelligence* 2018: 1-9. May 2023.

—. "Multi-Moments in Time: Learning and Interpreting Models for Multi-Action Video Understanding." *Computer Vision and Pattern Recognition* 27 September 2021: 1-11.

Monfort, Matthew. *Moments in Time Dataset Download Form*. 2019. June 2022. <https://docs.google.com/forms/d/e/1FAIpQLSc0rovlbTCDqJyuJXKLHWtpIX6fiuc1jlAnhT68p86D9NCF9g/viewform>.

Montfort, Nick. *Love Letters*. 2014. Code repository.

Morey, Sean. *Rhetorical Delivery and Digital Technologies: Networks, Affect, Electracy*. New York: Routledge, 2015.

Mullaney, Thomas S., et al. *Your Computer Is on Fire*. Cambridge: The MIT Press, 2021.

Nakamura, Lisa. *Digitizing Race: Visual Cultures of the Internet*. Minneapolis: University of Minnesota Press, 2008.

National Archives. *What's an Archives?* 15 August 2016. May 2023. <https://www.archives.gov/about/info/whats-an-archives.html#:~:text=An%20archives%20is%20a%20place,photographs%2C%20and%20other%20primary%20sources.>.

New Oxford American Dictionary. *crisis*. 2023. May 2023. <https://www.oxfordlearnersdictionaries.com/us/definition/american_english/crisis>.

Nieves, David Angel. "“For the master’s [DH] tools will never dismantle the master’s house”: An Alternative Primer for a Critical Black DH Praxis." *Digital Humanities Quarterly* (2022).

Noble, Safiya. *Algorithms of Oppression*. New York: NYU Press, 2018.

OED. *crisis*. 2023. May 2023. <https://www-oed-com.libproxy.lib.unc.edu/view/Entry/44539?redirectedFrom=crisis&>.

Online Etymology Dictionary. *generation*. 2023. 4 May 2023.

Open AI. "https://arxiv-org.libproxy.lib.unc.edu/pdf/2005.14165.pdf." *Advances in Neural Information Processing Systems* (2020): 1-75.

Parrish, Allison, Everest Pipkin and Carly Schnitzler. *Intimacy in the Digital Archive—Allison Parrish and Everest Pipkin in Conversation at the DIL* . 19 March 2021. May 2023. <https://www.youtube.com/watch?v=yqOlmqw3-Zs>.

Pfister, Damien. *Networked Media, Networked Rhetorics: Attention and Deliberation in the Early Blogosphere*. University Park: Penn State University Press, 2014.

Pfister, Damien Smith and Michele Kennerly. *Ancient Rhetorics and Digital Networks: Rhetoric, Culture, and Social Critique*. Tuscaloosa: University of Alabama Press, 2018.

Pipkin, Everest. *Bio*. 11 May 2023. May 2023. <https://everest-pipkin.com/#about/bio.html>.

Pipkin, Everest. *Interview with Everest Pipkin* Carly Schnitzler. 8 June 2022.

—. *Lacework*. London, 20 July 2020. Computer-generated artwork.

—. *On Lacework: watching an entire machine-learning dataset*. London, 20 July 2020. Essay.

—. *Roblox Dream Diary*. 2020. May 2023. <https://everest-pipkin.com/#games/roblox.html>.

—. *World Ending Game*. 2022. May 2023. <https://everest-pipkin.com/#games/worldending.html>.

Plato and Benjamin Jowett. "Phaderus." 15 January 2013. *Project Gutenberg*. May 2023. <https://www.gutenberg.org/files/1636/1636-h/1636-h.htm>.

Porter, James E. "Recovering Delivery for Digital Rhetoric." *Computers and Composition* (2009): 207-224.

Posner, Miriam, Andy Wallace and Zoe Borovsky. *Very basic strategies for interpreting results from the Topic Modeling Tool*. 29 October 2012. May 2023. <http://miriamposner.com/blog/very-basic-strategies-for-interpreting-results-from-the-topic-modeling-tool/>.

Python syntax and semantics . 23 March 2023. May 2023. <https://en.wikipedia.org/wiki/Python_syntax_and_semantics>.

Quintilian, Bill Thayer and H.E. Butler. "Institutio Oratoria." 18 October 2020. *Institutio Oratoria*. May 2023. <http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Quintilian/Institutio_Oratoria/home.html>.

