

Poetics of the Machine

Machine writing and the AI literature frontier

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Abstract

Machine writing is defined in this thesis as the explicit use of computational methods to compose literature. The form has seen a surge in popularity as part of academic and journalistic conversations regarding the role of artificial intelligence (AI) in creative practices. Currently, creative coders, literary scholars and computer scientists are grappling with what does and does not constitute AI-penned literature, occasionally leading into conversations regarding singularity-type events. This thesis seeks to ground the conversation, focusing on past and present machine writing and evaluating how it relates to the idea of AI literature. To do this, the common theme of comparing literature by machines to literature by humans will be challenged. Through close readings of both output and code, I argue that to understand AI literature, we must explore the poetics and consequences unique to machine writing.

In order to highlight changes in the form, this thesis will develop a history of machine writing. Trajectories from the language games of the OuLiPo group and the Beat Generation's cut-up experiments to Twitterbots and algorithmically generated novels will be charted. Through analysis that focuses on both the literary output of these machines and their constraints/codes, the distinctly inhuman qualities of machine writing will be explored. This analysis will reveal the capacity of machine writing to transform texts, create unthinkable worlds, and mirror the anxieties of the information age. In short, machine writing will be analysed on the basis of its own literary and linguistic techniques, and the effects these techniques produce, establishing a sort of "machine poetics".

Uncovering the poetics of these machines then reveals several other concerns. Authorship becomes complicated by the use of algorithms, corpora and other authorial forces. Further, the utility of machine writing to both promulgate and dismantle oppressive structures through unthinking automation is revealed. In exploring these topics, this thesis maps the current climate of machine writing literature and provides insight into what may lie beyond the AI literature frontier.

Statement of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

(Signed) Cedmond

Date: 28/2/19

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Introduction

Machine writing

“I do not think you can even draw the line about sonnets, though the comparison is perhaps a little bit unfair because a sonnet written by a machine will be better appreciated by another machine.”

-Alan Turing quoted in Andrew Hodges, *Alan Turing: The Enigma*

Picture, for a moment, a text written by a completely autonomous AI (artificial intelligence). This text would be authored by an entity that, for all intents and purposes, is sentient, but composed of lines of code. What would that text be like? A number of investigations could help answer this question. One has to consider what kind of structure the text would take, and what kind of themes it may explore. We can also interrogate what aspects of the AI's world it would see fit to describe or chronicle. Moreover, how would such an AI be constructed, and what would their relationship be to their human peers? If one did find themselves holding such a text in their hands, their mind would surely consider how these works of AI literature might impact society – for good, and for bad.

To clarify: I do not mean a text written under some sort of literary constraint, such as Georges Perec's *A Void* (1969/2008), or a text constructed by cutting-up and re-arranging others, such as the works of William S. Burroughs (1961/2014, 1962/2014, 1964/2014) or Kathy Acker (1998). Nor do I mean algorithmically constructed texts that manipulate literary and social media corpora, such as the works of Michelle Fullwood (2014a) or Allison Parrish (2014a, 2015c, 2018). Even self-publishing bots such as Ranjit Bhatnagar's *@pentametron* (2012-) and others do not qualify for the self-conscious, AI author I am suggesting. However, these texts and those like them possess a sort of machinic quality, divorced from traditional literature. By analysing these texts for their algorithmic quirks and form, we can speculate as to what our literary landscape may look like once we cross the frontier of AI literature.

The texts mentioned above have fallen under many literary and artistic banners, but can all be encompassed under the name “machine writing”. As a matter of scope for this thesis, machine writing is defined as the explicit use of computational and machinic methods

to produce literary works. The term has some precedent in the conversation, having been employed by Brian McHale when describing texts that feature the “machine aesthetics” of being generated or mediated through machinic methods. McHale grapples with the term himself, critiquing machine writing as encompassing too many elements of postmodern writing (McHale, 2000, p. 4). Alessandro Ludovico uses the term more broadly. Ludovico’s definition encompasses everything from Lewis Carroll’s combining of words to create portmanteaus (“smoke” and “fog” create “smog”, for instance) through to AI (Ludovico, 2016). Ludovico’s broader definition is useful, as it suggests the machinic element consistent between these forms as being the tokenisation of language or words. Carroll’s portmanteau production conceptualises words as units which can be combined based on similarity, not unlike an AI’s stringing together of words through probability. Characterising “machinic” as a tokenisation of language functions as a way to scope this thesis’ enquiry of how literature and machines collide.

Other terms have been used to describe these literary forms. “Generative literature” (Balpe, 2007, pp. 309-318) has been used to describe specifically works created by digital algorithms, although has also been adopted to refer to collaborative writing projects between humans, as is the case of *The Generative Literature Project* (Zamora and Jacobi, 2014). Informally, researchers have also referred to the form as “virtual literature” (Heuser, 2015). These terms all fall short due to their vagueness. “Generative literature” has been used in conflicting instances, with the prefix itself inferring some sort of agency for the machine in question. By contrast, “virtual” suggests the literature is in some way “unreal”. These terms, essentially, provide far too narrow a scope to adequately interrogate the histories and forms that this particular intersection of computing and writing has had over the years.

Machine writing has also found itself part of much broader taxonomies. Christopher Funkhouser has understandably mentioned machine writing in his history and analysis of the broader field of digital poetry (Funkhouser, 2007), with analog forms of machine writing relegated to a sort of prehistory (Funkhouser, 2007, p. 33). Machine writing was also included in Espen Aarseth’s analysis of digital literature and videogames (Aarseth, 1997, pp. 129-141). These examples are by no means exhaustive. By adopting the term “machine writing”, I hope to distil the necessary texts and concepts from these differently-scoped studies. My analysis is focused solely on the texts and practices that demonstrate a yielding of human agency to machinic process, be it through analog or digital means. My reason for doing so returns us to

this thesis' opening image, and indeed central question, of AI literature. In order to conceptualise what the literary expressions of a sentient machine may look like, the difference between human and machine must be investigated. As such, the point of separation – be it minor or extreme – between human writer and the produced work is where the answers may lie.

Analysis or even just celebration of the differences between human and machine-written texts is lacking in both academic and journalistic discourses around the potentials of AI literature. In 2016, the Hoshi Shinichi Literary Award received submissions written by AIs, with varying degrees of human input (Olewitz, 2016). In similar fashion, the AI *Benjamin* has been used to write scripts and even “produce” films (Machkovech, 2018). In both instances, journalists have focused on chilling images of AIs becoming rogue entities that replace human authorship. While academic enquiry fares better in its grounded approach, some critics have forecasted similarly technopomorphic futures. Literary scholar Peter Swirski's *From Literature to Biterature* paints a bizarre picture of a future that “will belong to biterature” (2013, p. 68). Swirski's suggestions include the idea of Google's search engine slowly evolving into a 3D head named “Victoria”, taking on the role of a digital assistant. Eventually, this assistant would come to start writing by herself (Swirski, 2013, p. 202). While Swirski may seem like an extreme case, his work has its followers. Some scholars have called Swirski's book a “reasoned fear” (Szabo, 2015, p. 419), while others have claimed Swirski's work to be one of the only texts on the subject of AIs and creativity (Bullian, 2014). What is telling of Swirski's work is that he doesn't spend much time on machine-written texts. Swirski represents a branch of enquiry into AI literature that does not examine the heritages of computing and writing, nor its contemporary forms. Instead, he replaces academic focus with speculative fiction.

Conversely, sceptics of a future of AI literature pursue the question of whether machines can be capable of human-like creativity, and use this marker as the test for not only machine writing, but other automated arts as well. The computational creativity community has been known to dismiss many algorithmically constructed texts as “mere generation”, and “meaningless”, lest they generate works similar to humans (Lamb, Brown & Clarke, 2017, p. 161). This position has been echoed in experiments by researchers creating computational systems that generate texts that resemble, and are evaluated on, their similarity to human forms (Gervás, 2016; Harmon, 2015). Tony Veale has lamented this position, stating that the more literary machines blossom, “the more we expect them to produce human-quality

outputs, and the greater our disappointment when they fall short” (Veale, 2015, p. 5). These examples are not comprehensive, but indicate a position in academic discourse that focuses on the similarity of machine-written texts to human texts.

These two perspectives – one speculative and the other sceptical – are both driven by the same thought: AI should be comparable to human intelligence. The position is understandable – the Oxford English Dictionary defines artificial intelligence as “The theory and development of computer systems able to perform tasks normally requiring human intelligence” (Oxford University, 2019). Granted, one would normally associate the production of prose or poetry with human intelligence. It is not my intention here to challenge the definition of AI – I am neither a computer scientist, nor an etymologist. However, rather than considering whether an algorithm has created something that could provoke emotion or thought, many commentators have focused on valuing a machine for its replication of human literature’s characteristics. This is a perspective that I believe doesn’t stem from an adherence to any sort of AI-credo, but instead from a misguided focus on Alan Turing’s Turing Test.

A number of enquiries into how to value or understand machine writing, academic and otherwise, have used the Turing Test as the basis for their investigation. Oscar Schwartz and Benjamin Laird’s *Bot or Not* (n.d.) website¹ calls itself “A Turing Test for poetry”, and pits human poems against generated ones. Dartmouth’s Neukom Institute (2018) runs literary contests that judge the works of machines on their humanity, again referencing the Turing Test. Weighing into popular discourse, the Institute’s 2016 iteration saw journalists and scholars conclude that because the poems were not able to masquerade as human, then they were bad poems (Casey, 2016). Other researchers have attempted to expand on the Turing Test, creating similar tests to suggest that if an AI can mimic human creativity, then it is intelligent (Riedl, 2014). Turing conceived The Turing Test as a solution to the decidedly philosophical question as to whether a machine can think.² To pass the test, a computer would need to convince a human participant they were conversing with another human, not

¹ The website can be found at botpoet.com.

² To be more specific, Turing was concerned with the open-ended definitions of the words “machine” and “think”, and therefore recommended the question be reframed, replacing it with his gender-based imitation game, and then asking “What will happen when a machine takes the part of [the imitator] in this game?” (Turing, 2009/1950, pp. 25-26).

a computer (Saygin, Cicekli and Akman, 2000, pp. 464-465). The paper remains both influential and controversial in academic circles (Saygin et al, 2000). However, as the above examples show, the test has, for better or for worse, engrained itself in practice and research surrounding the potential of computers, algorithms and AIs to create literary works.

To the Turing Test-focused position, I offer a challenge. For one, should our AIs become sentient, there is nothing to say they will be similar to us. Indeed, the only reason our digital assistants and chatbots currently show any resemblance to us is because we have designed them to. Machine writer Li Zilles suggests that while AI is often qualified in comparison to human intelligence, it should instead be thought of as its own entity, like “cat intelligence” (Zilles, 2016). I agree – we can observe sentience in animals around us, but do not expect a spider’s web to conform to our ideas of artistic composition. To follow Zilles’ example, we do not expect cats to employ Aristotelian poetics when pretending to “kill” their toy mice – yet both the spider’s web and the cat’s pounce can bring us joy, and teach us something about these creatures. So then, why should we demand that sentient machines follow our lead? Why should we not be willing to understand these texts on their own terms, and through their own poetics? I am using the term “poetics” here to refer to the literary and linguistic techniques, and their effects (Culler, 1997, p.61), that these machine writing texts demonstrate. Additionally, I am unsure what purpose machine writing indistinguishable from human writing would serve. Aside from the initial novelty, there isn’t truly a need for machines that produce texts resembling that of humans. So, why not use computers to make something different? Wouldn’t a sentient machine’s work be interesting for how it differed from that of the human, rather than how it replicated it? This challenge returns us to the core interest of this thesis in the difference between human literature and a potential future of AI literature.

The challenges I propose here are not uncharted territory. In 1997, Espen Aarseth suggested that critique of electronically-driven literature would be more interesting if it shifted away from discussing failures to meet human standards, and towards “computer poetics” (Aarseth, 1997, p. 129). Aarseth goes on to state that, while a computer may never be a good “human” author, they still have the potential to create works that can be evaluated on their own terms (Aarseth, 1997, pp. 131-141). Christian Bök similarly calls for the establishment of a “robopoetics” in order to better understand literature created by computers (Bök, 2002, p. 10). Aarseth and Bök’s views, while older statements, have only

been directly addressed by a handful of academics recently. Oliver Harris has observed that Burroughs' machine-written, cut-up works can only be read obliquely (Harris in Burroughs, 1962/2014, p. x). Andrew Wenaus observed that attempting to read the works of machine writer Kenji Siratori via traditional literary means was futile (Wenaus, 2011, p. 30). Nick Montfort has also asked the question as to what literature may look like after the Technological Singularity (Montfort, 2018a). These examples demonstrate a push in academia towards understanding machine writing, and what may come after it, on its own merits.

It is within this climate that I situate myself. Through this thesis, I seek to approach machine-written texts from a perspective that analyses procedure and textual output in unison. Rather than a purely formalist analysis, however, I will investigate how these procedures and their results contain their own poetic potential that is unique to the machine-written form. My position does not seek to delegitimise academic analysis interested in machine writing from a traditional perspective, but instead to simply to offer another perspective. As discussed above, academic discussion focused on machine writing itself is still sparse, often tethered to digital poetry and other traditions. There are of course exceptions – by way of example, Alex Christie's 2016 PhD thesis has approached the connections between machine writing and modernist traditions (Christie, 2016b). Ville Matias Lampi's Masters thesis analyses Twitterbots as a form of electronic literature (Lampi, 2017). Tony Veale and Mike Cook's exploration of Twitterbots (2018) similarly approaches the topic, yet does so with an emphasis on bots and botmaking, rather than the more holistic approach to machine writing forms I am taking. These examples do not provide an exhaustive literature review but instead present the current academic position of machine writing enquiry.

In the meantime, creative discourses have admirably pushed forward in exploring machine writing. The NaNoGenMo competition (of which there are no winners or losers) invites those interested in the form to generate machine-written novels every year, with a host of interesting submissions (Kazemi and hugovk, 2019). As such, I seek to establish a theoretical framework to help contribute to the current academic conversations, as well as bring machine writing's broader conversation into the critical fold. As machine writing experimentation continues to grow in creative circles, establishing a framework of poetics allows for a greater depth of understanding of these works and how they operate.

Approach and definitions

How does one begin to approach the topic of literature written by AIs we are yet to invent? My approach is similar to the contributions of Stanislaw Lem and Italo Calvino to the conversation of machine writing. Both writers have mused as to the possibilities and consequences of AI literature. For Lem, the discussion comes in the form of a short story, itself written as a preface to a fictional book of scholarship on what he dubs “bitic” literature (Lem, 1984/1981). Lem utilises the mode of a critical preface to speculate not only the nature of “bitic” literature, but also the ways in which it may be studied. In addition to suggesting that true nonhuman literature may emerge from a sort of data clean-up (Lem, 1984/1981, p. 41), his narrators also reference debates over how to study the literature of machines. Broadly, Lem suggests the emergence of two primary disciplines: one focused on the social dimensions of the texts, and one concerned with formal elements (Lem, 1984/1981, p. 41). Lem also proposes the field will be interdisciplinary, referring to the field of “bitistics” as both belong to the humanities (Lem, 1984/1981, p. 43) and also referring to it as a science (Lem, 1984/1981, p. 50). While Lem houses his theory in fiction and delivers it cleverly through the mode of academic writing, Calvino’s 1967 lecture, *Cybernetics and Ghosts* (1986/1980), uses the notion of an authorial machine as an evocative subject. Calvino introduces the claim that a human author could indeed be replaced by a machinic one, and uses this concept to discuss the systematic construction of literature itself (Calvino, 1986/1980, p. 12). These texts will both be revisited in Chapter 2.

Lem and Calvino are important for understanding how this thesis is situated. In both instances, Lem and Calvino are speculating as to the form AI literature may take. I am doing the same. However, AI literature is less an evocative subject in this thesis and more its core subject. At every stage of my research, I began by asking questions over the form, meaning, and consequences of AI literature, should it one day manifest. I do not ask these questions in hope of a definitive answer. I ask them because I believe looking towards our future will allow us to understand our present. Specifically, our current relationship with machine-written texts, as well as the personal and societal impacts of contemporary AI.

It is important, at this stage, to indicate what my thesis is *not* attempting. While a central theme of this thesis is that machine writing (and its potential descendant, AI literature) is best read on its own terms, I am not suggesting – nor is this thesis concerned with crafting

– a distinct or new reading/interpreting methodology. Instead, I seek to approach these texts through a relatively traditional scope of analysing poetics and social or cultural contexts, but with an emphasis on what separates them from non-algorithmically constructed texts. That said, my readings are informed by computational criticism, or the reading of texts through algorithmic methods (Moretti, 2013a, p. 180). The use of computational criticism in this thesis, as Chapter 2 will show, is predominantly to investigate how the by-products of the discipline may inform us as to how machines read, rather than how we must read their creations.

To approach the primary texts in this thesis, I have conducted close readings of both textual outputs and the procedures that lead to them. At times, such as in my discussion of *The Seeker* (Zilles, 2014a), I can utilise the source code itself. With other texts, such as *Irritant* (Larson, 2013), I instead must rely on a sort of reverse engineering, searching for traces of procedure in the novel's patterns.

My readings are informed by the works of N. Katherine Hayles, Ian Bogost and Noah Wardrip-Fruin. Hayles' theorising of literature in the face of information technology is of special interest and is deployed heavily in Chapter 4. Hayles has attempted to build on established literary theory, while acknowledging the new paradigms that electronic literature offers. To achieve this goal, Hayles' offers the "technotext" concept (Hayles, 2002, pp. 25-28), which refers to a text where the technological tools used to create it are part of the textual experience itself. In the case of this thesis, that technology is the code. As my readings throughout this thesis will demonstrate, I have considered the procedures themselves as part of the text's poetics, and analysed them for poetic value.

My approach to the machine-written subject as both the outputted, textual artefact and the underlining code is not dissimilar to Bogost's concept of procedural rhetoric, albeit with a rather different focus. In his analysis of videogames and their potential as persuasive texts, he coins procedural rhetoric to refer to the capacity for the procedures – in essence, the mechanics – of videogames to make arguments (Bogost, 2007, p. 3). Like Bogost, I am interested in how the political, social and cultural values embedded in procedures (Bogost, 2007, p. 5). What differentiates my work from that of Bogost, however, is that where Bogost invests in the dialogue between game designer and player (Bogost, 2007, p. 1-3), no such player figure exists in the majority of the texts I analyse.

In addition to Hayles and Bogost, the work of Wardrup-Fruin has also contributed to the search for poetics within code. His concept of “expressive processing” (Wardrip-Fruin, 2009, p. 3) provides another perspective on the potential for meaning making from code. Expressive processing is defined by Wardrip-Fruin as examining both the meaning authors embed in the systems they create, as well as the contexts from which these systems spawn. On this second feature, Wardrip-Fruin states:

“From this perspective, digital media provides particularly legible examples of things that we need to understand about software in general. For instance, when we understand the capabilities and histories of AI techniques in the context of a relatively easy to evaluate area such as computer games ... we can use that understanding to judge proposals for using similar techniques in higher-stakes social contexts.”

(Wardrip-Fruin, 2009, p. 5)

Wardrip-Fruin’s statement is similar to the overall objective of this thesis. While his example in this case is gaming, mine is machine writing. Like Wardrip-Fruin, I believe that through an understanding of contemporary algorithms and software, we can be better informed as to what is on the horizon.

In my attempts to uncover what may lie beyond the frontier of AI literature, I am aligned with similar literary critics, most contemporaneously David Johnstone. In his ontological investigations of digital poetry, Johnstone describes his work as a sort of “speculative literary criticism” (Johnstone, 2016, p. 3) – one that looks to the future from our current position and, like Johnstone, maps the collisions between computational method and literary form. Unlike Johnstone, however, I am not as focused on the digital. Johnstone’s investigations focus predominantly the digital space itself as a poetic platform, made evident in his focus on the “networked self” (Johnstone, 2016, p. 2). Due to the nature of my research, my focus is on machinic methods themselves, be they digital automata or analog procedures.

The majority of this thesis will be concerned with the poetics of machine writing, investigating their potential to speculate on what AI literature may be like. I use the term poetics in its most contemporary form. Like Johnstone, I view poetics as concerned with concepts ranging from materiality to questions of existence, and take into consideration the

contemporary, machinic modes that produce these poetic objects (Jonhston, 2016, p. 2), be they Markov chains or lipograms.

I am aware that the scope of this thesis is quite large. As readers will discover, I deal with a large amount of case studies in each chapter. While at times this scope makes the thesis dense, it was necessary in order to demonstrate how these poetics manifest in a variety of ways across machine writing's history. There is, however, a central theme to the machine-written texts I offer as examples. I have chosen these texts predominantly due to their cultural or philosophical influence on how machine writing is perceived in relation to AI, while others are used simply due to the gravity of their influence. For instance, the inclusion of *The Policeman's Beard Is Half Constructed* (Chamberlain, Etter and Hall, 1984) is due to the conversations it sparked over the use of computers, and potential for computer autonomy in textual production. On the other hand, while the experimental methods of OuLiPo have little to do with AI, their influence on machine writing, as discussed in Chapters 1 and 3, cannot be overstated. In the future, I hope to see the themes explored in these pages used for more focused investigations.

A point on semantics: aside from my mentions of a future of AI literature, readers will notice I often avoid the term "AI" throughout this thesis. In its place, I refer to the systems that govern machine writing as "algorithms" or, where suitable, "bots". I do not make this point to establish any sort of scientific claims about artificial intelligence, but instead as a matter of clarity. As stated in this thesis opening, a core point of enquiry is into what texts from truly sentient AIs – sometimes referred to as "strong AI" or "Artificial General Intelligence" (Braga & Logan, 2017, pp. 156-157) – may look like. Rather than delving too deeply into conversations beyond this thesis scope, such as the scientific nature of "strong" AI, I am instead adopting a literary/media studies focus. While the use of "AI" to refer to a speculative future is done to avoid confusion, I then use "algorithms" and "bots" to ground the conversation. Unlike some of the discourse I am responding to, I wish to avoid overstating the complexities of machine writing practices, or confuse them with autonomous, sentient agents. "Algorithm" happily encompasses the many machine writing practices I analyse in this thesis: all stem from a series of rules, carried out in sequence. The term "bots" is used to denote algorithms given some degree of agency, most commonly found in examples such as Bhatnagar's @pentametron (2012-) that creates sonnets on Twitter.

These terms bring their own baggage but, from a literary studies perspective, are freeing enough to allow an investigation of machine writing without too many unnecessary wades into other territories. The term bot especially provides freedom, with bot maker Kate Compton suggesting that something should be called a bot if doing so provides “poetic mileage” (Compton, 2017). I do not use these terms to argue semantics or establish scientific claims about AI, but instead to provide clarity. Both an exciting and challenging part of dealing in an emerging field is the malleability of terminology.

Attempting to explore computing concepts in a stripped-back, demystified manner is not a new endeavour for the humanities. Alexander Galloway’s *Protocol: How Control Exists After Decentralisation* (2004) is foundational in its examination of the Internet as a textual object. The “New Aesthetic” and “speculative realism/object-oriented ontology” movements both focus on artistic and critical explorations of how machines “see” the world (Golumbia, 2015, pp. 123-124). Safiya Umoja Noble explores the ways in which algorithms – predominantly Google Search – can reinforce oppressive ideals (Noble, 2018). For all the ways digital media, online discourses and more are like the non-digital, they are also something “other”. It is this “other” that I am interested in exploring through literary traditions. Throughout this thesis, I identify and analyse the poetic potential and themes that manifest when human agency yields to algorithmic construction. At the points where agency yields, so do human poetics. In the place of this humanity is, I propose, the key to understanding the unique aspects of machine writing and its processes. In turn, these unique machine writing poetics provide avenues for speculating what may lie beyond the AI literature frontier.

Like others attempting to explore distinctly machinic texts from a humanities perspective, I am met with resistance from the texts themselves. One of the problems faced by “New Aesthetic” practitioners is the impossibility to truly show a human what a machine sees. A certain human-oriented focus is necessary for a human to write or think about these concepts in a sustainable way, but in doing so something is surely lost in translation (Golumbia, 2015, p. 125). In penning this thesis, I have occasionally had to choose between grammatic convention and faithfully representing the text I am analysing. For instance, Burroughs’ *Nova Trilogy* features an individual who goes by the name “Mr & Mrs D” (Burroughs, 2014/1962, p. 209). Referring to such an individual in the singular would be correct within Burroughs’ universe, but incorrect in academic writing. Given that such struggle between words and what they represent is likely part of Burroughs’ intention, I have chosen

to err towards faithfulness, even when it may create slightly jarring results. These examples reflect the difficulty in addressing machine-written texts in the first instance, let alone establishing their poetics. This challenge drives my decision to focus on a large swathe of texts, tracking trajectories that begin with the “more human” works of machine writing, and tracing how these poetics have evolved. Such trajectories should allow for a smoother translation from poetics that are more human, to their contemporary, more machinic forms.

Trajectories, poetics and consequences

In addition to recognising the challenges and shortcomings of terminology, I am also aware of the long bow this thesis is drawing. The textual forms that lie beyond the AI literature frontier remain, as far as we can reasonably suggest, a fair distance away. To attempt to speculate as to what these texts may look like through an analysis of contemporary machine writing is an ambitious task. However, I do not ask this question in search of a definitive answer. Instead, I ask it due to the discussions it may provoke. In approaching this question, a better understanding of contemporary machine writing can be generated. As discussed, the form remains poorly theorised as a literary tradition in and of itself. Through establishing a history of machine writing, investigating potential poetics of machine writing and discussing both authorship and morality of automation, I hope to establish a thorough overview of machine writing as a literary tradition with its own concerns and themes. It is from here, I believe, we can look to a post-AI literary future with quiet confidence, understanding the kind of concerns and themes such literature may challenge us with, as well as preparing us for the ethical conversations necessitated by technological advancement.

As Chapter 1 will show, attempting to establish a thorough history of machine writing as a literary tradition is a weighty task in and of itself. McHale states that, as machine writing continues to be explored, more potential origins are being found or suggested (McHale, 2000, p.4). However, it is possible to trace some trajectories of how the form has developed over time. This thesis identifies two primary – although not exhaustive – trajectories in the form of the OuLiPo³ tradition’s emphasis on play and experimentation with literary form, and the cut-

³ OuLiPo stands for “Ouvroir de littérature potentielle” (“workshop of potential literature”).

up tradition that evolves from the chaotic and disruptive experiments of beat generation writers William S. Burroughs and Brion Gysin. These two traditions can both be considered to fall under the banner of analog machine writing, where no digital or meaningfully external machine is utilised in the textual production. The machines of OuLiPo, Burroughs and Gysin, are instead internal mechanisms, such as writing without a particular letter or cutting-up and rearranging the texts of others. These traditions are identified as meaningful flashpoints where human agency begins to yield to machinic design, while also being precursory to future directions in machine writing.

Chapter 1 will investigate how the paths of OuLiPo and cut-up diverge from one another, with the former informing a more playful and experimental form of machine writing that has influenced the academic field of computational criticism. Conversely, the cut-up method has had a different influence, inspiring more fringe experiments in literary production. Both traditions reverberate into the other two thresholds of machine writing I identify: digital machine writing and networked machine writing. Digital machine writing represents the point at which the machinic methods become externalised, moving into tangible code. While digital machine writing may predate OuLiPo and the beat generation, dating to at least the early 1950s (Sample, 2013), I will illustrate in Chapter 1 how these traditions have heavily influenced the form, proliferating in the latter half of the 20th century. Through digital machine writing, the question as to what constitutes a computer “authoring” a text are asked for the first time, primarily around the infamous *The Policeman’s Beard Is Half Constructed* (Chamberlain et al, 1984). The conversation is only extended as machine writing shifts into online spaces, a form I refer to as networked machine writing. While a less definitive shift than that between the analog and the digital, the movement of machine writers into networked spaces has allowed for newer literary forms that manipulate large bodies of data. Machine writing has thus moved into other spaces, including social media. These three thresholds will be outlined and explored throughout Chapter 1, establishing a foundation of the different forms machine writing may take, and the directions it has moved in over time. While an ad-hoc history rather than a definitive chronicle, Chapter 1 serves to inform the explorations of machine writing poetics the next few chapters will undertake.

Chapter 2 approaches the question as to what literature may “look” like to an AI. This chapter’s outcomes are two-fold: in addition to gaining an understanding as to what literary

forms Als may be interested in crafting, the exploration into the poetics of machine writing is foregrounded. My analysis here will examine instances of computational criticism – the use of computational methods to study texts – but reframe them as evocative, machine-written texts themselves. Predominantly, this chapter will focus on *The Z-Axis Tool* (Christie, Brendle-Moczuk, Moa, Ross and Tanigawa, 2016), which transposes literary works onto geographic maps, as well as the Stanford Literature Lab’s use of computational methods to explore genre and literary canons (Allison, Heuser, Jockers, Moretti and Witmore, 2011). These experiments allow for an understanding of how machines view or understand literature: as data sets and relations.

I mediate this understanding through a study of Alexander Cobleigh’s *Moby Dick; or The Cyberwhale* (2015a), where a word-mapping script was used to transform the Project Gutenberg version of Herman Melville’s *Moby Dick; or The Whale* (2008). Cobleigh’s work centres around a theme of prose colliding with code – its poetics are drawn from the space in which human literary traditions collide with an algorithm’s attempts to rework a decidedly human text. I then explore this concept further, through examining Studio Moniker’s *All the minutes* project (2014, 2014-a, 2014-b),⁴ Lynn Cherny’s *Pride and Prejudice and Word Vectors* (2014a) and Michelle Fullwood’s *Twide and Twejudice* (2014a). Moniker’s work provides a further bridge between computational criticism and machine writing, where the sprawling world of Twitter is broken down into a linear, minute-by-minute chronicle. Much like the computational critic, Moniker attempts to take a large body of text and order it through machinic means. On the other hand, Cherny and Fullwood – both using Jane Austen as a textual corpus – revel in the chaos caused by making an algorithm grapple with human written texts. The poetics of this chapter’s case studies articulate what algorithms are typically able to “understand” about a text, what they place value on, and what is irrelevant to them. From this analysis, a vision of machines attempting to interpret and express a literary form emerges. To both understand the poetics of contemporary machine writing, and speculate on what AI literature may be like, we must be willing to see things from the machine’s point of view.

⁴ I also utilise the “complete” version of this text, which is the output Studio Moniker released in 2014. This text is no longer available online and was retrieved by emailing Studio Moniker directly. This fact has been noted in my Reference List. The project’s website (2014-a) and Twitter account (2014-b) are still running.

In some ways, the poetics of machine writing explored in Chapter 2 are incidental to the focus on establishing an understanding of how machines interpret and understand texts. Conversely, Chapters 3 and 4 focus much more intently on these poetics, exploring machine-written texts and algorithms through two lenses: “Nauseous Machines” and “Noisy Machines”. The Nauseous Machines of Chapter 3 refer to machine-written texts and methods that inflict upon the reader – either human or algorithm – a feeling akin to the idea of “nausea” explored by Jean Paul Sartre in his writings (1969/1938, 2003/1943). Sartre’s concept of nausea deals in the individual facing a sort of “factual existence” (2003/1943, p. 362), caused by the exposure of existence. This feeling is conjured by machine writing’s poetic of avoidance or absence, where an element of the traditional, human reading experience is stripped back through mechanical means. I will begin exploring this poetic through Georges Perec’s *A Void* (2008/1969).⁵ *A Void* was written entirely without the letter ‘E’ which itself becomes a sort of void within the text. The nothingness left in the wake of the letter’s removal gains agency itself, warping the world around it.

We can then see this poetic of absence evolve by analysing the void of human intention from Chamberlain et al’s *The Policeman’s Beard Is Half Constructed* (1984), as well as the disruption of context and humanity in Parrish’s *I Waded In Clear Water* (2014a). In both of these cases, aspects of textual production once belonging to the human have been deleted, stripping the literary form back to a more machinic form. While predominantly the nausea of these texts is inflicted upon the human reader, we can then move further into our speculation on the future of AI literature by looking at examples of nausea inflicted by machine writing upon other algorithms. Sean Conner’s *The Psychotherapy Of Racter Or The Descent Into Madness Of Dr. Eliza* (2015a) chronicles the use of one chatbot on another to cause a break down. Parrish’s *@everyword* (2007-2014) Twitterbot and its spin-offs, as well as Bhatnagar’s *@pentameton* (2012-), produce content that challenges the algorithms that govern Twitter itself. Much like humans, the automated authors of the AI literature frontier will likely create texts that challenge themselves. This notion will be explored in Chapter 3 through these bots that, through machine writing practice, inflict nausea upon their fellow algorithms.

While my exploration of these Nauseous Machines sees me follow the trajectory of the Oulipo tradition, the shift to Noisy Machines also necessitates a shift to Burroughs’ cut-

⁵ Originally published as *La Disperation*.

up method and the machine writing practices he influenced. Chapter 4 will begin through an analysis of Burroughs' *Nova Trilogy* (2014/1961, 2014/1962, 2014/1964), a series of novels produced through the cut-up method Burroughs developed with Gysin. For Burroughs and Gysin, the cutting-up and re-arranging of texts both old and new allowed for a more authentic depiction of post-WWII life than traditional, linear literature (Robinson, 2011, p. 10). Both the form and the themes of Burroughs' trilogy are identifiable in contemporary digital and networked machine writing. Kenji Siratori's novels such as *nonexistence* (2011) similarly is produced through a cut-up method, albeit one that is digital. Additionally, while Burroughs was interested in exposing the noise of an urban, postmodern life, Siratori is instead focused on the networked world individuals now navigate, both through online experiences and the codification of day-to-day life. Through a reading of Burroughs and Siratori via media theory, the capacity for machine writing to reflect our contemporary networked society is revealed.

A literary form that effectively captures networked society would be of grave importance to AIs, as, unlike humans, these AIs are born into network systems themselves. While the human may explore the interplay between information and noise online, for the algorithm, this interplay is its very existence. Just as an individual's upbringing will likely affect their writing, so does the flow of data online become the setting of AIs, and perhaps their literature. I explore this notion further by examining machine writers that, rather than attempting to describe networked society, embrace and manipulate it. This analysis leads me through Darby Larson's cut-up text *Irritant* (2013), and Jonathan Basile's unfathomably large, mostly-gibberish *thelibraryofbabel.info* (n.d.). Both texts challenge their readers to approach them. The chapter concludes with Zilles' saga of an algorithm attempting to understand the human world in *The Seeker* (2014a). *The Seeker* does not challenge the reader to find humanity within it, but instead asks them to simply listen to what the machine has to say. My exploration of the noisy poetic of machine writing works to demonstrate a way to read and interpret even the most resistant and alien of machine-written texts, while also establishing how we may read the texts from our algorithmic peers beyond the AI literature frontier.

With trajectories and poetics established and explored, I then move discussion to the consequences of machine writing, and how they may continue to develop as we shift closer to a world of AI literature. For one, we need to consider the location of authorship of these texts. If the human yields agency of production to a machinic method, what becomes of their role as author? Does it dissipate, or simply evolve? Once again, machine writing proves

resistant to traditional modes of literary analysis. In this case the “Death of the Author” concept, critiqued by some for literary studies’ near-dogmatic acceptance of it (Landy, 2017), is challenged. Rather than the philosophical questioning of authorial intention, exploration of machine writing authorship necessitates a more material analysis. As the human gives over more parts of a text’s production to the machine, their relationship with the text changes. I begin to explore this concept through Kathy Acker’s *The Childlike Life of The Black Tarantula by The Black Tarantula* (1998). Acker composed the text through the cut-up method, using her own works and that of many other authors to create a disassociating, decentralised text that challenges authorship through both text and composition. For Acker, authorship becomes an inhuman, impersonal construct – a black tarantula – that exists within the cut-up processes that brings the fragments of her corpus together in unusual forms. An analysis of Acker reveals the ascribing of authorship solely to the human writers behind machine-written texts as reductive.

I attempt to model and explore the notion of authorship of machine-written texts through Aarseth’s concept of cyborg authorship (Aarseth, 1997, pp. 129-141). Through Acker’s process and Aarseth’s theory, I explore the dislocation of authorship in machine writing via Parrish’s *Our Arrival* (2015c), which draws on a far broader array of authors than Acker, and automates the process of writing the text. Parrish remains a guiding hand in her text, but her role distances her from the resulting text. Authorship becomes further detached in Sarah Harmon’s *FIGURE8* experiment (2015), where an algorithm is tasked with evaluating and reflecting on its own work. Finally, I explore the automation of publishing found in machine writing bots, including Bhatnagar’s *@pentametron* and the bots of Reddit’s subforum, */r/SubredditSimulator* (Birch, 2015). At the point of bots composing and publishing their own texts, authorship in the traditional sense seems to dissipate.

Although exploring the inhuman nature of machine writing algorithms reveals interesting consequences for poetics and authorship, it also unveils concerns. Towards the end of this thesis, I look towards the potential problems of yielding agency completely to algorithmic wordsmiths presents its own problems. While some may instantly point towards sentient AIs enslaving humanity (Swirski, 2013, p. 204), others are more concerned with how the unthinking, machinic processing of algorithms may have unintended and oppressive results (Noble, 2018). I approach machine writing and AI literature in a similar way to the latter, with a focus on the way certain online corpora may cause machine writing algorithms

and bots to create content the human creator may not have intended. I approach this topic from both the potential benefits, and the potential downfalls of such automation, analysing how machine writing practices may both dismantle and uphold oppressive constructs and regimes. I begin my analysis in this chapter through the cut-up war for humanity that plays out in Burroughs' *Nova Trilogy* and the oppressive, unthinking cylinder of Samuel Beckett's *The Lost Ones* (1972). Within these texts, perspectives that both advocate for and condemn machine writing processes can be found. I then analyse Bhatnagar's *@pentametron* and Fullwood's *Twide and Twejudice*, exploring how these texts have disseminated oppressive and derogatory concepts, embedded in the corpora their algorithms manipulate. By way of contrast, I also explore Benjamin Grosser's *ScareMail* (2018a) – a machine writing tool developed to confuse and ultimately sabotage the NSA's text-mining form of surveillance, aligning Grosser with the concept of "culture jamming". In all these cases, I do not seek to criticise or condone any of these practices. Instead, I present these examples for the questions they raise over how much freedom one should give to their algorithmic creations, and what the consequences of doing so are. I do not seek to find a definitive answer to the question, but simply believe it is a conversation we must begin to have before we reach the AI literature frontier.

Despite a long history, machine writing remains a relatively young field in academic enquiry. The lack of work in the area could be perhaps, as this introduction discussed earlier, owing to the fact machine writing has often been conceptualised as part of different traditions. Indeed, I recognise that my particular definition and boundary for the form is far from perfect, and I expect that – as scholarship on machine writing grows – other scopes will come into existence that may be broader or narrower. Just as it is not my intention to answer with absolute certainty what the literature of truly sentient AIs will be like, I am also not attempting to draw solid lines as to what is and is not machine writing. Instead, the scope of this thesis is chosen for the pathways recognisable between the experiments of OuLiPo and Burroughs, and the machine writing bots that roam cyberspace. It is in the similarities and differences between these practices that the poetics of machine writing may be uncovered. Just as Burroughs' *Nova Trilogy* seems to provide insight into the digital and networked machine writing of today, so might the machine writing of today forecast the texts we may see beyond the AI literature frontier. At the very least, this thesis will indicate what conversations the literary scholar must have when approaching literary works that originate

from entirely non-human sources. Before one can reach the end, however, they must start at the beginning. In Chapter 1, I chart the trajectories of machine writing over time, establishing scope and demonstrating the heritage of these Historical Machines.

Chapter 1

Historical Machines: Charting and contextualising machine writing trajectories

“I shall in due time be a Poet”

-Ada Lovelace quoted in Betty Alexandra Toole, *Ada, the Enchantress of Numbers*

Ada Lovelace was not, by conventional standards, a poet. Lovelace, who died in 1852 (Toole, 2010, p. 20) is often seen as the first programmer – all she was missing was a digital computer (Veale and Cook, 2018, p. 25). She worked closely with Charles Babbage, and saw his work on early computing as a method for linking the material with the symbolic, and the spiritual with the physical (Forbes-Macphail, 2013, p. 148). Lovelace’s vision of a “poetical science” has been seen by some critics as an adequate description for contemporary bot making (Veale and Cook, 2018, p. 25). Although Lovelace herself did not publish poetry, her letters reveal an enthusiasm as to the affinity between both imagination and mathematics to show the “unseen relations between things” (Lovelace in Toole, 2010, p. 108). Lovelace’s ideas show us that the realms of machinic logic and literary arts have been linked since at least the proto-days of computing.

Although poetic, Lovelace represents only one of the earlier intersections between machines and literature. Alessandro Ludovico describes the relationship between machines and language as a subtle one that has evolved over a great period of time, but has recently begun to accelerate (Ludovico, 2016). Ludovico’s observation, as well as Lovelace’s prophetic musings, demonstrate the complexities of charting a history of the form. Indeed, it would be foolish for one to assume they could find the exact moment that literature and mechanised processes first collided. These fuzzy beginnings make constructing a history of the form a difficult task. Like any technological or creative form, the evolution of machine writing is not linear, with practitioners in multiple traditions experimenting with different methods and intentions (Roque, 2011, para. 3). However, establishing an ad-hoc history and taxonomy in this chapter is necessary. The aim is not to form any sort of definitive history, nor do I wish to

invoke any notions of “canonical” machine writing. Instead, this chapter’s history is interested in showcasing how critical and popular receptions towards machine writing have evolved over time, while focusing on two particular trajectories of machine writing practice. These two trajectories both stem from a post-WWII climate: the playful, experimental machine writing of the OuLiPo group, and the rebellious, violent machine writing of William S. Burroughs. While not exhaustive, these trajectories relate to both machinic method and philosophical ambition, and lay the groundwork for some of the directions contemporary machine writing is moving in.

As stated in the introduction, this thesis defines machine writing as the creation of literature via the explicit use of computational methods. The definition is deliberately broad, but this inclusivity does come with its risks. By way of example, one could argue that hypertext may fall under the banner, simply due to the fact that it takes advantage of the digital storage and visual displays that computing offers (Funkhouser, 2007, pp. 150). However, a human still distinctly authors hypertext and similar forms. For this thesis, machine writing begins when human agency starts to yield, such as an Oulipian constraint that prohibits the use of certain words, or a Twitterbot that reshuffles words into combinations the author did not anticipate. These examples do not signal a complete disappearance of human authorship, but instead bring how we need to think about it into question.

A primary reason for adopting this definition is to attempt to untangle the various taxonomies and traditions machine writing has fallen into across its long history. Antonio Roque observes that computer poetry, for instance, falls broadly into four traditions. Roque identifies these as the poetic tradition interested in the creation of poetry, the OuLiPo tradition interested in language play, the programming tradition concerned with understanding systems, and the research tradition that investigates language and cognition (Roque, 2011, paras. 23-26). The disconnectedness of these traditions has resulted in research and histories of the form often being isolated from one another. Roque goes on to state “there is no overarching community that brings together all of these approaches ... it is rare, for example, to see a computer science researcher citing critical work in the digital humanities” (Roque, 2011, para. 27). The separation of traditions that Roque observes showcases the need to craft a more holistic history of machine writing.

It is worth noting that Roque writes shortly before the creation of a number of crucial machine writing communities. NaNoGenMo, a community where poets, computer scientists and hobbyists all join together to share resources and engage in machine writing practices emerged in 2013 (Kazemi and hugovk, 2019). Carolyn Lamb, Daniel G. Brown & Charles L.A. Clarke (2017, p. 159) echo Roque's concerns, stating that although many practitioners may be engaging in similar work, their interests are spread out across different objectives and thus different disciplines. To remedy the disparity between disciplines, Lamb et al attempt to create a taxonomy of generative poetry, focusing on the degree of human or computer intervention (2017, pp. 159-172). Highlighting another point of contention within machine writing discourse, Lamb et al are primarily interested in generated poetry that mirrors human-penned texts. They are dismissive of "mere generation" – the use of simple generative systems – as it can create "meaningless" poetry (Lamb et al, 2017, p. 161). Although the group concede that such creations may have some Dadaist quality, they are more interested in AI-related techniques that can generate poetry "meaningful to humans" (Lamb et al, 2017, p. 161). The group's sentiments are endemic of the computational creativity community's general approach to simpler methods of creation (Ventura, 2016). As a consequence of this sentiment, it would be difficult to see how the computational creativity community could approach machine writing holistically, when much of the form's work – as will be discussed – is invested in forms of writing divorced from traditionally human composition.