Ramsay, Stephen and Geoffrey Rockwell. "Developing Things: Notes toward an Epistemology of Building in the Digital Humanities ." Gold, Matthew K. *Debates in the Digital Humanities*. Minneapolis: University of Minnesota Press, 2012.

Remer, Gary. *Ethics and the Orator: The Ciceronian Tradition of Political Morality*. Chicago: The University of Chicago Press, 2017.

Rettberg, Jill Walker. "Speculative Interfaces: How Electronic Literature Uses the Interface to Make Us Think about Technology." 03 October 2021. *electronic book review*. 4 May 2023.

Rettberg, Scott. "Developing an Identity for the Field of Electronic Literature Reflections on the Electronic Literature Organization Archives." *Dichtung Digital. Journal für Kunst und Kultur digitaler Medien* (2012): 1-33.

—. *Electronic Literature*. Polity Press, 2018.

—. *Scott Rettberg*. 2023. May 2023. <https://retts.net/>.

Richardson, Ronald K. "The White Supremacist Collective Unconscious and the Autonomous Self." *Transition* (2020): 69-90.

Risam, Roopika. *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy*. Evanston: Northwestern University Press, 2019.

Roark, Kendall. *CDS Collaborative Glossary* . November 2019. May 2023. <https://purdue.edu/critical-data-studies/collaborative-glossary/about-glossary.php>.

Roberts, Siobhan. "Christopher Strachey's Nineteen-Fifties Love Machine." 14 February 2017. *The New Yorker*. 4 May 2023.

Rockwell, Geoffrey. "What is Text Analysis, Really?" *Literary and Linguistic Computing* (2003): 209-219.

Sample, Mark. *The digital humanities is not about building, it's about sharing* . 25 May 2011. May 2023. <https://samplereality.com/2011/05/25/the-digital-humanities-is-not-about-building-its-about-sharing/>.

Schnitzler, Carly. *About If, Then*. 13 December 2022. May 2023. <https://ifthen.cargo.site/>.

—. *Archive*. 9 April 2023. May 2023. <https://ifthen.cargo.site/Archive>.

School of Cultural Texts and Records, Jadavpur University. *Bichitra: Online Tagore Variorum*. 18 October 2022. May 2023. <http://bichitra.jdvu.ac.in/index.php>.

Server-Side and Client Side Graphic. n.d. 2023 May. <https://cmci.colorado.edu/infopedia/pmwiki.php?n=Main.WikiSandbox>.

Seth, Neha. *Part 2: Topic Modeling and Latent Dirichlet Allocation (LDA) using Gensim and Sklearn* . 26 August 2021. May 2023. <https://www.analyticsvidhya.com/blog/2021/06/part-2-topic-modeling-and-latent-dirichlet-allocation-lda-using-gensim-and-sklearn/#:~:text=Latent%20Dirichlet%20Allocation%20(LDA)%20is,are%20also%20%E2%80%9Chidden%20topics%E2%80%9D.>.

SFPC. *Amit Pitaru*. 2015. May 2023. <https://sfpc.io/people/amit-pitaru/>.

—. *Jen Lowe*. 2013. May 2023. <https://sfpc.io/people/jen-lowe/>.

—. *Our Mission*. 2023. May 2023. <https://sfpc.study/about>.

—. *Participate*. 2023. May 2023. <https://sfpc.study/participate>.

Smith, Andrew, Carly Schnitzler and Lillian-Yvonne Bertram. *3.1—Andrew Smith on Visualizing the Remix* . 26 September 2022. May 2023. <https://www.youtube.com/watch?v=7B1N-BHlg9Y>.

Somers, Meredith. *Deepfakes, explained*. 21 July 2020. May 2023. <https://mitsloan.mit.edu/ideas-made-to-matter/deepfakes-explained>.

St. James, Liza. *Code Words: Day 4*. 2 August 2018. May 2023. <https://medium.com/sfpc/code-words-day-4-with-lillian-yvonne-bertram-83592e791c33>.

Steal Away to Jesus. n.d. May 2023. <https://hymnary.org/text/my_lord_he_calls_me>.

Stone, Philip J., et al. *The General Inquirer: A Computer Approach to Content Analysis*. Cambridge: The MIT Press, 1966.

Strickland, Stephanie. *Ringing the Changes*. Counterpath Press, 2020.

Tausczik, Yla R. and James W. Pennebaker. "The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods." *Journal of Language and Social Psychology* (2009): 24-54.

The British Museum. *Benin Bronzes*. n.d. May 2023. <https://www.britishmuseum.org/about-us/british-museum-story/contested-objects-collection/benin-bronzes>.

The Daily Tar Heel. *Editorial: We all saw this coming* . 16 August 2020. May 2023. <https://www.dailytarheel.com/article/2020/08/covid-clusters-edit-0816>.

The WIDE Research Center Collective. "Why Teach Digital Writing?" *Kairos* (2005).

To, Alexandra, et al. *3.2—Alexandra To and Chris Martens on Gaming as Speculative Worldbuilding*. 22 October 2022. May 2023. <https://www.youtube.com/watch?v=wIBcv8O1qXQ>.

Topaz Labs. *Gigapixel AI*. April 2019. May 2023. <https://www.topazlabs.com/gigapixel-ai>.

U.S. Department of Labor. *Wages and the Fair Labor Standards Act*. 23 October 2022. May 2023. <https://www.dol.gov/agencies/whd/flsa>.

UNC Research. *Review Process Overview*. 2020. 4 May 2023.

Underwood, Ted. "A Genealogy of Distant Reading." *Digital Humanities Quarterly* (2017): 1-17.

—. *Topic modeling made just simple enough*. 7 April 2012. May 2023. <https://tedunderwood.com/2012/04/07/topic-modeling-made-just-simple-enough/>.

University of Toronto School of Continuing Studies. *What Is a Full Stack Developer & What Do They Do?* 2021. May 2023. <https://bootcamp.learn.utoronto.ca/blog/what-is-a-full-stack-developer/#:~:text=Full%20stack%20technology%20refers%20to,can%20see%20and%20interact%20with.>.

Unthinking Photography. *Everest Pipkin*. June 2020. May 2023. <https://unthinking.photography/contributors/everest-pipkin>.

UPenn English Department. *In Memoriam: Jonathan Scott Enderle*. 21 September 2021. May 2023. <https://www.english.upenn.edu/people/in-memoriam/jonathan-scott-enderle>.

Vee, Annette. *Coding Literacy: How Computer Programming Is Changing Writing*. Cambridge: The MIT Press, 2017.

Voyant. *Corpus Terms*. 2023. May 2023. <https://voyant-tools.org/docs/#!/guide/corpusterms>.

—. *Topics*. 2023. May 2023. <https://voyant-tools.org/docs/#!/guide/topics>.

Waddell, Kaveh. *Lost in Transcription: Auto-Captions Often Fall Short on Zoom, Facebook, Google Meet, and YouTube*. 24 August 2022. Consumer Reports. May 2023. <https://www.consumerreports.org/disability-rights/auto-captions-often-fall-short-on-zoom-facebook-and-others-a9742392879/>.

Walter, Sheryl L., et al. "A tale of two sample sources: Do results from online panel data and conventional data converge? ." *Journal of Business and Psychology* (2019): 425–452.

Wardrip-Fruin, Noah. "Digital Media Archaeology: Interpreting Computational Processes." Parikka, Jussi and Erkki Huhtamo. *Media Archaeology: Approaches, Applications, and Implications*. Berkeley: University of California Press, 2011. 302-322.

—. *How Pac-Man Eats*. Cambridge: The MIT Press, 2020.

Whalen, Zach. "'Any Means Necessary to Refuse Erasure by Algorithm' : Lillian-Yvonne Bertram's Travesty Generator." *Digital Humanities Quarterly* (forthcoming).

Winner, Langdon. "Do Artifacts Have Politics?" *Daedalus* (1980): 121-136.

YouTube. *Use automatic captioning* . 2023. May 2023. <https://support.google.com/youtube/answer/6373554?hl=en>.

Zimmer, Ben. "The Linguistic Power of the Protest Phrase 'I Can't Breathe'." 15 December 2014. *Wired*. May 2023. <https://www.wired.com/2014/12/ben-zimmer-on-i-cant-breathe/>.