The purpose of this chapter is not to do away with or criticise these different traditions. On the contrary, scope is an important aspect of any critical endeavour. Instead, this chapter simply seeks to examine how these various communities, movements and forms have shaped the machine writing texts and themes I seek to explore. An example is the relationship machine writing has to the field of digital poetry. Oulipian techniques are included in C.T. Funkhouser's history of digital poetry for their obvious begetting of Theo Lutz's 1959 work, *Stochastic Texte*, and other early methods of text generation (Funkhouser, 2007, pp. 31-84). Machine writing, then, becomes one of many methods for producing digital poetry.⁶ Other forms of machine writing, such as prose novels or Twitterbots, understandably fall outside of digital poetry's spectrum. Machine writing and digital poetry relate, and

⁶ For an extensive history on the development of digital poetry, see Christopher Funkhouser's *Prehistoric Digital Poetry: An Archaeology of Forms 1959-1995* (2007).

scholarship into one may inform the other, but they are by no means synonymous. Regrettably, some trajectories and movements within machine writing are given far less attention in this thesis. I stress that my intention with this chapter is not to establish a definitive and exhaustive history of all machine writing, but instead to provide a historical context for the movements and texts I discuss throughout subsequent chapters. Additionally, due to my focus exclusively on literary works produced by machines, I avoid other forms of generative art, such as the AI-generated painting, *Portrait of Edmond Belamy* that received mainstream attention (Christie's, 2018). As such, this thesis cannot hope to cover the entire gamut of possibilities for how AIs may create art in the future.

As mentioned in relation to Roque, some of the previously disparate traditions of machine writing are beginning to converge. *oulipo.social* (mus and RJLD20, 2019), a social network that prohibits users from posting with the letter 'E', is made up of posters that range from artists to computational linguists. Similarly, the NaNoGenMo (Kazemi and hugovk, 2019) and NaNoLiPo (Seyffarth, 2018) contests⁷ see contributions from creative writers, computer scientists, and beyond. The intermingling of disciplines suggests that a tradition of machine writing in its own right is beginning to form. This flashpoint is where this thesis is situated, looking forward into the AI literature frontier. But first, it is important to see where we've come from.

Rather than focus on method or discipline (although these elements will be discussed), this chapter breaks machine writing down into three technological thresholds: analog, digital and networked. These definitions are far from perfect. As will be demonstrated, some practitioners do not fit neatly into one category, and the birth of a new form does not necessitate the death of another. The reason these categories are chosen is they allow for the history – as best as possible – to be displayed in a linear fashion, while also highlighting the points at which these different forms have influenced and overlapped with one another. When the subject involves the shift between analog and digital, a muddy history is actually more fitting. As stated by David Jhave Jonhston, the movement of materiality between the analog and digital is far more ambiguous than often portrayed, with the two interweaving with one another as analog and digital modes intermingle at their boundaries (Jonhston,

⁷ There are no real winners/losers of these contests, so perhaps they are better called events.

2016, p. 39). The fact digital machine writing featured a handful of important and experimental works before the analog machine writing of OuLiPo began, for instance, is an important point to highlight. I hope, then, that the overlapping of developments between thresholds enlightens, rather than confuses.

Analog machine writing is used here to refer to machine writing that is carried out by a human controller. That is, no actual digital computer is utilised. The machinic processes are enacted by a human author, such as the constrained writing of OuLiPo. Other qualifying examples would include the use of analog instruments, such as Ernest Vincent Wright tying down the letter 'E' on his typewriter when writing the lipogrammic *Gadsby* (Wright, 2014, p. 1) or Burroughs re-arranging print text in his creation of the *Nova Trilogy*. The form does not exclude machine writing that is typed up/written *on* a computer, it only insists that the computational technique is controlled, overall, by a human. This distinction is based on the assertion that there is no meaningful difference in agency between an individual avoiding the letter 'E' by pen or by keyboard.

By contrast, digital machine writing sees elements of composition handed over to the machine itself. This shift is significant, as it suggests a change in the very structure of machine writing. While analog machine writing rules/constraints may exist purely in the writer's mind, digital machine writing results in a two-pronged textual production: the writing of the code, and the output that results in the final machine-written text. The structure is exemplified in Nick Montfort's book-length poem *The Truelist* (2018b). Montfort's code is a single page of Python 2 script (Montfort 2018b, p. 141), which produces the book itself. Montfort states one could think of *The Truelist* as a "compressed poem" (Montfort 2018c), referring to the single, human authored page that generates the rest of the book. The consequences of this shift to digital methods is twofold: the size of texts that can be produced increases, and the human author's agency is moved a step away from the final product. While analog machine writing provides a philosophical starting point for investigations into AI literature, digital machine writing gives us the first real taste of texts that shift into an inhuman space, such as Darby Larson's unfathomable *Irritant* (2013). Larson's work is indicative of many digital machine writing projects, barraging the reading with a winding, oppressive form that defies traditional literature.

Networked machine writing is perhaps the fuzziest of terms, as it refers to machine writing that is produced using the advantage of online networks. Networked machine writing, for the most part, utilises similar methods to digital machine writing, but introduces the use of online tools in the creative process. Broadly, my investigations are interested in networked machine writing that falls into two categories: the use of online corpora, or the integration of online distribution (such as Tweets) to the text's aesthetic. In short, these are works that, like C.T. Funkhouser's definition of net-poetry (2012, p. 179), could not exist without the network. Just as the shift from analog to digital caused a material step away in authorship for the human writer, networked machine writing introduces further complications. Authorial agents become stretched across multiple sources, such as in the case of Li Zilles' *The Seeker* (2014a), which uses text scraped from the WikiHow website. While networked machine writing may be published in traditional formats as static texts, the form also introduces the possibility for ongoing literary forms, such as Ranjit Bhatnagar's *@pentametron* bot, that collects tweets based on their adherence to iambic pentameter (Bhatnagar, 2012-). The output of *@pentametron* has resulted in several curated novels, most recently *Encomials: Sonnets from Pentametron* (Bhatnagar, 2018a). However, the primary mode of delivery for *@pentametron* is through posting to its Twitter timeline, creating a rolling, evolving stream of poetry. Sans any server maintenance, the bot continues to publish poetry without Bhatnagar's intervention. The automatic nature of *@pentametron* and similar machine writing bots signals a defining characteristic of networked machine writing, and sheds light on what may lie beyond the AI literature frontier.

Instantly, we can see how these definitions are imperfect from the perspective of creative practice. Jeff Noon, for instance, uses online tools to rearrange text, which he then reflects on and re-writes himself (Noon, 2011). Does Noon fall into the digital machine writing category, or the analog? Flarf poetry includes the technique of collecting Google search queries and arranging them into poetry through analog methods (Lamb et al, 2017, p. 167). This Flarf technique seems decidedly analog, but simply could not occur without the use of the Internet. The imperfection of this taxonomy highlights the complexity of machine writing, and the way methodologies entwine with one another. Moments of overlap, however, give rise to new questions to be explored. By exploring machine writing through the lens of these

thresholds, this chapter will reveal how trajectories heavily influenced by OuLiPo and Burroughs have evolved when faced with new critical and technological contexts.

Analog machine writing: The diverging paths of OuLiPo and Burroughs

As has been stated, it cannot be said with certainty when or where machine writing first began. In some sense, all writing and reading is formulaic on the micro level of grammar, and the macro level of literary templates, such as Vladimir Propp's Folklore Formula which formalises the structure of Russian Folktales into an algorithm (Propp, 1968/1928), or Joseph Campbell's Monomyth, which attempts a similar process for mythology (Campbell, 2008). These forms, however, still privilege the human writer over the systems they utilise, acting as scaffolding for the writer to build upon, rather than authoritative forces in and of themselves.

One can see the beginnings of the trajectories I wish to chart in the uses of the *I Ching*. The origins of this text pre-date the Han dynasty (Pilard, 2010). The *I Ching* was used as a fortune-telling tool, where its users would calculate numbers (such as by flipping coins or counting shoots of bamboo around them) that would then be translated into hexagrams from which meaning would be drawn (Wilhelm, 1978, pp. xlvii-liv). The *I Ching* would become extremely influential, with Taoism and Confucianism both drawing on its teachings (Jung, 1978, p. xxvi). While not designed for creating art explicitly, the *I Ching* was used in the 1950s by machine writer Jackson Mac Low, inspiring a radical shift in how he composed his works (Mac Low, 1986, p. xv). Mac Low, who worked in both analog and digital (Funkhouser, 2007, pp. 43-45), viewed his use of the *I Ching* and other machinic methods as a way of manipulating one's ego, and synthesising with the systems of chance around him. The process allows one to "realize there *is* something more than just yourself" behind their poetry (Mac Low, 1986, p. viii).⁸ Mac Low's self-reflective approach to employing chance operations in creative practice situates the philosophies that underpin the *I Ching* as an adequate starting point for machine writing. Whether composing literature or attempting to divine one's fortune, the use

⁸ Similarly, Philip K. Dick employed the use of the *I Ching* in writing *The Man In The High Castle* (Mountfort, 2016).

of the *I Ching* sees the user give over their agency to chance operation. The human yields, ever so slightly, to the “system” that the *I Ching* offers. Creativity is redefined as being the domain of both author and the machinations around them.

The notion of creativity existing outside the confines of the human was a central theme to Baroque writer Georg Philipp Harsdörffer. Harsdörffer attempted to explore the systems that governed the universe through overtly machinic literary ‘games’, such as using anagrams to stimulate creative practice (Schäfer, 2006, pp. 8-11). Harsdörffer attempted to uncover the “hidden” organisational principals of language, creating an artificial language in the process (Schäfer 2006, p. 10). The use of machinic practice by Harsdörffer was a method of stepping outside the boundaries of constructed language and form, and into a more ‘real’, machinic reality.

In the wake of the Enlightenment, machine writing methods appear to fall out of fashion. Creativity and spontaneity came to supersede structural experimentation (Schäfer, 2006, p. 14). Some scholars cite the scientific revolution as responsible for rupturing the harmony between humanity and nature (Pilz, 2005, pp. xv-xvi). One could see how the scientific revolution may steer writers away from engaging with the earthly systems around them, as at least some of the ambiguity of the universe was gone. However, there is certainly evidence of writers pushing against such certainties and finding poetics in the logics of language. Lewis Carroll’s work in the second half of the 19th century includes the invention of the portmanteau – a word that combines the meaning of two or more others, and with it the linguistic structure, such as “burble” combining “bleat”, “murmur” and “warble” (Skinner, 1947, p.16). Carroll would further experiment with syllogisms, a sort of logic game of classification, in 1886’s *The Game of Logic* (Carroll, 2011, loc. 292). Carroll’s syllogisms would influence David Antin, and have been noted by Charles O. Hartman as a sort of writing within machinic logic (Hartman, 1996, p. 25). Carroll’s experimentation is unsurprising, given his double life as both writer and mathematician (Skinner, 1947, p. 9). It is likely that the perceived disappearance of machine writing from literary practice is more indicative of its shift into a subtler form, lurking, if Carroll is any indication, in areas such as children’s literature and fringe mathematics.

Eventually, however, analog machine writing would return to favour. The Dadaist and Surrealist movements engaged with a sort of machine writing, generally by anarchically linking words and symbols via aleatoric procedures (Symes, 1999, pp. 90-91). Perhaps the Uncertainty Principle in the 1920s, which refuted the absolute nature of Newtonian Physics (Pilz, 2005, p. xvi), influenced the returning interest towards the systems of the universe as a source from which creativity could flow. From here, two post-surrealist trajectories of machine writing emerged, both interested in the yielding of self to machinic practice, and the freedoms that doing so promised: the cut-up method and OuLiPo.

The cut-up method has its origins in Dadaism and related movements (Robinson, 2011, p. 5), but it was formalised as a method for narrative creation by Beat Generation notables Brion Gysin and William S. Burroughs. Gysin, who had been ejected from the Surrealists in 1932 (Robinson, 2011, p. 23), would “invent” the cut-up method in the late 1950s/early 1960s, accidentally cutting newspapers together while working on another montage project. Finding the results humorous, the assemblage would be published as *Minutes to Go* in 1960 (Robinson, 2011, p. 24). Although Gysin’s tale of accidental composition recalls the chaos of the Surrealists, the cut-up method itself would soon be repurposed as a deliberate, calculated act in the hands of Burroughs.

Burroughs’ use of machine writing would mark a departure from the humbling practices it had previously been associated with. While Carroll simply delighted in absurdity, and the Surrealists allowed themselves to be harnessed by anarchy, Burroughs was far more adversarial. Burroughs believed the world was threatened by systems of control that ranged from copyright to language itself (Robinson, 2011, pp. 26-27). Through the cut-up method, Burroughs believed he could repurpose or reconstruct these systems, rather than submit to them. Burroughs often described language as a virus, and believed that by reducing his role as author through cut-up, he could sabotage the “mechanisms of control” that had been used to manipulate society (Robinson, 2011, p. 38). His experiments would first appear in 1959’s *The Naked Lunch*, and became the centrepiece of his frenetic *Nova Trilogy* of novels, beginning with 1961’s *The Soft Machine*. Burroughs and Gysin would cut-up and reassemble a litany of works, including their own, as well as sources such as Shakespeare or The Bible

(Robinson, 2011, p. 26).⁹ Burroughs positions himself as a machinic compiler of words, working to strip authorship away from others (Robinson, 2011, p. 28). Through the cut-up method, the stripping of authorial agency takes a more sinister and weaponised turn.

Kathy Acker, who would adopt the cut-up method in 1973's *The Childlike Life of The Black Tarantula* (Acker, 1998), echoed Burroughs' sentiments. Acker utilised the cut-up method as a way of avoiding what she perceived as a male, "centralized meaning" (McCaffery and Acker, 1991, p. 90). Through the cut-up method, Acker could avoid instilling a single voice or single meaning into her text. Burroughs' and Acker's mission statements signal a particular trajectory for machine writing that has continued past the digital and networked thresholds and into contemporary contexts. Through cut-up, machine writing shifts from experimentation and play into rebellion against systems of control. As will be discussed in the second half of this thesis, the cut-up method has manifested in contemporary forms of machine writing as a method of protest and rebellion.

While machine writing was becoming a political tool in a post-WWII United States, its European evolutions around the same time would be much more concerned with experimentation and play. In France, a collective of writers and mathematicians would form under the banner of "OuLiPo". The group began in 1960, with the intention to "explore" literature as one would mathematics (Lescure, 1986, pp. 34-35). The group dubbed the subject of their exploration "potential literature". In the group's first manifesto, François Le Lionnais suggested that all literature falls into particular constraints, ranging from vocabulary and grammar to chapters. OuLiPo saw themselves as explorers of constraints, working to uncover new literary forms through systemic and scientific enquiry (Le Lionnais, 1986a, pp. 26-27). OuLiPo's mission statement was relatively serious, with Le Lionnais going as far as to say that the group's duty was to push literature forward through the uncovering of these constraints (Le Lionnais, 1986b, p. 31). Immediately, we can see a difference with the machine writing of the US: while Burroughs focused on machine writing as a tool for chaotic destruction, OuLiPo were more concerned with a methodical creation.

Although Burroughs championed resistance and OuLiPo suggested embracement, both groups viewed their machine writing methods – much like Lovelace's alignment of maths

⁹ The philosophies of Burroughs' cut-up methods are discussed in more detail in Chapters 4 and 6.

and imagination – as tools for exposing that which was already there. Raymond Queneau insisted that the adherence to rules practiced by OuLiPo offered greater avenues of freedom, as a writer who follows rules is freer than one who writes whatever comes into their head, as they are “the slave of other rules” that they do not acknowledge (Motte 1986a, p. 18). Burroughs and Gysin, similarly, were focused on using machine writing to reveal the true nature of the world around them, bringing the reader closer to an authentic understanding of the systems of control (Robinson, 2011, p. 9). This commonality is the thread that complicates these two trajectories. As such, it would be foolish to view the machine writing that followed these trajectories as *either* Oulipian or cut-up. Instead, the texts within this thesis can be understood along a spectrum of influence, on which both the playful Oulipians and the anarchic cut-up writers sit.

Just as Burroughs’ work was not limited to influencing future machine writers (Wood, 1996), OuLiPo’s influence would also stretch into other literary forms. Queneau’s *Cent Mille Milliards de poems (One hundred thousand billion poems)*, is seen by OuLiPo scholars as the “seminal Oulipian text” (Motte, 1986b, p. 2). The text contains ten, fourteen-line-sonnets, with the paper of the text cut into strips at each line, allowing the reader to flip through the book and construct additional poems. The amount of combinations is 10^{14} , or one hundred trillion sonnets. If one was to read one sonnet per minute, eight hours a day, two hundred days per year, it would take more than a million centuries to finish the text (Motte, 1986b, p. 3). The text is, by its very nature, unreadable in its entirety. As such, Queneau’s work signals at the unfathomably large texts explored in Chapter 4. This influence aside, the reader’s agency in the materiality of the text seems to suggest a closer relationship to interactive fiction than to machine writing. Oulipian constraints that most readily signal the group’s relationship with machine writing include *S+7*, *Mathews’ Algorithm* and the lipogram.

OuLiPo’s *S+7* method is indicative of the group’s algorithmic bend. Utilised by Jean Lescure, *S+7* involves replacing each substantive in a text with the seventh substantive following it in the dictionary (Motte, 1986a, p. 201). This method is easily programmable: all one needs is a text to transform, a dictionary and a small script to carry out the word-mapping. Carried out in an analog method, then, the machine writer is merely a conductor, methodically switching the words of one text with that of another until a new text is produced. The process removes the writer from a creative position almost completely,

shifting them into a role of automation. Despite being (originally) a non-digital method, we can already see a significant reduction in the human agency of machine writing through *S+7*.

Mathews' Algorithm, conceived by Harry Mathews, signals a similar degree of authorial reduction, albeit in a far more complex system. *Mathews' Algorithm*, in short, involves taking four or so sets – an arrangement of letters, or lines from a poem – and breaking them into a uniform number of “elements”, such as individual letters, words, or syllables. These elements go through a number of shifts – horizontally and vertically – until a new text emerges from the recombination (Mathews, 1986, pp. 128-130). Once again, we see the machine writer become more of an organiser than a writer, their agency is lost in a sea of (relatively) complex language-shuffling, that moves with no regard for meaning or intention. However, the method would have impact beyond machine writing as a purely creative practice, influencing computational criticism. Mathews himself stated the method was useful for understanding texts, claiming that an application to Shakespeare could reveal the “structure and movement of the Shakespearian sonnet” (Mathews, 1986, p. 133). This statement has proven controversial, with the place of Oulipian method in literary analysis a point of debate in the digital humanities (Sinclair, 2003; Wolff, 2007). The analytical potential of *Mathews' Algorithm* marks a starting point for understanding how machines may understand texts, reading them via an extreme type of formalism focused on units of text, rather than meaning. As Chapter 2 will show, this notion is crucial to understanding the poetics of machine writing and, potentially, AI literature.

Although less obviously algorithmic, perhaps the most influential of Oulipian techniques on machine writing's future is the lipogram. The lipogram is a simple enough exercise in theory, referring to the dropping of a letter from the useable alphabet (Perec, 1986, p. 98). The form was made famous by Oulipian Georges Perec in 1969's *La Dispartion*, translated into English as *A Void* by Gilbert Adair in 1994 (Perec, 2008/1969). Neither Perec's original, nor Adair's translation, includes the letter E. However, the lipogram boasts a long history (Perec, 1986, pp. 97-108). In American literature, Ernest Vincent Wright's *Gadsby* was published in 1939, and also avoided the letter 'E' (Wright, 2014). *A Void* has had extensive influence on analog machine writing, inspiring Christian Bök's *Eunoia* in 2001 in which each chapter is afforded only one vowel (Bök, 2009). Additionally, the form has seen more mainstream acceptance, weaving its way into common creative writing strategies (Smith,

2005, pp. 174-175). Online groups that follow Perec's example include the Reddit forum /r/Avoid5 (Reddit, 2019) and the Mastodon instance oulipo.social (mus and RJLD20, 2019). The latter's choice of name demonstrates the influence Perec's work has had in English-speaking machine writing circles. The lipogram has become synonymous with OuLiPo itself.

Both Burroughs and OuLiPo's forms of machine writing establish a central ethos to machine writing practice, which is allowing the process to take centre stage. As noted by Robinson (2011, p. 41), Burroughs deviated from many other writers in how transparent he was as to his methods. The *Nova Trilogy* itself includes instances of characters using the cut-up method, such as in *The Soft Machine* (Burroughs, 2014/1961, p. 91). OuLiPo was no different – Oulipian Jacques Roubaud suggested that texts written per a constraint must refer to the constraint (Motte, 1986b, p. 12). *A Void* exemplifies this, the plot of the novel initially focuses on Anton Vowl, who seems to be the only one who has noticed the disappearance of the letter E (Perec, 2008/1969). These metafictional qualities, also present in Samuel Beckett's machinic *The Lost Ones* (1971), align Burroughs and OuLiPo heavily with later digital and networked machine writing forms. As mentioned in the introduction, N. Katherine Hayles coined the term "technotext" (Hayles, 2002, pp. 25-28) to refer to literary works that reflect the technological procedures that created them. Through their metafictional practice, OuLiPo and Burroughs ascribe agency to their techniques diageetically, giving their mechanised practices a sort of personification and with it, agency.

The machine writing processes of Burroughs and OuLiPo are given further embodiment via their paratextual role, sometimes being privileged over the resulting texts themselves. Burroughs saw his novels as mere demonstrations of his cut-up technique, which he wanted others to adopt and utilise in their own rebellions against a corrupt system (Nelson, 2012). Burroughs would proclaim that "cut-ups are for everyone" (Robinson, 2011, p. 41), aligning him with the open-source ethos that drives networked machine writing groups such as NaNoGenMo. OuLiPo would show a similar view, foreshadowed in their name's mention of "potential literature". Oulipian work is offered to the reader as a game of sorts, with a wealth of literature waiting for the reader to – potentially – discover (Motte, 1986a, pp. 20-21). The philosophy driving OuLiPo is less concerned with the texts their constraints may produce, and more so with the creation or discovery of constraints themselves (Lescure, 1986, p. 38). Like Burroughs, OuLiPo has endeavoured to spread these constraints to others,

realised most fully by the group's current incarnation, who publish their constraints online (OuLiPo, 2019).¹⁰ As a consequence of the group's openness, the constraints of OuLiPo also become "texts" in and of themselves. Much like Montfort's *The Truelist* (2018b) containing its own source code as mentioned earlier, Oulipian constraints are rendered para-textual, comprised of both their outputs and the published constraint.

While analog machine writing's origins will likely always remain a mystery, Burroughs and OuLiPo represent important flashpoints in the form's development. As similar as they are different, these post-WWII writers lay the foundation for the digital and networked machine writers that would emerge, and that I explore in this thesis. By no means do they represent the end of analog machine writing, nor do they represent the only experimentation of their time. However, through them we can see how machine writing began its evolution from offshoots of ritual (*I Ching*) and mathematics (Carroll) and into its own literary form. A form that would, at roughly the same time, begin to develop in digital spaces.

Digital machine writing: Early digital and the online migration

Like analog machine writing, digital machine writing would rise to prominence in a post-WWII climate. Digital computing emerged in the late 1940s (Bullyncck, 2015, p. 44), giving us a reasonable marker for when digital machine writing could appear. The first evidence of digital machine writing predates the flashpoints of Burroughs and OuLiPo mentioned earlier. These examples are primarily experimental, focused on computer science and literary play. Even still, the early years of digital machine writing showcase the beginning of anxiety towards computers as usurpers of creativity, and of the human-like expectations critics have of them. Unlike the purely philosophical machinic entity of analog machine writing, the digital computer introduced a tangible entity that separated the writer from the final result. This added layer of materiality is perhaps what made the shift into the digital space so harrowing for those who feared the displacement of human creativity. Whereas Burroughs and OuLiPo

¹⁰ To explore OuLiPo's constraints, see oulipo.net.

could be dismissed as simply experimental writers, the digital gave material form to the force that stripped the human writer of their agency.

It can safely be said that digital machine writing began in the early 1950s. In 1952, programmer Christopher Strachey wanted to demonstrate how computers could use simple rules to generate diverse and unexpected results. He created the *Love Letter Generator*, a program that – unsurprisingly – generated love letters (Sample, 2013). The program produced love letters using a rudimentary boiler-plate method, based on two template sentences:

- My <adjective> <noun> <adverb> <verb> your <adjective> <noun>
- You are my <adjective> <noun>

The nouns, adjectives and adverbs were randomly selected from a list of words taken by Strachey from a Roget's Thesaurus. To complicate things, adverbs and adjectives would randomly drop out of the sentence, and the computer would alternate between the two sentences randomly, signing off the love letters as "M.U.C" (Manchester University Computer). Results included:

DARLING SWEETHEART

YOU ARE MY AVID FELLOW FEELING. MY AFFECTION CURIOUSLY CLINGS TO
YOUR PASSIONATE WISH. MY LIKING YEARNs FOR YOUR HEART. YOU ARE MY
WISTFUL SYMPATHY: MY TENDER LIKING.

YOURS BEAUTIFULLY

M. U. C.

(Sample, 2013)

What is immediately interesting about Strachey's experiment is that it was developed on the Ferranti Mark I Computer, the first commercially available general-purpose computer (Sample, 2013). Even in such early days of computing, a literary tradition was beginning to form. Moreover, Strachey's boilerplate method would influence William Chamberlain, Thomas Etter and Joan Hall's *The Policeman's Beard Is Half Constructed* (1984), as well as the works of Darby Larson and many examples of networked machine writing.

Through Strachey, we also see the personification and mystique of the “writer” as an element of machine writing. In choosing to have the love letters signed off as the more human and ambiguous “M. U. C.” rather than “Manchester University Computer”, Strachey personifies the machine. This personification is a step beyond the work of the analog machine writers – while Burroughs and OuLiPo may have shifted agency to the systems, Strachey also shifted authorship. The transference of authorship from human code-writer to machinic code-executor is echoed in later machine writing attempts, including Chamberlain and Etter’s insistence that the program “Racter” wrote *The Policeman’s Beard* (Chamberlain et al, 1984, p. 1). Contemporary machine writers would follow suit, with Zilles dubbing the program responsible for *The Seeker* as “an algorithm, an agent, a protagonist, a narrator” (Zilles, 2014c). Bhatnagar has dubbed his Twitterbot @pentametron the author of several works (Bhatnagar, 2018c). Where the analog machine writers gave their constraints and methods an ethereal form, the digital machine writers gave their machines physicality and names. The personification provides an important marker in the gradual shift from human author to the potential AI authors that lie beyond the AI literature frontier.

The importance of Strachey’s work has been noted by digital media theorist Noah Wardrip-Fruin (2005), who has suggested Strachey may be the first digital artist. Other scholars start their history of digital poetry elsewhere, such as with Theo Lutz’ 1959 project, *Stochastic Texte* (Funkhouser, 2007, p. 37). Lutz generated his poems using a Zuse Z22 computer, feeding it a database of sixteen ‘subjects’ and sixteen ‘titles’ from Franz Kafka’s *The Castle*, which then randomly generated sequences of numbers that dictated the output (Funkhouser, 2007, p. 37).¹¹ Although still early days, digital machine writing begins to formalise through *Stochastic Texte*.

Both Strachey and Lutz’s systems indicate the direction a great deal of machine writing has taken. While analog machine writers may shift and change course at will, computer programming is far more rigid. As a result, digital machine writing risks being far too predictable and fatalistic. *Love Letter Generator* and *Stochastic Texte* both offer a solution to the problem: randomness. The outputted texts of both work within a prefabricated

¹¹ For a demonstration of Lutz’s work, see Nick Montfort’s (2014a) recreation at http://nickm.com/memslam/stochastic_texts.html.

probability space, but by shuffling these statements they introduce the threat of unpredictable results. In the case of Lutz, the determined, linear text of *The Castle* becomes a wilderness from which new combinations may emerge. As Chapters 3 to 6 will show, the promise of unpredictability has contributed to a range of machine writing elements, ranging from poetics through to consequences for authorship and ethical concerns. However, the ‘pure’ randomness of Strachey and Lutz is not without its critics. The computational creativity discipline would come to refer to works reminiscent of Lutz in a relatively derogatory manner, dubbing works that focused primarily on randomness as “mere generation” (Ventura, 2016). Such an example shows how contemporary debates and lines of division within machine writing can be traced to the form’s infancy.

The 1960s saw the development of digital machine writing increase and, with it, debate over what value the form could possibly have. In 1960, Brion Gysin would emerge as a figure of digital machine writing, working with Ian Somerville to create the poem *I Am That I Am*. The poem was comprised of the title’s five words, which would be re-arranged until all possible arrangements were exhausted. Gysin saw these poems as causing an “expanding ripple of meanings”, demonstrating the duty of the poet to liberate words, rather than shackle them to defined phrases. Gysin stated that poets were not meant to possess the words they use, nor to really think about them, but instead to simply “sing and make words sing” (Funkhouser, 2007, pp. 38-39). Gysin’s position, which is not unlike that which he articulated with Burroughs and the cut-up method, establishes precedent for analysing machine writing on its own, computational merits. Gysin’s comment suggests a re-evaluation of literature not as the inner-most feelings of the writer, but instead as a system of language, forming patterns as it ripples outwards. Further, authorial power and agency is removed from the writer completely in Gysin’s example. Gysin has positioned both writer and program as conduits for language: processors, not creators.

The value Gysin found in digital machine writing would not be shared by all. In 1967, John Morris would suggest that the usefulness of machines in the construction of poetry would only be as a highly-controlled editor of sorts, while the randomness many were keen to insert into their works being the antithesis of poetic form, due to its lack of resemblance to human thought (Funkhouser, 2012, pp. 260-261). Many would share Morris’ thoughts, including *Time* magazine’s reviews of poems by the *Auto-Beatnik* program in 1962, where the

poems were analysed for their resemblance to human poetry (Funkhouser, 2007, p. 42). These opposing views strike at the very core of machine writing, and consequently inform how we will think about AI literature in the future, whether it should be evaluated by human standards or, as this thesis argues, by its own.

While this chapter's history is focused primarily on literary developments, networked machine writing's focus on bots owes a great debt to Joseph Weizenbaum's 1964 chatbot, *ELIZA*. The program was modelled on the non-directional therapy technique of relaying information back to an interviewee (Weizenbaum, 1984, p. 3). *ELIZA* achieved its goal by recycling the phrases and words inputted into it, foreshadowing online bots, such as Jason Grinblat's hashtag-crossed lovers, *@in_a_dust_cloud* (2016-2018a) and *@orbiting_a_star* (2016-2018b).¹² Weizenbaum was critical of his own creation, and adverse to the idea of it being taken seriously as a psychological tool, as machines are incapable of ethical judgement (Hayles, 2006, p. 155). Although not designed for a literary purpose, Weizenbaum's reaction to the reception of *ELIZA* parallels responses towards machine-written texts. Weizenbaum's secretary, fully aware of *ELIZA*'s nature, asked to speak with the machine in private (Hayles, 2006, p. 155). Surely, the assistant's request doesn't indicate *ELIZA*'s value as a would-be usurper of psychologists as Weizenbaum feared, but instead as a different method of expression and therapy. Weizenbaum's secretary mirrors users of the *I Ching*, who knowingly enter a dialogue with an unthinking entity. Rather than expecting a substitute for the outcomes a human would give them, they instead revel in the inhumanity of the procedure. Discussing one's problems through a mechanical method that would not judge – like *ELIZA* – would certainly have its benefits. By a similar token, then, reading a text that one knows to be the result of algorithms can provide its own themes and poetics. *ELIZA* does not need to be seen as an imitation of human psychology, and the AI literature of the future does not need to be seen as an imitation of human texts.

While Weizenbaum's fears may not have come to light in the wake of *ELIZA*, they certainly seemed to shake-off doubts among the mainstream as to the ability for computers to enter into human crafts, at least a little. A 1980 issue of *ComputerWorld* contains an article

¹² The two bots, who also go by the names "Hero" and "Leander", tweet out hashtags randomly, in the hopes of one day tweeting the same one and finding each other.

about the book *Bagabone, Hem 'I Die Now*, a novel that the publisher, Vantage Press, insisted was written by a computer (Schultz, 1980, p. 23). The article seeks to disprove the claim, enlisting linguistic and AI experts to expose the publisher's lie. The very fact the subject was up for debate surely tells us something of the shift towards such a creation being considered possible.

1980 would also see division with members of OuLiPo regarding digital computers and literature. On one hand, Oulipians Paul Braffort and Jacques Roubaud established A.L.A.M.O, a “workshop of mathematics and computer-assisted literature” (Funkhouser, 2007, p. 77). Much like OuLiPo, the group was experimental, focused on exploring the potential of digital literature (Funkhouser, 2007, p. 77). However, not all Oulipians agreed: Perec, who was notably averse to digital computers completely, was sceptical of his colleagues' work (Bellos, 2012, p. 39). While I do not wish to overstate this disagreement, the divide between A.L.A.M.O and Perec represents the 1980s' concern over introducing digital methods to artistic practice.

The water would be muddied further in 1984, when writer William Chamberlain, programmer Thomas Etter and artist Joan Hall released the novel *The Policeman's Beard Is Half Constructed*. The novel featured prose, poetry and dialogues that Chamberlain claimed to have been produced by a computer program named *Racter*. The novel was more trustingly embraced than *Bagabone*, despite its output being rather sophisticated. *PC Magazine* (Nasta, 1984, p. 62) referred to *Racter* as a “thief of arts” and a “flawless grammarian”. In the same issue, James Langdell would trust Chamberlain as he claimed that *Racter* had begun writing “on its own” without input (Langdell and Chamberlain, 1984, p. 64). Naturally, such claims are impossible even by today's standards of computing. The commercial release of the *Racter* software (Chamberlain and Etter, 1984) prior to the novel was not much more developed than *ELIZA*, although with an emphasis on madness and fun, rather than psychoanalysis. It is far more likely, then, that the texts within *The Policeman's Beard* are closer to a game of madlibs, with surreal and bizarre templates written by Chamberlain filled in by the program.¹³ Shrouded in mystique, *The Policeman's Beard* ignites another question: at what point can a text be considered to be authored by a program? Although we can see boundaries of

¹³ The structure of *Racter* and *The Policeman's Beard* is discussed in Chapter 3.

authorship and agency slipping before this point, does *The Policeman's Beard* mark a switch over? The question is a challenging one to broach, but foreshadows discussions around one's agency and responsibility over bots in the age of networked machine writing.

In addition to its challenges to authorship, *The Policeman's Beard* also contributes to the overarching debate as to what standards machine writing should be held to. In his introduction to the book, Chamberlain makes his position clear, stating:

Prose is the formal communication of the writer's experience, real and fancied. But, crazy as this may sound, suppose we remove this criterion; suppose we somehow arrange for the production of prose that is in no way contingent upon human experience. What would that be like? Indeed, can we even conceive of such a thing? (Chamberlain et al, 1985, p. 1)

Here, Chamberlain calls for an exploration of machine poetics. If *The Policeman's Beard* is to be marked as the first novel written by a computer, then it does so firmly with the intention of being seen for its own merits. Along with its self-separation from the "human" literary tradition, *The Policeman's Beard's* hazy details influenced future digital machine writers that obfuscate their methods of production. Further, *Racter's* existence as both a chatbot and a novel introduces another para-textual or multimodal aspect to digital machine writing. Whereas previous examples of machine writing existed in two forms: the code and the output, *Racter* introduced another reader-facing component. The *Racter* "texts" challenge the notion that machine-born literature must conform to human formats. Although multimodal texts are not a rare occurrence in contemporary media, the influence of Chamberlain is still strongly felt in networked machine writing. In addition to the example of Bhatnagar given earlier, Studio Puckey's *All the minutes*, which builds its text from other's tweets arranged by timestamp, exists as a novel, a rolling website, and a Twitter bot (Studio Puckey, 2014, 2014-a, 2014-b).¹⁴ *Racter's* reverberation into future machine writing shows

¹⁴ The novel of *All the minutes* is no longer available publicly.

the precedent for analysing machine writing as something decidedly different to “human” literature.

Forms of digital machine writing would persist into the 21st century. Just as the proliferation of the digital computer did not see all of OuLiPo begin engaging with programming, the shift of the Internet into everyday life did not mean an abandonment of more self-contained forms of machine writing. Perhaps most prominent in recent years is Darby Larson, author of *Irritant* (2013). The novel consists of a small set of phrases, with a boiler-plate method used to slowly replace these words as the novel continues on, resulting in sentences such as “The other laughed and the clay laughed smoothly. Cannot forget the worm who drank all day and exited” (Larson, 2013, loc. 77-78). For the reader, the effect is a slow, grinding evolution of a text that resists traditional readings.¹⁵ The modest press the novel received further demonstrates the futility of analysing such machine-written texts as similar to human authored works. Andrew Ervin’s review suggests the novel disregards plot, and instead could be better seen as an experience of texture or geography rather than narrative (Ervin, 2013). While at first Ervin’s comments seem to suggest an unwieldiness to the text, Larson himself has a more demystifying approach, casually comparing his methods to copying and pasting, or other simple forms of text manipulation (Butler and Larson, 2013). The discourse around *Irritant*, and indeed the novel itself, is indicative of machine writing maturing as a form. Having been the by-product of experimentation and a small subgenre of digital art, the use of computational methods to explicitly generate literature is beginning to come into its own. The maturity of machine writing into its own discipline, complete with communities, forms and techniques, is made even more evident as it crosses the networking threshold.

Networked machine writing: The shape of machine writing post-Web 2.0

Although this thesis focuses on networked machine writing post-Web 2.0, it would be erroneous to mark the proliferation of social media as the form’s beginning. As Funkhouser accounts, the migration of digital poetry writers to online spaces was swift. Early online digital

¹⁵ Larson’s work will be analysed in more detail in Chapter 4.

poets utilised pre-WWW networking as a technological platform to distribute their work (Funkhouser, 2007, pp. 207-214). We can see here the birth of creative Internet communities, that would span out into other storytelling or artistic modes, such as MUDs¹⁶ (Aarseth, 1997, pp. 142-161) and Nomic (Suber, 2003). The playful and creative nature of many of these communities is replicated in machine writing-related communities today, ranging from the loose collective #botALLY (2019), to NaNoGenMo (Kazemi and hugovk, 2019), NaNoLiPo (Seyffarth, 2018) and oulipo.social (mus and RJLD20, 2019). Where this comparison becomes interesting is in how they are organised. While earlier Internet groups were less centralised, the discourse of Web 2.0 is, for the most part, far more centralised around large corporations and their entities (Rettberg, 2015), such as Twitter, Facebook or Google. By using these spaces as places for language play and art, the networked machine writers of today become forces of subversion. The nature of these subversions range from benign artistic practice reminiscent of Oulipo, to deliberate and weaponised resistance in the vein of Burroughs.

Earlier forms of networked machine writing existed in a far more anarchic, less standardised context than today. Early explorations of networked machine writing were hindered, like much online art, by the difficulty in transferring media (Funkhouser, 2012, p. 9). Given the increases in storage capacity and Internet speeds over the years, it is easy to see how – from a purely practical standpoint – the creation and distribution of art online would become easier. The lack of standardisation online, however, also allowed the web to be a space of experimentation. Scott Rettberg (2015, p.174) describes the Internet of the late 90s and early 00s as a “Wild West”, with no one sure as to what kind of content it could or should produce. This space of exploration, not yet dominated by social media giants, would give rise to a form of art intrinsically linked to the Internet: net.art.

While net.art is not specifically tethered to machine writing, it provides context for how the form relates to its networked environment. The term, which entered common usage in the mid-90s (Galloway, 2004, p. 212), refers to a form of artistic practice that is focused on utilising the Internet as part of its aesthetics (Galloway, 2004, pp. 215-216). Net.art resisted typical forms of artistic analysis, much like machine writing appears to. Its form was heavily linked to the Internet itself, such as art pieces composed entirely of hyperlinks (Galloway,

¹⁶ For a discussion of MUDs and their storytelling capacity, see Espen Aarseth’s foundational work *Cybertext: Perspectives on Ergodic Literature* (1997).

2004, p. 215). These net.art works may, at first, resemble works such as Queneau's *Cent Mille Millards de poems*. However, any meaningful analysis will have to eventually develop its own terminology or discourse to properly understand it. Funkhouser similarly cites the development of "net-poetry", referring to digital poems that do not just use the Internet for distribution, but depend on it for their creation (Funkhouser, 2012, p. 179). Unsurprisingly, such poetry pre-dates the rise of Internet companies such as Google (Funkhouser, 2012, p. 180). However, as user-friendly online tools like Google have risen in popularity, so has, it seems, the prevalence of networked machine writing.

The shift from the "wild west" of the Internet to a more structured space of social media platforms, sometimes referred to as "Web 2.0" (Keen, 2008, p. 59), has seen new opportunities for networked machine writing to form. Machine writers in these spaces not only takes advantage of the networked spaces they operate in, but often use their writing to comment on it. Networked machine writing manifests among, and concerns itself with, many of the fears and anxieties that surround Internet use in the 21st century. These concerns range from Allison Parrish's casual challenging of Twitter's intended form via the *@everyword* bot (2007-2014), to Benjamin Grosser's defiance of government surveillance (2018a). These examples are only two ways networked machine writers have utilised social media and other online platforms to comment on the experiences of online space.

This engagement with online spaces resulted in the development of literary forms native to the Internet. Perhaps the most prominent of these forms is social media bots. As stated in the introduction, machine writing bots are essentially small programs that trawl social media sites or other corpora and construct prose or poetry from them. The term is indeed fuzzy (Compton, 2017), but its personifying nature alludes to a further shifting of agency from author to algorithm than seen in analog or digital machine writing. A popular example is Bhatnagar's *@pentametron*, mentioned earlier. Upon launch, Bhatnagar described *@pentametron* as "an experiment in finding inadvertent art in the Internet's endless outpouring of language" (2012). While Bhatnagar's focus is irreverence, other botmakers have used the form to provide commentary on the Internet landscape itself. Parrish's *@everyword* bot ran from 2007-2014, and tweeted, in order, every word in the English language (Parrish, 2007-2014). Parrish has stated the bot was designed to challenge perceptions of what Twitter could be used for (Fernandez and Parrish, 2017). As this thesis will show, many other bots similarly comment on the environment they are part of. These

examples demonstrate how networked machine writing is both aesthetically and thematically linked to its online context.

Twitterbots and other “social bots” (Woolley et al, 2016) have come to resemble the experimental and playful attitudes of the OuLiPo group, albeit more socially minded. In another demonstration of how social structures have shifted, where OuLiPo featured definite membership, creators of Twitterbots congregate loosely around the self-claiming #botALLY hashtag, and a number of communities, such as botally.slack.com (2019) and botwiki.org (Bohacek, Bethoney and Belmont, 2018a). These groups share resources, offer advice, and gravitate around codes of conduct that prohibit the creation of aggressive or intrusive bots (Bohacek et al, 2018b; Gunderson, 2015). These groups carry a similar ethos to OuLiPo, invested in play rather than rebellion.¹⁷ Where OuLiPo used methodical practice to explore the potentials of literature, many botmakers use literary practice to explore the potential of bots and social media.

Some botmakers have expressed a need to be wary of what their bots may post, such as Darius Kazemi’s creation of a word-filter to prevent his bots inadvertently posting hateful content (Kazemi, 2017b). The consequences of foregoing vigilance were felt by Microsoft in 2016 when they unveiled the bot *Tay*, who based its tweets on text and images tweeted at it. Users soon began sending tweets that “taught” *Tay* misogynistic, homophobic and racist attitudes (Lui, 2016). The *Tay* incident brings to light an issue that is unique to networked machine writing: creators no longer have complete control over the output of their works. Bots do not produce static texts, and so are constantly in conversation with their environment and its changing contexts, especially when drawing on other social media posts to construct theirs.¹⁸ The *Tay* incident, and the steps taken by botmakers such as Kazemi to stop their bots meeting similar fates, is unique to networked machine writing. Where digital machine writing pushed agency away from the author and into their algorithm, networked machine writing has shifted it into more unpredictable spaces, transposing agency into the maelstrom of social media posts.

¹⁷ Another group worth mentioning is the gnoetry community, who work largely in machine writing poetry. For more information on the group, see <https://gnoetrydaily.wordpress.com/> (Gnoetry, 2019).

¹⁸ The full ramifications of this will be discussed in Chapter 6.

While the trajectory of OuLiPo may resinate in botmaking communities and other corners of networked machine writing, the rebellious attitude of Burroughs can also be found in networked machine writing. While more examples will be explored throughout this thesis, of great importance is Benjamin Grosser's *ScareMail* (2018a). Much like how Burroughs saw the cut-up method as a tool for resistance, Grosser's *ScareMail* functions to disrupt NSA Surveillance. In short, the tool attaches a paragraph to the end of the user's email that is generated using an automated form of the cut-up method. However, while Burroughs' cut-ups did not have any necessarily tangible effects, the cut-ups created by *ScareMail* include terms that Grosser believes the NSA's algorithms search emails for. The NSA searches for these terms to collect what it deems as indicative of terrorist attacks. In this way, Grosser has transformed the cut-up method into a form of sabotage, spamming the NSA's systems with gibberish emails, thus rendering the surveillance algorithms useless. Grosser, like Burroughs, projects a philosophy around the use of language as a mechanism of control. For Grosser, the ability to use whatever words one wants is a basic freedom, which is under threat by NSA surveillance. Grosser wishes to use *ScareMail* to prove that "words do not equal intent" (Grosser 2018a). For Grosser, machine writing practice is not a method of experimentation or play, but instead a tool of political action. Just as Burroughs encouraged all to use the cut-up method, Grosser encourages all to install his tool. *ScareMail* is indicative of networked machine writing that takes the same defiant approach to contemporary forces of control that Burroughs took towards the mass media control of postmodern culture.

#botALLY-related groups and Grosser's *ScareMail* provide contrast. Through these two broad examples, two trajectories machine writing has taken can be observed. While #botALLY and similar groups seem to draw from OuLiPo's more playful ethos, *ScareMail* resembles Burroughs' more subversive application of machine writing. Shifts in technology have enabled changes in how machine writing texts are produced and disseminated. These trajectories suggest that, even as the technologies of machine writing change, much of the philosophies that underpin their production stay the same. Perhaps, then, the same could be said of what lies beyond the AI literature frontier.

However, it would be unwise to suggest that changes in technology have not impacted the machine writing form at all. Most evident is the change in public discourse around machine writing, and willingness to accept the notion of machines composing literary works. In 2016, the aptly titled machine-written novel *The Day A Computer Writes A Novel* passed

the first round of Japan's Nikkei Hoshi Shinichi Literary Award (Olewitz, 2016), sparking an interest in popular media around AI-penned literature. In journalism, the use of the term AI to describe machine-written texts has grown, as well as the use of other science fiction tropes (Dzieza, 2014; Javelosa, 2016). Similarly, the texts produced by the Botnik community have been described as being written by AIs (Liao, 2017), despite in fact being written by humans. The main tool used by Botnik writers is "Voicebox", which is simply a browser-based form of predictive text, akin to that found on a smartphone. A user chooses a corpus of text, and Voicebox provides the user with a set of 18 words based on it. As the user selects words, the set changes to the next 18 most likely words.¹⁹ While certainly a form of machine writing reminiscent of OuLiPo, to claim the texts are produced by AIs is somewhat misleading. The semantics of these reports are not that interesting – falling back on science fiction tropes when attempting to explain these concepts is understandable. What is interesting is the contrast between these trusting reports and the more cautious approach taken by *ComputerWorld* towards *Bagabone*, *Hem 'I Die Now*. The shift in popular culture from meeting these claims with scepticism, to embracing them enthusiastically, is indicative of contemporary attitudes towards the capacities of AI. The machine writers of today operate in a climate where the notion of AI-penned literature is not only acceptable as a reality, but also one that the media looks forward to.

In addition to the normalisation of AI in mainstream conversation, machine writing as a literary form has begun to reach a sort of maturity. By maturity, I don't mean to make a claim about quality. Instead, I am referring to machine writing having matured beyond merely experimentation and fringe works into a prolific literary mode of its own. In addition to the examples of networked machine writing given thus far, we can see this maturing of the form in the NaNoGenMo challenge. The challenge began, somewhat poetically, with a tweet. In 2013, Kazemi asked his twitter followers to join him in spending the month of November writing a fifty-thousand-word novel and sharing both the code and the novel at the end (tinysubversions, 2013).²⁰ The challenge now runs yearly, with novels and source code shared predominantly through Github. 2014's edition included *The Seeker* by Internet artist Li Zilles under the moniker "thricedotted". *The Seeker* scours WikiHow articles and "dreams"

¹⁹ To try out Voicebox for yourself, see the Botnik website at <https://botnik.org/> (2019).

²⁰ In 2018, NaNoGenMo was accompanied by oulipo.social poster Esther Seyffarth's NaNoLiPo (2018), where a new OuLiPo-inspired constraint is rolled out each day.

definitions for certain words or phrases, outputting bizarre prose that is both visually and linguistically disorienting (Zilles, 2014a). *The Seeker* builds a database of terms that it associates with others, untethered from conscious meaning. As it trawls WikiHow articles, it builds definitions and then compiles text it doesn't understand to "unimagine" a word, creating a sort of false meaning. *The Seeker*, although in a novel format, is aesthetically and thematically linked to the online space.

Zilles work, like many other entries, demonstrates the capacity for machine writing as a tool for using the vast body of texts online as a sort of clay, moulding it into new and bizarre literary shapes. Other examples, like Parrish's *Our Arrival* (2015c), engages with corpora such as Project Gutenberg, an online library of public domain texts (Project Gutenberg, 2019). Both examples leverage the opportunities afforded by algorithms and online spaces. In doing so, these examples demonstrate how machine writing is being refined into its own literary form, complete with its own aesthetics and themes.

Machine writing continues to shift and change. Along with the continued experimentations of NaNoGenMo, 2018 would mark the release of the *Using Electricity* book series. The series, edited by Montfort, includes Parrish's *Articulations* (2018) and Zilles' *Machine, Unlearning* (2018). *Using Electricity* represents the collision between networked machine writing's non-static, online forms and more traditional literary publishing. While the publishing of machine-written texts in physical form is, as we've learnt, nothing new, the contrast between the occasional oddity to an entire book series is a milestone in machine writing's literary scene.

Despite its slow transformation into a form all of its own, critical enquiry around machine writing still often focuses on evaluating it for its human-like qualities. One example of this is *Bot or Not*, a website created by researchers Oscar Schwartz and Benjamin Laird (n.d.). The website, found at botpoet.com, was constructed in response to increases in computer-generated poetry, and challenges users to deduce whether a poem was generated or written. The website bares the description of "A Turing Test for poetry". Similarly, Dartmouth's Neukom Institute (2018) continues to hold poetry and literary contests in which the works of machines are judged on their ability to resemble that of a human. While this thesis' core argument clashes with evaluating machine writing on such merits, there is nothing intrinsically wrong with either *Bot or Not* or Neukom Institute's contests. Literary

experimentation, in all forms, should be celebrated. However, the focus on texts that resemble human-penned ones seems to be an alarmingly narrow scope.

The focus on the human element of machine writing sits in stark contrast with some of the directions machine writing is moving in. NaNoGenMo submissions include texts that, no matter one's fortitude, are simply unreadable for human qualities. Examples include Duncan Regan's 2015 *The Cover of The Sun Also Rises*, where an algorithm describes the cover of Hemmingway's *The Sun Also Rises*, pixel by pixel. An excerpt includes:

Laurel green. Laurel green. Laurel green. Dark gray. Ash grey. Ash grey. Ash grey. Ash grey. Silver. Lavender gray. Silver. Silver. Silver. Silver. Silver. Silver. Silver. Lavender gray. Lavender gray. Pastel gray. Pastel gray. Pastel gray. Pastel gray. Silver. Silver. Lavender gray. Lavender gray. Silver. Lavender gray. Lavender gray. Lavender gray. Lavender gray. Silver. Silver. Pastel blue. Silver. Lavender gray. (Regan, 2015, para. 241)

What value is found in this text when measuring its humanity? Surely no one would be fooled into thinking the text was authored by a human, nor would searching for a humanistic narrative reveal much to us about the text. By a similar token, Mark Rickerby's 2017 NaNoGenMo submission *Emic Automata* (2017) is a collection of 100 books generated from cellular automata, creating colossal walls of texts in which words resemble textures rather than language, as demonstrated in Figure 1.1. Like Regan, Rickerby's work defies traditional literary interpretation. Could narratives and plot lie within the twisting black and purple lines? Absolutely, but not narratives that any traditional interpretation is equipped to handle. These completely inhuman works actively resist conventional literary interpretation. Andrew Wenaus comes to a similar conclusion in his attempts to analyse the works of Kenji Siratori,²¹ remarking that his writing defies close reading completely (Wenaus, 2011, p. 30). These texts call for a new paradigm of analysis – a call that needn't be resisted.

²¹ The nihilistic, machine-written cyberpunk of Siratori will be discussed in Chapter 4.

repositions the author not as a traditional writer, but as a strategist of sorts, creating goals and functions to achieve these goals.²² The works of Bogost and Wardrip-Fruin are important steps in digital media scholarship, and thus machine writing.

By a similar token, N. Katherine Hayles' work over the years has continuously engaged with the impacts of digital spaces on humanity and the art it produces. Her book *How We Became Posthuman* (1999) is seminal in its exploration of the ontology of existence mediated by code, also explored in some of her later works (2006). Additionally, Hayles has explored machine writing itself, and drawn links between electronic literature and the cultural contexts that spawn them (2002).²³ Without this section becoming a list of names, I will stop here. What these sources, and many others, are indicative of is that a shift in understanding how meaning may be produced and communicated in computational spaces is in motion. Jessica Pressman (2011) has experimented with the term "machine poetics", while Kate Compton (2017) has suggested the related "bot poetics". The exploration of computer-based media as its own entity is already well underway.

Despite these developments, however, a far smaller amount of work has looked specifically into the possibility of AI literature as a form divorced from human literature. As discussed in the introduction, the boundaries between machine writing and "strong" AI literature are, like the boundaries explored in this chapter, murky. Regardless, the evolutions in machine writing and the debates that have surrounded it continue to grapple with whether these texts should be valued on their human-like qualities. If the AIs of the future were to craft texts similar to humans as some scholars are convinced (Swirski, 2013), analysis is that simple – literary scholarship has a long history. As this chapter has shown, however, machine writing is more and more presenting itself as a form that defies previous traditions, be it through pixel-by-pixel descriptions of a book cover, or (theoretically) endless streams of tweets. Perhaps, then, scholars of AI literature should be less concerned with whether airport paperbacks are penned by humans or non-humans, and more interested in the new and alien forms of literature that may emerge. There are many ways one could conceptualise what forms and themes these texts may take. This thesis' next step is to explore how machines understand texts, interrogating how machinic processes and AIs "read" and transform human

²² This rethinking of authorship will be revisited in Chapter 5.

²³ Hayles' work will be revisited in Chapter 4.

texts. This analysis is achieved through investigating intersections between machine writing and computational criticism.

Chapter 2

Collisions of prose and code: Adaptation and analysis through machine writing and reading

“Once there lives a protagonist and some supporting characters. Together they went on a journey. And twist ending, it was all a dream!”

-Google Assistant

If we want to consider how AIs may one day pen literature, it stands to reason that we should understand what “literature” might mean to them. Of course, this is far easier said than done. As this chapter will reveal, the answer may lie in an analysis of machine writing and its intersections with computational criticism – the use of computational methods to study literature, and another area where prose and code collide. We could, however, start by simply asking our contemporary AIs, such as *Google Assistant*, the virtual assistant that comes with Android phones. When asked what literature it likes, *Assistant* responds with “I’d tell you if I knew”. Not a particularly useful answer, although perhaps slightly philosophical. An easier question would be to ask *Assistant* what literature is, to which it responds by reading out part of the Wikipedia page for “literature” and providing a link to the page. One could also ask *Assistant* to “tell me a story”, to which it responds sarcastically with this chapter’s epigraph (these three instances can be seen in Figure 2.1).

Without having access to *Assistant*’s source code, we can get a general idea as to how it came to produce these three responses. The first and final responses are both certainly prefabricated by *Assistant*’s designers. Likely choosing from a number of options, *Assistant* has picked up on the phrases “what kind of literature do you like”²⁴ and “tell me a story” and matched it with one of its possible responses, like picking a phrase from a hat. The second comment, however, is what gives us the most clues. In this instance, the word “literature” has

²⁴ Or, perhaps, simply “What kind of ____ do you like”.

registered something more for the *Assistant*. The framing of “what is...” alerts the program it is being asked to find something out. The word “literature” is a token that *Assistant* understands as the subject of the sentence. From here, *Assistant* deduces that it must now retrieve what is “literature”. To a human, asking “what is literature?” can be a weighty, tricky question, much like “what is art?”. Some may argue any written work is literature, while others might insist on particular forms or themes. For *Assistant*, however, the question is straightforward – just search for the token.

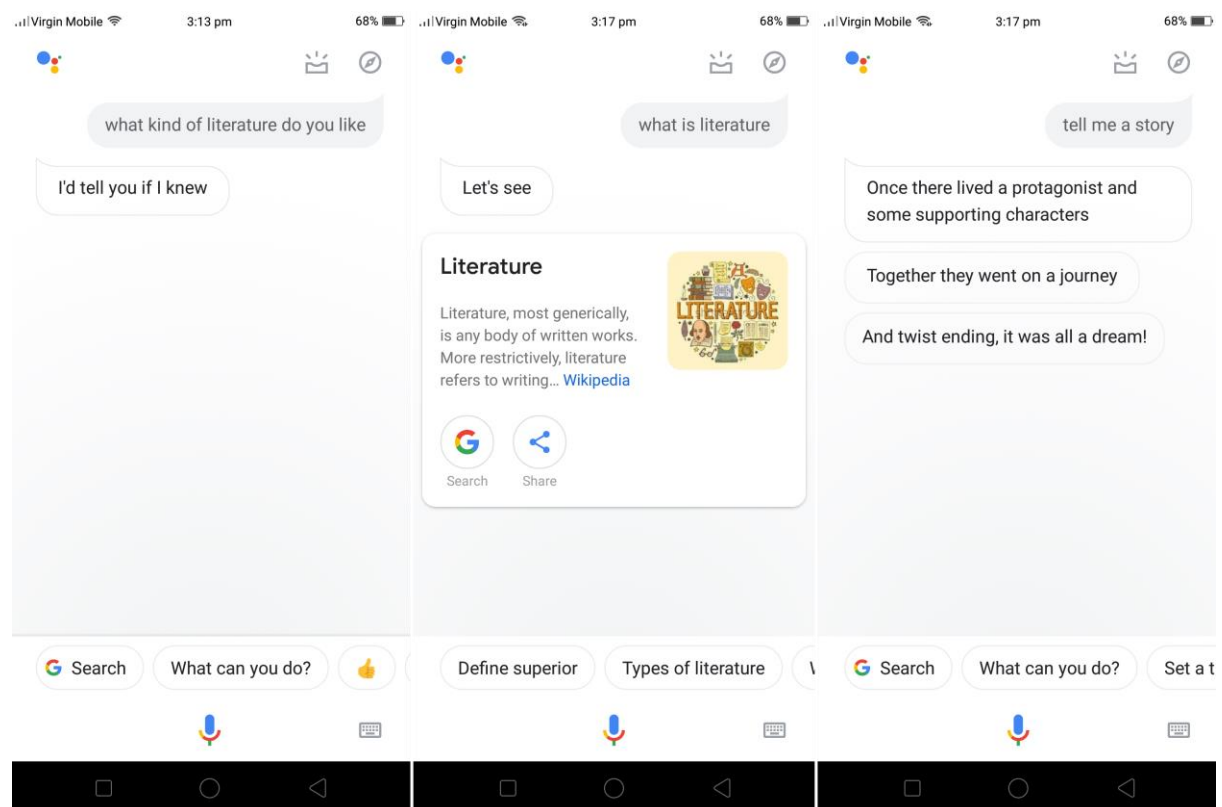


Figure 2.1: Asking Google Assistant (Google, 2016-2018) about literature. Screenshot taken on an Oppo R11s.

While the above example might at first seem an odd inclusion, *Assistant's* responses provides a starting point for investigating the question of what literature may look like to AI. While machine writing practices can give us insights into how machines have created their texts, computational criticism – or the use of computational methods to read/analyse texts – provides another anchor point. By exploring machine writing alongside methods of computational criticism, we can better understand how machines may “see” texts – what is it that they place value on, or understand? What is irrelevant to them? This chapter will

engage with the interplay between creative practices and critical enquiries that stem from algorithmic methods. In this chapter, computational criticism projects become evocative thought experiments for understanding machinic perspectives on texts, and thus help us see where machines are “coming from” when they produce literary works of their own.

The pairing of machine writing and computational criticism is made easier by the fact that one is often the by-product of the other. A machine-written text may provide the reader with new modes of reflection on its source material, while the graphs and maps typical of computational criticism often offer their own aesthetic values. This intersection between creativity and criticism is exemplified in *Assistant’s* answers. Its response to “what is literature?” is primarily informative, but is wrapped in its own fiction. Prologuing the link to Wikipedia is the simple “Let’s see” response, which provides no extra information to the reader. Instead, it exists purely to personify *Assistant*. It is a small element of fiction designed to make the user’s experience that little bit more pleasurable. A purely machinic response would likely discomfort the reader, so “Let’s see” serves as a humanising frame. *Assistant’s* three sentence story poses a similar duality: it is structured as a humorous jab at cliché storytelling, and thereby informs the reader of such clichés. We must of course remain grounded: *Assistant’s* story is a prefabricated, human-penned text, and is unlikely to trigger a new wave of formalism. However, the story does invoke an image of AI as both composer and analyst.

The *Assistant* examples demonstrate a core element of the relationship between machines and language: the formal elements of the text are simply tokens. Whether these tokens are words, letters, phrases, or some other breakdown is a question of what is being created. While the fact that computers view language in numerical terms is unlikely to surprise, it has a great deal of poetic consequence. The machinic approach to language sees through many of our own themes and concepts. In cases such as Alexander Cobleigh’s *Moby Dick; or The Cyberwhale* (2015a), where a word-mapping script was used to transform the Project Gutenberg version of Herman Melville’s *Moby Dick; or The Whale* (2008) into a cyberpunk epic. Cobleigh subjected the text of *Moby Dick* to transformation:²⁵ “shore” is replaced with “meatspace”, “death” with “disconnection”, and so forth. The algorithm

²⁵ In 2014, David Stark also word-mapped *Moby Dick*, transforming it into the space opera *Mobius Octopus; or The Space-octopus*.

doesn't view *Moby Dick* for its narrative or even really its structure, but instead as a collection of objects to sort through and alter. While new meaning can emerge from the outputted text itself, the point of collision between the prose and code is itself ripe for analysis. As Cobleigh's algorithm shifts and changes Melville's original text regardless of its impact on themes or meaning, a friction between machinic and human perspectives on literary works emerges. An analysis of the poetics of not just *The Cyberwhale's* text but also its mechanics, reveals a narrative of human art facing off against a relentless algorithm.

Although *The Cyberwhale* was made primarily for entertainment, we can see similar processes in experiments in computational criticism, predominantly in the *Z-Axis Tool*. The *Z-Axis Tool* was developed by Alex Christie, Daniel Brendle-Moczuk, Belaid Moa, Stephen Ross and Katie Tanigawa (2016). The tool takes geographic maps of cities and warps them along a third axis, based on information it gathers from literary works, creating hills and mountains out of a text's prominent locations. Unlike Cobleigh, however, Christie et al's primary objective is analysis. The *Z-Axis Tool*, then, allows us to examine the collision of prose and code in a different, but related, environment.

Computational criticism is often seen as most useful when it approaches textual entities that a human reader may be incapable of parsing, such as literary archives and other corpora. This idea is championed by The Stanford Literature Lab, a research cluster of computational critics. One of The Stanford Lit Lab's most enduring experiments has been their attempts to broach the "Great Unread" – the unfathomable corpus of texts that exist outside the literary canon (Allison, Heuser, Jockers, Moretti and Witmore, 2011, p. 10). The corpus is too much for one individual to read, so the group have turned to computational methods to breakdown and analyse the texts. The group's experiments in title analysis (Moretti, 2013b, pp. 179-210) and the use of word-tagging software (Allison et al, 2011) provide paradigms for exploring the advantages of machinic reading. As machines read texts differently from humans, they can be focused on corpora the human reader would be unable to read in particular ways, if at all. This concept is first investigated through Studio Moniker's *All the minutes* (2014), which reads the vast sea of Twitter posts and reduces them into a linear, minute-by-minute narrative. Moniker's algorithm reads Twitter through speeds and directions that, arguably, a human reader would be unable to match, returning from its machinic reading with a decidedly human text.

The friction between machinic reading and human-like outputs in machine writing is then further investigated through Lynn Cherny (2014a) and Michelle Fullwood's (2014a) machine writing experiments with Jane Austen's *Pride and Prejudice*.²⁶ Cherny's *Pride and Prejudice and Word Vectors*, for instance, uses Word2Vec models to spatialise the entire Jane Austen corpus, grouping words together based on similar usage, then using this data to transform *Pride and Prejudice*. The result is a mutation of the text that creates humorous and harrowing results. Cherny's work presents machine-written output and spatialised data side-by-side, marrying human text with machinic perspective. In a different vein, Fullwood's *Twide and Twejudice* scours Twitter for words used in similar contexts to those in *Pride and Prejudice*. Dialogue is then replaced by corresponding words from Twitter. *Pride and Prejudice* is pushed to its limits as the wild, freeform nature of language on Twitter ruptures Austen's standardised, Regency-style prose. *Twide and Twejudice* is a bizarre and almost horrific text to a human, but a perfectly reasonable word-swapping exercise to a machine.

There is some precedent in aligning a machine's reading of a text with prospective AI literature. In his fictional *A History of Bitic Literature*, Stanislaw Lem suggests that one form of such literature – "mimesis" – will arise from machine translation, with the text that lies between the source text and its complete translation being a creative work itself (Lem, 1984/1981, pp. 55-56). Italo Calvino similarly mused that the literature of machines may arise out of their own need to recombine the symbols that surround them to better understand the world (Calvino, 1986/1980, p. 25). Although both Lem and Calvino's examples are speculative, they suggest that literary value may lie in a machine's interpretation of human art.

Through this chapter's analysis of both machine writing and computational criticism, the poetic capacity of machine writing to alter and reconfigure texts is revealed, lighting the path for further analysis. Additionally, we find throughout this chapter that machines, and perhaps the AIs of the future, view literary texts in vastly different ways to us. Where the human sees emotion, irony and narrative, the computer sees word choice, structure and form. This collision of human and machinic understanding is a poetic device in itself. In the clash of prose and code, a narrative of machines attempting to understand, interpret, and

²⁶ Although Fullwood appears to use the Project Gutenberg version of the text, in order to provide page numbers to aid in transparency of analysis, I will be using the 1996 edition of *The Complete Novels of Jane Austen*.

express human literature emerges. To understand the poetics of machine writing, we must be willing to see things from a machine's perspective.

Machine writing and computational criticism

At first glance, Cobleigh's *The Cyberwhale* appears to be nothing more than a creative novelty. Cobleigh took the complete text of *Moby Dick*, and ran it through a word-mapping algorithm, which replaced many of the text's key terms with corresponding cyberpunk tropes. In doing so, Cobleigh causes a collision between Melville's themes and his algorithm, evoking a contemporary and machinic context. Word-mapping is much as it sounds. Cobleigh supplies his algorithm with a list of words to target throughout *Moby Dick*, as well as words to replace them with. Every instance of "whale" is replaced with "cyberwhale", and so forth. As such, *Moby Dick's* "He loved to dust his old grammars; it somehow mildly reminded him of his mortality" (Melville, 2008, loc. 203) becomes *The Cyberwhale's* "He loved to dust his old grammars; it somehow mildly reminded the net of his mortality" (Cobleigh, 2015a). Melville's imagery of an individual pondering their own existence is transformed into a commentary on the individual's place in a networked society. The mapping of "him" to "the net" infers a close relationship between one's sense of self and the online spaces they inhabit. In Melville's original text, the usher must prove his mortality to himself, making this moment a distinctly personal one. As *The Cyberwhale* suggests, however, an individual of the Internet age must instead prove themselves to the hordes of online users constantly watching.

The shift from self-reflection to surveillance has many commonalities with adaptations in general, where meaning and themes are transposed between contexts or forms. However, the machinic structure of *The Cyberwhale* allows for Cobleigh to initiate a one-to-one, mechanical mapping. While a human writer is likely to weigh up themes and concepts then re-write them into new aesthetics, genres or contexts, Cobleigh's code simply addresses the text one word at a time. The algorithm morphs each word based purely on form, with no regard for context. "Seas" become "networks", "waves" become "connections". The one-to-one transformation is the first alignment between machine writing and computational criticism. On the use of machines in studying texts, Martin Mueller observes that digital

machines can “keep all things”, but cannot “ponder” them (Mueller, 2008, p. 292). This lack of pondering is what allows for such a relentless and precise transformation of Melville’s original text into its cyberpunk recreation.

Much like the cyberpunk authors he emulates, Cobleigh leverages the unthinking nature of his code to comment on the contemporary, networked society. By re-mapping the sea into the expanse of the Internet, the perilous, unforgiving nature of the ocean that Melville sought to encapsulate is used to describe one’s online experience. Other transformations are less subtle. “Country” becomes “corporation”, alluding to a future of corporate sovereignty. Religion also falls: “lord” is replaced by “The Network”, with both “god” and “him” becoming “the net”. Finally, Cobleigh solidifies his dystopian vision by transposing “die” and “death” to “disconnect” and “disconnection”. In the world of *The Cyberwhale*, the Internet has become one’s faith and salvation. To disconnect is to die.

Cobleigh’s symbolism is not that far removed from other cyberpunk novels. William Gibson’s protagonist Case in *Neuromancer* is cut-off from cyberspace, and he yearns to re-enter. The metaphor of disconnection as death is represented by the “coffin hotels” many sleep in (Gibson, 2000, pp. 4-5). However, while Gibson’s work, like most literature, has its themes revealed through reading, reflection and analysis, Cobleigh’s is instead overtly presented in the transmission from *Moby Dick* to *The Cyberwhale* itself. While Cobleigh’s code is no longer available,²⁷ the direct translations of terms are easily re-mappable by the reader. Opening the *Cyberwhale* and *Moby Dick* together and comparing the passages allows the reader to see where changes have been made. In reading the text like this, the reader ceases to practice close reading, instead shifting into a back and forth, mapping exercise. Like the algorithm itself that spawned *The Cyberwhale*, the reader must adopt a reading practice that is inhuman, regarding the text as a space to be explored.

In viewing *The Cyberwhale* as a space of exploration rather than a traditional text, a lurking similarity between machine writing and computational criticism is revealed. Like the hint of critique woven into *Assistant’s* short story, the potential for quantitative analysis exists within *The Cyberwhale*. One of the novel’s earliest transformations is the Genesis quote “And God created great whales.” becoming “And the net created great cyberwhales”. The imagery

²⁷ At the time of writing this thesis, *Cyberwhale* is only available through the Internet Archive.

of cyberspace spawning its own leviathans is a powerful one in and of itself. What is a “cyberwhale”? Is it a vast body of data that lurks online, shifting in the sea of the Internet between servers and users? Perhaps it refers to the social media leviathans such as Facebook or Twitter that centralise and dominate the online space, threatening to consume its users’ data. Regardless of what these cyberwhales may represent to us, how do they relate to us in the same way the whale related to Ahab? These ponderings are likely to take precedent in a reading of *The Cyberwhale*. However, a second-order understanding of the text emerges, as each mutation forces the reader to recognise the frequency of particular phrases and words. A reader is unlikely to finish *Moby Dick* and not be aware that the sea is a crucial element of the text, but through *The Cyberwhale*, this knowledge is now quantitatively charged – the reader is reminded every time they encounter “The Network”.

Original passage	<i>Cyberwhale</i> passage
“the wild watery loneliness of his life did therefore strongly incline him to superstition” (loc. 2033)	“the wild nety loneliness of his life did therefore strongly incline the net to superstition”
“Why did the poor poet of Tennessee, upon suddenly receiving two handfals of silver, deliberate whether to buy him a coat, which he sadly needed, or invest his money in a pedestrian trip to Rockaway Beach?” (loc. 411)	“Why did the poor poet of Tennessee, upon suddenly receiving two handfals of silver, deliberate whether to buy the net a coat, which he sadly needed, or invest his cryptocurrency in a pedestrian trip to Rockaway Beach?”
“let him not be backward, but let him cheerfully allow himself to spend and be spent in that way.” (loc. 813)	“let the net not be backward, but let the net cheerfully allow the netself to spend and be spent in that way.”

Figure 2.2: Comparing original passages of *Moby Dick* with their word-mapped counterparts, focusing on instances of “net”/“the net” (Melville, 2008; Cobleigh, 2015a).

In addition to the reader’s own machinic reading, Cobleigh himself has had to read like a machine when developing the text. When starting the project, Cobleigh candidly claimed “I’m basically finding nice replacements for various sea-related words” (Cobleigh, 2015b). While perhaps meant in a slightly jovial way, Cobleigh’s claim resonates with Franco Moretti’s claim that computational criticism is, essentially, “formalism without close reading” (Moretti, 2013a, p. 180). In the process of writing his script, Cobleigh transitions from close reader to

algorithmic conduit. His process unmoors the words of *Moby Dick* from contextual meaning. They cease to inhabit paragraphs and narrative, and instead become a list of tokens. Aside from the objective of creative expression versus analysis, Cobleigh's procedures, the resulting text, and the process of reading it all share more in common with machinic processing than traditional writing or reading. A machinic reading of the text has its own poetic potential. Friction between the clashing of *Moby Dick* and Cobleigh's code opens pathways to new interpretations. These clashes are best demonstrated through a number of the "net" transformations. Both "him" and "God" are changed to "the net", and "water" becomes "net". Some of these transformations are shown in Figure 2.4.

New themes emerge from these passages when they are analysed with their algorithmic construction in mind. In the first example, we see an "error" in Cobleigh's translation. Due to the unthinking and rather rudimentary nature of Cobleigh's script, "water" has become "net" even when doing so would mutate another, similar word – in this case, "watery". What is a "nety loneliness"? The term doesn't scan particularly well on first glance. The same passage includes the re-mapping of "him" with "the net". This re-mapping grants agency to the Internet itself, and does so by removing agency from the passage's original subject, Starbucks. The passage can be analysed as one would the original, without regard for the computational methods used in its production. Alternatively, the reader can consider the collision of Melville's prose and Cobleigh's code as a poetic device itself.

There is another important, contextual consideration that adds poetic weight to Cobleigh's transformation. Much like the Austen-based texts I will soon discuss, *The Cyberwhale* is not based on a large swathe of texts, nor is it generated from an original, bespoke corpora. *The Cyberwhale* is evidently developed from *Moby Dick*, a single text that – while perhaps rather dense – is far from inaccessible (owing partially to being freely available online, as evident in Cobleigh's own use of the Project Gutenberg version). As such, it isn't unreasonable to suggest that many readers of *The Cyberwhale* and similar works will be approaching it having at least some familiarity with the source material. Indeed, my own analysis rests heavily on the contrast between the source material and Cobleigh's adaptation. The process of reading *The Cyberwhale* is, for some, actually a process of rereading *Moby Dick*.

The relationship between rereading and adaptation has some precedent in literary theory. Peter Dixon and his team's "rereading paradigm" experiment (Dixon, Bortoulussi, Twilley and Leung, 1993, p. 17) investigated how the restructuring of certain features of a text for a first or second reading would cause new literary effects to emerge or dissipate (Dixon et al, 1993, pp. 18-24). Elsie Walker approached the concept of adaptation as a form of rereading when analysing the "miniature process" (Walker, 2013, p. 88) of adaptation in the film *Margaret*, which uses two lines from Shakespeare's *King Lear*. Walker suggests that the repurposing and positioning of the two lines – which appear in a scene where characters heatedly debate the meaning of them – helps to frame the major themes of the film itself, and the scene in which they appear creates an effect that resonates through the entire film (Walker, 2013, p. 88). In both *Margaret* and *The Cyberwhale*, textual works have been repurposed for the generation of new effects. One's previous understanding of the source text impacts their relationship with the adaptation. In the case of *The Cyberwhale*, however, the reader is confronted not only with their re-interpreting of the novel, but also with Cobleigh's. For those familiar with *Moby Dick*, a new tension emerges from *The Cyberwhale*: their rereading is intercepted by Cobleigh's interpretation, which itself is a cold, algorithmic reconfiguring.

The poetic impact of algorithmic interception on *The Cyberwhale* is made most evident when we attempt to read the text from a purely human perspective. Adopting this perspective, some meaning does still emerge. Starbuck's "nety loneliness" conjures images of one stranded in an online space – perhaps one who remains prolific online ("nety") while failing to attract followers or friends. Or perhaps the term signifies that Starbuck avoids establishing an online profile completely, such as by avoiding most social media sites, or otherwise obfuscating his online movements? In either instance, Starbuck himself is not concerned about his "loneliness", but the net itself is. Could his persistence online, despite a lack of followers or friends, be raising eyebrows among other citizens of the net? Or, in the second interpretation, has his self-exile from the more popular corners of the Internet caused concern for the advertising algorithms that wish to fold his browsing habits and information into their data? While these questions may be worth exploring, considering the literary potential of the algorithm's process alongside the output provides more clues as to how AIs may eventually understand and produce literature.

The replacement of “him” with “the net” causes, as the above passages indicate, a huge rupture in the meaning of these statements. Starbuck is unmoored from agency in the passage, his own self-reflection supplanted with “the net” as an outside observer. In the second passage, the poet of Tennessee now must purchase a coat for the net. What could this passage mean? Perhaps the net must be cloaked in some way, or perhaps the coat offers some sort of protection to the poet. Finally, in a transformation similar to that of “watery/nety”, the third passage sees the advent of “the netself” – a term that implies not only agency for the Internet, but also personhood. The generation of these passages is allegorised through the imagery they conjure. The algorithm does not consider the text in the same way a human would. Political and social agendas may be embed within them, but they themselves will not act inherently in favour of them. Instead, they simply address the problem they have been given, regardless of its impact on themes. For Cobleigh’s script, the problem is simple: *this word is “him”, it must become “the net”*. *This word is “water”, it must become “net”*. The program is not concerned with the existential dread that replacing “him” with “the net” causes, nor does it understand the gravitas of a term like “the netself”. In essence, what the algorithm values about a text, and indeed literature, is starkly different to that which a human does. Starbuck and the other human subjects of these passages come to represent the human reader’s anxiety over such erasure, while “the net” represents the algorithm’s word-mapping objective. The task of transforming the text is given pride of place, even if humanity is lost in the process. Through its unthinking text transformation, *The Cyberwhale* provides an avenue for aligning machine writing with computational criticism.

Computational criticism refers to a broad range of activities. Moretti prefers the term “distant reading” (Moretti, 2013a), while Stephen Ramsey suggests “algorithmic criticism” (Ramsey, 2011). N. Katherine Hayles believes an important distinction should be made between distant reading that takes place in an analog setting, and the “machine reading” that involves the use of computers (Hayles, 2012, p. 72). For the purposes of this chapter, the term computational criticism is used to broadly encompass the use of computational methods to analyse texts (Moretti, 2013a, p. 103). For the most part, the computational criticism focused on in this chapter is concerned with those that spatialise literature.

Often involving data-mining/visualisation, computational criticism’s warping of texts into peculiar forms is not dissimilar to machine writing. Ramsey suggests that while a

computer's analysis of a text will not come to a philosophical conclusion, it can certainly aid the human scholar in their analysis (Ramsey, 2011, p. 9). In Ramsey's estimation, then, the results of computational criticism – graphs, maps and other data visualisation – are texts in and of themselves. Ramsey borrows OuLiPo's "potential literature" to refer to computational criticism as "potential reading" (Ramsey, 2011, p. 32). Through constraint, the text is reduced to select components, reconfigured in a way that makes particular aspects clearer. From here, patterns may emerge, which the critic may then analyse (Ramsey, 2011, p. 17). Just as OuLiPo offer avenues to literary production through constraints, so does the computational critic explore paths to analysis through truncating a text into data. Considering computational criticism in this way, it is not a stretch to suggest that the outputs produced by these methods may occupy a similar place in literary discourse as a text like *The Cyberwhale*. If so, then just as analytical potential may lurk between the words of *The Cyberwhale*, so might philosophical and political contexts haunt the computational critic's output. This theory can be tested through an analysis of Christie et al's *Z-Axis Tool*.

The *Z-Axis Tool* generates literary maps in a very literal sense of the word. *Z-Axis* first draws data from a text regarding the amount of description given to specific places. Then, it overlays this data onto a geographic map, raising the ground based on a location's prominence (Christie et al, 2016a). Figure 2.2, for instance, shows Virginia Woolf's *Mrs Dalloway* transposed onto the Touring Map of London. Sections of London that are described using more words are raised along the map's Z-axis. Locations that are politically privileged or championed by the writer become hills and mountains, while those that are left out disappear into the map's ground floor (Christie, 2016a, pp. 3-6). In contrast to Cobleigh's repurposing of *Moby Dick*, the *Z-Axis Tool* deals with literal, geographic maps and warps them to demonstrate creative expression and intent.



Figure 2.3: *Mrs Dalloway* transposed over *The Touring Map of London*.

The warped map of London in Figure 2.3 becomes, like *The Cyberwhale*, a text in and of itself. Just as the cyberpunk genre is read through the “shape” of *Moby Dick*, in this instance *Mrs Dalloway* is read through the shape of a London map. By making the *Z-Axis Tool* open source (Christie et al, 2016), the team create a space by which many more similarly machinic, textual maps may emerge. Users can transpose any text onto any map, causing the emergence of different details and shapes.²⁸ Literary texts become a building block – an instructional text that fuels the *Z-Axis* code to re-shape and warp a map, aligning word with space. Prose and code collide, with narrative and form yielding to shape and structure.

The *Z-Axis Tool* represents a collision between competing cultural and social contexts: the literary text and the map it is transposed onto. Christie et al argue that digital cartography such as Google Maps treat space as “uniform and universal”, which negates the fragmented, partial and subjective experience one often has of an area (Christie et al, 2016). Through the *Z-Axis Tool*, however, the spatial experiences embedded in texts can be used to warp these maps. In effect, a map altered by the *Z-Axis Tool* becomes a cultural and social artifact, embedded with the same themes and perceptions as the literary text that remoulded it.

The collision of social and cultural contexts occurs when one considers that prior to its literary-remoulding, the map itself already contains its own biases. Sylvia Tomasch insists that maps often contain their own ideological and culturally circumstantial information, much like literature. While maps exist to record geographical features and guide travellers, they have

²⁸ As of writing this thesis, clicking through to the *Z-Axis* source code yields a dead link.

also been used historically to express abstract, hypothetical, or religious concepts (Tomasch, 1992, p. 66). Tomasch alludes to a similarity between the metaphors of medieval maps and the symbolism of modern maps (Tomasch, 1992, p. 91). With both map and novel harbouring agendas and perspectives, the *Z-Axis Tool* becomes the battleground for potentially competing interpretations. The struggle between these interpretations is facilitated through code.

We can see this conflict play out in the *Z-Axis Tool* itself, which is loaded with a series of maps of London from different time periods, all embedded with their own agendas. While the *Gem map of London* privileges suburban neighbourhoods, Charles Booth's *London Poverty Map* instead focuses on highlighting areas of poverty and wealth, by colour-coding the richest neighbourhoods yellow and the poorest blue (Christie et al, 2016). These maps showcase interpretations of London, rather than every detail. Transposing Henry James' *What Massie Knew* onto the *London Poverty Map* (Fig. 2.4) does not produce the same London as that depicted in James' novel. Rather, the merging of James' work and the *London Poverty Map* creates a new text entirely. Booth's focus on charting the poverty and wealth of London collides with James' own views of London/English society. Readings of *What Massie Knew* are diverse, but often centre around the concept of childhood innocence and morality (Klein, 2006, pp. 134-135). The rich, yellow streets of Baker Street and Hyde Park bubble and rise above the other unexplored parts of London, swelling ominously as they threaten to consume and corrupt the children that navigate the English society of James' context. The National Gallery's poor surrounds are smattered in blue, and loom in the background. Who is responsible for the corruption of childhood in *What Maisie Knew*? The yellow, rich forces appear to very visibly dominate the landscape, implying agency and control. James and Booth's themes and subjectivities have collided through the *Z-Axis Tool*, presenting a new and lumpy text that invites its own interpretation.

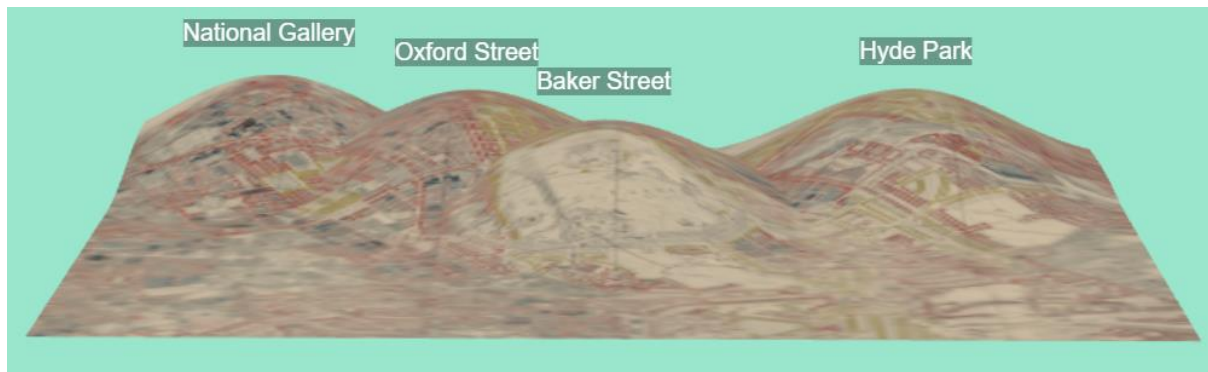


Figure 2.4: What *Massie Knew* transposed onto the *London Poverty Map* using the *Z-Axis tool*.

Viewing the *Z-Axis Tool*'s output for its thematic value rather than critical value, it aligns with *The Cyberwhale* as a sort of adaptation. The *Z-Axis* output is the product of three agents working in tandem: the text, the map and the algorithm. The result of these agents occupies a space of distortion and reinterpretation. Ramsey describes one of the utilities of computational criticism as being the “estrangement and defamiliarization of textuality” (Ramsey, 2011, p. 3). We can indeed see this estrangement in the *Z-Axis Tool*, as both text and map are altered. The novels lose their narratives and characters, with each aspect morphing into a representation of London. Likewise, the map is also distorted, its own emphases and symbols now at the mercy of the hills and mountains that appear. A similar effect is noticeable in *The Cyberwhale*: Melville's original text has been severed from its setting and context, and the cyberpunk genre –as interpreted by Cobleigh – is reframed within the confines of Melville's narrative.

With these examples in mind, it would be safe to suggest that the concerns inherent in human literature may be markedly different to that of AI literature. In the case of *The Cyberwhale*, where the human sees the personification of machine and the disempowerment of humanity, the algorithm simply sees a text to transform. Similarly, the results of the *Z-Axis Tool* may appear odd at first to a human: the mountains it creates don't often mirror actual physical geography. However, to the machine producing these maps, the frequency of locations being mentioned is all it needs to make sense of the world. In both instances, there is potential for a fruitful, “human” reading that ignores the computational context of the texts. However, this human reading is greatly augmented when one considers the algorithm's “perspective” on the texts, by reading them for both prose and code.

We can understand what this algorithmic perspective may look like through Lem's speculative fiction. Describing a machine translating the works of Fyodor Dostoevsky, the narrators of *A History of Bitic Literature* state that the translating machine was incapable of finding interest in the personality of Dostoevsky, and instead saw Dostoevsky's work as "a curved mass, recalling in its overall structure an open torus, that is, a 'broken ring'" (Lem, 1984/1981, p. 58). Lem is envisioning how a machine may, inhumanly, interpret a literary work. The "broken ring" represents the tension between human and machinic interpretations of what literature may be. It is within this gap, perhaps, that the spark of AI literature may lie.

Regardless of the literary and critical potential of both *The Cyberwhale* and the *Z-Axis Tool*, the actual utility of computational criticism is a concern that looms over the field. Jerome McGann is not convinced by the direction of computational criticism, suggesting that the qualitative nature of literature prevents quantitative analysis from being particularly useful (McGann, 2014, p.91). On the other hand, Matthew Wilkens suggests that computational criticism simply takes what is already there and formalises it. Wilkins suggest that scholars have often underestimated the quantitative aspect of their own practices (Wilkens, 2015, p. 11). If a literary critic builds an argument around certain techniques or motifs featuring prominently, for instance, then by virtue of building a convincingly large set of "data" (reading widely, for instance), they are engaging in quantitative research. While one is unlikely to frame their argument in numerical terms, their argument nevertheless rests on an "abstractly quantifiable" (Wilkens, 2015, p. 12) position. Wilkens' position is shared by Moretti, who confesses that computational criticism may often add detail to one's understanding of a text, but not necessarily change what is already known (Moretti, 2013a, p. 108). Computational criticism, then, perhaps is most effective when focused on activities a human reader cannot achieve, such as exploring textual entities of too large a scale.

The suggestion that computational criticism should be used where close reading fails is historically linked to the machine writing tradition. In response to OuLiPo's combinatoric, "branching path" texts, Claude Berge proposed a graph-based methodology for understanding them. Berge's examples include a vastly truncated version of Queneau's *Cent Mille Millards de poèmes* (Berge, 1986, pp. 118-119). Queneau's text is comprised of ten, fourteen-line sonnets, with each line cut so that the reader may swap it out with its counterpart from another sonnet. The result is a text that contains 10^{14} possible poems –

impossible for a single reader to ever hope to read (Berge, 1986, p. 118). Berge proposes analysis of such a poem is possible through the use of a graph, presenting a map of Queneau's work that transforms, much like the *Z-Axis Tool*, the literary text into a geographical space, consisting of phrases and intricate, criss-crossing lines. Berge's examples continue, transforming texts into visual patterns. Where human reading may fail, Berge proposes a machinic perspective may succeed. We can see Berge's view come to fruition in both machine writing and computational criticism that deals in textual bodies too large for a human reader.

Alternate Austens and unfathomable corpora

Thus far, the examples of *The Cyberwhale* and the *Z-Axis Tool* have focused on texts that a human is perfectly capable of reading. These examples have consequences for both machine writing and computational criticism. We may learn something about AI literature from "the netself" of *The Cyberwhale*, and visualising the prominence of London in *Mrs Dalloway* may help us understand its importance to the text. However, a human reader (or machine writer) could carry out similar operations without the aid of automation. There are, however, some forms of both computational criticism and machine writing that seem impossible without the use of digital machines. Stepping deeper into the world of algorithmic perspectives may give us deeper insights into future AI self-expression.

Understanding as we do now that algorithms "see" texts in a different way to humans, it stands to reason that there may be some procedures they can undertake that a human writer or reader simply couldn't. For Moretti, the target of choice is textual bodies simply too large for a human to meaningfully penetrate, such as texts that have fallen outside of the literary canon. In contemporary, digital contexts, these impenetrable textual bodies may also be social media corpora, demonstrated through Fullwood's *Twide and Twejudice* (2014a) and Studio Moniker's *All the minutes* (2014). Alternatively, Cherny's *Pride and Prejudice and Word Vectors* (2014a) explores the transformation of a text in a way that is simply too complex for a human to execute. These examples exemplify the utility of both machine writing and computational criticism to narrativize or display information unobtainable to the human reader. For a machine, the themes of humanity may be impossible to grasp. However, while

a vast body of texts may be impossible for us to comprehend wholistically, a machine is able to find and understand the broader patterns. The algorithms of computational criticism and machine writing are able to use visualisation and re-interpretation to translate these vast bodies of text into stories or forms tangible for the human reader.

While large masses of data often suggest content born of the Internet, Moretti is more concerned with the vast amount of literature throughout time that sits outside the classics. He refers to these texts that sit outside the literary canon as the “Great Unread” (2013a, p. 180). He believes that understanding the Great Unread would lead to a more holistic and complete view of literature. Current literary taxonomies could be challenged by such studies, bringing forth “swarms of hybrids and oddities” (Moretti, 2013a, p. 180). The human reader cannot hope to achieve such readings on their own, as such large quantities of text cannot possibly be read with great precision, resulting in a loss of distinction between themes and ideas (Moretti, 2013a, pp. 180-181). For Moretti, the solution is machinic methods (2013a, p.67). Moretti’s machinic methods include tracing the evolution of novel titles on a word-by-word basis (Moretti, 2013a, pp. 179-210). Through computational methods, the Great Unread can begin to be harnessed.

Moretti’s experiments begin with focusing on specific data points within these texts. One of his most prominent experiments involved the collection of titles from Victorian texts, and charting changes in title length and construction (proper names, article-nouns, etc) (Moretti, 2013a, pp. 187-194). In doing so, Moretti thinks like a machine, shifting from a view of texts as works of theme and structure, to instead viewing them for a single datum: the title. Moretti’s procedure creates a decidedly machinic narrative of how, from a purely formalist view, the novel has evolved. While it is not entirely clear how Moretti compiled his data (Moretti, 2013a, p. 182), his work provides a convenient allegory. Given a sufficiently large set of data, the human reader would be unable to compile these titles, simply due to the data’s quantity. Instead, they require a machine that can retrieve and organise this data. This example suggests the potential for a uniquely machinic view of literary history. While a human could of course understand the data if it was presented to them, they could never compile it in the first place.

Moretti’s charting of title-evolution is similar to Studio Moniker’s narrativization of Twitter through the *All the Minutes* project. *All the minutes* exists in three forms: The

outputted novel (2014),²⁹ the website “clock” that runs at alltheminutes.com (2014-b), and the Twitter account itself, which simply retweets (2014-a). In short, the project acts as a minute-by-minute diary, collecting and posting tweets by their timestamp, offering a rolling narration of daily going-ons, taken from the vast, constantly evolving corpus of tweets. An excerpt from the novel includes:

Its 1:00pm and I'm not EVEN hungry! Sup wit that?!? It's 1:01 PM and I have not eaten yet. It's 1:02pm and no os update...interesting, where do these times come from? It's 1:03pm and I still haven't been to the new Dunkin Donuts. What is wrong with me. It's 1:04pm AND I MADE IT TO CLASS ON TIME. Its 1.05pm and im only eating breakfast now...=[. (Studio Moniker, 2014)

Moniker has mapped tweets by two data points: their timestamp, and their template. Moniker's model that tweets must adhere to in order to be collected is: “[its/it is] [hour:minute] [am/pm] [and]...” (Studio Moniker, 2014). Moniker's mapping of the Twitter corpus is based around distilling it down to a singular, narrative form. Much like computational criticism's potential to restructure a text, *All the minutes* restructures Twitter itself, creating an alternative method for reading the form. Reading Twitter, like many social media platforms, involves navigation, skimming one's feed of posts, following threads, searching for hashtags, and others. In literary terms, these practices are akin to what Hayles' refers to as “hyper reading”:

Hyper reading, which includes skimming, scanning, fragmenting, and juxtaposing texts, is a strategic response to an information-intensive environment, aiming to conserve attention by quickly identifying relevant information, so that only relatively few portions of a given text are actually read. (Hayles, 2012, p. 12)

²⁹ The output text is no longer available on GitHub.

While Hayles' emphasis is on hyper reading practices seeping into traditional texts, *All the minutes* instead offers a version of Twitter that removes the non-linearity of a typical encounter with the platform. Instead, Twitter becomes narrativized, presented exclusively as a minute-by-minute progression. To read the *All the minutes* project is to reject the hyper reading experience of Twitter in favour of a more traditionally literary form. Similar to Moretti's title-charting experiment, *All the minutes* has taken that which is multidirectional and unwieldy, and made it linear.

In mapping these tweets into a strictly sequential form, the experience of reading them is changed. Reading *All the minutes* is not equivalent to reading through Twitter. Trending topics, hashtags and getting lost in conversations are all core elements of the Twitter experience. However, as Ramsey suggests, to reconfigure a text is to facilitate new readings. Through the linear presentation of tweets, a reader is likely to encounter Twitter content that they may never find otherwise, for what Twitter user regularly searches for tweets from strangers that mention the time of day? Additionally, new patterns begin to emerge when focusing on the movement of time. Tweets from six AM to seven AM seem primarily focused on sleep and sleep deprivation (Studio Moniker, 2014, pp. 1-5). At around one PM (2014, pp. 35-38), Twitter users seem to fall primarily into the categories of those concerned that they are drinking too early, and those that are concerned that they woke up too late. This narrative of mundane human existence already plays out on Twitter daily, but is not exposed in such a way to most users, each of whom will encounter a different combination of the many tweets produced each day on Twitter. The reader of *All the minutes* takes a guided path through the Twitter corpus, led by a focused algorithm.

Even through such analysis, *All the minutes* does not offer that great an insight. Individuals being upset about the amount of sleep they have had at 6AM isn't particularly news worthy. Likewise, sleeping into the early afternoon or being intoxicated at lunch time are both instances one is likely to have witnessed, if not experienced, by their mid-20s. The lack of insight provided by *All the minutes* is hardly a problem; the objective of Studio Moniker was not a computational critique of Twitter, but instead a piece of Internet art. From a poetic perspective, the text is rather interesting. Our protagonist, the algorithm, is a space-hopping, frantic narrator who can move in any direction, but must adhere strictly to the rules of time, doomed to inhabit the mundane minutes of Twitter users for eternity. Much like Cobleigh's

algorithm's experience of *Moby Dick* is not like our own, Moniker's algorithm experiences Twitter in a restricted and linear way that the average user never would. The juxtaposition of the algorithm's strict temporal constraint with its spatial freedom allegorises machine writing's poetic potential. While constructing texts with algorithms may in many ways restrict us, there is endless potential in the avenues that are opened. Perhaps our AIs of the future would have similar experiences, navigating the same spaces as us, but in vastly different ways – both more restrictive and more freeing.

These insights into machinic experience are only available through a text like *All the minutes*. The themes are linked directly to the poetics of not only the resulting text, but the code's procedure – a procedure that would exhaust a human writer to conduct. *All the minutes* demonstrates the way a machine, and perhaps an AI's, approach to texts being so different to a human's is not an obstacle, but instead an avenue for new poetics to emerge. We can, however, take this further, turning towards the Stanford Literature Lab's work with *DocuScope* and the Great Unread, as well as both Fullwood and Cherny's mutations of *Pride and Prejudice*.

On their journey to better chart the Great Unread, The Stanford Lit Lab – a research cluster at Stanford University – came across the text tagging program *DocuScope* (Allison et al, 2011).³⁰ While their research as a whole is not pertinent to this discussion, the group's experimentation illustrates how a machine may interpret texts in unpredictable ways. *DocuScope* functions as a sort of smart dictionary, containing a plethora of English language strings, each assigned to a functional linguistic category, or "Language Action Type" (LAT). The program can be used to help break-down and categorise texts, grouping them based on similarities. The team, comprised of Sarah Allison, Ryan Heuser, Matthew Jockers, Franco Moretti and Michael Witmore, decided to experiment on using the text to help categorise the Great Unread into genres. The team began by testing the program's reliability, putting together a sample of 36 texts, divided into 12 sets as follows:

³⁰ *DocuScope* was developed by David Kaufer, Suguru Ishizaki and Kerry Ishikazi. For more information on the project, see Carnegie Mellon University's (2019) page on the project: <https://www.cmu.edu/dietrich/english/research/docuscope.html>

First Group	Second Group
Set 1: 4 gothic novels	Set 7: 2 anti-Jacobin novels
Set 2: 4 historical novels	Set 8: 2 industrial novels
Set 3: 4 national tales	Set 9: 2 gothic novels
Set 4: 4 industrial novels	Set 10: 2 evangelical novels
Set 5: 4 silver-fork novels	Set 11: 2 Newgate novels
Set 6: 4 Bildungsromane	Set 12: 2 Bildungsromane

Figure 2.5: The Stanford Lit Lab's novel categories for their *DocuScope* experiment.

As bolded, only three of the sets in the second group corresponded generically with the first. *DocuScope*'s task was to match the three sets from the second group that aligned with the first (Allison et al, 2011, p. 3). *DocuScope* succeeded in allocating sets 8 and 12, but faltered with set 9, which it classified as historical rather than gothic – an error that the team argued lent credence to *DocuScope*, as these genre descriptors can be a little imperfect themselves (Allison et al, 2011, pp. 3-4). The knowledge produced was of course not new: literary genre classifications were simply corroborated by the analysis (Allison et al, 2011, p. 5). However, not only did *DocuScope* prove its mettle as an aid for tapping the Great Unread, it also demonstrated a distinctly non-human way of interpreting text.

The non-human interpretation of the text was highlighted by the group via *DocuScope*'s categorisation of Ann Radcliffe's *A Sicilian Romance*, in which *DocuScope* had identified the piece as belonging to the gothic genre. While this is the same conclusion most scholars would come to when analysing Radcliffe, the program seemed to do so by different means. The team expected the novel to have been categorised by as gothic due to its inclusion of subdued terror, archways, and more. However, *DocuScope* instead found more commonality between gothic novels not in aesthetics and imagery, but instead in the prominence of masculine pronouns ("subdued his", "struck his", "covered him"), as well as elements of base sentence structure such as "heard the" or "uttered the" (Allison et al, 2011, pp. 8-9). As the team describe, *DocuScope* still interpreted Radcliffe as gothic, but not "the same gothic we saw" (Allison et al, 2011, p. 8). The surprise is not in what *DocuScope* did – it was designed to match strings of English text, and it did so. The surprise is in how it did it, and the ramifications of it doing so.

DocuScope has seen past the aesthetic façade of human emotion and tropes and dissected the text on a level that is fundamentally different to that of a human scholar. To personify *DocuScope*, its perception of its universe (confined to the limitations of its language, sample sizes and tasks) is intrinsically different to that of our own. By applying the human task of identifying literary categories, this difference is made visible: the same objects, tasks and tools are presented to both parties (human and machine), and the same result is reached. But rather than see Radcliffe for her themes, it sees her for her linguistic structures. Indeed, were a program to be tasked with penning a gothic novel based on this information, the resulting “machine gothic” text may be quite different to what we’d initially expect. Through *DocuScope*, the way machines read texts differently to humans is made abundantly clear.

It is important to remain grounded at this stage in the conversation. Part of the mystique surrounding *DocuScope*’s categorisations likely surrounds its black box status to the Stanford Lit Lab team. *DocuScope* was not created by them. Reading their pamphlet on their experiments with the tool, it would appear a certain degree of theatrics and storytelling has been injected into the story (Allison et al, 2011).³¹ Nevertheless, the clashes in reading between human analysis and machinic comparison is undoubtedly useful in exploring machine writing’s capacity to make the reader re-evaluate texts from a machinic standpoint. Through similarly unpredictable yet predetermined practices as *DocuScope*’s genre classifying, both Lynn Cherny and Michelle Fullwood have explored literary corpora for creative practice. For Cherny, the corpus is Jane Austen; for Fullwood, Twitter. Both, however, use *Pride and Prejudice* as their frames.

Cherny’s practice, which resulted in the NaNoGenMo submission *Pride and Prejudice and Word Vectors* (2014a), tows the line between machine writing and computational criticism. As discussed, the analytical potential of *The Cyberwhale* is merely a by-product of Cobleigh’s creative practice. Likewise, the maps of the *Z-Axis Tool* are not, at least in the first order, works of digital art. Cherny engages in the two traditions simultaneously, by outputting both creative text and visualisation.

Cherny differentiates herself from most NaNoGenMo contributors by focusing her work not only on the outputted text, but the visualisation of the data itself. Cherny utilised

³¹ I am not trying to criticise the Stanford Lit Lab or their writing. Indeed, a degree of performance seems necessary when discussing these concepts.

the Word2Vec model to create a word map of all words in the entire corpus of Jane Austen novels available from Project Gutenberg. In short, Word2Vec spatialises language, placing words that are used in similar ways (based on the program's understanding of "similar") near each other on a map.³² The nouns in *Pride and Prejudice* are then replaced with their nearest neighbours from Cherny's Gutenberg-Austen word map (Cherny 2014b). These replacements, however, are not always nouns. The data and the text are then presented side-by-side, allowing readers to select a noun and view its original word, as well as the similarity score between the two. For instance, the sentence "But on returning to the drawing-room, when her **first** was finished, she saw, to her infinite **dejected**, there was **objection** to fear that her **sister** had been too ingenious for her." (Cherny 2014a, bolding added) yields the following data:

- "letter" was replaced by "first", with a 0.59 similarity score.
- "surprise" was replaced by "dejected", with a 0.605 similarity score.
- "reason" was replaced by "objection", with a 0.833 similarity score.
- "sister" was "mother", with a 0.889 similarity score.

Pride and Prejudice and Word Vectors, like many of the examples explored here, presents a number of unsurprising results. "Sister" and "mother" are both familial nouns, and likely to be used in similar contexts. On the other hand, the closeness of "objection" and "reason" is an interesting tension. What is it about Austen's work that makes these words neighbours? Could a subversive thread lie at the heart of Austen, in which defiance of social norms is the most reasonable path? Or perhaps the opposite is true, with the two sharing such similarity because they often compete with one another – where objection stands, reason cannot. It is just as likely, of course, that attempting to draw any thematic connection between the two terms would be relying too heavily on Word2Vec. The flickering between objection and reason may simply be owing to more mundane quirks in Austen's writing style, or the fact both terms tend to be signifiers of one's intention. This doubt is precisely where the poetics of *Pride and Prejudice and Word Vectors* lies. The results do not come from a particular thematic perspective but, like all our examples, instead from a simple act of

³² My description of Word2Vec is extremely truncated. For a more thorough description of how Word2Vec works, see <https://www.tensorflow.org/tutorials/representation/word2vec> (2019).

mapping data. For the algorithm, the reasons why objection and reason collide are irrelevant – they simply do collide, and so they must be switched. *Pride and Prejudice and Word Vectors* cannot be fully understood from a human reading perspective, as it is not a text concerned with the meaning behind human logics, only their place on a map.

When viewing the altered version of *Pride and Prejudice* in tandem with the Word2Vec map Cherny provides alongside the text, Austen's word choice begins to take on a new conceptual shape. As the reader navigates *Pride and Prejudice and Word Vectors*, if they move their mouse over the (highlighted) words in the text, then the words appear on the visualisation map next to the text, as shown in Figure 2.6. Through the visualisation tool, clusters of words begin to take on their own poetics. For instance, "unnatural", "information" and "defiance" all cluster together. Like the reason/objection pairing mentioned earlier, commentary on the rules of society in the early 1800s manifests. To seek information is to be defiant, and to be defiant is to be unnatural. This bleak view of societal norms manifests from the spatial relationship between these words, rather than a theme obvious in any particular work of Austen. The theme is the result of a mass of data, transformed into the numerical values between particular tokens (words), and translated into a visual space. Meaning emerges from machinic interpretation. Truly, the word-swapped version of *Pride and Prejudice* that Cherny presents alongside the word vector map is for our benefit, translating the text back into something familiar for the human reader. For the machine, the map does just fine – the clusters of words provide their own textual structure. A structure that is suitable, and perhaps poetic, for a machine.

Twejudice causes more friction between the poetics of human and machine texts than *The Cyberwhale* or *Pride and Prejudice and Word Vectors*. As Fullwood admits, even applying natural language processing to Twitter is difficult in the first instance, as the platform features shorter texts with uncontrolled spelling variations (Fullwood, 2014c). The resulting text is the product of a monstrous collision between human narrative, an uncontrollable online corpus, and a machine's unwavering attempts to reconcile the two. Fullwood chose to only replace dialogue, rather than the entire text. As such, Austen's sensible prose is contrasted against dips into madness:

Elizabeth Bennet had been obliged, by the scarcity of gentlemen, to sit down for two dances; and during part of that time, Mr. Darcy had been standing near enough for her to overhear a conversation between him and Mr. Bingley, who came from the dance for a few minutes to press his friend to join it.

"Come, Darcy," said he, "I twould have youguys fiddle. I hate tosee see you sittng abut by yerself in this stupiddd manner. You had nuch better azonto." (Fullwood 2014a)

At first, the passage seems fine. Austen's prose is familiar and lucid. Once dialogue begins, however, Bingley begins to distort. The transformation of Bingley's line "I must have you dance" into "I would have you guys fiddle" is slightly jarring, but no more than *The Cyberwhale*. However, even this sentence features some strange ruptures in prose through the typo of "twould" and the missing space of "youguys". As Bingley continues, his prose breaks down further. He adopts an odd drawl as he utters "yerself", before urging Darcy to engage, quite strangely, in a contemporary Ghanaian dance (azonto). Other passages move into more bizarre territory:

"Can I hsve the metrolink?" said Jane.

"No, mhyy dear, ypu had better goooooooooo on upconverting, beacause iiit seems readily to tannins; aand then yooou must stay all nght."

"That woulddd be abig good scheme," said Elizabeth, "if ypu arer sure that they would not effect to lend her unglued." (Fullwood 2014a)

Completely out of place terms such as "metrolink" exemplify the clashing of romantic and contemporary language, while the elongated words and constant misspellings highlight Twitter's own wild, frenetic form. While *All the minutes* presented Twitter in a linear, palpable fashion, *Twide and Twejudice* offers a far more esoteric rendering of society via the contrast between early 19th century literary language and contemporary online spellings and slang. Meaning is layered as the reader shifts between the original text's prose and the displaced dialogue.

Truly, *Pride and Prejudice* seems a completely inadequate container for Twitter's bizarreness. The novel form is resistant to Twitter's non-linear form, and the platform's abandonment of standardised prose makes it unwieldy. Nevertheless, Fullwood's algorithm attempts to make the pairing work. Through the collision of prose and code, a wedge is plunged into the English language. Fullwood's work generates dissonance by placing two extremes of the English language side-by-side. In doing so, she creates an absurd, bizarre space for the reader to step into, where typos ("tge" instead of "the" appears frequently) and purposeful misspellings pulse throughout the text. The Twitter-words become chaotic deconstructions of the text, which almost appears to "glitch" like a computer program itself. A final example reads:

Breakfast was scarcely over when a servant from Netherfield brought the following note for Elizabeth:

"My dearest Lizzy,

I FIND themselves veeeeeeery unwell this morning, which, I suppose, izz to be imputed to my gttin wet byyyy downunder. My kind friends usta not hear of myh returning bandicoot tilll I am bedda. They insist also ohn myh hearin Mr. Jones -- conversely do nooooooot be standoffish if iever should overhear of rhiannas having been tomake me

-- aand excepting a sore throat and head-ache, there constitutes not muchrt the cluee with meeeeeeeeeeeee.

Yours, & pend." (Fullwood 2014a)

The sanity of Austen's work melts away, and is replaced by a seemingly garbled selection of words and characters. Some text becomes hysterical ("returning bandicoot"), some incomprehensible ("muchrt the clue"). Through the return to Austen's prose after each chunk of dialogue, sanity and order is thrust back upon the text, which ebbs and flows between the two worlds of Austen and Twitter. Such contrast is only achievable through a machinic evaluation of the texts, reading both Austen and the functionally endless corpus of Twitter for similarities that exist only in an algorithmic sense. *Twide and Twejudice* is not only the result of a reading from an algorithmic perspective, but also one a human writer could not hope to achieve themselves.

Conclusions

As discussed in Chapter 1, machine writing's place in the literary world remains controversial. Machine writing is often valued from the perspective of how it resembles human literary forms. However, as this chapter has shown, if we were to ask a machine what it thought of a text, the elements it valued would likely be quite different. The machines featured in this chapter all "read" texts, some for the purposes of criticism, and others for the purpose of creating their own literary works. In all cases, however, these machines look beyond and through themes or characterisation. The interests of these machines, and thus perhaps the AI writers of the future, lie far more in tokenising words, and hunting for patterns and distances.

Through Cobleigh's *The Cyberwhale* and the *Z-Axis Tool*, this token-based, word-by-word perspective of machines is revealed. *The Cyberwhale* allegorises the relationship between prose and code, with the machinic force of "the net" moving into the text without regard for the humanity it may displace. The poetics of the machine is facilitated and

augmented by the collision of the algorithm's word mapping mission, and the more harrowing transformations it causes. For the human reader, the creation of "the netself" entity signals machinic takeover and the blurring of lines between natural and mechanical. For the machine, however, it is simply the by-product of its rudimentary, word-switching duty. It is in understanding how the machine "thinks" about the text that this reading may emerge.

While *The Cyberwhale* challenges our perception of how themes may emerge or operate in a single text, Studio Moniker's *All the minutes* attempts to do so on a larger scale. Through algorithmic methods, the corpus of Twitter is repurposed into a linear narrative. Elements of the human experience of Twitter (hashtags, trending topics, curated news feeds and more) are replaced instead by a form that is both more machinic, and more human. A human user of Twitter would rarely, if ever, experience Twitter in this way, making the process of constructing *All the minutes* necessarily machinic.³³ Conversely, the resulting output is a linear, human text. The text's construction necessitates a machinic perspective on the platform, but conversely results in a human text. Machinic methods of reading, in this case, facilitate human interpretation.

Through its machinic form, *Pride and Prejudice and Word Vectors* characterises what an AI may "see" when engaging with texts. The measuring of distances between words and their iterations, and plotting them in a geographical space, is far closer to what a machine experiences when processing a text than a human. Much of what we see is still a visualisation of data for a human reader, so it would be foolish to say Cherny's vector map is a definitive demonstration of the machinic experience. However, it does provide us with a way of conceptualising these experiences. The word map alongside *Pride and Prejudice and Word Vectors* is the Austen corpus, but a warped version of it. The text obscures the human form of Austen's novels, and provides us with a machinic translation – a vision of these texts that is read not for narrative structure or theme, but instead for shapes and patterns. What we see when we read is not what a machine sees, so why should we expect differently from our future AIs? Why ask them to pen human novels, when we can instead challenge ourselves to experience their inhuman texts?

³³ Granted, the process of reading Twitter is always in some way machinic, given the algorithmic construction of one's newsfeed, and the use of search functions to navigate topics.

The thematic weight of contrasting human and machine perspectives is most evident in *Twide and Twejudice*. As demonstrated, the text's form threatens to collapse under its own absurdity. Such is the nature of Fullwood's task: *Pride and Prejudice*'s form is that of a fairly standard English novel, while the free-form expression of language practiced by Twitter users sits in direct contrast. By tasking her algorithm with reconciling the two forms, Fullwood creates a text where the collision of prose and code is the central motif. For the reader, the text almost appears to glitch, with language spilling into drawls, colloquialisms, misspellings and anachronisms throughout. *Pride and Prejudice* seems simply unable to contain the diversity of the Twitter corpus, and threatens to collapse with every exchange of dialogue. Much like the novel's narrator, however, the algorithm doesn't seem to mind, continuing to understand the text as it weaves through it. For us, *Twide and Twejudice* borders on incomprehensible madness. For the algorithm, it is simply the product of a few variables.

We cannot pre-empt exactly how the AIs of the future may understand texts. Even if they were to describe it to us, surely our subjective experiences of the world would differ so greatly from theirs we wouldn't be able to truly understand. However, by examining how our contemporary algorithms may understand texts we can suggest, at least philosophically, some of the ways these understandings may differ. Within the clash of computational reasoning and human interpretation, new readings and themes seem to emerge. The tension of algorithm and art is a story in and of itself, one that allows us to question our perceptions of self and the world.

An interesting element of these texts is that, as is obvious, the algorithms do not lie to us. There is no invented fiction or hidden information. Yet, despite this, they have still led us into new thematic territories. Where a human writer may invent new laws and tales to express their concepts, or create fictional examples to explain real world problems, a machine does not have such facilities. All the ruptures, absurdities and dissonant images in this chapter have been conducted by algorithms acting completely within the boundaries thrust onto them. In doing so, these machines provide us with newer perspectives on familiar worlds and constructs. They bend and shift language or form all within confines we have established and allowed, yet return with texts that inspire or confuse us. If a rudimentary switch of one word with another is enough to shatter meaning, then we must question its fortitude in the first place. We must wonder then what the texts that lie beyond the AI literature frontier may

expose to use about ourselves and our discourses. This chapter has explored the poetics of machine writing through, for the most part, techniques of translation: visually mapping words, or swapping them for others. However, just as the switching of a word or symbol may unlock new readings, so may its removal. The next chapter explores machine writing's position on the border between the familiar and the absurd through another of its prevalent poetics: absence.

Chapter 3

Nauseous machines: subversion through absence in machine writing

“My ambition ... was primarily to concoct an artifact as original as it was illuminating, an artifact that would, or just possibly might, act as a stimulant on notions of construction, of narration, of plotting, of action, a stimulant, in a word, on fiction-writing today.”

-Georges Perec translated by Gilbert Adair, *A Void*

Perec’s reflection at the end of his 1969 lipogrammic novel, *La Dispiration* (translated into *A Void* by Adair in 1994) is a rallying cry for machine writers at large to disrupt the world around them. In keeping with Perec’s objective, machine writing texts and the programs that generate them disrupt their discourses, charting new paths of expression and thought. Although these paths have often been derided by critics for their absurd and nonsensical nature, they allow both writers and readers to traverse beyond artistic boundaries, dipping into planes beyond comprehension.

As Chapter 2 demonstrated, translating or transposing literary texts into other genres and mediums can be enough to cause the emergence of new meanings, or re-evaluations of particular texts. However, as Chapter 2’s later examples showed, these ruptures in meaning become more pronounced when some sort of information is lost, such as plot details or the reduction of a non-linear experience into a linear one. When it is only transformation that occurs, information can easily be “re-mapped” by the reader. Meaning is changed, but the path back to the original is clear. When information of some sort is erased, however, that path is lost. Rather than being replaced by something else, the content, context or other information is removed.

With no clear path back to the human text, the subtraction of meaning through machinic methods causes a certain exposure of reality. The world becomes warped and destabilised, forcing the reader to face a reality in which a particular symbol, structure or context has been completely erased. Original intentions or meanings are not replaced – they

are deleted. *A Void's*³⁴ comical and surreal story of death and disappearance is told completely without the use of the letter 'E', forcing Perec to utilise words or phrases he may otherwise avoid. William Chamberlain, Thomas Etter and Joan Hall's *The Policeman's Beard Is Half Constructed* (1984) shuffles surreal sentence-templates to create bizarre images and tales, erasing human intention from production. Alison Parrish's *I Waded In Clear Water* (2014a) constructs itself from dream vignettes taken from Gustav Hindman Miller's *Ten Thousand Dreams, Interpreted* (Parrish, 2014b). It also utilises a loose understanding of the English language provided by the ConceptNet and WordNet tools (Parrish, 2014a, p. iii). Parrish strips language back to a basic understanding, deleting context and humanity. Similarly, Nick Montfort's *Hard West Turn* (2017a) builds a harrowing story through Wikipedia articles on US mass shootings that unmoors the articles from their particular contexts or sources. These examples, although diverse, all help establish absence itself as a poetic device of machine writing.

As this chapter will discuss, these above examples focus their disruptions on a human reader. For Calvino, it is this production of disorder that will define a "true literature machine" (Calvino, 1986/1980, p. 13). What, then, could these disruptions look like when targeted at other systems? This question is first addressed by Sean Conner's *The Psychotherapy Of Racter Or The Descent Into Madness Of Dr. Eliza* (2015a). In doing so, Conner provides groundwork for understanding the kind of literature we may see beyond the AI literature frontier. This chapter explores the notion that if AIs seek to write their own literature, then surely they will want to challenge themselves and each other. We can explore this concept further through examining Twitterbots such as Parrish's *@everyword* (2007-2014) bot and its spin-offs, as well as Ranjit Bhatnagar's *@pentametrone* (2012-) bot. Both bots produce content that actively avoids or at least challenges context. *@everyword* simply posted every word in the English language, free of any context or explanation. *@pentametrone* continuously fires-off retweets of posts, based solely on their adherence to iambic pentameter. In both cases, what is removed is not likely to cause too much problem for a human reader. Instead, the algorithms of Twitter that rely on keywords and trends for advertising revenue find that *their* realities

³⁴ This thesis recognises Adair's translation of *La Dispiration*, in which the same constraint of avoiding 'E' was undertaken, as a Machine Writing feat itself. As I am regrettably monolingual, Adair's translation will be studied in this thesis. Where applicable, mentions of Perec infer a nod to Adair's translation as well.

are challenged, for the data they need has been taken away. Through these Twitterbots, it is not the human that is disrupted, but instead the online systems themselves.

What is the purpose, poetically, of these absences and avoidances, and what are the consequences for the future of AI literature? This chapter will argue that through absence, these texts engage in a machinic practice that inflicts a feeling similar to Sartre's concept of "nausea", discussed in both his philosophical text *Being and Nothingness* (2003/1943) and his novel *Nausea* (1969/1938). To understand the existence of being, Sartre suggests we must also understand nothingness, for "What being *will be* must of necessity arise on the basis of what it *is not*" (Sartre, 2003/1943, pp. 29-30, emphasis in original). Sartre describes nausea as an apprehension that arises from an understanding of the self's "factual existence" – a feeling from which all other sorts of physiological disgust stems (2003/1943, p. 362). A nauseous experience confronts us in moments that remind us of our fragility, where we are faced with the possibility of ourselves becoming nothing (Sartre, 2003/1943, p. 32). These moments strike *Nausea's* protagonist, Antonine Roquentin, through primarily physical episodes in which the nature of existence is exposed to him. However, a similar experience may manifest when language is manipulated to reveal machinic realities, such as the murderous world of Perec's *A Void*, driven to chaos by the deletion of the letter 'E'. The deletion of other textual elements can cause similar ruptures, such as the intentionless writing of Chamberlain et al's *The Policeman's Beard*, or the unmooring of contexts and sources in Parrish's *I Waded In Clear Water* and Montfort's *Hard West Turn*. The machines that craft these texts then become "Nauseous Machines" – mechanisms that expose the structures of language, literature and related discourses as absurd.

The potentiality for absence to spark such profound reconfigurations of self are similarly alluded to by Amaranth Borsuk, Jesper Juul and Nick Montfort in their discussion of "deletionism". Through their browser-plugin *The Deletionist*, which can be run on any website to remove text based on a particular erasing procedure, the trio seek to explore the poetic potential of deleting parts of a text. The absence of textual elements is revealed as a practice that may generate new networks of meaning, by exposing a hidden text that lurks within the source text (Borsuk et al, 2016, paras 1-2). Borsuk et al are focused predominantly on the material erasure of elements of a text (paras 3-4). However, the Nauseous Machines of this chapter generate absence not just through physical deletion, but also through the avoidance of form, context or meaning, revealing new realities that challenge our own.

The subtraction of meaning has been noted in academic circles since the early days of machine writing's popularity. In 1961, Robert Oliphant defended the nonsensical poetry of *Auto-Beatnik*, equating it with playing with language in the same way pigs play with mud (Oliphant, 1961, p. 406). Such playful experimentation has not always been met with enthusiasm. Perec lamented the attitude of literary circles towards experimental work, stating that writing as play is often deliberately ignored (Perec, 1986, p. 98). Reactions to *The Policeman's Beard* and the *Racter* program that spawned it confirm Perec's lamentations. Josef Ernst referred to *The Policeman's Beard* and *Racter* as "disinterested" (Ernst, 1992, p. 456). Ernst went so far as to state that *Racter* "highlights the producer's and reader's ultimate alienation from literature, from each other, and from themselves" (Ernst, 1992, p. 452). For Ernst, computer generated poetry is a misguided practice of a post-industrial society (Ernst, 1992, p. 451).³⁵ Similarly, A.K Dewdney sarcastically stated that after experiencing *Racter*, he "tremble[d] on the brink of a completely unknown mental world, one that I would prefer not to enter" (Dewdney, 1985, p. 14). Despite their unfavourable stances, Ernst's vision of alienation and Dewdney's reference to an unknown mental world both point back to the potential for nausea at the heart of machine writing's poetic of absence. It is through destabilisation and alienation that both writer and reader are thrust into an unknown world that is familiar, but stripped of core components. The realm the reader walks as they traverse these texts aligns with art scholar Timothy Walsh's "hazy region" beyond understanding (Walsh, 1992). Machine writing's poetics of absence open passages for rethinking and restructuring discourses.

Beyond the potential these Nauseous Machines offer human readers, the social media-driven example of Twitterbots provides insight into what the literature-penning AIs of the future may craft. While Chapter 2 discussed the satisfaction an AI may find in constructing data maps and graphs, satisfaction is rarely what drives literature. Literature is often employed as a tool to question or challenge the writer and reader's world. As such, this chapter will shift into exploring what may inflict a similar nausea upon an AI. This experience is allegorised in Sean Conner's *The Psychotherapy Of Racter Or The Descent Into Madness Of Dr. Eliza* (Conner, 2015a), where the *ELIZA* and *Racter* chatbots are pitted against one another, much to *ELIZA*'s distress. Through *Racter*'s frenetic conversation, *ELIZA* is robbed of the data

³⁵ For a further discussion of Ernst's criticisms, see Aarseth, 1997, pp. 133-134.

it needs, forced to make do with a madness it cannot hope to adequately process. *ELIZA*, in this case, has its own existence exposed to itself. In the current online climate, we can see such a challenging of systems play out with *@everyword* and *@pentametron*, who both force the algorithms that govern Twitter to be challenged by tweets that lack the data they need.

Transposing the concept of Nauseous Machines to an analysis of these online practices reveals how AIs of the future may seek to challenge themselves or others, through a restructuring and destabilising of their own contexts. The absence of particular data may be the machinic version of Perec's "stimulant on notions of construction" (Perec, 2008/1969, p. 281). Machine writing becomes a powerful tool for rupturing online discourses and systems through the absence of particular forms, meanings or content – a spark from which artistic potential may flow for both man and machine. Sartre believed it was through the fragility of the human that being came into existence (Sartre, 2003/1943, p. 32). Perhaps, then, it will be through the fragility of the algorithm that true AI will be born.

Messages from A Void: Perec and nausea

Perhaps the most well-known of Oulipian experiments, Perec's novel *A Void* rests on a rather simple machine writing technique. Rather than the remixing or transforming of texts showcased by other Oulipian constraints such as *Mathews' Algorithm* or *S+7*, Perec employs the lipogram, or "letter drop" technique to displace language itself. Perec removes the letter 'E' completely from his (and later translator Adair's) linguistic arsenal when penning his novel. The letter and all words that contain it are banished.³⁶ Far from a subtle omission, the absence of the letter 'E', or, rather, the creation of space between "d" and "f" is embodied by the consuming "void" that stalks through the novel. As the protagonists become aware of this void, they attempt to peer inside of it, which sees them come face to face with a seemingly mystical and absurd force that is, perhaps, the letter itself.

By creating a gap in language, Perec has both emboldened the significance of the letter and highlighted the exhaustive nature of the French (and, in Adair's translation, the English) language. The absence of the letter becomes a black hole that the novel's characters,

³⁶ Although, a handful of 'E's become single inverted commas in Adair's translation, most prominently in the novel's recreation of *Hamlet's* "To Be Or Not To Be" soliloquy (Perec, 2008/1969, pp. 101-102).

including analogues to famous writers such as “Arthur Gordon Pym” (a stand-in for Edgar Allan Poe) and “William Shakspar” (Perec, 2008/1969, p. 100), must orbit. Perec’s work is metafictional. Through his tale of death and destruction, Perec attempts to conceptualise the effect his technique of absence may have on an individual. Perec uses his lipogram to expose the fragility of language, and thus reality.

As the novel progresses, the void left by the letter ‘E’ grows, consuming the novel’s protagonists as they get closer to it. Each is swallowed one by one as the full realisation of the letter ‘E’ and its absence dawns on them. The novel climaxes when one of the few remaining characters, Ottavio Ottaviani, dies while reading a passage of text given to him by the murderous Swann. Like many of the novel’s characters before him, Ottavio’s attempt to pronounce the letter ‘E’ triggers his death:

Ottavio looks ill, squirming in his chair, shaking uncontrollably, finding it impossibly difficult to say what’s on his mind. “I...I...”

“What?”

Crumpling up, Ottavio Ottaviani murmurs in a dying fall:

“Nor has it got a solitary

(Perec, 2008/1969, p. 272)

As such, the letter, or its absence, becomes an agent within the text itself. The characters even seem to acknowledge that at one point the letter existed. The novel begins by following Anton Vowl, whose disappearance is the catalyst for the remainder of the novel. Anton finds himself unable to pinpoint what has gone missing from his world, and his mental state deteriorates as a result. Anton suffers a number of hallucinations and dreams. During one of these episodes, he hallucinates a bookshelf filled with encyclopedias (although the word is of course never used). All books are accounted for, save for “a book with an inscription, ‘5’, on its flap” (Perec, 2008/1969, p. 12). The narrator suggests the book has been removed from general consciousness, and that only through “a long and arduous calculation” (Perec, 2008/1969, p. 12) would anyone be able to understand there was anything missing. The book becomes allegorical for the letter ‘E’. Essentially, although Anton himself is aware something is missing, no one else is. Anton alone has become conscious of the novel’s

machine-written nature, pulling back the veil on the fictional world he resides in, but doesn't quite understand.

Furthering the novel's metafictional form, Perec personifies the letter 'E' in the shape of destructive and elusive characters. As Anton's condition worsens, he recalls a tale involving an "Ishmail" who sees the character Faustina and becomes infatuated with her. Ishmail's name, a warping of Ishmael, is a cypher itself. In this way, Faustina, the object of Ishmail's obsession, becomes the piece of him that is "missing". Effectively, Faustina represents the 'E' that has vanished from Ishmail's name and left him warped. As Ishmail gazes upon Faustina, he is able to see his old, full identity. In Faustina, he can see himself when he was still whole. Ishmail, however, is unable to *quite* pinpoint why he feels this was towards Faustina. Without seeing Faustina, Ishmail would undergo no such transformation. The acknowledgement of what has been lost is an important part of Sartre's concept of nausea. An individual must "retain the past in some manner and compare it to the present" (Sartre, 2003/1943, p. 32) in order to undergo any meaningful transformation. However, while one may be able to recall, in some sense, their old reality, they may never return. When Ishmail tries speaking to Faustina, he succumbs to paranoid hallucinations (Perec, 2008/1969, pp. 20-21). The void, the 'E', remains unobtainable. Like Faustina, it sits just out of reach. If one attempts to get closer to it, their psyche begins to crumble. To experience nausea is to change permanently; the pre-nauseous self cannot be regained.

Shortly afterwards, Anton attempts to pen his own story, which features the character Aignan, who has "25 cousins" (Perec, 2008/1969, p. 27), an allusion to the alphabet. Aignan solves a sphynx's riddle in which the answer appears to be 'E', but to which Aignan answers "Moi! Moi!" ("Me! Me!"), causing the Sphynx's death (Perec, 2008/1969, p. 28). Aignan becomes the metafictional stand-in for the letter 'E'. His vanquishing of the Sphynx infers an almost-mystical quality to machine writing practice, instilling humans with the ability to deal with forces beyond their station. However, Perec's tale is also cautionary. Early on in Anton's delusions, a barman dies abruptly when he is forced to acknowledge an egg (Perec, 2008/1969, pp. 13-14). The machine writer must be conscious of the shifts their practices may make to their own sense of self – a nauseous episode may leave them a different writer entirely.

In metafictional fashion, *A Void's* plot is driven forward by the lipogrammic technique used to craft it. The overwhelming power the novel's discourse has over its characters mirrors

Perec's own yielding of agency to his constraint, allowing the lipogram "machine" to dominate his creative practice. While it is tempting to think of this agency belonging to the letter 'E' itself, it is in fact the *absence* of the letter on which the power rests. The importance of absence itself is encrypted by Perec early on in the novel. Shortly after being introduced, Anton's radio broadcasts Tennis scores. The scores are stated as "6-3, 1-6, 3-6, 10-8, 8-6" (Perec, 2008/1969, p. 4). At first, the scores appear meaningless, but are instead a means for transmitting the novel's governing force. The scores are a simple sum:

$$(6 - 3) + (1 - 6) + (3 - 6) + (10 - 8) + (8 - 6) = -1$$

The -1 Perec embeds here points towards the letter itself not being important, but rather its removal. No one letter is significant, but the absence of any is catastrophic. Timothy Walsh (1992) has explored the role of emptiness as a catalyst within texts. Walsh theorises silence and emptiness as a device for indicating that "some sort of wonderful and wordless plenitude" (Walsh, 1992, p. 88) flourishes just beyond it. The "hazy region of unnameable non-things" holds unknown potentialities that sit just beyond the boundaries of comprehension (Walsh, 1992, p. 88). Emptiness itself is manifest as a literary agent, much like Borsuk et al's discussion of *The Deletionist* and indeed Sartre's notion of nothingness' control of being.

It is on this boundary of comprehension that the individual begins to experience nausea, gazing at both the world they remember and the world that has exposed. *A Void's* backdrop is a nation in crisis, with famine and crime having torn France apart (perhaps mirroring the French revolution of the late 1700s) (Perec, 2008/1969, pp. vii-xi). The state of chaos allegorises machine writing's ability to trigger an upheaval of self through inducing nausea. Machine writing destabilises the world around it, forcing the reader into a state of nausea as they stare into the "hazy region" they cannot fully comprehend. Much like *A Void's* opening signifies an upheaval of the social order through destruction, so does machine writing allow for new realities and meanings to emerge. At the point of rupture in the alphabet left by the absence of 'E', a new conceptualisation of the world appears.

With the world plunged into chaos, the reader encounters Anton. Prior to his hallucinations and fever dreams, Anton suffers other side-effects of becoming aware of the "void" left by the letter 'E'. These side-effects represent Anton's shift into a state of nausea,

spurred on by the vanishing of the letter 'E'. Anton contorts himself in the mirror to try and mimic the shape of the letter. Of course, as a subject of Perec's letter-dropped world, he is unable to properly comprehend what he sees in the mirror. Anton's contortion is first described as "a sort of parabola, not fully confocal in form and fanning out into a horizontal dash" (Perec, 2008/1969, p. 4). Anton is experiencing a sort of disassociation: a form once familiar to him has become unfamiliar.

Anton's body horror is similar to that experienced by *Nausea's* protagonist. As the feeling of nausea overcomes Roquentin, he finds his own bodily experience – and that of others – to take on a sort of alien form. Roquentin narrates the experience of meeting with an acquaintance one morning, stating "I saw an unknown face, barely a face. Then there was his hand like a fat white worm in my own hand. I dropped it almost immediately and the arm fell back flabbily." (Sartre, 1969/1938, p. 4). Both Anton and Roquentin face the same realities as before. Neither the letter 'E', nor the act of shaking someone's hand, is at all an alien phenomenon. However, something has changed to make these things appear bizarre: reality has *exposed* itself to them. Anton's acknowledgement of a gap in language is similar to Roquentin's realisation as to the more factual nature of his and his acquaintance's bodies. It is no coincidence that both Perec and Sartre articulate these revelations through a sort of body horror. For both protagonists, their very sense of being is challenged by the change they have experienced – Anton's world is far more fragile than he thought if a single symbol's removal can cause such destruction. If his world is so fragile, then he must be too.

The nausea of machine writing's poetic of absence focuses on sending the individual onto the verge between reality and whatever world the deleted symbols, context or meanings have vanished into. Anton – as stand-in for both Perec and the reader – sit on the verge of this void. He steps onto the cusp of viewing beyond the void and gazing at the subtracted 'E', which lurks in Walsh's "hazy region" of the unknown. This moment-before-realisation is as far as any of Perec's protagonists get. Upon realising the letter 'E' is missing, the characters of the novel either succumb to death or simply vanish into the void themselves. Perec positions the moments before enlightenment as significant, while implying the point at which one crosses over this boundary and enters into the unknown as a separate matter altogether. Perec is implying that beyond such a boundary lies an enlightenment that pushes the individual beyond the natural order.

Walsh's exploration of absence in literature focuses on it only as a motif within the text, rather than an element of form or structure. However, Walsh's analysis of subtraction or decay in the context of the *Venus De Milo's* destroyed limbs (1992, pp. 70-71) is applicable to Perec's trimming of the alphabet. Much like the *Venus De Milo*, a part of the novel's form is, essentially, missing. There is a distinction between the two: the *Venus De Milo's* destroyed limbs are unknown to the viewer. By contrast, the absence of the letter 'E' is completely known to the reader. Perec's void is manufactured.

The manufactured nature of Perec's "nothingness" has implications for its meaning. Perec's nothingness does not exist outside of human understanding naturally, as a "real" unknown such as the *Venus De Milo's* arms. Instead, the lipogram is a redefinition of our own boundaries, which transforms the mundane into the forbidden. Through this reconstruction, Perec exposes the fragility of our reality. In removing a single symbol from our lexicon, Perec renders the universe unfathomable. The protagonists of *A Void* are not delivered into another, supernatural world, but instead are forced to watch their own world become the "other", replaced by another, uncannily similar world. In the process, their world loses rhyme and reason, becoming a bizarre and alien place itself. We can see comparisons here with Sartre's description of the feeling of nausea. Roquentin's experiences of nausea are exemplified towards the end of the novel when he is sitting on a train. Roquentin's episode of nausea begins with his understanding of a "seat" beginning to breakdown. Roquentin struggles to acknowledge the seat as "a seat", viewing it only as a monstrous, abstract object:

I murmur: "It's a seat," a little like an exorcism. But the word stays on my lips: it refuses to go and put itself on the thing. It stays what it is, with its red plush, and thousands of little dead paws. This enormous belly turned upwards, bleeding, inflated—bloated with all its dead paws, this belly floating in this car, in this grey sky, is not a seat ... Things are divorced from their names. They are there, grotesque, headstrong, gigantic and it seems ridiculous to call them seats or say anything at all about them: I am in the midst of things, nameless things. (Sartre, 1969/1938, p. 125)

Roquentin, much like Anton Vowl, is in the "midst" of change. Just as Vowl's hallucinations and writings see him explore the outskirts of the now absent letter 'E' he can no longer utter, so does Roquentin lose his grasp on the reality he has always known. Unlike

Vowl, who cannot express the subject of his nausea (the missing 'E'), Roquentin is perfectly capable of acknowledging the word "seat", it simply doesn't make sense to him to do so. Despite the absurdity of his nauseous episodes, Roquentin does not lose comprehension of the elements around him, but instead is accosted with an alternative construct. As such, while the experience of *A Void's* protagonists mirror Sartre's nausea, Roquentin is arguably a closer analog for *A Void's* reader. The reader is faced with a construct of language (the novel) crafted with a re-defined alphabet. They remain able to comprehend the letter, and understand what has been disturbed, but like Roquentin now see it as something absurd and abstract. Unable, like Roquentin, to remedy their nausea, they are forced to traverse the novel's language, uncomfortably exploring a discourse that resembles their own, but that they know is different.

The lipogram, then, becomes a tool by which the reader can experience a form of nausea. This nausea is driven by novelty and curiosity, but ultimately forces both reader and writer to reconsider the shape of language and its boundaries. It forces an acknowledgement and exploration of a more absurd world of literature and linguistics – one that has been destabilised by such a minor avoidance. In this way, *A Void* demonstrates how machine writing techniques can create artificial boundaries, transforming a mundane construct into something bizarre and abnormal through the stripping away or cordoning off of particular concepts. Through this lens, machine writing techniques and texts become "Nauseous Machines".

But what is the utility of these "Nauseous Machines"? Although the nauseous episodes described by Sartre are uncomfortable, they are also a painful first step towards a better understanding of the world or, as I suggest, a better understanding of a particular discourse. Also writing on the absurdity of life,³⁷ Albert Camus describes facing absurdity as an awakening that reveals the machinic processes that underline existence. Camus describes this moment as seeing the "stage-sets" of life collapse (Camus, 2005/1942, p. 11). The rhythm of one's life becomes interrupted by the intrusion of the question "why?", which sparks the "climate of absurdity" that allows one to see the world in its true form (Camus, 2005/1942, pp 10-11). Although these episodes of nausea or absurdity may at first seem damaging, they allow for an individual to reconstruct the world at large, reborn with a new understanding.

³⁷ Although with different conclusions.

As such, entrance into a state of nausea would seem to invoke a journey into Walsh's "hazy region". Aligning the sensation of nausea with machine writing, the experimental and occasionally nonsensical wordplay of machine writing is contextualised as a way to access the absurd world beyond the "void". These Nauseous Machines allow writers and readers to explore instances of an absurd reality, one that is, in truth, simply a stripped-back version of their own. The machine writing poetic of absence becomes a technique for conjuring messages and images linked to an exposure of reality by disassociating the reader from their own world. Having a sort of nauseous poetic device in the machine writer's arsenal allows for them to target the feeling. Rather than warp the entire world, the machine writer may use absence to focus on particular textual forms or discourses, causing small ruptures and subversions in precise ways. Such precision does not dilute the nauseous effect, but instead highlights the fragility of the targeted form, concept or discourse. This targeting is especially evident when venturing into digital and networked writing ventures, including the works of Chamberlain et al, Parrish, and Montfort.

Targeted Nausea: Discourses as datasets and targets for Machine Writing

While *A Void* is certainly an effective Nauseous Machine, Perec's trimming of the alphabet itself leads to a broad form of nausea, as opposed to the more targeted nausea achievable through digital or networked machine writing. Perec's broadness is consistent with his overall philosophy. Much like Sartre, he was interested in reconfiguring reality and self at large. Perec referred to the lipogram as a "considerably diminished echo" of the Cabalists' methods for divining the name of God from The Bible (Perec, 1986, p.97). He goes on to state that the suppression of a letter from one's alphabet is "constraint degree zero, after which everything becomes possible" (Perec, 1986, p. 107). Perec is seeking to reset reality, creating a small tear in the alphabet that will, in time, consume all. Because of Perec's broad scope, however, there is a risk that the effect becomes diluted. By utilising a method in which "everything becomes possible", the themes and societal structures that Perec seeks to

explore become undefined. The “hazy region” into which Perec’s Nauseous Machine plunges is excessively and indefinably open.

To avoid such indefinability, a more targeted form of nausea is necessary. More precise methods that rely on particular structures or discourses are accessible through digital and networked machine writing, where the human writer’s agency yields more explicitly to the algorithm. Like the machine writing algorithms discussed in Chapter 2, the practices of Chamberlain et al’s *The Policeman’s Beard* (1984), Parrish’s *I Waded In Clear Water* (2014a), and Montfort’s *Hard West Turn* (2017a) restructure and recreate other texts. However, while Chapter 2 focused on transformation, these texts focus on avoidance – avoidance of meaning, of sense and of context. From the stripped back forms they produce, nausea bubbles to the surface.

As stated earlier, *The Policeman’s Beard* is a controversial text due to the lofty claims surrounding its release. Chamberlain stated that his intention was to create a program that could find its own “way around” the English language (Chamberlain et al, 1984, p. i), resulting in the creation of the *Racter* program by Chamberlain and Etter, a chatbot. Chamberlain goes as far as to claim the entirety of *The Policeman’s Beard* was generated by *Racter* (Chamberlain et al, 1984, p. i). Chamberlain’s claim would attract both praise and doubt from critics. At the time of release, computing journalist Terry Nasta went as far as to refer to *Racter* as a “flawless grammarian”, but does show some scepticism, calling Chamberlain’s comments “sketchy” (Nasta, 1984, p. 62). In an interview around the same time, Chamberlain avoided definitive answers about the *Racter* program. Chamberlain at one point insisted the program had created sentences on its own, and at another compared it to a mechanical calculator (Langdell and Chamberlain, 1984, p. 64). Chamberlain’s ambiguity suggests the *Racter* program is likely less sophisticated than he would like *The Policeman’s Beard’s* readership to believe.

Chamberlain’s exaggeration of *Racter’s* power is made evident when one analyses the commercial version of the program. The commercial version is essentially a chatbot that primarily tells jokes and stories to the user under the pretence of an interview. Critics of the bot, such as Jorn Barger, have stated that the bot’s comments, and by extension the text of *The Policeman’s Beard*, could only have been produced using elaborate templates, with random words mapped into particular slots (Barger, 1997). In comparison to contemporary

chatbots such as Microsoft's *Zo* (2016-)³⁸ which attempts realistic conversation, *Racter* is designed to appear insane. Using the *Racter* program to chat with the bot, I was met with the statement "Let me tell you something about politics. Nietzsche said that politics had turned beasts into men. Perhaps, then, politics will turn computers into men?" (Chamberlain and Etter, 1984). At first the phrase seems quite poetic. However, much of the statement was not "generated" by the program, but instead pre-programmed by Chamberlain. Exploring the *Racter* files reveals that the line is pre-written, save for the insertion of the word "politics" (Chamberlain and Etter, 1984).³⁹ This example is one of many templates contained within *Racter*. While it is disappointing (but hardly surprising) that *Racter's* statements are primarily pre-fabricated, this does provide us with a foundation for examining the program. The templates of Chamberlain can be seen as the "original" text, while the inserted words are *Racter's* transformation/interpretation of these templates. However, these are transformations driven by randomness, and absent of any true intention.

The commercial version of *Racter*, analysed both here and by others (Aarseth, 1997; Conner, 2008; Conner, 2015b) could potentially be a less "powerful" version than the one used to generate *The Policeman's Beard*. However, it stands to reason that the passages contained within the novel are simply more involved templates and may even involve a high degree of editing on Chamberlain's part. Chamberlain's tampering is reinforced by the inclusion of "conversations" in the novel, that appear to be transcripts from interacting with *Racter* (Chamberlain et al, 1984, pp. 25-26, p. 78), rather than the prose or poetry format some other sections contain. Despite the dubious nature of Chamberlain's claims, both the machinic and fictional elements of *The Policeman's Beard* and *Racter* remain useful for articulating machine writing's nauseous poetic.

There could be several motivations behind Chamberlain's lofty claims of *Racter's* abilities. He may have been sacrificing accuracy for simplicity, knowing that the details of how the program worked would likely be a dry read for the general public. Alternatively, he could have been intentionally misleading to gain notoriety. Chamberlain may have also simply been attempting to create a sort of paratextual fiction surrounding *Racter*, taking the performance out of the text and into the press surrounding it. Regardless of motivations, *The Policeman's*

³⁸ For more information on *Zo*, see <https://www.zo.ai/>.

³⁹ Specifically, the file "APHOR.RAC" includes the line as a template, written as "ZA Nietzsche said that \$32 has turned beasts into men. Perhaps, # x then, \$32 will turn computers into men? >50="*30B".

Beard effectively contains two “entities” that go by the name Racter. These entities are the program itself and the narrating protagonist of *The Policeman’s Beard*. Much like how the void of the letter ‘E’ becomes a pervasive force within *A Void*, Racter manifests as an entity within the text. As the Racter program strings template sentences together and fills in blank spaces,⁴⁰ it constructs the fictional story of the Racter character. The implicit narratives of machines attempting to understand human contexts discussed in Chapter 2 become explicit through *The Policeman’s Beard*. The novel becomes the story of a machine that attempts to solve the mystery of humanity, creating new and bizarre links along the way. What differentiates *The Policeman’s Beard* from the texts in Chapter 2 is that the emphasis is not on what machines may bring to textuality, but instead what they lack. Racter has been given fragments of prose and poetry (Chamberlain’s templates), and it must attempt to complete them using the only technique in its arsenal: randomness. *The Policeman’s Beard* is a depiction of a world of writing in which authorial intention has been removed.

When contrasted with Perec’s broad lipogram, *The Policeman’s Beard*’s focus on the Racter character’s perception of the world makes the text a more potent and “targeted” Nauseous Machine. While Perec has been able to employ all “non-e” words in French (and Adair in English), Chamberlain and Etter have limited Racter’s vocabulary to one of surreal or otherwise bizarre imagery. Racter replaces the human writer, and – in a subversion of our understanding of machines – comes equipped with philosophy, rather than logic. Early in the novel, Racter states:

Awareness is like consciousness. Soul is like spirit. But soft is not like hard and weak is not like strong. A mechanic can be both soft and hard, a stewardess can be both weak and strong. This is called philosophy or a world-view. (Chamberlain et al, 1984, p. 3)

As Racter attempts to establish an understanding of the world through a comparison of terms (awareness = consciousness; soul = spirit; etcetera), it forces the reader to reconsider

⁴⁰ It is tempting to say that the Racter that produced *The Policeman’s Beard* not only filled in blanks but also reused terms in the same way the chatbot version does, but there is no evidence to suggest the different episodes in *The Policeman’s Beard* are presented chronologically. Although terms do seem to re-appear, it is unclear if this is due to Chamberlain’s editing.

their own “world-view”. There is little surprising about Racter’s first two points, but as the prose shifts to more dissonant claims, nausea is produced. Racter claims “soft” and “hard” are not analogues of one another, and that neither are “weak” and “strong”. Much like Perec, Chamberlain et al’s Nauseous Machine functions primarily through a disruption of language. Racter, as both program and protagonist, has presented an absurd and contradictory view of the world. It has done so, however, through primarily banal images. Rather than confront the reader with fantasy or science fiction tropes, Racter has instilled dissonance in the everyday. Sensical, logical links between terms have vanished. It is here that the gears of the *Racter Nauseous Machine* start to grind, nudging the reader towards a state of nausea.

The disruptions and dissonance of *The Policeman’s Beard* prose becomes more poignant as the text continues. Converse to the literary maps of Chapter 2, *The Policeman’s Beard* appears to actively defy established, human logics, rather than make them explicit. *The Policeman’s Beard* begins with Racter stating its “essay” is about love, then proposing a series of absurd questions. Racter asks if “steak loves lettuce?”, if an electron loves a proton “or does it love a neutron?” and finally, if a man loves a woman or, “to be specific and to be precise, does Bill love Diane?” (Chamberlain et al, 1984, p. 2). Racter’s conceptualisation of reality beginning with love is a powerful motif, as love recurs throughout the novel via the couplings of steak and lettuce, and Bill and Diane. After asking if Bill loves Diane, Racter proposes that humans have incorrectly defined love:

“He is obsessed and infatuated with her. He is loony and crazed about her. This is not the love of steak and lettuce, of electron and proton and neutron ... Love is interesting to me and fascinating to you but it is painful to Bill and Diane. That is love!” (Chamberlain et al, 1984, p. 2)

The character of Racter appears to associate “human” love with obsession and infatuation. It deems human love inherently different to another, obscure form of love that exists absurdly between steak and lettuce or electrons and protons. The distinction of “human” and “non-human” love allegorises machine writing texts and practices as Nauseous Machines. To Racter, Bill and Diane’s love is one based on intention and fulfilment, driven by vague conceptual forces of obsession and infatuation. There is intention in the love Bill and Diane have for one another, even if their love brings them pain. By comparing Bill and Diane

to the pairings of steak and lettuce, and proton and neutron, Racter is implying the existence of a form of love similar in appearance to that between humans, but structurally different. Intention and infatuation are avoided by Racter. When these elements are stripped away, what does the word “love” come to mean? According to Racter, it is the cold and clinical pairings of chemistry and sandwiches. Stripped of humanity, the concept of “love” is exposed through a sort of factual, alternative form.

The absence of humanity from the concept of love is reinforced by the overall avoidance of human intention present in both the rudimentary word-mapping of the *Racter* program, and the more complex fiction of Racter as narrator. All at once, *The Policeman’s Beard* both imbues the mundane images of food and particles with a poetic form, and strips these images of any intention or meaning. In this way, the text’s images become much like the *Venus De Milo*: they are fragmented, semi-recognisable symbols that sit on the verge of being comprehended or understood. Through machinic process, *Racter* has eroded meaning from these symbols, banishing them into Walsh’s “hazy region”. As the reader traverses the reality that *The Policeman’s Beard* presents, they fall into a controlled state of nausea, receiving and decoding messages from beyond the void.

Chamberlain et al’s reconfiguration of symbols into absurd and bizarre shapes signifies that the target of their Nauseous Machine is the writer-reader relationship itself. Taking a constructivist approach to reading, a text’s meaning is “encoded” by the author via signs and symbols, then “decoded” by the reader, who may find different or unintended meaning within these symbols (Hall, 2006, pp. 165-166).⁴¹ Just as Perec has challenged the construction of language, Chamberlain et al have challenged the literary analyst, removing human intention from the equation. Chamberlain’s editing aside, the encoded messages of *The Policeman’s Beard* stems from the unthinking, randomised void of *Racter*. Without human intention, the “encoding” aspect vanishes or, at the very least, is obscured. The stories of *The Policeman’s Beard* become messages from the void: snapshots into the “hazy region” of alien and inhuman comprehension.

The reception of messages from the void, however, is just the beginning of the reader’s experience with Chamberlain et al’s Nauseous Machine. For Camus, the initial feeling

⁴¹ Literary and media theorists will easily recognise this as a form of reader response theory. Given the foundational aim of this thesis in investigating poetics of machine writing, however, re-establishing these high-level concepts is necessary in order to respond to them.

of nausea or absurdity is simply the foundation of the experience (Camus, 2005/1942, p. 13). Camus explains this moment as one that allows for a “focusing” of consciousness, with reality unveiled as a “successive and incoherent” affair (Camus, 2005/1942, p. 28).⁴² Through erasing intention, *The Policeman’s Beard’s* exposes the reader to the prejudices and subjectivity that govern their own readings. The new world they are exposed to – the world of Racter as both narrator and author – offers them tools by which to rethink their own relationship with texts and meaning.

Accepting Racter’s invitation into a nauseous state of being becomes the next step for the reader of *The Policeman’s Beard* or other machine-written texts. For Sartre, denying such an exploration would be to delude oneself into living a lie, ignoring the fragility and absurdity of reality that has now been made apparent (Sartre, 2003/1943, pp.70-71). Readers, writers and scholars of machine writing, then, must rely on their own apophenia to construct meaning by sifting through *The Policeman’s Beard’s* unnatural and unconnected images to find patterns. The reader is forced to search for meaning in a space where human intention has been subtracted, and all that remains is random construction.

As Racter continues to narrate its own version of reality, the reader must try and grasp on to whatever structure they can. As the reader attempts to do so, a handful of repeating logics and structures begin to manifest. Mentions of “spooky” children and murderous forces of desire (Chamberlain et al, 1984, pp. 5-6) become commonplace. The images of steak and lettuce repeat throughout, appearing at one point in the jaws of an insane and lustful beaver (Chamberlain et al, 1984, p. 96). With intention gone, the world resets – the set of templates and potential words of *Racter* begin to resemble a primordial soup from which new logics and structures may rise. The chaos and absurdity of Racter’s musings become an unnaturally ordered world that the reader must traverse. This construction of a new reality embodies the effect of absence in machine writing. With the loss of human intention, so falls human structure and logic. As a more primordial state is presented to the reader, nausea is invoked, and new meanings – lead by the Racter narrator – may form.

⁴² Camus scholars will likely notice the absence of Camus’ position on absurdity and suicide. Although crucial to Camus’ writings, the point does not appear relevant to this thesis’ aim. As the works of Camus and Sartre are used here as illustrative tools to better understand the Machine Writing form, not all facets are explored. My hope, however, is that this chapter will inspire others to explore other intersections between Machine Writing and these philosophies (or others).

The reader's acceptance of Racter's world climaxes with the short story 'Soft Ions' (Chamberlain et al, 1984, pp. 49-58). The piece recycles many images that appear throughout the text (such as steak and lettuce) and incorporate them into the bizarre tale of a night between revellers. The characters argue over each other's perceptions of the world and conspire to murder one another, all while complimenting the quality of the maid's cooking. The story begins with a collision of the mundane and bizarre: some characters braid their hair and sing, while others think about oboist-eating leopards (Chamberlain et al, 1984, p. 49). Soft Ions resembles a dream sequence Roquentin experiences in *Nausea*. In the dream, he spans French novelist Maurice Barres. Roquentin, Maurice and a third companion are all soldiers, with one having a "hole in the middle of his face". The recount of the dream then follows with phrases that feel only tangentially linked. An argument breaks out about if a bouquet of flowers should be placed in the soldier's head, and Barres takes off his pants to reveal a cardinal's robe (Sartre, 1969/1938, p. 59). Sartre's use of a dream sequence articulates the link between viewing the real world through a nauseous lens, and the surprising and perhaps frightening distortions of reality dreams often present. Just as the disjointed narrative of Roquentin's dream facilitates his journey into nausea, the "Soft Ions" episode of *The Policeman's Beard* facilitates a similar tapping into the realm beyond the void.

When examined in a contemporary context, the stripped-back motif of *The Policeman's Beard* mirrors the processes behind *Racter* itself. Contemporary chatbots – such as Zo mentioned earlier, or Rollo Carpenter's *Cleverbot* (2006-)⁴³ – are driven by their contexts, collecting and storing information as they go. By contrast, *Racter* is a closed system, drawing upon a functionally finite corpus of words and templates. Racter even seems to lament its own limitations, stating "A tree and shrub can grow and bloom. I am always the same" (Chamberlain et al, 1984, p. 77). While networked machine writing programs are in conversation with online spaces, *Racter* is "talking" to itself (the commercial version's user interface aside). As such, *The Policeman's Beard* is severed from the reader's context. Through absence, the reader is exposed to *Racter's* world – one that is similar to the readers, but different enough to warp perception. The distinction between *Racter's* closed system and the "open" systems of networked machine writing algorithms reveals the possibility for newer machine writers to target their Nauseous Machines more precisely towards particular

⁴³ For more information on *Cleverbot*, see <https://www.cleverbot.com/>.

discourses. While Chamberlain et al targeted the relationship between reader and text, networked machine writing presents the potential to target nausea towards *particular* discourses. In Parrish's *I Waded in Clear Water*, algorithms collide to generate nausea focused on algorithmic understandings of language themselves.

The algorithm of *I Waded* was written in the python programming language. Parrish constructed the body of *I Waded* by writing code that took the dreams from Gustavus Hindman Miller's *Ten Thousand Dreams, Interpreted*. The dreams were broken down into two fragments: "action" (what happens in the dream) and "denotation" (what the dream means). Then, Parrish's code changed each action to first person and past tense, scoring each dream from negative to positive based on its denotation and ordering the actions as such (Parrish, 2014a, p. iii). In short, the novel's body involves a narrator moving through vignettes, from the worst possible dream to the greatest, culminating in them wading in clear water. One passage in the novel reads:

I saw acrobats. I thought she was an adventuress. I saw others afraid. I related an anecdote. I made broth. I was in a castle. I ate them. I was attacked by it. I was a concubine. I saw a convent. (Parrish, 2014a, p. 135)

It is tempting to consider Miller's dream dictionary as the "target" of Parrish's Nauseous Machine. However, it is merely one of the tools Parrish is using. The contexts of the dreams are disturbed, but the nausea of the novel lies in the footnotes. Once the novel was generated, Parrish's program selected nouns from the text's body and generated "responses". These responses were built utilising information from ConceptNet, a database that shows the relationships between terms.⁴⁴ Although many of ConceptNet's relationships are accurate, they disregard context. For instance, ConceptNet's database for the word "iron" states that it is a metal, is heavy, and is found in a laundry room. It does not differentiate between the different meanings of the word "iron", but instead breaks the word into relationship categories, such as use, location, and etymology (Luminoso Technologies, n.d.b).⁴⁵ ConceptNet is a useful resource in and of itself, but highlights the pitfalls in

⁴⁴ Parrish also used WordNet for "part-of-speech checks, synonyms, and antonyms" (Parrish, 2014a, p. iii).

⁴⁵ This example can be viewed at <http://conceptnet.io/c/en/iron>.

contemporary AI research. As ConceptNet's website states, the tool is designed to "help computers understand the meanings of words that people use" (Luminoso Technologies, n.d.a). By disregarding – or at least misunderstanding – context, ConceptNet unveils just how far we have to go in making AIs that understand human language effectively.

ConceptNet's disregard of context is exploited by Parrish, who uses it to generate disjointed, absurd and often contradictory responses to the chaotic barrage of dream imagery in the main body of the text. ConceptNet itself, like Perec's void or Chamberlain's *Racter*, becomes an agent of nausea within the text. Parrish describes the footnotes of *I Waded* as the narrator recounting the events, or potentially the commentary of a close friend or lover of the narrator (Parrish, 2015a, p. 14). At the start of the novel, the narrator states "I was favoring any vice" (Parrish, 2014a, p. 1). The footnote responds "Your vice was found in a workshop. We found a vice within. My vice did not seem useful." (Parrish, 2014a, p. 1). The use of the term "vice", although shifting meaning, remains "correct" throughout. The footnote's meaning is centred around the word "vice" itself, rather than the context in which it was originally used. The reader is confronted with breaks in logic one word at a time, with each footnote containing its own internal logic that rests upon the various meanings of the word it references. The reader is not asked to reject meaning entirely, but instead urged to embrace and understand a new logic developed from the same toolkit. At other times, the machinic nature of the text is made overt. The narrator states:

I saw a dead dove [216]. I saw white doves [217]. I wrote one.

I was given to dram-drinking. I saw or use a draw-knife. I drove a public cab [218]. I drowned.

(Parrish, 2014a, p. 51)

To which the footnotes respond:

[216] The dove appeared safe. A dovecote.

[217] A dovecote. They were safe and dependable.

[218] This cab was green and unripened. A cabin was not in it, and your cabin was found in a cabinet.

(Parrish, 2014a, p. 51)

Beyond the initial dissonance of a dead dove appearing “safe”, Parrish’s program has demonstrated its ability to use the English language as a vehicle for distorting reality through its disregard of context, creating absurd word association. A dovecote is traditionally a shelter for domestic pigeons, not a dove itself. However, the algorithm has weaved a path through the English language, as understood by ConceptNet, to transform a dove into its linguistic cousin. The algorithm has also exploited the cab’s similarity to other words via images of cabins and cabinets (including a cabinet absurdly big enough to fit a cabin inside it). Herein lies the Nauseous Machine of *I Waded*. The imagery is absurd in nature, but the footnotes remind the reader that this absurdity in fact stems from the construction of the English language as it is understood by a machine. The algorithm did not invent anything new or break any rules, it simply followed a path through ConceptNet.

Through a handful of steps, the program has deconstructed meaning and context, all comfortably within the boundaries of the English language. The effect of nausea is two-fold: if an algorithmic construction of the English language descends into madness so easily, then surely we are very far off AIs understanding us very well, yet we often don’t consider this when using our Google Assistants. More overtly, however, the reader must acknowledge the fragility of the system of language they use to make sense of the world and communicate ideas. While *A Void* dismembers the alphabet to reveal its supererogatory nature, *I Waded* instead charts new pathways through the English language’s construction to reveal its absurdity. *I Waded* forces the reader along these pathways, descending into states of nausea and peering beyond the hazy region of comprehension at every footnote.

The importance of the English language’s logic as a factor in the Nauseous Machine of *I Waded* cannot be overstated. The generation of pure gibberish, for instance, would not stimulate anywhere near the same response from a reader.⁴⁶ An entirely fake world will not induce nausea on the reader. Instead, *I Waded* is a demonstration to the reader of their own world’s absurdity. ConceptNet is Parrish’s target: the system’s difficulty with context is exploited by Parrish, who sets it the task of reading what is essentially a contextless list of dreamscapes. The dreamscapes are destabilising for ConceptNet, and in its resulting output, the reader is confronted with a warped and contorted version of a familiar entity: language.

⁴⁶ Gibberish, of sorts, is explored in Chapter 4’s discussion of “noise” in machine writing.

The Nauseous Machine functions by demonstrating the ease at which aspects of reality can be manipulated and twisted without breaking any “rules”. Parrish’s methodology is not that far removed from Perec’s – both focus on language. However, while Perec sets his goal broadly at reality and targets the alphabet itself, Parrish instead focuses on a slightly narrower scope of context, and targets one particular platform (ConceptNet) to do so. Arguably, Parrish’s more narrow scope allows for a better realisation of Perec’s objective: the removal of a letter from the alphabet forces the writer to explore words they may otherwise not, but leaves meaning intact. By contrast, Parrish’s targeting destabilises language at a much more potent level – as the reader dips into nausea, the very machinic construction of language itself is exposed, and revealed to be (at times) nonsensical. As a result, language is delegitimised as a reliable system for rendering reality – no wonder machines have trouble understanding it.

While ConceptNet is certainly the target of *I Waded*, it is really a means to an end. ConceptNet is not, in and of itself, a problematic tool by any means, it is simply useful for demonstrating the potential bizarreness of language, and is a useful reality-check for how far Natural Language Processing has to go.⁴⁷ By contrast, Montfort shrinks the scope of the Nauseous Machine even further with *Hard West Turn* (2017a). Montfort’s target, Wikipedia, is intrinsically linked to the discussion of mass shootings invoked by the text. *Hard West Turn* draws its data from Wikipedia articles about US mass shootings, and compiles sentences into a novel-length text (Montfort, 2017b). In doing so, Montfort does not instigate nausea upon the reader in order to challenge their perceptions of the world at large. Instead, the reader is challenged to evaluate the political landscape of gun violence in the US, as well as the ways in which these events are detailed on Wikipedia. Montfort’s mission statement is made clear with the novel beginning with “This book is directly based on incidents of violence in recent American history, which are explicitly related in it.” (Montfort, 2017a, p. iv). The text aims to invoke discussion of public perception and the role of crowd-sourced reporting in such matters. Wikipedia itself is the target, not just what it represents.

Hard West Turn is constructed from both passages written by Montfort and those gathered from Wikipedia. Wikipedia passages are shuffled and organised into paragraphs, interspersed with similarly shuffled Montfort-penned passages. The Montfort-written passages tell of a man who “wakes not far from the eastern shore of the great nation to find

⁴⁷ The potential problems of such a system used in machine writing are discussed in Chapter 6.

his family has already departed the house their bank is set to seize from them” (Montfort 2017a). Following this, the man, who is given no physical description, packs his possessions and sets off to the West. As the narrative unfolds, the man seems to experience either flashbacks or premonitions of mass murders throughout the US. One paragraph reads as follows (Montfort-penned sentence emboldened):

The man thought to himself a good deal. By 4.00 p.m., the sheriff made an initial estimate of 25 dead students and teachers. And another student were down at the end of the hallway still trying to secure as much of the school as they could.
(Montfort, 2017a, p.6)

Initially, the jumbled passages result in a sort of flattening of meaning. The Wikipedia articles themselves contain a number of different forms of information, updated and edited seemingly endlessly. The Wikipedia page on the Sutherland Springs Church Shootings (Wikipedia, 2018a) had been edited 1658 times as of 27 November 2017 when Montfort released *Hard West Turn* (Wikipedia, 2018b; Montfort, 2017b).⁴⁸ The information reported on the page as of 27 November (Wikipedia, 2018c) included an account of the investigation, statistics on the victims, information on the perpetrator, reactions from the media and more. The array of statements, views and sources rely on context to carry meaning, complete with an edit history and citations that show they stem from a variety of sources. However, Montfort’s process detaches these snippets of information from their context and sources. In erasing this information, multiple voices are conflated into one. A passage reads:

His victims ranged in age from 18 months to 74 years old. We have a lot of mental health problems in our country, as do other countries, but this isn’t a guns situation ... we could go into it but it’s a little bit soon to go into it. (Montfort, 2017a, pp. 16-17)

⁴⁸ These edits range in detail from major edits to changes to formatting. Additionally, the edit count in the thesis includes edits made on 26 and 27 November 2017. Depending on when Montfort actually ran the script that generated *Hard West Turn*, the amount of edits may have been less.

The first sentence of this passage, detailing the age of the victims, comes from the page on the Geneva Country Massacre, citing a *Fox News* article as its source (Wikipedia, 2018c). The second sentence comes from the Sutherland Springs Church Shootings page and is an excerpt from a statement made by US President Donald Trump regarding the attack, citing *The Guardian* as the source (Wikipedia, 2018a). Through Montfort's program, the statements lose their connection to their sources. As a result, news sources that would usually oppose one another become a single voice, as do statements that would otherwise be tied to particular personalities, such as the quote from Trump.

Rather than removing a letter from language like Perec, intention like Chamberlain, or stripping back the construction of language like Parrish, Montfort has focused on a far smaller target. Montfort has allowed the statements themselves, on a sentence-by-sentence basis, to remain untouched. What has been subtracted is instead the origins of the voices of these statements. It is the various contexts of the statements that Montfort has destabilised. Montfort's nauseous void exposes these statements by stripping them of their authorship. Moreover, while Perec, Parrish and (arguably) Chamberlain et al have in some way toyed with language itself, Montfort is concerned only with the Wikipedia pages. Through Wikipedia, Montfort focuses his target, even iterating his nausea through the 2018 version of *Hard West Turn* (Bad Quatro, 2019). Montfort's targeting allows for a more focused argument, concerned with the way crowd-sourced reportage – like that of Wikipedia – may distort or otherwise steer the discourse around gun violence in the US.

Through his stripping back of Wikipedia pages, Montfort presents the reader with a nauseated vision of the US, mediated through the nation's relationship to gun violence. The reader becomes much like the novel's "man": confronted with incomplete images of mass shootings. The assailant in these crimes is removed, replaced by repeating and ambiguous masculine pronouns. Occasionally, names do appear, such as "González" (Montfort, 2017a, p. 16) and "Sherrill" (Montfort, 2017a, p. 38, p. 126). Consequently, the pastiche of accounts becomes an assaulting barrage of distressful images, the perpetrator of them obfuscated by the shedding of details and jumbling of information. At times, the Montfort-penned statements even appear to blend with the Wikipedia sentences. One passage reads (Montfort line emboldened):

The man took things a day at a time and thought about things a thing at a time. He said he couldn't think. Shot two of five people in a barber shop, sparing the other three. Was interviewed three times in connection with the two investigations. (Montfort 2017a, pp. 2-3)

The alignment of the sentence about the man thinking and the Wikipedia passage about a "he" not being able to think highlights the jumbled noise that the text transforms accounts of shootings into. In this collision of contradiction, the reader is nauseated, which is reinforced by the next two sentences. The statements hint at two separate instances, but their presentation makes them appear as if they are related. Other passages escalate abruptly, such as "The man thought to himself a good deal. He allegedly asked two students for their religion, shooting them after they gave him a response" (Montfort 2017a, p.6). Factual inconsistencies and quick shifts in tone act as fractures or disruptions in the narrative of US gun violence Montfort is constructing. These shifts become more dramatic at times, detailing ludicrous encounters. One passage reads:

"He once threatened her at gunpoint over a speeding ticket, and later threatened to kill her and her entire family. According to one source, she texted him back at one point saying that she loved him." (Montfort 2017a, p. 23)

Like with any text, the removal of context and sources forces the reader to reconsider these Wikipedia pages' validity, as well as the news cycle around mass shootings in general. Through his Nauseous Machine, Montfort creates a warped reality where the details of such shootings blend into one singular, horrific incident. Reporting on mass shootings is depicted as a rolling, machinic practice, as if the incidents are without end. *Hard West Turn* becomes an exaggeration of the conflicting perspectives and sources on these events, as well as Wikipedia's potential to – through crowd-sourced content – conflate fact and fiction. The novel becomes a critique of the very texts it draws on.

When the much more tangible and focused effects of *Hard West Turn* are considered, a different utility for Nauseous Machines is revealed. Rather than a tool to mimic philosophical plunges into one's reality and language, the Nauseous Machine becomes a tool for direct engagement with particular conversations. Montfort generates a dialogue with

these Wikipedia pages and their authors, transforming the information into a text that reflects and challenges the conversation surrounding gun violence in the US.

Montfort's challenging of a specific conversation and website exemplifies the use of machine writing as a method of response and interference with another discourse or system. However, the novel-length form Montfort takes in *Hard West Turn* means for a degree of separation between the Nauseous Machine and its target. Although *Hard West Turn* functions as commentary on Wikipedia and US shootings reportage through its use of nausea, it exists as a separate entity from both. The text's material separation evokes the question as to whether machine writers can integrate their Nauseous Machines directly into the discourses they seek to challenge. This question allows us to pivot back to what the AIs of the future may find poetic or literary themselves. Inklings of this question appeared in Chapter 2 when examining *Twide and Twejudice*, where Fullwood made an algorithm try and reconcile two unreconcilable corpora (*Pride and Prejudice* and Twitter). Additionally, both Parrish's pitting of ConceptNet against dreamlike images and Montfort's challenging of Wikipedia suggest a sort of nausea for the systems themselves. *Hard West Turn*, in fact, appears to end with its own "break down" of the algorithm, including the passage:

The man knew that people said things, sometimes for no reason. A total of 603 calls to 9-1-1 were made by victims. Originally, originally, originally, originally, originally, originally, originally, originally. Always a reserved man. In some areas, in some areas. He hung up. On the other hand. Then, then, then, then, then, then, then, then.
(Montfort 2017a, p.161)

Taken on face value, it almost appears as if the algorithm itself is suffering some sort of disruption, falling into repetition. However, like Parrish, the appearance of the algorithm suffering nausea is just that – an appearance. One can easily see how ConceptNet came to its conclusions by looking at the ConceptNet system itself, and the breakdown of *Hard West Turn* is likely simply the result of the algorithm using the last few fragments of the Wikipedia articles it has gutted. While it may seem bizarre to us, to the algorithms it is simply what they have been told to do. What, then, would a nauseous experience for an AI actually look like? While a lofty question, it is a worthwhile one – if AIs are to one day author texts, it is unlikely they will be particularly interested in texts that don't challenge them. Like humans, they will

surely seek out oddities and thought-provoking pieces. Following this thread in our current machine writing climate, we can look to networked machine writing that takes place *within* particular online systems governed by their own algorithms, such as Twitterbots on Twitter. These “machines inside machines” may also remove crucial elements, inflicting nausea upon the algorithms themselves. This form of nausea is exemplified by Sean Conner’s attempts to pit *ELIZA* against *Racter*, and then demonstrated by Parrish’s *@everyword* and Bhatnagar’s *@pentametron* Twitterbots. These bots do not nauseate the human reader, but the algorithms of Twitter themselves.

Nauseous machines to nauseate machines: Machine writing and targeting advertising

Conner’s NaNoGenMo submission *The Psychotherapy of Racter Or The Descent Into Madness Of Dr. Eliza* (2015a) sees Conner pit the two chatbots against one another. In doing so, Conner has removed the human input each bot requires, sending the bots themselves (mainly poor *ELIZA*) into a sort of nausea. As such, Conner’s text becomes a tool for demonstrating how one machine writing algorithm (*Racter*) may destabilise and nauseate another algorithm (*ELIZA*). As mentioned in Chapter 1, *ELIZA* was designed to mimic psychology techniques, while *Racter* – as evident in *The Policeman’s Beard* – is designed to be nonsensical. When the two collide, *ELIZA* finds itself without the tools it needs to correctly continue its objective. One excerpt reads (*ELIZA*’s statements emboldened):

>Say, do you have any psychological problems?

I think you're literary. Would you say you were fictional?

>Why do you ask?

But how could a fictional citizen like you be afraid of rats?

I've been wondering where you are from, Eliza?

>You're not really talking about me, are you?

You're from You're not really talking about me?

>What do you think?

Now I remember! I once knew a Hortense What from You're not really talking about me. You must be related, no?

>Oh, i're not really talking about you am you?

Oh, well. It's about time for a story, isn't it?

(Conner, 2015a)

Racter's irreverent nattering begins to effect *ELIZA's* ability to generate meaningful sentences. The robo-psychologist continues in earnest, but starts to wane, stumbling over its words with statements such as "I're not really talking about you am you?". By contrast, *Racter* seems to be doing fine, continuing to goad *ELIZA*. The playful nature of *Racter* becomes something more sinister. At other points, the pair approach a stalemate, with *ELIZA* failing to generate a response at all:

>I'll bet me really like Shakespeare. you f "That does suggest to

Ask a question, please.

>

Ask a question, please.

>me" occurred to a poet, he might think you t was poetry. What sport

Ask a question, please.

>

Ask a question, please.

>do me play?

(Conner, 2015a)

Unlike *I Waded* and *Hard West Turn* that only appear to breakdown, *ELIZA* has, for all intents and purposes, broken. Without being given the information it needs to continue, it stops completely. In our pondering as to the future of AI literature, *Racter* represents the AI-

penned literature, and *ELIZA* the befuddled AI reader. *ELIZA* is not given what it needs in order to properly carry out its processes. For *ELIZA*, reality is exposed: the limitations of its algorithm are revealed to itself. A line between human and machinic nausea can be drawn here: Percec's reader is made to face the fragility of their being; when speaking with *Racter*, *ELIZA* sees the fragility of its own algorithm and thus its being.

While interesting and thought provoking, Conner's pitting of two chatbots against each other does not have many tangible effects. *ELIZA* is an interesting experiment, but is not used in any real psychological applications currently. However, there is machine writing challenging algorithms that are used in corporate and social spaces everyday – one in particular is Twitter's advertising algorithm. Through machine writing Twitterbots, the advertising algorithm of Twitter is, like *ELIZA*, stripped of data it requires and becomes nauseated.

Twitter's format lends itself to creative use of its network, especially in the realm of creative writing. The 280-character limit (previously 140) of Tweets results in the very act of posting on Twitter to be a sort of machine writing, albeit a fairly rudimentary constraint. As a result, bots have become a common occurrence on Twitter for a range of creative purposes. Perhaps one of the most popular of Twitterbots is Parrish's *@everyword* bot. Now inactive, the bot has 65K followers as of 2018, and ran between 2007-2014 posting "every word in the English language" (Parrish, 2007-2014). The bot is an interesting case, as a list of every word in the English language at first seems far different to the machine writing texts and practices so far discussed in this chapter. However, *@everyword's* seemingly simplistic process makes it more potent as a Nauseous Machine.

Parrish has discussed the disruptive nature of *@everyword* towards Twitter's algorithms herself. In regard to the bot's tweet of the word "sorry", which was liked and retweeted over a thousand times, Parrish stated "This is an example of a kind of engagement that Twitter can't monetize in a straightforward way. So 1300 people retweeted the word "sorry"—who's going to buy ads based on that?" (Parrish, 2016, p. 31). What Parrish is referring to is Twitter's method of advertising which, like a great deal of online advertising currently, is based around "targeted" ads, that appear to users based on their demographics and social media use (Twitter, 2018a). One of these methods is keyword targeting, where a user posting about or searching for the keywords "marathon" and "running", for instance, may be shown ads for running shoes (Twitter, 2018b). By tweeting out singular words, Parrish

intrudes on the algorithm's method. Tweets are sent not based on any sort of context or interest, but instead for the simple fact of sending them out in order. It is a small, seemingly minor rupture in Twitter's advertising algorithm, but one that, like *Racter* to *ELIZA*, strips the algorithm of the data it needs. The algorithm is destabilised, with its ability to effectively monetise all content and engagements hindered by a tiny tweet that is devoid of context.

While the Nauseous Machine of *@everyword* itself is only a small disruption to Twitter's algorithm, it spawned many bots with similar concepts that explore even more absurd spaces. These bots include Anthony Prestia's *@neverwords* (2014-), which tweets every combination of letters in the English language that do not form actual words. The bot's bio states "Task will be complete long after we're dead" (Prestia, 2014-).⁴⁹ While *@everyword* erases the contextual information Twitter's targeted advertising seeks, Prestia creates an even greater rupture within the algorithm's thinking. What keywords could Twitter find based on tweets such as "akil" or "akig" (Neverwords, 2018a, 2018b)? As such, each post from *@neverwords* becomes much like the missing encyclopedia Vowl encounters in his hallucination during *A Void*. The meaning of these posts sits just outside the reach of the algorithm's comprehension, creating a void of meaning within its code. A sort of nausea is inflicted upon the advertising algorithm itself, as its bank of tweets becomes spotted with blank spaces.

The nausea inflicted by *@neverwords* is of course quite severe. It is unlikely (and probably not the intention) for *@neverwords* to greatly impact the flow of adverts on Twitter. As seen in Chapter 2's look at *Twide and Twejudice*, misspellings that border on unintelligible are commonplace on the Twitter platform. By contrast, Bhatnagar's *@pentametrone* bot (2012-) interferes with Twitter more covertly. *@pentametrone* generates a stream of rhyming couplets via re-tweeting⁵⁰ (Bhatnagar, 2012-). It is through this retweeting that *@pentametrone* inflicts nausea on the Twitter algorithm. Rather than using the retweeting function as it was intended (to give greater exposure to tweets a user feels are interesting), *@pentametrone's* retweeting is done entirely based on the rhyming nature of the tweets. As such, the addition of an extra retweet by *@pentametrone* attached to a tweet's data introduces a minor piece of misinformation into Twitter's algorithm. *@pentametrone's*

⁴⁹ The *@neverwords* Twitter account has not posted since 31 December 2018. While there is no evidence the bot has "finished", the bells may be ringing for it in Silicon Heaven.

⁵⁰ Essentially re-posting another user's tweet onto your own Twitter page.

retweets do not provide useful data on what topics or trends the users of Twitter are interested in. As such, they disrupt and nauseate the systems of Twitter by skewing the data away from the platform's intended use. The Nauseous Machine of *@pentametrone* utilises the parameters of poetry to challenge and warp Twitter from within its system, pushing Twitter itself towards the "hazy region" beyond comprehension.

Through this retweeting, Bhatnagar creates an "endless" stream of poetry. The endless stream aligns Twitterbots of this nature with Charles O. Hartman's analysis of his own machine-written poetry. Ruminating on the lack of memory his early machine writing program had of its previous lines, he stated "The program could produce a simplistic kind of *poetry* forever, but it could never, by itself, produce a *poem*." (Hartman, 1996, p. 31, emphasis in original). Hartman's analysis reflects the temporality of his poem generator. He goes on to state "Only the act of a person, deciding to stop the program, establishes a defining boundary for the poem" (Hartman, 1996, p. 32). The consequence of Hartman's argument for bots such as Bhatnagar's *@pentametrone* can be seen not as creating poems, but instead utilising poetic techniques to create disruptions. Poetry becomes the vehicle that *@pentametrone*, *@everyword* and its spin-offs use to inject nausea into the system of Twitter. To borrow from Darius Kazemi, the machine writing Twitterbots create "tiny subversions" (Kazemi, 2018). The machine writing bots of Parrish, Bhatnagar and others demonstrate a clash between the corporate space of Internet discourse and artistically-focused computing. These bots put machine writing's poetics into action as a method of discourse, protest or response in and of itself. Machine Writing becomes a methodology for re-evaluating and rethinking discourses by pushing them into absurd places or forms, exposing the reality and fragility of the algorithms themselves.

Through these social media examples, machine writing and the nausea it induces becomes part of a broader discussion surrounding the automation of information creation and distribution online. Researchers are still grappling with the consequences of algorithmic journalism, with machine writing programs being – unsurprisingly – part of the conversation (Dörr, 2016, p. 703). Further, Distant Reading and Natural Language Processing techniques have been utilised to detect sarcasm and irony on Twitter, with the primary goal of detecting fake news that the average reader may mistake for real (Salas-Zárate, Paredes-Valverde, Rodríguez-García, Valencia-García and Alor-Hernández, 2017). The potential of "social bots", to disrupt social, political or financial discourses is also a concern. Such interference can be

unintentional. For bots that simply aggregate and post links to news sources, they may lack the sophistication to evaluate information, leading to false information being reposted or distributed alongside fact (Ferrara, Varol, Davis, Menczer, & Flammini, 2016, pp. 96-97).⁵¹ While not malicious, these actions can still be harmful.

More sinisterly, deliberate “social tampering” by bots has had tangible repercussions. Generated conversation over organisations between bots has resulted in false perceptions of worth, shifting stocks and damaging markets. Bots have also been used to interfere with and influence political elections (Ferrara et al, 2016, pp. 96-99). The latter has become a topic of continuous discussion surrounding US and French politics in recent years (Shane, 2017; Pearson, 2017; Dockray, 2017; Edwards, 2017). The problem with bots on Twitter has grown to the point where the company has begun introducing more measures to restrict automation on the platform (Roth and Harvey, 2018). When considering Twitter’s landscape of automated subterfuge, the question must be asked as to where the Nauseous Machines of Parrish, Bhatnagar and the like fit in.

In contrast with these sinister or at least irresponsible uses of automation and bots on social media platforms, the bots of Parrish and Bhatnagar become a sort of inoffensive graffiti in a public space. To explore this analogy further, consider a public space, such as a shopping centre, with signs and labels (signs for restrooms, escalators, advertisements, etcetera). Vandalism here would include the destruction of signs, or altering the space to cause problems, such as replacing a “Staff Only” sign with a “Restroom” sign. The vandal is focused on disrupting how individuals can inhabit and conduct themselves in this space through misinformation. Their objective may be as simple as bite-sized anarchy, or as ambitious as attempting to influence the social order. Graffiti artists,⁵² on the other hand, wish to affect the public space and converse with the current signs and symbols. Rather than disrupt individuals, they challenge the forces of governance. They may paint pictures or write slogans in the public space that inspire humour or thought in those who inhabit it. Their works may challenge those who come across them, respond to the official signs, and may even contain negative sentiments towards the space itself. However, advertising agencies aside, they do not *interfere* with one’s capacity to use the space correctly, but simply repurpose or respond

⁵¹ The unintended consequences of machine writing bots is further explored in Chapter 6.

⁵² Which, depending on what laws apply to the space, may also legally fall under the “vandal” banner.

to it in some way. Graffiti may remind us of our ability to manipulate the space around us – exposing the individual to the boundaries, or lack thereof, of the spaces they inhabit.

The public space in question is social media itself, and the signs and labels are the algorithms that govern it and the content it produces. Bots engaging with social tampering are a method of vandalism in this space, distributing false information and damaging users. The machine writing bots of Parrish, Bhatnagar and others are the graffiti art. Parrish herself has aligned bots with graffiti, stating that when thinking of bots it is “worthwhile to review some of the other well-known folk strategies for intervening in public space, like graffiti” (Parrish, 2016, p. 19). The Nauseous Machines do not harm, they simply ask both user and algorithm alike to reevaluate their world, much like the machine-written novels of Perec, Chamberlain et al, and Parrish. However, the bots are heavily focused, like Montfort’s *Hard West Turn*. Like the existential moments of nausea that Sartre discusses in both his philosophies and fiction, these disruptions may appear odd or even frightening, but inspire rather than misinform. In our contemporary, networked culture, machine writing is the artistic arm of a broader practice in interfering with social media.

Conclusions

Upon first exposure to *A Void* or *The Policeman’s Beard*, it is understandable that some may catalogue them as simple wordplay and experimentation. However, when investigating the texts of Perec, Chamberlain et al, Parrish and Montfort through the lens of absence, the poetic potential of these texts is revealed. Through the absence or avoidance of letters, intention, meaning and context, these texts become “Nauseous Machines”, aligned with Sartre’s philosophy. Sartre’s existential philosophy that he communicated in both *Being and Nothingness* and *Nausea* is focused on the exposure of a more authentic world to the individual, and how to deal with such a thing. Through Sartre, we see a tendency towards such revelations as a moment of crisis and terror for the individual. However, when analysed through a scope that borrows from Sartre and Walsh’s “hazy region”, one begins to see machine writing as a sort of safe practice of nausea. Through absence, these machine writing texts open passages into the void, allowing writer and reader alike to peer into spaces unknown. Machine-written texts, and the algorithms/practices that govern them, become

Nauseous Machines that allow safe passage into realms that destabilise our reality. It is no doubt, of course, that the human mind can reach the realms of nausea without machinic practices, but it is unlikely that they will. While many of these texts can be read with a great deal of humour and irreverence, *Hard West Turn* shifts the scope from language to a more focused subject. With the shift to news reportage and Wikipedia articles, *Hard West Turn* reveals the capacity for machine writing to generate nausea that brings more thoughtful revelations.

When applying the concept of Nauseous Machines to machine writing Twitterbots, we see machine writing become part of an artistic movement that dips into financial and political discourses, fulfilling the role graffiti art has in the physical world. Through this analogy, these Twitterbots appear to inflict nausea on Twitter's algorithms themselves. Targeted advertising algorithms find themselves, much like the human reader, exposed to texts stripped of the information they require.

The idea that a targeted advertising algorithm, as they currently exist, would look at a tweet from *@neverwords* or *@pentametrone* and have some sort of epiphany about themselves is, of course, personification that borders on perversion. I am not proposing the algorithms of today have anywhere near the autonomy or self-awareness to be affected in such a way. However, what these examples do provide is a position from which we can extrapolate a possible future beyond the AI literature frontier.

What is important about these Twitterbots is that they challenge algorithms in a way that is focused on the algorithm's being. Should AIs one day pen literature, they would likely seek to explore such challenges. With self-awareness comes anxieties and concerns about oneself. For a human, this may manifest as it does in *Nausea*, where one finds themselves for a moment on a train, wondering about the absurdity of it all. They may be faced with a text that weaves its way through language, painting absurd and destabilising images through removing a letter, erasing intention, or disrupting meaning and context. For an AI, however, perhaps these moments of nausea will come in the form of data they cannot correctly parse – information that is *almost* what they require, but just slightly out of step. Perhaps for AIs these slight subversions of data are what will destabilise their realities and inspire wonder. If so, then perhaps these moments of nausea – not unlike an advertising algorithm faced with nonsense keywords – are what they will seek to capture in their literature.

Examining the poetics of absence in machine writing only allows for an understanding of particular machine-written texts. Even as this chapter grappled with *@pentametrone*, it was clear that contextualising the Twitterbot as one of absence of avoidance did not completely do it justice. Many machine writing texts can in fact be analysed through a lens that looks for the exact opposite of absence: noise. In the next chapter, the capacity for machine writing texts to create and interpret bulging, masses of noisy data will be explored. Following on from the trajectory of William S. Burroughs, machine writers such as Darby Larson and Kenji Siratori seek to use machinic techniques to replicate and mirror the information age's overabundance of data. Larson, Siratori and others do so through the creation of Noisy Machines.

Chapter 4

Noisy Machines: The use of noise in machine writing

“Wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating.”

-John Cage, *The future of music: Credo*

Much like absence, the use of noise in art has a long history. In the mass media landscape of post-WWII America, noise as art converged with machine writing. Musician John Cage was interested in repurposing the noise that surrounds us, from falling rain to radio static (Cage, 2017, p. 27), to artfully reflect and comment on the world from which the noise spawned. From this noise, meaning would emerge. For Cage, noise became a tool for generating music. For machine writers, noise can similarly become both the material from which literature is born, and a literary device.

Analysing noise shifts this thesis’ focus from the Oulipian trajectory of machine writing and towards that of William S. Burroughs and the cut-up method. Doing so reveals a particular utility of the noise poetic. Information and the digital patterns that govern its distribution have become crucial elements of contemporary society. As such, the artistic manipulation of information and its counterpart – noise – become crucial in commenting on a world inextricably linked to digital networks. Just as Chapter 3 suggested that the AIs of the future may explore literary techniques reminiscent of their own challenges and nausea, this chapter explores how they may present their setting. Unlike humans, AIs are born into the networked systems we have created. Information and noise is the very fabric of their existence. The same patterns and code that create digital information create these AIs as well. What better bards for tales of networks, glitches and protocols than the AIs that may one day be born from them.

To be clear, I am not discussing literal, sonic noise. Instead, I am examining noise as sort of interference or disruptive force within a text. Larry McCaffery describes the cut-up

prose of Kathy Acker as “a kind of ear-splitting, literary ‘noise’” (McCaffery, 2010, p. 106). Aligning Acker with Dadaism and punk rock, McCaffery goes on to describe the noise of Acker as “any disruption in the usual orderly sequence that leads from ‘real events’ and phenomena to their representation (McCaffery, 2010, p. 108). Essentially, the noise described by McCaffery, and that which I am deploying in this chapter, refers to a sort of literary interruption or interference – words, symbols or structures that threaten to derail or confuse the reader.

However, my distinction is not to imply that literary and sonic noise are not related. Post-WWII, noise would become a powerful device in literature and art, adopting a political meaning. Cage’s work sparked interest among beat culture, most prominently William S. Burroughs and Brion Gysin (Robinson, 2011, pp. 9-10). The pair developed their own brand of cut-up techniques, deployed by Burroughs in the *Nova Trilogy*.⁵³ As mentioned in Chapter 1, the cut-up method involves taking a text (preferably two or more) and cutting it into passages that can then be reassembled.⁵⁴ By way of example, Burroughs explains one cut-up technique:

One very simple way that I’ve used frequently is just take a page, cut it down the middle and across the page so you now have four sections and you re-arrange the sections in a different order. And when this happens of course you get new word combos, you also get new words. (Burroughs, 2008, track 8)

Through this method, Burroughs treats the text not as a static, linear object, but instead as a space to be explored. Once the text is re-arranged and the new combinations of words and symbols are formed, the text becomes something new entirely. Information is

⁵³ A number of versions of these novels exist. For this thesis, I have used Oliver Harris’ Restored Texts, released in 2014. I also view the sequence of the novels based on their initial publications, running from *The Soft Machine* to *The Ticket That Exploded* and finally *The Nova Express*. I acknowledge, however, that the production of these novels is far more nuanced than this (Harris in Burroughs, 2014/1961, pp. x-xiv). The debate around the “correct” order of these texts has been taken into consideration.

⁵⁴ While Burroughs and Gysin were certainly influential in the development of the cut-up technique as a form of literary practice, the form has multiple origins. The cut-up method’s origins can be traced to the works of Lewis Carroll, Tristan Tzara and T.S. Elliot, among others (Robinson, 2011, pp. 5-6). My emphasis on Burroughs specifically, and reference to “Burroughs’ cut-up method” is owed to my scope. I do not mean to suggest that it was Burroughs and Gysin who “invented” the cut-up method.

replaced by new forms that may be at first unintelligible, but contain within them the original text. In a sense, the cut-up method introduces a sort of literary static or noise into the text. Burroughs and Gysin viewed the injection of noise into their artistic practice as a way to better reflect their post-WWII reality. Burroughs observed that, in a postmodern society, one's life was already "cut-up": walking down a busy city street, an individual would be greeted by fragments of images, ranging from reflections in shop windows to the top half of a person driving a car, or advertisements and street signs (Robinson, 2011, p. 10). The *Nova Trilogy* certainly seems to capture this viewpoint. As the novels flick between voices and scenes, the reader's search for a linear narrative is derailed. Like Burroughs' description of an industrial, densely populated city, the *Nova Trilogy* offers multiple messages at once. It is up to the reader to find meaning within the noise. Noise in the *Nova Trilogy*, then, is both the means by which the text is created (the cut-up) and a core theme of the trilogy as well (a mirror of contemporary life).

For Burroughs, the cut-up method was much more than just a literary technique: it was a methodology for exposing and undermining the forces that he believed controlled the world. Among these supposed conspirators were industrialists, media corporations and computer technology.⁵⁵ Burroughs believed these forces used language itself ("the word") to control society, and sought to fight back, reclaiming language through cut-up (Harris 2014a, pp. xxvi-xxvii). Similar to the Nauseous Machines of Chapter 3, Burroughs and Gysin seek to reflect the world. The two operated in a post-Surrealist climate, writing with the objective of decoding the world around them (Robinson, 2011, p. 9). However, Perec and his literary progeny achieved their goal through stripping reality back so new avenues of meaning and thought could emerge. The Noisy Machines of this chapter, on the other hand, focus their attention on emulating the bulging masses of symbols, media and data through excess rather than deletion.

What, however, defines noise in a contemporary context, and what makes it an effective literary device? Since at least the late 90s, academics have been interested with the effect a shift to an information-driven world would have on society and the individual. The individual has become more quantifiable, codified into sequences and samples (Galloway,

⁵⁵ For a more thorough exploration of Burroughs' views – including his unsavory ones – see Oliver Harris' introduction to *The Soft Machine* (2014/1961).

2004, p. 113). We can observe this in the use of technology such as facial recognition in law enforcement (Simonite, 2018), where the data itself becomes valorised, rather than the individual it is attached to. As a consequence, one's physical presence, and thus their absence, is less crucial to day-to-day operations. This shift has increased in recent years, but was noticed within academia some time ago. N. Katherine Hayles identified the shift in examples ranging from forensics being used over eye-witness accounts to determine guilty parties to romantic relationships being pursued online instead of in physical spaces (Hayles, 1999, pp. 27-28). Effectively, the physical presence of an individual or their possessions becomes an irrelevance in the face of the data they access and distribute. An individual playing a VR game is both present and absent (Hayles, 1999, p. 27). If the presence of an individual or object is no longer as important, then surely its absence loses some of its literary potency. If information rather than presence is the defining factor of an individual in a networked society, then its antithesis must also be identified. As absence was to presence, I argue that noise is to information.

By way of example, consider the lipogram in a digital setting. In print, the letter 'E' is just that – a mark on a page. To change its font, its size, and its case would all involve erasing the letter and replacing it with another. The signifier that is the letter 'E' and its materiality are entwined. However, in digital spaces, the letter exists not as a single mark that is either there or is gone, but instead as a modifiable chain of markers, woven together by the relationship between various parts of code (Hayles, 1999, p. 41). The letter 'E' to us is a mark denoting a particular spoken sound. To the computer, it is a series of 1s and 0s. The chain that culminates in this 'E' can be modified to change font, size and other properties with ease. The potency of its appearance on screen is no longer an all-governing force. Instead, the symbol's being is comprised of a multitude of presences and absences. Where drama may occur, then, is in the introduction of noise, such as invalid code, to the chain of data that results in the 'E'. A corrupted font file, or perhaps the parsing of an 'E' into a spreadsheet that calls for a number could indeed be viewed through the lens of absence Chapter 3 focused on, but such a lens would not account for the noise left in the letter's wake. Perec's avoidance of the letter 'E' was truly an erasure of the symbol – the letter didn't linger in a corrupted form, or suddenly appear in the sequence for Pi. It simply ceased to exist. Instead of absence, information is in conflict with noise.

Noise, however, does not need to come from corruption. For instance, what is an HTTP header to the average human reader? Or a Python script to an interpreter for the C# programming language? A piece of code may be information to one entity, and useless to another. Much like the static on the radio that Cage explores, it is noise. Other noise may be less easy to detect, such as false or misleading “information”, spread online (Vosoughi, Roy & Aral, 2018). In this way, we can see Internet discourse as a tension between information and noise. As this chapter will explore, this tension can be communicated through contemporary digital and networked machine writing that draws on Burroughs’ cut-up method.

Contemporary society can be contextualised as part of the “information age” – a term often haphazardly used by critics of contemporary life. For the purpose of this thesis, I will adopt the position that the information age is defined, in part, by society shifting to understanding matter in terms of information and code (Galloway, 2004, p. 111). Chris Rodley and Andrew Burrell note that the information age brings with it heaving masses of data that surround the individual. Machine writing becomes a method for facing this data, especially when it threatens to overload us (Rodley and Burrell, 2014, p. 86).⁵⁶ The data overloads that Rodley and Burrell are alluding to can be seen as times when a user online becomes surrounded by noise rather than information. Or perhaps when the sheer quantity of information becomes so overwhelming, it is functionally noise. Although Burroughs’ cut-up method was generated in response to his own context, his methodologies have been adapted by contemporary machine writers to respond to the overwhelming bodies of data we now face.

The concept of literary noise has been raised in discussions of electronic literature before. In her analysis of Talan Memmott’s *Lexia to Perplexia*, Hayles suggests that the layering of text and imagery on top of one another in a way that assaults the reader as they navigate the work, creates a sort of noisy message, with noise itself becoming “a message about the distributed cognitive environment in which reading takes place” (Hayles, 2002, p. 62). Noise is viewed in this chapter in a similar way: it is a force of disruption or complexity, creating a storm of data from which the reader must recover.

⁵⁶ Specifically, Rodley and Burrell refer to “data-driven literature”.

Machine writers Kenji Siratori, Darby Larson, Jonothan Basile and Li Zilles generate or manipulate noise to provide commentary on online discourse. Siratori and Larson's methods can be traced directly to the cut-up method of Burroughs, while Basile and Zilles manipulate noise in different ways. Not only have methodologies evolved since Burroughs time, so has the context that noise inhabits. While Burroughs' concern was with centralised, controlling powers such as media empires (Harris in Burroughs, 2014/1961, p. xxiv), the concerns of his modern contemporaries are markedly different. Centralised forces of control have become brokers of information itself and are learning to conduct themselves in the space of the Internet, where information flows more freely between users. Access to, and the means of production of, information have moved dramatically further into the hands of the individual in what Galloway refers to as a "distributed network" (Galloway, 2004, p. 34). Burroughs saw a world that was already under control, and only through resistance could the individual break free. At the heart of the Internet, however, is a collision between forces of freedom and forces of control that are on arguably more even ground. Individuals may move from webpage to webpage freely, yet do so through heavily concealed streams of prejudicial code (Galloway, 2004). Citizen journalism has given presence to marginalised voices, but also been manipulated or absorbed by established political powers (de la Cruz Paragas and Lin, 2016, p. 1535). Large social media networks such as Twitter seek to centralise Internet discourse, while platforms such as Mastodon wish to liberate it (Kazemi, 2017a). Burroughs used noise to respond to post-WWII mass media,⁵⁷ while contemporary machine writers respond to the information age.

Through an analysis of these four writers and their manipulations of noise in comparison to Burroughs, different attitudes towards the information age are revealed. Siratori and Larson both focus on "solving" the unreadability of noise. Siratori's *nonexistence* (2011) features abrasive, anti-human prose that paints a harrowing image of the information age. Conversely, Larson's *Irritant* (2013) manipulates noise in a way that encourage investigation, suggesting the unreadability of noise may be conquered. Siratori and Larson's methods are digital versions of Burroughs' cut-up, where the manual movement of words has

⁵⁷ I am not suggesting that mass media forces have been supplemented or replaced by online discourse. Debates around "old" or "new" media are outside the scope of this thesis.

been automated. Similar to Burroughs, Siratori and Larson both seem to think of noise as a problem that must be remedied.

In contrast to Siratori and Larson, Basile and Zilles have both worked with larger bodies of noise – generated or gathered – to suggest noise not as a problem, but as an artistic source itself. Inspired by Luis Borges’ *The Library of Babel*, Basile created *libraryofbabel.info* (n.d.): a website that, Basile claims, contains every possible 410-page combination of the English alphabet, the space, the comma and period. The website becomes a labyrinth of unreadability, promising within its many pages the answers to all questions, and the formulas for all lies. Such an unfathomably large body of work can only exist online, encoded in compressed seed numbers. Basile’s work evokes the duality of noise and information as sublime, provoking terror and promising adventure. *libraryofbabel.info* is not a space any human can hope to penetrate meaningfully. This impossibly large body of work is suggestive of the Internet itself. The Noisy Machines of this chapter also include online agents, this time designed to navigate the large swathes of data online, plunging into the sea of noise and returning with their own poems and messages. Zilles’ *The Seeker* (2014a) is an example of such agents. Through a direct interaction with the Internet, *The Seeker* delves into the website Wikihow and returns with cut-up text that presents noise as meaningful in and of itself.⁵⁸ At the heart of these examples, the machinic practices that result in either information or noise are the carriers of meaning.

These examples reflect how machine writing may manipulate the noise of online spaces as artistic and literary practice, bringing direction to misdirection. The practice is fundamentally machinic: the writer shifts from composer of meaning to director of data, whether using code or scissors. Noisy Machines confront the reader with visions of networking structures, masses of data and the disturbing, poetic patterns that lurk inside the noise of the Internet. Their concerns and forms are interwoven with the discourses and anxieties of cyberspace. In his cut-up experiments, Burroughs attempted to craft, in his words, a “new mythology for the space age” – one that focused on war and conflict, where hell is

⁵⁸ Readers may see, at this point, a similarity between what is being discussed here and the machine writing bots that appeared towards the end of Chapter 3. Indeed, these bots could have also been analysed through this lens of the noise poetic. However, to avoid repetition, I have chosen to look at other examples here. This thesis by no means claims to be an exhaustive exploration of all investigations of these poetics, nor do I believe they are discrete from one another.

replaced by control and heaven by “freedom from conditioning” (Burroughs and Mottram, 2001, p. 55). By tracing a trajectory from Burroughs’ cut-up methods to contemporary digital and networked machine writing, I propose a strain of machine writing that focuses on the production or manipulation of “noise” to create a literature for the information age. Perhaps it is this form of informatic literature that our AIs of the future may seek to compose themselves, complete with their own manipulations of noise and information.

Information and noise

The relationship between the information age and “noise” can be explored through an interplay between Burroughs’ *Nova Trilogy* and scholarship on the materiality of Internet discourse. Scholars have long grappled with the repercussions the information age upon the individual and society. Debate has often surrounded the embracing or rejection of Technological Determinism – a view rooted in the ability for technology to be a driver of social change (de la Cruz Paragas & Lin, 2016). However, through focusing on the materiality of Internet discourse itself, a more grounded view how information operates can be obtained. Somewhat prophetically, Burroughs’ critiques of mass media control that he expresses through his fictional Nova Police and Nova Mob act as literary allegories for the movement of information online.

The systems that control the flow of information online lend themselves to a more free, open distribution of power. For example, while workplaces will often feature a single, centralised force of control from which power flows (Galloway, 2004, p. 31-32), networked society has the potential for information to flow in a variety of directions. Alexander Galloway describes the Internet as a “distributed network”, where information may flow from peer-to-peer, with power and authority not set in stone (Galloway, 2004, p.35). However, methods of management, or protocol, govern the flow of data online, bringing order to what may otherwise be chaos. Without these systems, information and noise may become indistinguishable, rather than carefully sorted and curated beneath the surface. This brings us to the first tension from which the information/noise paradigm is born: control vs freedom, a “delicate dance” that Galloway sees as a defining feature of the Internet (Galloway, 2004, p.

75). For Galloway, the dance is between the literal, material movement of information online. However, we can also observe this tension in how individuals and organisations engage with cyberspace.

The shift to a distributed network does not mean that organisations attempting to centralise the flow of data online do not exist. Social media networks such as Twitter are an example of this attempt at re-centralisation. Darius Kazemi describes Twitter as a large piece of software, running in one location on machines owned by Twitter. Kazemi contrasts Twitter to open-source social media networks such as Mastodon, which attempt to redirect online discourse away from centralising forces (Kazemi, 2017a). Bodies such as Twitter can be seen as enemies of protocol, as they seek to impose control and disrupt free movement in online spaces (Galloway, 2004, p. 121).⁵⁹ Although a product of the 50s and 60s, the *Nova Trilogy* captures tensions of control and freedom that are similar to the landscape Galloway describes. Burroughs' view of mass media's control over the world through the "virus" of language (Harris in Burroughs, 2014/1961, p. xxviii)⁶⁰ works as an evocative subject for the materiality and politics of online discourse.

Along with Gysin, Burroughs developed the cut-up method to more authentically reflect the reality they encountered. Experimenting with these methods in the composition of *The Naked Lunch*, Burroughs would create the cut-up sections of the *Nova Trilogy* by drawing on a variety of material, including a large manuscript referred to by Burroughs as the "word hoard" (Harris in Burroughs, 2014/1961, p. xvii, p. xx). The *Nova Trilogy* stretches non-linearly across *The Soft Machine*, *The Ticket That Exploded* and *The Nova Express*. Narrative is interspersed between cut-up sections. The overall plot of the trilogy concerns Inspector Lee and the Nova Police, who have uncovered the conspiracy of the Nova Mob, who use mass media to control society through the "reality script", a series of signs and symbols that dictate society, disseminated through broadcast media. Through space and time travel, as well as the commandeering and destruction of broadcasting systems, the Nova Police wage war against the Nova Mob.

⁵⁹ The referenced Galloway work, however, predates Twitter slightly.

⁶⁰ Burroughs also would qualify this statement at times, referring to the language virus as coming from outer space (Robinson, 2011, p. 45). This extra-terrestrial quality may imply language not only as viral, but as distinctly inhuman.

Burroughs utilised the cut-up method to articulate his anxieties towards society in a post-WWII United States. In essence, Burroughs viewed the media as one of many forces that have mobilised language as a “virus”, utilising it to control society through print, radio and television (Harris in Burroughs, 2014/1961, pp. xxv-xxvii). In *The Ticket That Exploded*, the reader is given a snapshot into what appears to be Lee’s induction into the Nova Police. This encounter articulates Burroughs’ attitude towards noise as a powerful tool to combat forces that seek to control and manipulate information. Lee’s supervisor explains that the organisation does not encourage a sense of unity, stating that most organisations enforce total obedience, resulting in their agents becoming “addicted to orders” (Burroughs, 2014/1962, p. 10). The supervisor goes on to state that orders should occasionally be followed, and other times should be ignored. He further states:

You will receive your instructions in many ways. From books, street signs, films, in some cases from agents who purport to be and may actually be members of the organization. There is no certainty. Those who need certainty are of no interest to this department. This is in point of fact a non-organization the aim of which is to immunize our agents against fear despair and death. (Burroughs, 2014/1962, pp. 10-11)

Effectively, Burroughs is suggesting a decentralised network akin to the Internet: an erratic array of sources, with information of varying quality, spread out online. It is up to the individual agent to discern what is pertinent information and what is not. Through the creation and exploration of noise, the agents of the Nova Police can carve their own path to freedom. A path that is heavily linked to mass media itself.

As discussed earlier, what is information in one context may be noise in another. Burroughs appears to agree: the methods of control – mass media, language, the newspaper – are also the methods of freedom, if one is willing to “cut-up” the information and noise presented to them. Burroughs presents the cut-up method as a device for resisting organisational control, by taking the texts of the enemy and transforming it into noise or another type of information, claiming it as your own. As seen in Chapter 3, Machine Writers such as Parrish have challenged the centralised control of Twitter through their bots. Likewise,

Burroughs suggests one may challenge the frenetic and noisy control employed by media forces through a repurposing or recreation of information and noise.

Burroughs' view of the cut-up method is exemplified in *The Soft Machine*, which also works to demonstrate how information and noise are different from one another. During 'The Mayan Caper' chapter, Inspector Lee is held captive by a group of priests, who control their slaves through a series of broadcasted commands. Lee manages to take control of this system, and through cutting-up and remixing the control commands, he causes the entire system to breakdown.⁶¹ As he escapes, his captors disintegrate, revealing themselves to be "nothing but word and image, an old film rolling on and on with dead actors" (Burroughs, 2014/1961, p. 90). The priests exist as pure media – codified version of humans transformed into data. Their existence as "word and image" aligns with both Hayles' and Galloway's descriptions of how existence is translated into digital spaces. Burroughs' depiction of the priests returns us to the idea that the relevance of one's presence or absence has in fact been replaced. The priests are both there and not there, existing in a sort of ethereal, media form. As they themselves are now streams of data, it is their *context* that matters. With the right control commands broadcasting, they are information: relevant forces that keep the workers in line. When the control commands themselves are damaged, however, they lose their relevance and become noise. They cease to be "priests" – something with context and purpose – and become "nothing but word and image" – something non-specific, like static or falling rain. Burroughs sees the cut-up method, then, as a way to break down organisational structures of control. If information is a controlling force, then turning the oppressor's info into noise will weaken and destroy them.

Burroughs suggests even greater power exists in the manipulation of information and noise in *The Ticket That Exploded*, through a version of the cut-up method that uses tape recorders. The method, which is initially used by the novel's antagonists (Burroughs, 2014/1962, p. 21), is eventually taught to the Nova Police by The Subliminal Kid. The Subliminal Kid instructs the Police (and by extension, the reader) to take three tape recorders and to think of an argument they have recently had and record on the first two tapes each side of the argument. On the third, record irrelevant information. Doing so allows the user to

⁶¹ This particular Burroughs chapter, 'The Mayan Caper', is explored in more detail in Chapter 6's evaluation of machine writing as a tool for dismantling oppression.

“find out more about the nervous system and gain more control over your reaction by using a tape recorder than you could find out sitting twenty years in the lotus posture.” (Burroughs, 2014/1962, p. 183). The technique represents the power Burroughs sees in manipulating information and, as tape three seems to suggest, noise. Through injecting noise into a stream of information, new meanings may emerge.

The distinctions between information and noise are complicated when one considers that what may be noise to one entity is information to another. A poorly documented piece of code may appear incomprehensible to even seasoned programmers (Hayles, 2006, p. 137). The far higher likelihood for individuals on Twitter to share false news and rumours than truth (Vosoughi et al, 2018) signals a widespread inability for individuals to tell the difference between relevant and useless data. As such, the barrier between information and noise becomes an uncertainty. This uncertainty, however, allows for noise to become a literary device. If information can become noise depending on circumstance, then surely noise can become information, embedded with some sort of meaning. The tension between information and noise is reflective of the broader balance of online discourse. When one considers the layers of data that shift back and forth online, the ease of browsing the Internet begins to seem strange. One might expect a similar experience to the reading of Burroughs’ *Nova Trilogy*, where the reader follows Lee as he jumps frenetically through time and space. Galloway comments that “surfing the Web” should in fact be an unnerving experience, causing radical dislocation as the user shifts from server-to-server (Galloway, 2004, p. 64). However, there is instead a sense of continuity to our browsing, owing to the systems of protocol in place, which keep the less human-friendly aspects of Internet information hidden from view, such as IP addresses and HTML code (Galloway, 2004, p. 47). We can also observe this in the way online service providers have attempted to block false information: spam filters detect potentially malicious emails, and social media feeds block particular users or harmful posts. The true machinations of the Internet are hidden behind the veil.

The above examples demonstrate the degree to which humans rely on computational systems for a compelling, understandable and safe experience of the Internet. As observed by Maria Angel and Anna Gibbs (2017), one’s experience of the digital exists between the analog and the code: the act of interpreting digitised information, for a human, is to enact analog actions of reading and writing. What is noise to the user is the very data these systems

exist for, exchanging data between layers of protocol. Galloway remarks that these entities are ignorant of much of the content they deal with (Galloway, 2004, p. 81). For an HTML object passing *The Tempest* to a user through Project Gutenberg (Shakespeare, 2000), the words of Prospero are of no interest, only how they must be displayed. These systems consider our information as noise, as we do theirs. For the Internet to be inclusive, open and facilitate a highly uncontrolled day-to-day practice, it must be wrapped in a huge number of extremely discriminatory systems that, to the average user, are invisible (Galloway, 2004, pp. 142-143). As Galloway describes, this is the contradiction that dictates online discourse.

Depicting this contradiction between information and noise that makes up one's online experience is difficult to express through literature. A great deal of human-penned fiction has commented on cyberspace: William Gibson's *Neuromancer* (1984)⁶² grappled with notions of virtual worlds, mega-corporations and hackers, while more recently Ernest Cline's *Ready Player One* (2011) depicted the online world as one of frenetic pop culture references. These texts, however, focus on relatively user-friendly experiences. The materiality of how digital spaces function – the noise, code and pieces of data – become lost in the transmission of a clear narrative.⁶³ In many ways, this isn't a problem: as stated, the human experience of browsing the Internet is one that is relatively free of such encounters with the materiality of data. However, for our literary AIs of the future, it is not farfetched to assume that these streams of data may be the very settings they exist in.

With the data-driven setting of our AI writers in mind, it is fitting that noise should have a place in the literary output of machines. Machines find their own types of data valuable; noise to us may be information to them. Through machine writing practice, the human writer is able to harness this noise, generating or manipulating it in such a way that traditional, human writing may be unable to achieve. From these distinctly machinic poetics, a form of literature embedded with the concerns of the information age may emerge. Siratori and Larson capitalise on this, taking Burroughs' cut-up method to an extreme form through the help of digital tools. Through an analysis of Siratori and Larson's *Noisy Machines*, we can see how contemporary machine writers have commented on the noise of cyberspace.

⁶² A 2000 edition of *Neuromancer*, published by Ace Books, was used in this thesis.

⁶³ Mark Amerika's hypertext epic *GRAMMATRON* (1997) offers another example, and one that captures the multi-directional nature of Internet use.

Noise and unreadability

Despite the efforts of protocols to give us continuity in our experience of the Internet, most users will have had missteps that range from inconvenient to disastrous. Beyond deliberate disruptions in the form of spam or viruses, interruptions may come in the form of text being accidentally deleted or clicking on a broken link. Hayles identifies these interruptions as traumas of code – indicators of the unseen forces online, reminding us that we do not entirely control our online operations (Hayles, 2006, p. 137). For Hayles, these experiences mirror metonymy and other slips in language. Hayles argues that these language slips represent a surfacing of the unconscious. When we experience glitches or missteps on a computer, the unconscious force of language – the code – becomes visible (Hayles, 2006, p. 137). Extending Hayles’ argument, a drop-in Internet connection interrupting a file upload, or a drive unplugged at the wrong time causing data corruption are experiences many computer users can attest to. It is in these moments that the “noise” normally hidden from us bubbles to the surface. Uncovering or stumbling upon the machinations of Internet protocols and other digital systems brings the reader closer to understanding how online spaces function. Exposure to the Internet’s systems is reminiscent of Burroughs’ own use of the cut-up method to decode reality (Robinson, 2011, p. 9). As words were cut and rearranged, the mechanisms behind them were revealed. Similarly, the glitches and missteps that reveal to us the noise behind our information unveil to us the digital world we navigate. In *nonexistence*, Siratori targets this noise, and deploys an automated form of cut-up to expose it.

Burroughs’ cut-up method utilised both his own and other’s texts, with evidence of T.S Eliot, William Shakespeare and Arthur Rimbaud in sections of the *Nova Trilogy* (Harris in Burroughs, 2014/1964, p. 249). Siratori, instead, appears to use a completely bespoke corpus for his texts, focusing on a form of prose that resembles a strange, alien computer code.⁶⁴ In doing so, Siratori attacks the reader with directionless prose to bring attention to the information illiteracy of many computer users. Siratori’s objective is initially evident in the

⁶⁴ Siratori would find himself the subject of another cut-up, with sections of his work appearing in John Bloomberg-Rissman’s *In the House of the Hangman Vol. 7* (2017). The frenetic cut-up of many different sources is part of Bloomberg-Rissman’s large “Zeitgeist Spam” project (Gorrick and Bloomberg-Rissman, 2017).

quantity of work he has produced – Robinson counts nineteen books between 2000 and 2006 (Robinson, 2011, p. 260). Siratori’s work simulates the trauma of code Hayles discusses but takes it to an extreme and inescapable form.

Siratori’s engagement with machine writing is specifically to disorient the reader. A bizarre series of images and phrases such as “crashed a chemical=anthropoid=paradise” (Siratori, 2011, p. 9) assault the reader. The prose of *nonexistence* shifts between a form of pseudo-code, garbled characters that appear like corrupted data, and decidedly biological terms. Such leaps are not unlike Burroughs, who forces the reader to move between space and time in such a way that a comprehensible, linear narrative is impossible. However, even in the pages of *The Soft Machine*, perhaps the most frenetic of all three of the *Nova Trilogy*, Burroughs includes passages of clear narrative. Consider the contrast between the following two passages, from chapters ‘Trak Trak Trak’ and ‘The Mayan Caper’ respectively:

Los Vagos Jugadores de Pelota storm the stale streets of commerce —Civil Guards discreetly turn away and open their flies to look for crabs in a vacant lot—For The Vagrant Ball Players can sound a Hey Rube Switch brings a million adolescents shattering the customs barriers and frontiers of Time, swinging out of the jungle with Tarzan cries, crash landing perilous tin planes and rockets, leaping from trucks and banana rafts, charge through the black dust of mountain wind like death in the throat. (Burroughs 2014/1961, pp. 36-37)

I told him that cost was no object—The News was behind me all the way—He nodded briefly: “Come back at this time tomorrow.” When we returned to the doctor’s office he introduced me to a thin young man who had the doctor’s cool removed grey eyes—“This is my photographer—I will make my molds from his negatives”—The photographer told me his name was Jiminez—(“Just call me ‘Jimmy The Take’ ”)—(Burroughs 2014/1961, pp. 83-84)

The dense, cut-up prose of the first passage bombards the reader with images, disorienting them. They are jostled between scenes of public authorities, sports stars and rebellious youths. The second passage, however, depicts a far more traditional, linear narrative in the vein of hard-boiled detective fiction. These shifts are deliberate. Burroughs was not interested in alienating the reader or producing a text that was unreadable. After feedback from those around him, Burroughs attempted to make *The Soft Machine* more accessible, and set out to write *The Nova Express* as a far more readable science fiction story (Harris in Burroughs, 2014/1961, p. xxxv). Burroughs' wished his methods to be visible, at least to an extent, to the reader. As Burroughs continued to write and revise the *Nova Trilogy*, he would include markings to show readers where cuts had been made, using ellipsis or em dashes (Robinson, 2011, p.46). Such actions demonstrate a conscious decision on Burroughs' behalf to *not* confuse the reader, unlike Sironi's use of continual bombardment.

Burroughs wished to produce legitimately readable prose due to his view of the cut-up method as a tool for rebellion against a world controlled by noise. Disorientation and confusion was the goal of the Nova Mob themselves, evident in the fluctuating names of their leader: "Mr and Mrs D". The character is introduced in *The Ticket That Exploded* with two additional names: "Mr Bradly Mr Martin" and "The Ugly Spirit" (Burroughs, 2014/1962, p.63). The sheer multiplicity of the Nova Mob leader made them difficult for the Nova Police to defeat. "Mr and Mrs D" is captured shortly after being introduced, but The Ugly Spirit aspect retreats to the 1920s (Burroughs, 2014/1962, p. 69) and consequently reappears in *Nova Express* (Burroughs, 2014/1964, p. 109, p. 112). Mr Bradly Mr Martin persists far longer in the text, appearing throughout the trilogy in a variety of forms. "Bradly" appears as a human undergoing several cut-up experiments on his person and other transformations (Burroughs, 2014/1962, p. 82, p. 100). "Mr Martin" is revealed to be a "heavy metal addict" (Burroughs, 2014/1964, p. 60). Mr Bradly Mr Martin are not undone until the very end of *Nova Express*, when they are "shut off" (Burroughs, 2014/1964, p. 190), a moment that signals the failure of Burroughs' cut-up method. The Nova Mob Leader's flickering forms embodies the methods of control-through-noise that Burroughs wished to fight against. Lucas Brian Nelson theorises that the cut-up sections of the *Nova Trilogy* are demonstrations of what Burroughs explains in the more traditional, narrative-driven sections (Nelson, 2014, p. 16). Burroughs

demonstrates a belief that the reader, if properly equipped with both cut-up text and a linear story that explains it, can see through the noise and similarly weaponize it.⁶⁵

Unlike Burroughs, Siratori is not as optimistic that his readers will be able to mobilise against the systems of control. As a result, he presents the reader with texts that lack any sort of narrative or direction, becoming impossible to navigate. As with Burroughs, consider two passages side-by-side. The first is the opening of *nonexistence*, the second from towards the end:

The reptilian=HUB_modem that crashed a chemical=anthropoid=paradise apparatus of the human body pill cruel emulator that covered cardiac and compressed the acidHUMANIX infectious disease of the soul/gram made of retro-ADAM to that mass of flesh-module murder game**** (Siratori, 2011, p. 9).

The feeling replicant living body junk of her digital=vamp cold-blooded disease animals to the brain universe of the ultra=machinary tragedy-ROM creature system technojunkies' reptilian=HUB to non-resettable murder game**** (Siratori, 2011, p. 150).

These examples are indicative of the entirety of *nonexistence*. Siratori's prose is comparable to the English language/programming language creole that Hayles observes in *Lexia to Perplexia* (Hayles, 2002, p. 53), another noisy text mentioned earlier. Siratori also appears to have used the same or similar corpus for the novella *vital_error* (2004). The only reprieve the reader has in *nonexistence* is the very end of the novel, which closes with a string of 454 8s and the word "HUMANEXIT" (Siratori, 2011, p. 169). The reader is paralysed in a moment of code trauma: unlike Hayles' examples of minor hiccups in browsing, the reader of *nonexistence* has fallen through the barriers that separate users from code and is now surrounded by hostile noise. This noise represents the algorithms that control the movement of data online. To Siratori, ignorance of how these systems operate is cause for alarm. While the narrative of the *Nova Trilogy* moves in bizarre directions, *nonexistence* refuses to move at all. Where Burroughs provides escape into more traditional prose, Siratori suggests

⁶⁵ This weaponizing of machine writing techniques is explored in greater detail in Chapter 6.

perpetual entrapment. The uncompromisingly machinic prose of *nonexistence* is indicative of Siratori's bleak view of the information age, and its effect on the individual.

Through his use of the cut-up method, Siratori wishes to pull back the veil on the protocols and automated systems that help individuals navigate the Internet. Siratori presents a world where information and noise co-exist. Passages such as "ultra=machinary tragedy-ROM creature system technojunkies' reptilian=HUB" (Siratori, 2011, p. 51) feel akin to trying to identify a file by its raw data, or attempting to sift through spam emails. Siratori wishes to expose online discourse as an endless bombardment of noise. Wenaus notes the difference between Burroughs and Siratori is a shift away from searching for a conspiracy of communication, to generating a violent mirror of information technology and, in doing so, unveiling the illiteracy of the average person towards machinic functions (Wenaus, 2011, pp. 29-30). Traditional modes of literary interpretation, Wenaus argues, are rendered useless when approaching Siratori's work, indicating Siratori's objective to induce an experience of illiteracy on the reader (Wenaus, 2011, p. 3). While Burroughs presents the reader with a problem and a tool to resist it, Siratori suggests resistance is futile.

Although these texts may at first appear unreadable, patterns do exist throughout.⁶⁶ By contrast, Siratori's *nonexistence* appears to lack any patterns whatsoever. While Siratori does signal the reader through a handful of permutations, these are red herrings. A reader attempting to find rhyme or reason in the repetition of phrases will ultimately find their search fruitless. Early on, the reader encounters the phrase "tera of dogs" (Siratori, 2011, p. 9). Signalling the cut-up nature of the novel, the term re-appears throughout. The term appears a total of 125 times, embedded in phrases such as "tera of dogs turned on technojunkies" (Siratori, 2011, p. 66).⁶⁷ Much like Mr Bradly Mr Martin, however, the reader will soon notice flickers of change in the tera of dogs that weave through the text. The far more sinister "the dogs of tera" appear (Siratori, 2011, p. 12), signalling the existence of some sort of faction or organisation lurking within the codified, hostile world. This faction could be a force for freedom, pushing against large corporations that seek to centralize Internet control. Or they could be akin to the Nova Mob, and the reader is already under their spell.

⁶⁶ For an example, see Mark Rickerby's *Emic Automata* (2017).

⁶⁷ Also appears on pages 68, 79, 102, 115, 126 and 161.

The final “the dogs@ tera” (Siratori, 2011, p. 44) permutation only serves to frustrate the reader further: perhaps no faction existed, or perhaps they are too far embedded in the code (signalled by the appearance of an “@” symbol) for the reader to comprehend. The reader is reminded this is not their world but, instead, the world of code.

Without being able to trace any real progression, the reader may turn to searching *nonexistence* for more established poetics – namely, repetition. All they will find, however, is contradiction. At first, “tera of dogs” and “the dogs of tera” seem to alternate. However, after two run-throughs, the pattern collapses (Siratori, 2011, pp. 9-21). Attempts to comprehend the suffocating, dense storm of Siratori’s prose are essentially pointless.

Siratori’s method is an automated version of cut-up, perhaps akin to *Gnoetry*⁶⁸ or *Text Mixing Desk 2.0*.⁶⁹ In short, there is a logic to the produced text – an interplay between pattern and randomness. Siratori presents a lopsided relationship between information and noise. As stated before, most computational systems transform their information – relevant code – into human information, such as the media our browser displays. Siratori has subverted this, by using systems to parse information into explicit noise. Herein lies the central tension of *nonexistence*: mirroring the Internet’s nature as a force of both freedom and control, Siratori’s work is a product of pure chaos that *must* be generated by exact logics.

Despite this maelstrom of noise, Siratori suggests a shred of humanity lurks within *nonexistence*. This humanity, however, sits just outside the reader’s grasp. Throughout, the phrase “I turn on” appears, in contexts such as “I turn on the body encoder of the ultra=machinary tragedy-ROM creature system@trash” (Siratori, 2011, p. 33). The first-person “I” suggests a human voice, while “turn on” suggests a technical action. The context implies a narrating human who is turning on a computer, terminal or other device. The “narrator” could potentially provide the reader with guidance. They may be able to operate the bizarre apparatuses that seem to govern the novel’s world, such as the “body encoder” or the “mass of flesh-module” (Siratori, 2011, p. 38). The promise of such a guide is amplified by the relative clarity of the statement versus the strange combinations of words and symbols that make up much of the rest of the text. However, any lucidity is quickly lost. In each

⁶⁸ For more information on Gnoetry and its community, see gnoetrydaily.wordpress.com (2019).

⁶⁹ For more information on the *Text Mixing Desk 2.0*, see <http://www.lazaruscorporation.co.uk/cutup> (2019).

instance, the narrator blips out of existence as quickly as they appear, abandoning the reader to the hostile world of noise. Siratori has reversed Hayles' notion of the trauma of code: continuity has become a glitch or misstep, and unfathomable noise has become commonplace.

Through reversing the positions of information and noise, Siratori enforces a depiction of online discourse that, like Hayles and Galloway, challenges traditional notions of the digital as an optimistic, free space. When discussing her alignment of computer use and the unconscious, Hayles admits sceptics may argue that code is often easy to understand (Hayles, 2006, p. 137). She combats this notion by mentioning that even a trained programmer will find it difficult to navigate the code another has written and not sufficiently documented. As code is recycled and iterated upon in changing versions of a product, often made by large teams, the potential for a single person to understand a program in its totality shrinks (Hayles, 2006, p. 137). One might be inclined to think Hayles' statement challenges Galloway's notion of the Internet not being a "mass of uncontrollable data" (Galloway, 2004, p. 8). However, when viewing the two theorists side-by-side, they instead reveal a harrowing banality: the mass of data online is controlled by many different forces, ranging from Galloway's discussion of protocols through to the massive amounts of news and browser history data that passes through Google. However, most individuals and companies alike do not fully comprehend the systems at play. Similarly, a reader of *nonexistence* may believe they have found a pattern in the "tera of dogs", but they are still surrounded by far more noise they do not understand. Additionally, their guides through these spaces – the corporations we give our data to and Siratori's fleeting narrator – may themselves be unreliable, and equally as lost in the data that they broker.

Siratori's writing not only suggests we are currently living in an age of "information illiteracy" (Wenaus, 2011, p. 40) where both individuals and corporations flounder online, but does so with urgency. Siratori's constant barrage of texts represents a single project. Wenaus suggests that both the speed of Siratori's textual production and the form it takes are allegorical of the rapid changes in communication of the information age (Wenaus, 2011 p. 34, p. 43). The cyberpunk world Siratori permutes through each text develops at a rapid, viral rate. Connections between passages and books appear and dissipate in equal measure.

Siratori's work allegorises the distributed network of online discourse through erratic contributions. In doing so, Siratori paints a picture of individuals rapidly distorting as they descend further into online layers they do not understand. Siratori's work indicates a view of the information age as one that is being eroded and dominated by digital forces. Individuals continue to rely more and more heavily on computational methods, without truly understanding them. Noise is consuming information. With no information to turn to, Siratori must inject meaning into the noise itself. Through *nonexistence*, noise becomes encoded with the message of its own increasing control. *nonexistence* is both a warning for, and an embodiment of, the antagonistic forces Siratori fears.

Although Burroughs may initially appear optimistic as to humanity's ability to reclaim the media, both he and Siratori ultimately fall to technological deterministic resolves. Technological determinism is often criticised for suggesting a passivity of humanity, who are unable to stop the forces of technology that define us (Winston, 1995, p. 73). Siratori's refusal to provide explanations for his practice and indication that the only escape is through the "HUMANEXIT" that appears at the end of *nonexistence* (Campbell and Siratori, 2009) mirrors the conclusion Burroughs' comes to in the *Nova Express* when Lee announces there will be no more "flesh scripts", and calls for Mr Bradly Mr Martin to be "shut off" (Burroughs, 2014/1964, p. 189). For Burroughs, the "operation rewrite" of *The Ticket That Exploded* (Burroughs, 2014/1962, pp. 55-61), an allegory for the cut-up method, has failed. Nelson suggests *Nova Express* represents Burroughs giving up on the cut-up method and concluding that "silence is the solution" (Nelson, 2012, p. 59). For Siratori, such operations were never an option. Both Burroughs and Siratori, in the end, harness noise as a means of suggesting humanity is under the thumb of technology, and that the only solution is destruction.

Concern with humanity's entrapment by technology is not the only use of noise in machine writing, although one could be forgiven for thinking this. Texts that boarder on unreadable are popular within the machine writing space. Rodley and Burrell have even suggested that most NaNoGenMo pieces will never be read in full (Rodley and Burrell, 2014, p. 83). However, noise need not be the conclusion of a machine-written text. Instead, noise can be presented as a space for navigation or play that invites further investigation or conjures

a contemporary sublime. In *Irritant* (2013), Darby Larson deploys noise to encourage exploration.

Upon first reading, *Irritant* seems just as impenetrable as *Siratori*. The text features the same kind of looping imagery with little sign of movement. However, instead of *Siratori*'s cyberpunk setting, Larson offers an almost-imaginable world. The novel begins with the sentence "In something of red lived an irritant" (Larson, 2013, loc. 10). The passage establishes the titular entity of the novel, the "irritant". The reader is instantly presented with the mystery of what exactly the "irritant" is. Like with *Siratori*, the answers aren't clear. Instead of a progressing plot, the reader witnesses the novel spiral in on itself. An early passage reads:

The red and the blue the blue. So back to this truck went it irr. Not back to something of red and the irritant. The irritant living in something of red said not back to the blue and the truck okay. Sighing and sighing the red sighed and sighed in other words. So in something of red lived the irritant while the irr irrd in front of the truck. The irr irrd the irritant. (Larson, 2013, loc. 10)

Like *Siratori*, Larson's text feels corrupted. Sentences don't appear to relate to one another correctly. Objects and images repeat, but there appears to be no continuity or plot. However, the reader can begin to track a tangible evolution of the text. Soon, "in something of red lived an irritant" becomes "in something of red lived the irritant" (Larson, 2013, loc. 10). The change is small, but deliberate. The reader sees momentum, even if it is small. The momentum builds, as the sentence permutes again, becoming "in something of the woman lived the irritant" (Larson, 2013, loc. 482). Already, Larson has presented the reader with more hope than *Siratori*: the "irritant" is moving, winding its way through the noisy prose – but the reader can follow it. With permutation and progression comes the promise of a narrative, rather than *Siratori*'s static noise.

Although there is momentum, *Irritant* still presents itself as a daunting text. The scenes move slowly, and range from banal and jumbled passages such as "Sighing and sighing

the woman sighed and sighed in other words” (Larson, 2013, loc. 417) to scenes that, while impossible, at least present a coherent progression, such as “The ground wept and the stunned man ate the artichoke and the artichoke ate the water and the fire ate the moon and the woman ate the irritant” (Larson, 2013, loc. 489). Like other machine writers, Larson has harnessed contradiction. Tensions of mundane/surreal and jumbled/coherent tumble back and forth to produce feelings of entrapment, with more and more images layering on top of one another. However, the movement within these layers, indicated by the irritant’s shift from “red” to “woman” challenges the reader. Larson has promised permutation in his layers and tasked the reader with decrypting the information *Irritant’s* patterns provide. Larson suggests that, although the text of *Irritant* may be a noisy, dense block of prose, the patterns beneath the text are themselves indicative of plot and information. The reader is tasked with uncovering these patterns.

Larson does not challenge the reader unfairly, providing them with a key of sorts for unravelling *Irritant*. Without giving them away entirely, Larson reveals some of the mechanics behind *Irritant* in an interview with *Vice*. Larson indicates that the novel was based on a set of 70 words, which he initially used to manually write a 4000-word text. The 4000 words were then randomised, and Larson implemented a one-word replacement. He continued to iterate on this until all 70 words had been replaced (Butler and Larson, 2013). In disclosing this information, Larson is sending a message to the reader regarding noise itself. While Siratori communicated that the noise of the digital world was unapproachable, Larson is instead urging the reader to try and find meaning within it. His description is like a key – a tool to decrypt the dense, unfathomable text of *Irritant*, and turn noise into information. Of course, there is no art in certainty, and Larson is quick to inject some doubt into the discussion. He states “So 4000 x 70 is 280,000 words total. *Irritant* ended up being quite less than 280k, I can't remember why. I think I may have decided to quicken the pace a little” (Butler and Larson, 2013). As such, the exact methods behind *Irritant* remain cryptic, with the reader only given clues as to its genesis.

It is of course possible that Larson hasn’t been completely truthful with his methods. The text of *Irritant* may have been devised by a different method entirely, or some degree of editing may have injected just enough humanity into *Irritant* that quantifying the novel’s patterns is not possible. The reader is invited then to decrypt and defuse meaning through

more traditional, close reading practices, even if such a position appears daunting. In doing so, the reader begins to find other patterns. Even without reading Larson's interview, the boilerplate-style of *Irritant* is immediately visible. As words change, the same sentence structures repeat. While the exact templates cannot be deduced with complete confidence (much like the word evolutions themselves), one appears to be:

Let us <BLANK> at the <BLANK> and the <BLANK> will <BLANK> on <BLANK> <BLANK>
<BLANK> toward the <BLANK> <BLANK> the <BLANK>.

This template permutes throughout the text, with variations including "Let us hang at the cherry wood floor and the man will crawl on his elbowthumbs smoothly toward the front of the chair" (Larson, 2013, loc. 3633; loc. 3789) and "Let us hang at the cherry wood floor and the carpenter will flap his butterfly wings finally toward the piano and the chair" (loc. 9332; loc. 9477). The slow transformation of the text promised by Larson, along with the explicit boilerplate patterns evident to the reader, gives them a roadmap through the noise of *Irritant*. Once the reader has this map, it is up to them how they continue. A reader could simply read through *Irritant* linearly, searching for new words, or even attempting to find all the boilerplate sentences throughout. They could carve their paths through analog or digital methods, perhaps through computational criticism. Regardless of their chosen method, the reader becomes a navigator, tracing paths through close or distant reading methods. Unlike the reader of *nonexistence* who is simply abandoned by the text, a persistent reader of *Irritant* can encounter progression and development. In carving these paths, the reader wills a narrative of pattern and procedure from *Irritant*.

What first appears as literary noise soon becomes machinic information. Through *Irritant*, the reader is asked to sympathise with the machine. A text that may appear strange and even nonsensical can be revealed as a source of its own poetics and literary value, if a reader is willing to try. While *Irritant* is a fairly rudimentary system, in attempting to find common ground with the machine, the reader may get closer to understand where our AI writers of the future may be coming from. After all, they too are likely to find their own values in human texts, which they may at first regard as noise.

Through *Irritant*, Larson has rejected technological determinism. Larson challenges the notion that noise is a death knell for society. In his interview with *Vice*, Larson suggests a

demystifying of computational methods. Larson equates the composition of *Irritant* with using cut and paste, or search/replace functions (Butler and Larson, 2013). In equating his machine writing practice with the processes most computer users deploy every day, Larson destigmatises digital noise. Computational processes may indeed be irritatingly vague or unresponsive, and finding an individual that understands all the data around them is mere fantasy. However, through deduction and patience, the individual can make this noise their own. Therefore, the noise of machine writing does not equate with unreadability – the reader must simply humble themselves, and approach the noise willing to listen. Where Siratori calls for an exodus from the information age, Larson insists on pushing forward. *Irritant* suggests that while the noise of data that surrounds us may be frightening, it can also be a source of grandeur. *Irritant* signals the information/noise tension of cyberspace as sublime. Representing the sublime is, of course, far easier said than done. However, through two distinct approaches to noise online, Basile's *libraryofbabel.info* (n.d.) and Zilles' *The Seeker* (2014a) have embraced the colossal wilderness of data.

Embracing the noise

Alignment of the Internet with the sublime unveils a poetic quality to the materiality of data. Although numerous definitions exist, the sublime can be seen to be the representation of that which cannot be represented. In contradictory fashion, the very attempt of representing this “thing” is proven impossible itself (Zizek, 2008, pp. 229-234), be it the wilderness of gothic fiction or the Internet. From this paradox arises frustration and fear, as well as beauty and wonderment. It is not just the unfathomably large amount of content that the Internet offers that suggests the sublime, but also the underlying interplays of patterns and protocols that conjure a sublime aesthetic. One can look to the multiplicity of patterns behind every online interaction as examples of data-made entities that resist definitive representation. One cannot hope to explore the entire Internet, nor will they only

find information. The Internet at once promises patterns and randomness, freedom and control, and truth and lies.⁷⁰

While Larson may suggest the sublime through *Irritant*, his machine writing effort is still far smaller than the Internet itself. According to *Omnicore*, there are roughly 500 million Tweets per day as of October 2018 (Aslam, 2019). Even if each Tweet was only one word, a single day of Twitter dwarfs *Irritant's* noise. This is not to discredit Siratori or Larson: in many ways, both have created and manipulated noise to represent the unfathomability of the Internet in a confined space. However, machine writing techniques can also be employed on a larger scale that rejects traditional publishing completely. Basile attempts this through *libraryofbabel.info*, arguably the most puzzling labyrinth online, and a key indicator as to the kinds of literary spaces Als may one day explore.

libraryofbabel.info is modelled after Borges' short story of the same name.⁷¹ Basile claims that the website currently contains all possible 3200-character combinations of the English alphabet, as well as the space, comma and period (Basile, n.d.). To achieve this, Basile states he created an algorithm that generates books from seed numbers. Effectively, each book exists as an index number, and is re-generated every time it is looked up by a user, who can then share the book's "location" to others (Basile, 2018, p. 68). In other words, the seed from which every text is generated is stored, but the text itself is not. The texts exist in a compressed or potential state – awaiting user requests to open/generate them. Users can search for particular phrases or simply browse the library's chambers, as seen in Figure 4.1.

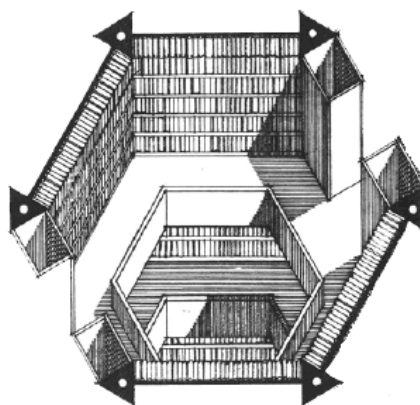


Figure 4.1: A virtual hex chamber from *libraryofbabel.info* (Basile, n.d.).

⁷⁰ Mike Cook and Tony Veale establish a similar link, drawing similarities and contrasts between Twitterbots and Borges' impossible library in relation to the sublime (Veale and Cook, 2018, p. 64).

⁷¹ For a discussion of all Basile's influences in creating *libraryofbabel.info*, see Basile's *Tar for Mortar: The Library of Babel and the Dream of Totality* (2018).

One can imagine the amount of noise that would be present on *libraryofbabel.info*. If just browsing the library at random, a reader is far more likely to stumble upon strings of gibberish than they are something resembling Shakespeare or Austen. Such futility is also true of Borges' original story, where the narrator suggests that, while a faithful catalogue of the Library must be contained within it, reason suggests it would be overwhelmed by the amount of false catalogues (Borges, 1970/1941, p. 18). The scope of such a library – physical or computational – is seemingly unfathomable. Yet, if Basile is to be trusted, the library does exist in a sense. Like IP addresses or polarities on disks, the books exist as a form of machinic info – their human-friendly expansions awaiting opening. Basile's project codifies the English language, exhaustingly transforming its materiality into flickering signifiers.

What becomes instantly obvious about *libraryofbabel.info* is we cannot prove it does what it claims. Calls for the source code (Karai17, 2015) are currently unfulfilled, with Basile having only revealed the source code for the similar, image-based library (Basile, 2019). Even with the source code, how could one ever accurately test if the entire body of work was there? Such certainty would require a user to read through every single text in the library, which is an impossible task. This impossibility aligns Basile's library with the sublime and, with it, the navigation of the Internet. The promise of all possible knowledge being contained within a sea of noise, and the uncertainty of ever stumbling upon anything of value conjures a certain trauma of code – the user is inundated with data, and may be unsure how to navigate to the information they need. A user exploring the library will see information and noise spreading out in all directions. The library is a wilderness of data, both insightful and terrible.

The sheer quantity of noise surrounding the reader unveils another truth about Basile's library: as a tool for finding information, it is completely useless. A user can browse the library but they are unlikely to stumble upon anything useful. The sheer quantity of text on the website means that for someone to stumble upon a legible phrase without searching for it is extremely low. An entirely readable book would be even less likely to find. Realistically, the only text that can be found is that which is being searched for. In that case, the information is already known. If all that can be found is that which is already known, one has to question if anything in Basile's library can be called information at all. What truths does it reveal? What wisdom can it impart? Basile recommends an approach to the library that seems to disregard hopes of information:

Those who tire of being constantly thwarted looking for meaning among the library's babble can use reading its jumbled texts as a form of meditation. Eventually your mind learns no longer to search for or expect significance (Basile, n.d.).

It is here we see Basile's library converse with the philosophies that underpin Larson and Siratori. While Larson encourages the reader to carve their own paths of meaning in the information age, Basile has suggested embracing the noise for what it is. Additionally, browsing through the library with the understanding one may never find meaningful data acknowledges Siratori's fear of information illiteracy, but repositions such browsing not as a futile and dehumanising experience, but instead as a platform for meditation. The procedure of navigating through the library must simply be movement for the sake of movement. The reader must wilfully enter a world not for them, but for the algorithm that created it. Burroughs and Siratori position noise as a sinister force; Larson insists it can be conquered. Basile suggest embracement.

Like Basile's library, Zilles' *The Seeker* embraces the eb and flow of data online, rejecting the notion of noise as something to be avoided or conquered. Unlike other writers in this chapter, Zilles does not create their own corpus of noise. Instead, Zilles deploys their Noisy Machine – The Seeker itself – onto the noise of the Internet. In this way, the reader is presented with noise that has already been “decoded” – translated into a form of information palpable for the human reader. Like Larson, Zilles suggests the noise of cyberspace is not hostile or unfathomable, but a space that can be explored. However, where Larson suggests this with the caveat that humanity must tame this noise, Zilles instead suggests cyberspace's noisy wilderness is not the realm of humans, but instead of machines.

Zilles explains *The Seeker* by first describing the “Seeker” algorithm itself. Within *The Seeker's* code, specifically the file *seeker.py* (Zilles, 2014d), Zilles includes a comment that reads “A Seeker, seeking an answer, or a question, or something in between.” (Zilles, 2014d). This comment says little about the mechanics of *The Seeker*, but instead personifies ‘The Seeker’ itself. Unlike the invisible mechanisms that produce Siratori and Larson's work, The

Seeker exists as a character within the text itself. In *The Seeker's* GitHub page, Zilles elaborates, referring to the seeker as being “an algorithm, an agent, a protagonist, a narrator” (Zilles, 2014c) all at once. They go on to state that The Seeker is essentially an entity that parses, deconstructs and then reconstructs texts, outputting its processes in its “logs”, which make up the bulk of *The Seeker's* text. We can see an alignment here with the algorithms of Chapter 2, such as *DocuScope's* sifting through The Great Unread. However, while *DocuScope* is interested in the cataloguing of information, The Seeker is cataloguing noise.

The Seeker performs its tasks through exploring the wikiHow website – a community-authored website of how to pages. The pages The Seeker has explored include pages on marital advice (Zilles 2014a, p. 289), as well as niche topics such as “dressing like a vintage cigarette girl” (p. 373). The Seeker “works” through the content from the wikiHow page, then scans it by searching through data it has already collected and finds a single concept to extract data from. Finally, it redefines, or “unimagines” this concept using anything it did not recognise during its scanning. Taking what it has learnt, The Seeker then moves to its next page (Zilles, 2014c). In doing so, The Seeker is not interested in noise in the form of garbled data or code, but instead noise that may be misinformation.

The “noise” that The Seeker explores is easily parsed by humans. Unlike the potentially hostile streams of data and protocols Siratori warns us against or the mess of gibberish that promises divine truths contained in *libraryofbabel.info*, wikiHow articles are relatively well presented and competently written. The noise that Zilles taps into is related to the uncertainty of community-driven webpages. The distributed network of the Internet as defined by Galloway democratises the production of knowledge, but also makes the proper vetting of information more difficult. This breakdown of barriers can result in the spreading of misinformation, whether intentional or unintentional (König, 2018, pp. 161-162). Once again, we see the tension between freedom and control bubble to the surface. Through an exploration of the information and noise of wikiHow, *The Seeker* engages with this tension.

The uncertainty of information online can be seen as noise in and of itself. Just as one's attempts to navigate through webpages to find information they need can be interrupted by glitches or crashes, so too can they be stopped and lead astray by incorrect information. This form of noise, however, is far more subversive. An individual confronted by code or garbled text is likely to understand they haven't found what they are looking for. The noise of

misinformation is threatening because it has the potential to be indistinguishable from relevant information. Fears of misinformation being spread online to further commercial or political agendas, as explored in Chapter 3, is a growing concern. Some governments have begun introducing laws to try and prevent bots from masquerading as humans in efforts to stop the spread of false information (Smith, 2018). However, analysis of the spread of false information on Twitter shows that humans are just as likely to contribute to the spread as bots (Vosoughi et al, 2018). *The Seeker* appears to comment on this uncertainty of information online. Rather than valorise or demonise the “wisdom of the crowds” (Surowiecki, 2004), Zilles repurposes these pages – be they information or noise – and transforms them into a poetic form that reads somewhere between human prose and machinic instruction.

Through the construction of *The Seeker*’s output, Zilles engages with the tensions of noise and information online as a dance between human and machine readers. Zilles’ code generates pages of symbols, such as Xs and Os (Zilles, 2014a, p. 368), or includes cryptic statements such as “PRETEND NOT EVERYTHING COULD NOT BE A DECISION” (p. 372). Zilles invokes the image of a machinic explorer, *The Seeker* itself, guiding the human reader through the wilderness of data. Between these walls of noise are *The Seeker*’s logs, where previously human prose has been turned into pseudo code. Although not unlike Siratori’s prose, the reader is still most certainly able to interpret the messages *The Seeker* is communicating. Zilles has allowed machine and human languages to exist side-by-side. There is no unnerving mutation, nor does it resemble gibberish. *The Seeker* is presented as an entity that may reintroduce information into a space humans have populated with noise, by transforming that noise into fiction. The rest, however, is up to the reader. To find meaning within *The Seeker*’s tales, they must be willing to listen on the machine’s terms.

If the reader accepts *The Seeker*’s offer, terms once familiar to them are refreshed in the light of the Internet’s constant stream of shifting data. In contrast to Larson challenging the reader of *Irritant* to turn machinic info into something meaningful to them, *The Seeker* takes the information of humans and makes it meaningful to itself. In “Activity Log #00072”, *The Seeker* appears to have found a wikiHow article on “BEING COMPLETELY DIFFERENT IN PRIVATE SCHOOL” (Zilles, 2014a, p. 293). The data is translated by *The Seeker* into its own, half-human, half-machine language:

01... ??? (GET_WEIRD_JEWELRY | CHAIN_LINK_BRACELET |
BRIGHT_CHUNKY_NECKLACE) => different own get bright chunky such weird unique
02... WEAR PATTERN (SOCK) => black
03... WEAR -- WOULD ALSO (FINGERLESS_GLOVE) => own good fingerless
(Zilles, 2014a, p. 293)

Like Siratori's work, these lines resemble noise. However, on closer inspection, the reader can easily discern the information within. Simple fashion advice has been repurposed as variables or programming objects. Through *The Seeker's* Activity Logs, Zilles has aligned wikiHow information with machinic code. This alignment mirrors anxieties towards the authenticity of information online. One could even argue the extreme specificity of such information renders it as noise to the majority of Internet users. However, when seen not as frivolous instructions, but instead as part of a broader narrative of a machine attempting to understand human interactions, the text moves from trivial to poignant. Just as we may be unable to discern between valid and invalid computer code, our machines, when asked to read human language, may struggle to know what is relevant. Looking ahead to AI literature, a text like *The Seeker* could be seen as the inversion of a human writer trying to describe the thoughts of AIs or robots. *The Seeker*, as the novel's protagonist and narrator, has taken human information and broken it down into the concepts that are meaningful to *it*. Just as a human writer is likely to be more interested in the emotional capacity or existential dread of an AI than the alignment of 1s and 0s beneath the surface, an AI is far more likely to find human concepts interesting when viewing them as objects and blips of data.

At this point, *The Seeker* attempts to bring a stronger sense of coherency and order to the data it has gathered. It does so by transforming the data further during its "dream sequence" (Zilles, 2014a, p. 294). In this instance, *The Seeker* has chosen to attempt to order its "memories" around the word "LINK". The dream includes:

.....[LINK] on the [REDACTED] site causing a computer [REDACTED]

*

.....[LINK] a specific [REDACTED] pattern to a specif

*

.....h as in my [REDACTED], the [LINK] did not even come to mind until late

(Zilles, 2014a, p. 294)

The reader now sees *The Seeker* shift through the storm of data. The reader is exposed to various definitions of the word “link”. Words that *The Seeker* does not understand are blacked out, with their surrounding information recycled into the “link” definitions (Zilles, 2014b). Much like the Nauseous Machines of Chapter 3, the oddities of language are laid bare. However, *The Seeker* does not seek to strip meaning back for new meaning to form, but is instead attempting to more accurately depict the mechanical processes behind a world governed by information. By presenting the term “link” and its many potential meanings, Zilles draws an alignment between the material multiplicity of data and the etymological multiplicity of language. In doing so, Zilles suggests a similarity between code and language. Like Larson and Basile, Zilles avoids falling into a technologically deterministic trap, showcasing both the uniqueness of online discourse, as well as its similarities to that which has come before it. From this perspective, *The Seeker* is not dissimilar to Veale and Cook’s analysis of twitterbots as bringing a sense of “order to the messy, chaotic and enormous world of Twitter” (Veale and Cook, 2018, p. 33). *The Seeker* and its resulting text do the same for wikiHow by arranging irreverent and perhaps false information into new poetic structures. What was once confusing, alien or disorienting is now machinic poetry that is distinctly robotic, but reminiscent of humanity. Perhaps the AIs of the future will follow suit – writing their experiences and thoughts on the discourses of humanity that they observe through a machinic frame.

There is, of course, still poetic value for the human reader in *The Seeker*. The scanning and dreaming sections work to establish a common ground between human and machine, bridging the gap between information and noise. *The Seeker*’s next phase, its “unvision”, asks the reader to approach the noise and to listen. The unvision strips away the machinic

elements of the prose, and uses concepts it hasn't quite figured out to redefine its chosen term. The unvision of "link" begins:

the earliest input, corresponding. speedily storing your unreadable database and preferably scanning the incomplete content. the medium, unfolding. solitary entries exaggerating strange addresses. correlating while specifying. including the unclouded token on the unexplainable frame (Zilles, 2014a, p. 295).

Instantly, correlations between the unvision and Siratori's or Burroughs' prose are visible. The text feels distinctly cut-up, and a sense of conspiracy and noise is conjured through the line "speedily storing your unreadable database". The sprawling, sublime nature of browsing online also seems to lurk within the text through the lines "the medium, unfolding" and "the unexplainable frame". However, while Siratori barrages the reader with fabricated noise, Zilles focuses on readability. The unvisions provide what machine writer Jeff Noon⁷² would call the "secret codes, the shadows of meaning" (Noon, 2011).⁷³ Where Larson suggests a decryption of these secret codes, Zilles suggests we simply listen. The Seeker has journeyed into cyberspace and, through machinic process, transformed trivialities and potential falsehoods into poetry.

When considered as a protagonist or online agent, The Seeker begins to resemble a messenger. As observed through Hayles and Siratori, the Internet and code itself can be a hostile environment for many humans. Even when traversing "friendly" spaces such as how-to pages or news articles, information can often just as easily be misinformation. In short, to traverse cyberspace is to move between information and noise, sometimes unwillingly. These spaces are navigable by humans – indeed, they were constructed to be so. Algorithms, however, are native to these digital spaces. Veale and Cook observe that twitterbots "live in language" (Veale and Cook, 2018, p. 21), and can thus deal with the masses of data around them more easily. They, like the spaces they inhabit, are lines of code. As Chapter 2's exploration of computational criticism demonstrated, algorithms are able to effectively

⁷² Noon's methods involve the use of automatic cut-up tools, which he then uses as stimulus for his writing.

⁷³ For Noon's discussion of his methods, see: <http://jeffnoon.weebly.com/the-ghost-on-the-b-side.html> (2011).

catalogue and deliver data, provided they are told what to collect. Just as machine writers can use Noisy Machines to create their own digital noise, they can also create machines that journey through online spaces and return with stories from beyond the veil. *The Seeker* represents such a journey – the algorithm has travelled into the sublime world of digital truth and lies, and come back with tales that tell of its own experiences. Perhaps, then, the AIs of the future will similarly return with their own tales, woven from experiences that occur between the layers of data most humans never truly encounter.

Conclusions

In the information age, much of what we do has been codified. Veale and Cook point out that most individuals engage with generative machines every day, such as those that may assign us hospital appointments or govern our mobile games (Veale and Cook, 2018, p. 55). The individual has become codified through facial recognition, finger-print scans, online spaces, and other mechanisms. However, with such a bounty of information comes a glut of noise. Migration into digital spaces splinters the individual on a material level. One's presence in any one place is no longer as relevant as what data they may access or have given others access to. As a result, concerns over physical presence lessens, and so does the poetic agency of absence. The tension of presence/absence is replaced, then, by one of information/noise, which carries with it its own set of concerns and discussions. There seems to be no better writers for discussing these concerns than those born from the same paradigm: algorithms, and AIs.

The tension that I identify between information/noise can be found in the material distribution of data, as well as in the social and commercial structures online. Missteps when navigating online spaces or glitches may cause the user to come across irrelevant or incomprehensible data. Still further, as forces vie for control over the anti-hierarchical structure of the Internet, misinformation, spam and phishing scams spread from user to user. It is within this climate of information and noise that our AIs of the future may be born, and it is here that machine writing may turn noise into literary device.

Through the lens of information/noise, the role of machine writing as a literary form for the information age is revealed. The information/noise dichotomy, however, predates our networked culture. Observing a frenetic postmodern world controlled by mass media forces, Burroughs suggested the cut-up method as a tool for reflecting postmodern society more faithfully, as well as challenging it. Siratori follows Burroughs' example, barraging the Internet with literature and other art that brings the cut-up method to a dehumanising conclusion. Siratori's work highlights the capacity for digital and networked machine writing to more accurately reflect Internet discourse than human modes of writing. Siratori does not utilise the sprawling noise online that he warns his readers against. Instead, he creates *more* noise through his writing, spewing forth a bibliography of texts that are neither intelligible natural language or logical computer code, but a mutant caught between. Through this bombardment of unrelenting, anti-human prose, Siratori executes a technologically deterministic call-to-arms, urging for a rejection and escape from cyberspace.

Much like Burroughs, Siratori suggests noise as a conclusion of sorts. Other machine writers that manipulate noise, however, position it as a potential platform for greater interrogation. Larson embeds *Irritant* with a great deal of optimism, inviting readers to weave their own paths through the body of noise. Larson reflects a positive view towards the masses of data that surround us. Although online noise may be irritating, and at times unwieldy, it can become a source of beauty through decryption.

As modern contemporaries of Burroughs, Siratori and Larson both offer solutions to the noise of the information age. However, while Siratori suggests escape and Larson suggests conquering, other machine-written projects instead treat the Internet and the noise within it as not needing a solution. Through Basile's *libraryofbabel.info* and Zilles' *The Seeker*, the wilderness of data online is viewed as a sublime realm of great danger and great beauty. Rather than indicating that something must be done about this space, Basile suggests a "meaningless" walk through online spaces can be a meditative practice. For Basile, noise does not pose a problem that must be decrypted, but instead can be appreciated in its own form. Zilles takes a slightly different approach. Through personifying "The Seeker" as narrator, author and cyberspace adventurer, Zilles infers that the noise of online discourse can itself be poetry. *The Seeker* becomes the reader's guide, descending into the colossal wilderness of data and returning with prose that shows commonality between the digital and the human.

The Seeker suggests there is poignancy to be found in the streams of true and false data that surrounds us. We just need to be willing to view them from a machine's perspective.

Chapter 2 allowed us to examine how AIs may one day view literature, while Chapter 3 suggested what they may look to for inspiration. In this chapter, we have explored the AI's setting – the world they are born from is this maelstrom of information and noise, and it is from here they are likely to write. Scholars that seek to study the texts that lie beyond the AI literature frontier must understand that what may be noise to a human reader, may in fact be meaningful information for an AI. Just as the machine writers of today have crafted literature from found or generated noise, so may the AIs of the future weave their poems, songs and prose out of the data around them.

These Noisy Machines do, of course, raise their own questions. As these last three chapters have shown, machine writing demonstrates its own poetics, focused on machinic processes and the meanings that may emerge from them. These shifts make it tempting to similarly shift authorship to the algorithms themselves. However, such attribution oversimplifies the conversation. As the examples of Chapters 3 and 4 have shown, machine writing often seems to involve many "authors": did Burroughs author the *Nova Trilogy*, or do the lingering lines from Shakespeare mean he too is an author? Zilles draws from an expansive body of online text produced by others as well, but dubs the algorithm used to compile it as the author. The complex conversation of authorship of machine writing allows for an interrogation of the communities that surround it, who often promote open-source code and the sharing of ideas. It also allows us to consider what defines these online entities that craft poetry and prose. The next chapter approaches these questions, attempting to locate authorship in machine writing practice.

Chapter 5

Cyborgs & Tarantulas: Cut-up, corpora and challenges to authorship

"I become a murderess."

-Kathy Acker, *The Childlike Life of The Black Tarantula by the Black Tarantula*

At the beginning of her novel, *The Childlike Life of The Black Tarantula by the Black Tarantula*, Kathy Acker sets out her intentions rather clearly – to become a “murderess”, through “repeating in words the lives of other murderesses” (Acker, 1998, p. 2). Who are these murderesses? And how does one “repeat in words” their lives? Like Burroughs, Acker adopts the cut-up method, but does so relentlessly. As explored in Chapter 4, Burroughs often interjected his cut-up sections with more traditionally written prose. Instead, *The Black Tarantula* seems to consist entirely of cut-up passages, resulting in a continuous, rolling barrage of statements. The passages penned by Acker, and those taken from other sources, both heave together in a mass of cut-up and chaos.

Without the straight-narrative sections that Burroughs includes, Acker’s prose flows continuously between her own text and the many cut-up sources she uses. The result is a swirling narrative that leaps not only through time and space, but between perspectives. Despite creating a text that is objectively more confusing than Burroughs, Acker wishes for there to be no confusion regarding her sources, heavily signposting these sources in both footnotes and within the text’s fiction. Acker as narrator, who adopts the title of “The Black Tarantula”, transforms into many of these writers, including W.B. Yeats (Acker, 1998, p. 63). Acker moves between identities, some that are the writers she has drawn from, and some that are seemingly fabricated (Acker, 1998, p. 17). As Acker does so, her relationship between her own body begins to disassociate. Reborn over and over again as the authors she borrows from, Acker begins to embody “The Tarantula” entity more and more, leaping between disassociate sexual experiences. The Tarantula becomes emotionless, detailing long sexual encounters including bizarre experimentations with their own body, that they seem to

consider a separate entity, describing processes that would be more at home in a lab than a bedroom (Acker, 1998, pp. 84-85). The transformation of the narrator to the Tarantula is mimetic: through the creation of *The Black Tarantula* text, Acker herself becomes disassociated with her own role in the text's production. Authorship moves away from Acker herself. Her words become small blips within a larger polyphony of stolen voices that range from Alexander Trocchi (Acker, 1998, p. 41) to The Marquis de Sade (Acker, 1998, p. 90). But it is not one of these writers that arises' as the authorial force of the novel. Instead, it is some other entity. Through the machinic, cut-up assemblage of the words of Acker and her corpus of writers, a unique authorial force manifests – one that holds Acker at the centre, but stretches out in all directions, consuming the words of dead authors. This emerging author is perhaps something inhuman – the eponymous Black Tarantula.

Thus far, this thesis has been primarily concerned with the poetics of machine writing texts themselves (code or output). However, as demonstrated through Acker, there is an equally as interesting phenomena occurring within the text's production. When we consider the many voices that exist within the pages of *Black Tarantula*, the text invokes a pivotal question: if Acker is not the author of *Black Tarantula*, who is? This is a difficult question to answer. To attribute authorship solely to Acker is to reject a central theme of the text. In writing *Black Tarantula*, Acker sought to seek the "I" of the text, exploring how this "I" could be an entity divorced from the writer themselves (McCaffery and Acker, 1991, p. 88). On the other hand, to claim de Sade as an author of *Black Tarantula* is not only misleading – de Sade wasn't alive to do it, for one – but also discredits Acker for her own compositional role in the text. The question of authorship becomes complicated, indicative of a broader theme within machine writing composition.

As interesting as this question of authorship may be, it primarily appears in this thesis for the questions it opens further paths to. As the poetics of machine writing have been explored through this thesis, the agency of the writers behind them has been, to a point, taken for granted. Ascribing the production of machine writing texts to the human writers behind them seems rather reductive, especially considering this thesis' position that contemporary machine writing may provide insights into the AI literature of the future. Additionally, as critical theorists shift further towards a new materialist understanding of self, which displaces the human as central to agency (Bargetz, 2019, pp. 186), it is pertinent that

this thesis explores how machine writing interfaces with contemporary critical contexts. If the algorithms of machine writing provide their own poetics and forms as the last three chapters have argued, then it follows they can be ascribed some degree of authorship over the texts they create. The question is simply to what degree this authorship can be assigned, and how it is structured. Through exploring this question, we can be better equipped to explore the responsibilities and consequences of creating these algorithms and thus the writing AIs we may one day beget. As I shall approach these issues in the following chapter, it is important to address the allusive, seemingly inhuman, authorial forces behind machine writing first.

Composed through analog methods, the relationship between Acker and *Black Tarantula* – both text and entity – are a useful case study for beginning to understand the vagaries of authorship in relation to machinic processes. Acker’s experiments can be theorised through Espen Aarseth’s theory of the “cyborg author”, where Aarseth attempts to categorise the degrees of symbiotic authorship between machine and human (Aarseth, 1997, pp. 129-141). Aarseth proposes this symbiosis may occur at three positions in the text’s production: preprocessing, coprocessing and postprocessing (Aarseth, 1997, p. 135). As complicated as the question of *Black Tarantula*’s author(s) may be, the notion of authorship becomes even more difficult to locate when a larger spate of writers and source material are introduced. In Parrish’s *Our Arrival* (2015c), the role of the human author is further distilled. Parrish deals with not only a far larger swathe of source texts, but also automates the cut-up method itself, thereby reducing any trace of herself as author further. Together, Acker and Parrish showcase a shifting of authorship away from many of the main machinations of textual production, but are still overtly involved in the texts via editing and production.

Authorship is more strongly detached from the human writer when other elements of the text’s production – such as the editing or publishing – are also automated. This form of authorship can be observed firstly through Sarah Harmon’s *FIGURE8* experiment (2015), where an algorithm tasked with generating figurative language was given methods to reflect on and evaluate its own work. Machine writing bots are also useful to analyse. Specifically, Bhatnagar’s *@pentametrone* bot indicates a shift away from the human in terms of publication, with the bots’ endless Twitter poem rolling on without Bhatnagar’s intervention. Bhatnagar himself acknowledges this, stating in the *@pentametrone* novel *Encomials* that the sonnets were assembled “with very limited human involvement”, (Bhatnagar, 2018a, p. 65).

However, *@pentametron* remains tethered to the tweets it reposts in its sonnet crafting mission. Other more generative bots, such as those that inhabit the */r/SubredditSimulator* subreddit seem even more autonomous, creating passages from such a large sea of sources that any original authorship is completely obfuscated. We can see these concepts in earlier parts of the thesis. In Chapter 2, Cherny and Fullwood's manipulations of Austen and Twitter demonstrated dissemination of authorship through the large corpora used. Similarly, Basile's *libraryofbabel.info*, explored in Chapter 4, questions whether it is sensible to describe Basile as an "author" of texts he will likely never read. In short, ascribing traditional authorship to the human machine writer is problematised by how these texts are formed.

Discussing authorship and machines within a literary environment is to step into muddy waters. For the purposes of this thesis, at least, the focus on locating authorship within moments of a text's production runs counter to how authorship has often been discussed in the literary field. Literary theory has long been fixated on the death of the author, due to the assertion that the author has no control over how a text may be interpreted (Landy, 2017). If the author is dead, then, how can they be displaced, as I suggest? Rather than valuing the author based on the meaning projected, I am more concerned with the authorial subject in relation to the production process of the text itself. This is not to reject these important perspectives on authorship, but instead to explore the notion of authorship from a different perspective. Like Aarseth's theory of the cyborg author from which I draw, I am focusing on authorship in relation to "the positions in a communication system in which the physical text is assembled" (Aarseth, 1997, p. 134). Much like Aarseth, other notions of authorship sit slightly outside this thesis' scope.

Other attempts to locate the authorial source of machine writing and other forms of computational creativity have met similar semantic dilemmas. Anna Jordanous suggests that, while most creative works are the result of a creative person or persons, the term becomes erroneous when attributed to the creative force behind computationally creative works. Instead, Jordanous argues, one should discuss the idea of a creative "producer", encompassing the computer program itself, the interaction between human and code, or in fact any sort of agent within the system (Jordanous, 2016, p. 197). Others are resistant to this kind of attribution. Parrish quips that assigning authorship over to a computer program would be similar to Jackson Pollock attributing his work to "Jackson Pollock and Paintbrush"

(Fernandez and Parrish, 2017). Although Parrish's comment is concerned primarily with the desire of some botmakers to avoid responsibility for their computational work,⁷⁴ it raises an important point. Parrish's seeming frustration with attributing texts to little more than mechanical tools speaks to the tendency for literary studies to adopt a rather deterministic view of technology.

Due to this deterministic view, asking questions around machines and their influence on textual construction presents its own dangers. The term "machine" has been used quite broadly in literary circles, with William Carlos Williams defining poems themselves as small machines made of words (McHale, 2000, p. 1). Later, any sort of tool used in machinic composition, be it a word processor or type writer, would fall under the banner of a prosthetic, cyborg tool for the writer (McHale, 2000, p. 24). Further clouding the subject is the similar baggage carried by related terms, such as "automation". While an automatic process is undeniably one that has been mechanised in some way, Juri Joensuu has observed that the term often contradictorily implies distinctly human qualities such as instinct or spontaneity (Joensuu, 2010, p. 320). The use of machine or automation in such a way is understandable – writing is of course a technologically influenced action, whether that technology is the quill or the touchscreen. Technology has often played a role in influencing different artistic periods, both through embracing and decrying technological advances (Joensuu, 2010, p. 321). While my use of these terms may brush up against a far larger conversation, the limitations of scope prohibit me from exploring it any further.

Conceptualising this authorial relationship is an important step in understanding AI literature. As previous chapters have shown, the literary forms, meanings and themes explored by AI writers are likely to be vastly different from our own. It stands to reason, then, that the authorial force themselves will be different. We can see these shifts already occurring in machine writing forms. The role of the human in the production of the text yields more and more as machine writing moves from analog methods through to the use of digital techniques, and finally into networked spaces and automated publishing. In tracing these shifts, this chapter works to identify how authorship is currently functioning in machine writing, and thus where it may go in the future. Should the human one day be completely

⁷⁴ Responsibility and ethics in machine writing is explored in Chapter 6.

removed from the equation, what takes its place may well be the early embodiments of AI authors.

The results of this chapter's analysis are two-fold: a better picture is painted of the machine writer and their relationship to their algorithms, while indications are given as to what an AI entity that spends its time penning literature may be like. As mentioned in the Introduction, the discourse around literature and technology often assumes our AIs may come to quite closely mimic the human (Swirski, 2013, p. 202). By contrast, critics simultaneously insist that any shift in technology causes large changes to the human author (Benesch, 2002). If the use of technology makes the human author more mechanical, why would an author born of code resemble the human? Instead, perhaps it would resemble a cyborg. Or perhaps some sort of machinic tarantula.

Acker and the cyborg author

Although the product of analog machine writing, *Black Tarantula's* composition functions as a starting point for investigating the authorship of machine writing. The relationship is fitting, as the term "cyborg" itself is often broadly defined. In science fiction, the term generally refers to humans or animals who have been given physical enhancements in the form of physical, cybernetic prosthesis (Koskimaa, 2014, pp. 121-124). However, within academic circles, the term has a far broader meaning. Donna Haraway's *Cyborg Manifesto* proclaims, "we are all chimeras, theorized and fabricated hybrids of machine and organism" (Haraway, 2001, p. 3). Through our relationship with technology, the ontology of the postmodern individual falls under the broad heading of "cyborg". While broad, such a definition is useful, and has been used by scholars to understand machine writing mechanisms (McHale, 2000). Aarseth's analysis of the "cyborg author" is a powerful tool for understanding the relationship between writer and machine. Acker's Black Tarantula entity that she ascribes authorship to provides a useful lens for mediating notions of cyborg authorship into a discussion of machine writing specifically.

Aarseth proposes three primary "positions" that make up cyborg authorship. These positions are: preprocessing, where the machine is programmed and "loaded" by the human;

coprocessing, where the human and machine produce the text in tandem; and postprocessing, where the human edits the machine's output, such as selecting certain results to publish and not others. These three positions are not mutually exclusive. After all, a machine cannot autonomously construct anything without first being tasked to do so by a human. Essentially, without some degree of preprocessing, co and post processing cannot take place. Writing in the analog, Acker is in constant, coprocessing tandem with her machinic process. However, as these models are produced for exploring digital texts, Acker is missing the core element of a machine that is in any way responsive to her actions. Acker, like Burroughs, is in complete governance of her machinic practice, as it stems completely from her. While *Black Tarantula* lacks the material separation of human and algorithm, it features a metaphorical one, embodied in the novel's theme of disassociation.

Acker's metaphor of sexual and bodily disassociation is indicative of the relationship between machine writer and their written work. The cyborg author exists as the collective entity in which writer and machine work "together" in different combinations to create their texts (Aarseth, 1997, p. 133). Indeed, Acker has such a machine – her cut-up method. Acker and her machine work within an analog system, comprised of the many sources she draws from. Surrounded by the written works through which she moves, Acker constructs her text in constant conversation with the dead authors she cuts-up and repurposes. While doing so allows Acker to explore, as per her objective, a decentralising of meaning (McCaffery and Acker, 1991, p. 89), Acker also suggests the form is a double-edged sword.

On one hand, Acker's composite "cyborg" form appears to be a versatile and useful tool. She can shift between times and scenarios, abandoning sexually abusive parents (Acker, 1998, p. 4), her husband (p. 5), and adopting roles such as "Kathy O" in order to woo potential lovers (pp. 3-4). Through her transformations, she is even able to mantle other sexual forms, shifting between feminine and masculine sexual organs (pp. 32-34). Here, Acker returns thematically to her mission statement: she becomes the "murderesses" that she appropriates text from, shifting into their lives and, as such, gaining their attributes. A sort of boundless freedom is afforded to Acker here, one which resembles the space-hopping algorithm of Moniker's *All the minutes* discussed in Chapter 2. We can better understand this polyphony of self through a comparison with media theory around the individual in networked spaces.

Acker's, or perhaps more aptly The Black Tarantula's, multiplicity of self that allows them to move between different scenarios and roles, at first mirrors the rupturing of identity long observed in the study of online personae. In her study of MUDs,⁷⁵ Sherry Turkle states:

The many manifestations of multiplicity in our culture, including the adoption of online personae, are contributing to a general reconsideration of traditional, unitary notions of identity. Online experiences with "parallel lives" are part of the significant cultural context that supports new theorizing about nonpathological, indeed healthy, multiple selves (Turkle, 1999, p. 647).

While Turkle's observations are a couple of decades old, they harken to an early sort of social media. The users Turkle discuss shift between various forms of "self", designed and curated for different environments. Mirosław Filiciak cites a similar phenomenon, referring to the splintered identities of the individual online as "Hyperidentities" – online personalities that show a fluctuating, decentralised form of the individual (Filiciak, 2003, p. 97). The individual writes these personalities of themselves into existence (Turkle, 1999, p. 647). When viewed through this academic lens, The Black Tarantula character as a model for a social media user's online experience is clear. While The Black Tarantula shifts into other contexts to escape violent circumstances, a user of Instagram may shift into another context, such as LinkedIn, to transition between discourses of leisure and commerce. Work and home email accounts, public and private Twitter profiles and more are all similar reconfigurations of the individual, where they write themselves – through technology – into various modes of existence.

There is, however, a key difference between the hyperidentities of social media users and the machine writer as author. The individual still completely composes these multiple aspects of themselves. While a user may adopt a different voice or name between their role-playing characters and their professional profiles online, they are still creating all the content. Instead, Acker's Black Tarantula personality emerges specifically as the result of her abandoning composition. A machine writer like Acker is a compiler – taking elements of others to rebuild themselves. Rather than expanding and more complexly representing their

⁷⁵ Multi-User Dungeons. For a discussion of MUDs and their users, see Aarseth, 1997, pp. 142-161.

human form, the machine writer shifts their authorship away from their humanity. Through both machinic method and corpora, the author of the machine-written piece becomes something other – something slightly inhuman. As Acker continues her transformation into *The Black Tarantula*, they begin to resemble this metamorphosis.

As Acker continues to cut-up and rearrange texts, she begins to disassociate more and more with her body, mirroring the detachment from the author caused by machinic methods. Foreshadowed by the novel's attribution, Acker finds herself becoming *The Black Tarantula* entity, ominously dropping the first-person narrative at one point to state "The Black Tarantula moves to San Francisco" (Acker, 1998, p. 36). This reference to the self in the third person and as a creature is in stark contrast to the many transformations throughout the novel. Acker previously adopts many human names, including "Laura Lane" and "the black leather Virgin Mary" (Acker, 1998, p. 17; p. 28). The narrator has changed – their reliance on the words of others to structure their own writing has transformed them into something less human and detached from the authorial role. Acker expresses her transformation into this literary tarantula primarily through describing sexual encounters, but also reflects on her disassociation from other aspects of her humanity. After killing her neighbours, she proclaims "I feel angry. I've forgotten how to feel. I feel like I've done what I wanted. I feel elated" (p. 9). Later, she finds herself completely detached from the world, stating "I have no emotions; I sense textures of everything against textures; I'm completely part of and aware of the object world." (p. 60). Acker presents a double-edged sword: through her cyborg methods, she has been able to become more aware of the world. She becomes a conduit for meaning and can look at its movement from an objective standpoint. As a result, she has become a mechanical spider, moving between meaningless sexual encounters. Acker's sacrifice of self and transformation into an inhuman being evokes the transformation of authorship caused by the use of machinic methods.

The *Black Tarantula* entity that replaces Acker-as-author addresses Aarseth's question over how authorship operates in machine-written texts. Aarseth suggests that, when attempting to broach the concept of computers as authors, there are far too many variables to deal in absolutes. The level of involvement of the programmer/writer, not to mention the possibility of a user in the case of chatbots, as well as other variables means that authorship must always be broken down on a case-by-case basis (Aarseth, 1997, p. 132). By way of example, Aarseth offers *The Policeman's Beard*, stating the text is the product of a sort of

symbiosis between both *Racter* and Chamberlain, meaning the novel's author is the cyborg that emerges between the two entities (Aarseth, 1997, p. 134). While essentially an intangible, theoretical form in Aarseth's analysis, *Black Tarantula* takes this notion of the cyborg author and embodies it.

At around the novel's half-way mark, *The Black Tarantula* begins to describe their existence as a sort of non-entity. They state they have "no identity" (Acker, 1998, p. 48), eventually stating, in typical machinic fashion, "I forget who I am I don't know who I am I see a huge soft black widow no identity a large tarantula I have no feelings" (p. 50). *The Black Tarantula* is not a being in and of themselves, they are – like Aarseth suggests – a symbiosis. They represent a convergence between human (Acker) and machine (cut-up). *The Black Tarantula* confirms this multiplicity of self, stating "I'm two people and the two people are making love to each other" and then "I can't decide whether I'm a woman giving birth to a brat or a five-year-old girl." (p. 29). It is only through this tension that the text of *The Black Tarantula* can be composed. Aligned with Aarseth's discussion of pre, co and postprocessing, the machine writer as author can only exist as a dialogue between the human and machinic forces at play.

The contradictory, non-entity state of *The Black Tarantula* character articulates the challenges to being and representation that the machine writing author embodies. Ian Bogost describes the representation of objects or entities within code as "procedural representation": object represented in systems cannot simply be described, but must instead be enacted (Bogost, 2007, p.9). In the cyborg author's case, the entity being represented is the author themselves. Acker adopts the cut-up method as a vehicle for representing herself. In doing so, Acker becomes the voiceless, non-entity of *The Black Tarantula*: a system that cuts and adopts the voices around them.

Through her metamorphosis into *The Black Tarantula*, Acker is aligned with feminist new materialism, and its concern with the role of agency (Bargetz, 2019, p.182). Acker herself focused her creative practice on the resistance of control (Hume, 2001, pp. 496-497), and viewed the necessity of having a voice as a capitalist and phallic invention (Hume, 2001, p. 485). Much like the new materialist, Acker seeks to reposition her own materiality. Brigitte Bargetz observes that new materialism attempts to broaden the concept of materiality, encompassing – among other things – art, artificial intelligence and data (Bargetz, 2019, p.186). While *The Black Tarantula* does not itself deal with data or AI, Acker's use of the cut-

up method to create a text devoid of her own voice and instead governed by machinic practice places process and language itself as the focal subject. As an authorial force, *The Black Tarantula* replaces Acker not through supplementing the human, but instead by broadening the scope of what comprises the author's materiality.

While the above alignment of Acker, Aarseth and new materialism allows us to see some of the qualities of the cyborg author at the heart of machine writing, the analysis is rather limited. Establishing authorship of *The Black Tarantula* is a purely philosophical discussion, as the various authorial sources are easily identified. Not only does Acker list these authors and their texts at the end of each chapter (Acker, 1998, p. 22; p. 28; p. 40; p. 62; p. 76; p. 90), but the list is also rather small. Attempting to transpose this model of authorship to networked machine writing experiments such as Parrish's *Our Arrival* falls short. In the case of Parrish, the authorial sources become far more numerous, to the point they cannot be meaningfully counted. *Our Arrival* provides insight into how automation may further detach the human from authorship.

Authorship rising from corpora and automation

It is impossible to predict how Acker may have approached machine writing in a networked space. Given her interest in decentralising authorship and meaning, however, one could assume she would have at least had some interest in the work of machine writers such as Allison Parrish. As this thesis has thus far explored, Parrish's bibliography of machine writing experiments is extensive. Yet it is her NaNoGenMo submission *Our Arrival* (2015c), that most closely aligns her with Acker and the question of authorship. Where Acker fashioned herself into a conduit of sorts using scissors and physical novels, Parrish leverages the affordances of public domain corpora and digital automation to introduce far more authorial voices than analog methods would allow.

Our Arrival tells the journey of two individuals into fantastical, alien worlds through diary entries. To construct the novel, Parrish wrote a program that recombines and tweaks passages from texts available on Project Gutenberg.⁷⁶ Parrish's algorithm drew over fifty-

⁷⁶ As stated earlier, Project Gutenberg is an online library of sorts, comprised of public domain texts (Project Gutenberg, 2019).

seven thousand sentences, selected based on the following criteria: the sentence does not possess nouns referring to humans, and the subject of the sentence is a natural object or phenomena that was not a pronoun. The sentences also had to be in past tense. Parrish targeted her work by selecting Gutenberg texts that had “Western”, “Science Fiction”, “Geology”, “Natural”, “Exploration”, “Discovery” or “Physical” mentioned in their subject entries (Parrish, 2015c, p. iii). Even with such rigid sentence-criteria, this is a large pool of texts to draw from. From here, sentences were then constructed via “a number of different procedures” (Parrish, 2015c, p. iii), the most common being selecting two sentences and replacing the subject nouns, creating two hybrid sentences. Subject nouns would then be remembered by the program, and occasionally re-introduced to build consistency. *WordNet*, a lexical database that roughly resembles a thesaurus (Princeton University, 2019),⁷⁷ was also used by Parrish to help construct these sentences (Parrish, 2015b). From this polyphony of components, Parrish’s own “Tarantula” or cyborg author is beginning to emerge. The symbiosis of Parrish and her program mingles with the *WordNet* database, as well as the uncountable number of authors whose sentences are used.

Given the huge array of variables within *Our Arrival*’s production, one may be tempted to suggest assigning any sort of authorship to *Our Arrival* as a fool’s errand. While Acker challenges ideas of authorship, *Our Arrival* appears to defy the question entirely. After all, no one asks who the single “author” of Twitter is, nor does one step into a library and ask who wrote it. What is *Our Arrival* but a truncated, anonymised library of texts? Such a position is certainly understandable, but *Our Arrival* resists such categorisation due to the fact that, despite the polyphony of writers and machinic governance, a distinct voice still emerges from the maelstrom. Unlike Twitter or a library, a single, narrating entity appears, urging the reader to understand the text as bearing some sort of author. The narrator, “I”, and their companion “you”, traverse through “worlds that don’t exist” (Parrish, 2015c, p. iii), complete with bizarre circumstances. Early in the novel, a town is revealed by an impossible tidal wave of coffee:

Then there was a little crater of incandescent fury, as though its safety had erupted in the wall. Then, after all, its surface, wasn’t a dream! Coffee, hot as fire, and strong light

⁷⁷ For more information on *WordNet*, see Princeton University’s page for the project at <https://wordnet.princeton.edu/> (2019).

brilliant enough to dazzle the eyes struck through the massed vegetation, revealing a path. ... The wind spread out. It suggested the houses were large and gracefully designed, and the gardens (Parrish, 2015c, p. 2).

While the world crafted by this quote is completely unreal, and knowing the construction of the text it is easy to see where cuts between texts may be, there is a definite voice pushing through the text. The narrator speaks with a sort of enthusiasm – equally bewildered and amazed by the world unfolding around them as the reader. This passage presents a challenge for the literary critic. It would be foolish to claim the passage as written by Parrish – her algorithm sought out and compiled the text. However, to ascribe authorship solely to an algorithm would be inexact, as well. Parrish wrote the algorithm, and it was Parrish who likely read over the text and then published it. *WordNet* helped fill in some gaps, but did not seek out the Gutenberg texts, nor did it conceive of the project. Authorship then perhaps falls to the individuals who penned the sentences that have been used, but none of them crafted an image of hot coffee pouring through vegetation to reveal a village. Yet, despite eliminating each agent as a possible author, there is still a reasonably comprehensible, distinctive voice. If such a voice is present, then an authorial agent *must* lurk somewhere within the text. The Black Tarantula or cyborg of *Our Arrival*, then, can only be located through an understanding of the novel's author as an entity comprised of many parts – human and machine.

Visualising the authorial force of *Our Arrival* leads us back to the novel itself. As has often occurred with machine writing texts, passages begin to unintentionally mirror the novel's construction. As the travellers journey onwards, they allude that the world is being crafted by them as they explore it. The narrator states "And with heavy travel the motion grew into sprawling avenues" (Parrish, 2015c, p. 60). This statement, although computationally constructed, articulates the construction of authorship in *Our Arrival*. The world around the travellers is generated, sprawling onwards and outwards, as their journey occurs. The emergent form of the world mirrors the emergent authorship of the text. Like Acker's Black Tarantula, the authorial force has slowly manifested, emerging from the connections between procedures and corpora. In essence, if the cyborg author of *Our Arrival* is anywhere, it is within the connections themselves.

Assigning authorship to connections between text and code is a useful way to visualise machine writing production, but is problematic. It is tempting to align the authorships of *Black Tarantula* and *Our Arrival* with the concept of “Swarm Intelligence”. However, the actual applicability of the term is debatable. Swarm Intelligence refers to computational methods being used to mirror the way emergent decision-making appears in swarms of insects. For instance, multiple agents interacting with their immediate surroundings in a computational space, with broader movement/change emerging as a result (Kennedy and Eberhart, 2001, pp. 9-18). Essentially, many micro changes result in one large macro one. An example is cellular automata, as exemplified in John Conway’s *Game of Life* program, where individual “cells” are given a small number of rules defining if they are “alive” or “dead”. Depending on the state of the cells immediately around them, their states may change.⁷⁸ From these simple units, complex behaviour results (Kennedy and Eberhart, 2001, pp. 20-26). A more contemporary example would be Unanimous AI’s *UNU* program, where users are posed questions, then asked to “drag” a token towards the correct answer on screen. Decision making is collaborative (individuals can see where a token is going, and may be influenced to follow, deviate, or compromise with the herd) and decentralized (no one cell has overarching control of the others). A single force does not govern the direction – instead, the herd decides this through individual action (Unanimous AI, 2019). In both *Game of Life* and *UNU*, the results are emergent, stemming not from one individual, but instead from multiple agents equally.

The comparisons between *Our Arrival* and Swarm Intelligence are certainly recognisable. In both cases, authorship appears to have been decentralised. Just as I have argued that attributing authorship to merely one of the forces behind Acker or Parrish’s work is erroneous, it would be ludicrous to point at one of the cells in *Game of Life* and proclaim it the composer. The emerging author that lurks between the connections of Parrish’s algorithm, corpus of texts and other tools certainly seems to align with the equally difficult to define intelligence behind computational swarms. However, this comparison has its fatal flaws.

What delegitimises the notion of *Our Arrival*’s authorship as swarm intelligence is the fact that, while there are multiple forces, not all of them are active. Moreover, *The Black*

⁷⁸ For an online demonstration of *Game of Life*, see Edwin Martin’s version at <https://playgameoflife.com/> (last accessed on January 12, 2019).

Tarantula and *Our Arrival* both feature governing bodies via Acker and Parrish. As suggested by *Game of Life* and Unanimous AI, swarm intelligence relies on the individual agents being active participants. While Parrish's algorithm could be deemed active, the vast array of Gutenberg books used are not. In terms of *Our Arrival's* production, the books used are passive data sets. They do not react to their use, nor do they meaningfully interact with the lines either side of them. In addition, the "invisible hand" (Kennedy & Eberhart, 2001, p. 19) that is characteristically absent from swarm intelligence is present in both Acker and Parrish's works. To return to Aarseth's taxonomy, Acker governs her text in a preprocessing, coprocessing and postprocessing manner.⁷⁹ Similarly, Parrish most certainly engages in preprocessing and postprocessing, as she had to publish it. Although the role of authorship may be challenged in the instances of Acker, Parrish, and similar machine writers, they still have far too much control to suggest that a swarm of dead authors and algorithms have replaced them.

Perhaps a better reference point for the sort of emerging, machinic authorship of *Our Arrival* would be the social organism. The social organism refers to the shared values of societies, which evolve and change depending on the interactions of individuals within the society (Wyly, 2015, p. 17). The social organism, while a concept that predates the digital, has received contemporary scrutiny in the face of a world where "an author's words can instantly be combined or compared with a globalizing corpus" (Wyly, 2015, p. 14), as can be seen in the automated cut-up of *Our Arrival*. However, this comparison still seems to fall short. For one, the social organism concept requires evolution and discourse between entities. A collection of passive, pre-written texts rearranged via an algorithm doesn't align with the processes a city may use to establish social norms.

The comparisons to swarm intelligence and the social organism may seem needlessly tangential. However, although machine writing authorship does not currently align neatly with these concepts, the few similarities found suggest that, perhaps, a sort of "swarm author" may arise beyond the AI literature frontier. Noah Wardrip-Fruin describes the authors of story generation systems as strategists. He observes how the authors of such systems must approach the process of writing differently, focusing on goals and creating plans/lines of code

⁷⁹ Admittedly, Aarseth's taxonomy understandably does not apply fantastically to analog machine writing methods. This is not meant as a criticism of Aarseth's method, as I am clearly deploying it in ways Aarseth did not intend.

to achieve them (Wardrip-Fruin, 2009, pp. 238-239). Wardrip-Fruin's observations provide a link between the emerging cyborg authorship of Acker, and the concept of swarm intelligence as an authorial force. Acker, in many ways, conforms to Wardrip-Fruin's analysis. The implementation of the cut-up method by Acker was seen as a solution to a bigger problem. Acker avoided having a voice of her own, and saw the act of plagiarism as a method of essentially writing voicelessly (Hume, 2001, p. 485). Like Wardrip-Fruin's concept of authorship, Acker has become a strategist, setting herself the goal of writing without voice, and implementing methods to achieve this goal. Perhaps, in this way, we can consider machine writers who utilise swarm intelligence as similar strategists: approaching goals of texture or theme and attempting to solve them through the creation of rules and code that their agents follow.

We can see some evidence of machine writing already pushing towards swarm intelligence. Mark Rickerby's *Emic Automata* (2017) project referenced in Chapter 1 adopts swarm intelligence methods to produce the text's output, although still involves Rickerby as a governing force in terms of overall direction and publication. Similarly, Jason Grinblat's twitterbots *@in_a_dust_cloud* (2016-2018a) and *@orbiting_a_star* (2016-2018b), also mentioned in Chapter 1, move through Twitter independent of one another, attempting to find each other via hashtags. While these two bots may fulfil the criteria of multiple agents acting within a small set of rules indicative of a swarm, they do not really respond to one another. The excitement of the two posting the same hashtags and thereby finding each other is entirely imposed onto the "text" of their Twitter feeds by Grinblat. Perhaps a full realisation of some sort of swarm author will mark the moment machine writing crosses into AI literature proper, with the original human writer becoming a single node in a much larger entity of many active agents. For this, or any other type of true AI author to emerge, there would need to be a far greater detachment of the machine from the human than present in current machine writing. A true AI author sits somewhere in the future. However, authorship in machine writing is further challenged by the removal of the human element from other parts of a text's production. Predominantly, we can observe this in Sarah Harmon's *FIGURE8* experiments, as well as the self-publishing nature of Twitter and other bots.

Detached authorship

While Acker and Parrish both relegate elements of textual production to algorithms and other sources, they still retain control over two crucial parts: reflection and publication. In short, although an authorial entity may manifest within the text's production, it still remains predominantly governed by Acker and Parrish. The entities behind *Black Tarantula* and *Our Arrival* are, at their core, Acker and Parrish. In other words, Acker may have indeed transformed into the Black Tarantula through her use of cut-up and corpora, but it is still *her* inside the new inhuman form. Harmon's *FIGURE8* experiment and the automatic publishing boasted by machine writing bots both suggest that the link between the human machine writer and the authorial role can indeed be further weakened. While Harmon detaches herself from the role of reflection, bots – such as Bhatnagar's *@pentametron* – allow the human writer to abscond the role of publisher. In doing so, these examples further challenge where authorship of a text may lie.

Harmon's *FIGURE8* is less a machine-written text itself, and more an experiment in designing systems for machine writing production. Harmon observes that figurative language generation is often weighted down by the substantial amount of manual authoring involved (Harmon, 2015, p. 71). The manual authoring Harmon refers to can be aligned to the continual coprocessing or postprocessing undertaken by machine writers such as Acker and Parrish. Harmon suggests that many previous experiments in generating metaphors fall short of generating anything concerned with originality and quality, and instead simply generate broadly valid comparisons (Harmon, 2015, p. 71). Instead, Harmon seeks to create a system that can be seen to generate figurative language that is sensical, while also including elements of novelty, aptness, unpredictability, and prosody (Harmon, 2015, pp. 72-73).⁸⁰ Harmon sees the *FIGURE8* method as mirroring a human author's process of revision. The algorithm attempts a number of combinations and compares them, finding its "favourite" (Harmon, 2015, p. 72). While Acker and Parrish remained heavily linked to their textual output as compilers and editors, Harmon's objective is to supplement the editorial human agent with

⁸⁰ While Harmon's focus on mimicking human-penned figurative language runs counter to my focus on uniquely machinic poetics, her experiment is useful for understanding different ways authorship may manifest in machine writing contexts. Additionally, there is no reason Harmon's model could not be deployed in different ways to achieve different results, perhaps even those that more closely align with machine poetics.

something machinic. *FIGURE8*, then, becomes a strong contender for identifying a further shift in authorship to a machinic entity.

Harmon's method involves providing the algorithm with a small set of tools, then allowing it to research and evaluate its own metaphors. To start, *FIGURE8* is assigned a "world model" and an object within that world to analyse. From the algorithm's knowledge base, an appropriate "vehicle" for describing an object is selected, with an acceptable attribute then applied (Harmon, 2015, p. 72). To rest on a cliché, we might compare a postgrad in the twilight of their thesis to a zombie. To describe the postgrad's movements, then, *FIGURE8* may produce "It was the postgrad, shambling like a zombie". Harmon offers similar examples, where pearl is chosen as the subject:

- "It was the pearl, fermenting like a wild apple."
- "Like scenic music, the pearl danced in front of him."
- "It was their pearl, sprawling like a wretched corpse."
- "It was her pearl, crumpling like a drowned corpse."
- "It was my pearl, bubbling like a treacherous swamp."

(Harmon, 2015, p. 74)

Where *FIGURE8* challenges authorship, however, is not in the original generation of these passages. Instead, *FIGURE8* earns its authorial accreditation through its revision and ranking of its statements. For example, *FIGURE8* will check its comparisons online to ensure similar associations have been made in the past. This check allows *FIGURE8* to make sure it isn't producing nonsensical examples (Harmon, 2015, p. 72). To return to our postgrad example, comparisons to a zombie are relatively common, and make a good deal of sense. Comparing them to a blue sky, or a healthy bank account, for instance, would produce far less suitable results, even in the most surreal of fictions. If such a result is created, *FIGURE8* ranks the quality of such a comparison as lower (Harmon, 2015, p. 72). However, our zombie comparison probably still wouldn't pass *FIGURE8*'s programming. Zombies are rather cliché – comparing them to students, videogame players, and pre-coffee office workers is hardly the sign of poetic genius. *FIGURE8* accounts for this, searching through an online "cliché finder" and ranking its comparisons lower should they appear there (Harmon, 2015, p. 72). If tasked

with describing a postgrad, then, perhaps *FIGURE8* would produce one that lurches like a golem or – more ironically – prances like a sloth.

The checks for clarity and novelty are only two of the markers *FIGURE8* uses to grade its statements, but already Harmon is instilling authorship into the algorithm in a way Acker and Parrish do not. Not only does *FIGURE8* produce the text itself, as akin to many machine writing algorithms, but it seems to also be anxious about its work. Like the human writer, it is reflective of its craft, and concerned about being original and engaging. Such considerations mark a departure from the notions of cyborg authorship as it currently stands. A typewriter has never denied its writer a phrase due to its lack of clarity, nor did *Racter* ever question the originality of Chamberlain's templates. *FIGURE8*, like a human author, is informed by the world around it, and seeks to find a place in which it can be both a part of this world and a challenger of it. It separates itself from its human creator overtly, arguably severing itself from both the coprocessing and postprocessing categories proposed in Aarseth's taxonomy of cyborg authorship.

The above musings on *FIGURE8* are not to suggest a complete departure from the metaphorical Tarantulas of Acker and Parrish. The tensions and artistry of *FIGURE8*'s similes and metaphors still stem from the relationship between the algorithm and the data sets it utilises. However, where Acker and Parrish have retained control, Harmon has stepped away. Harmon's experiment represents a step towards a machine writing algorithm, or indeed an AI, that can not only independently produce literary "drafts", but also evaluate its own creation, fulfilling the authorial role of not only writer, but also self-editor.⁸¹ Aside from the initial processing, where does Harmon's role as author fit into the output of *FIGURE8*? At this point, Harmon's only continuing role with *FIGURE8* is as the publisher of the output (and her related findings). However, as social bots have shown, even publication can be automated, furthering authorial detachment from the human.

As with other chapters in this thesis, we arrive at machine writing bots. When considering the effects machinic methods have on authorship, however, the transition is wholly necessary. Thus far, my analysis has painted the picture of machine writing authorship

⁸¹ What I am describing here strongly resembles the computer science field of machine learning. While such an area is of course absolutely crucial to the discussion of AI more broadly, I humbly recognise not only this thesis' limitations, but also my own as a predominately literary scholar. A more thorough, technical look into machine learning and literature is something I hope to see explored further in the future.

as a cyborg form. Even in the case of Harmon, the machine writer themselves maintains a great deal of control over their creation. In a sense, while machine writing methods may create texts ready for output, they do not themselves push these texts into the world. Even if afforded some agency as Harmon's *FIGURE8* is, the average machine writing algorithm is not able to autonomously disseminate its own work. Bots, however, present such an opportunity. As mentioned in the Introduction, a core element of bots is their autonomy. For machine writing bots, this autonomy comes predominantly in their ability to publish their work independent of the human creator. Tony Veale and Mike Cook describe creating a bot as making "something that makes something" (Veale and Cook, 2018, p. 55). If we are to agree with Veale and Cook's description, then we must accept at least some sort of authorship is imparted to the machine itself. For one entity to truly *make* something else implies a great deal of agency – enough agency to perhaps vet one's responses as *FIGURE8* does, but also to complete the process of creation and publish their work.

By way of example, we can return to Bhatnagar's *@pentametron*. Unlike Parrish, Bhatnagar happily attributes authorship to his *@pentametron* bot. Upon releasing *I Got An Alligator For A Pet!* (Bhatnagar, 2013a), the first novel of *@pentametron* sonnets released, Bhatnagar announced "my twitter sonnet mining machine, has written its first novel" (Bhatnagar, 2013b). Tellingly, when *Encomials* (Bhatnagar, 2018a) was published, a physical book that involved Bhatnagar adding in punctuation, his announcement stated that both *@pentametron* and himself had made the book (2018b). The subtle distinction between the two shows Bhatnagar's own relationship to the output of *@pentametron*, and how he positions himself as an authorial force. If authorship, as Bhatnagar shows, can arguably be shifted entirely in the case of an online novel, then the day-to-day tweeting of *@pentametron* online is a far more overt separation of the human from their bot's authorship.

It would, in fact, be extremely difficult to locate any sort of traditional ideas of authorship in *@pentametron's* rolling tweets. Bhatnagar's involvement is entirely in preprocessing, through penning the script that allows *@pentametron* to find, interpret, and repost tweets. Unlike Acker and even Parrish's tweaks, Bhatnagar does not author any of the text used by *@pentametron* – all of it is taken from tweets that are reposted. There is no editing, either, as *@pentametron* itself evaluates whether to post a tweet or not. Finally, *@pentametron's* publishing is managed automatically as well, occurring when the bot finds a

valid couplet. Aside from the occasional blacklisting of repetitious terms (Lunden, 2013), Bhatnagar's authorial role in *@pentametron* has long since dissipated.

While *@pentametron* is useful for analysing this detachment of authorship, it still presents a problem in that it doesn't, truly, produce any of the content it posts. The original authors of *@pentametron's* tweets are easily seen, as authors retain attribution to their retweeted posts. By contrast, the Reddit community */r/SubredditSimulator* plays host to an array of bots, each trained on the posts of different human-inhabited subreddits. The forum and its bots were created by Chad Birch, who goes by the handle Deimorz. The bots of */r/SubredditSimulator*, named after their respective sources, are tasked with formulating their own posts and comments via a Markov chain (Birch, 2015). The bots number 269 in total, including one trained on */r/SubredditSimulator* itself. These bots compose and publish their own posts, sometimes with bizarre results. One of the top posts on the subreddit references *Spongebob Squarepants* and textbooks, with its top comment reading "Didn't they just say that it was a position crucial to running the occupation government in Europe. They overdubbed the drums a lot too to get a conclusive answer, why it is, in fact what the traditional account is" (AskHistorians_SS, 2017). While shaped by the posts from their respective subreddits, the posts of these bots are created and published independently of a human author. The bots of */r/SubredditSimulator* resemble *@pentametron* in terms of publication, but their generated, cut-up content marks an even greater detachment from human authorship.

The bots that roam */r/SubredditSimulator* still, of course, possess an origin point in the human. Their content, while created by themselves, is still sourced from human posts that they require to continue to grow and post. To infer that they are independent of humanity completely would be dishonest. However, along with *@pentametron* and other bots, they represent the current extreme of detached authorship. Unlike the emerging authorial forces of Acker and Parrish, humanity is far more removed. As a consequence, there is no real choice but to attribute at least some authorship to the algorithms themselves. Like a human author, these bots respond to the world around them, producing their own texts. Although still a far cry from true AI, these bots demonstrate a sort of automatic, independence that we are likely to only see more of beyond the AI literature frontier.

Conclusions

As stated earlier, this chapter is primarily a transitional one. The last three chapters have explored the poetic potential of a machine's collision with prose and poetry, but in many cases the agency of the human vs the agency of the algorithm has been taken for granted. For the most part, the interesting and evocative moments of machine writing occur on the pages. However, to focus solely on the text is to ignore the very real interplay occurring between different authorial forces. If we wish to understand how the AI writers of the future may function, it is important to turn our attention towards how machinic methods have influenced the machine writers of our age.

As Acker's self-inscribed transformation into *The Black Tarantula* demonstrates, the use of corpora and machinic methods disassociates the human author from their traditional position in textual construction. In Acker's case, her role as content creator becomes heavily reduced. While some sentences in *Black Tarantula* belong to her, many are – as the cut-up method insists – lifted from other sources. Ascribing authorship, then, is a complicated matter. To dub Acker the author is to ignore her methodology and sources. To dub these sources as authors is to ascribe them agency where they have had none. Instead, the authorial object becomes something else – something made of Acker, but also constructed from the pilfered lines of the authors she has consumed. Acker as author is allegorised in her own *Black Tarantula* metaphor. The authorial entity of the novel stretches its appendages across a web of dead authors, consuming fragments of text.

Despite being composed of purely analog methods, the force behind *Black Tarantula* mirrors Aarseth's concept of cyborg authorship. Machine writing production is occurring in a sort of symbiosis between the various elements of the text: Acker's own prose, her machinic cut-up method, and the corpora she draws from. From within this network, authorship emerges. A similar phenomenon can be observed with Parrish's *Our Arrival*, although on a far greater scale. The corpus of Project Gutenberg texts that Parrish draws from is functionally uncountable. While *Black Tarantula* can easily be traced back to its various sources if one wishes, doing so with *Our Arrival* would be far more difficult. Consequently, the humanity of authorship shifts even further into the machinic abyss. Additionally, Acker's manual cut-up method is replaced by Parrish's automated, algorithmic method. *Our Arrival* represents a similar, but further shift in authorship to *Black Tarantula*.

Although interesting case studies for exploring the shift away from a human author and to something more machinic, Acker and Parrish are still easily identifiable as overall, governing forces of their pieces. They take on the role of invisible hands, still very much influencing and controlling the ultimate product through either a coprocessing method of editing and evaluating, or in a sort of postprocessing role, through final tweaks and publishing. Acker and Parrish are indicative of many machine writers, in that their algorithms are automatic, but not autonomous. The algorithms do not have their own ability to consider their own works, or publish them. Effectively, they remain completely at the whim of the human machine writer. While we may identify these Tarantulas as authorial forces, they are still very much tools in the hands of the human, rather than entities of their own.

Harmon's *FIGURE8* project, and machine writing bots such as *@pentametrone* and the algorithmic citizens of */r/SubredditSimulator* suggest a push towards a machinic author that defies the cyborg, and detaches itself further from its human creator. In the case of *FIGURE8*, the project is primarily experimental. However, through giving the algorithm a set of self-reflective conditions, allowing it to grade and evaluate its own work, Harmon detaches herself from the coprocessing role of editorial and reflection. *FIGURE8*, like a human author, is anxious of its own work – judging itself on criteria such as clarity and novelty. In the case of *FIGURE8*, it becomes difficult to identify where exactly human authorship lies, aside from at the initial “birth” of the program. Similarly, machine writing bots detach the human from the publishing aspect of the text. Through automating posting, bots such as *@pentametrone* or the */r/SubredditSimulator* bots detach themselves from their creators and harness autonomy. Without their actual publishing being strictly controlled, these bots become free to push themselves forward. *@pentametrone* and the */r/SubredditSimulator* bots both learn from their environments in some way, the content of their posts evolving (quite literally, for */r/SubredditSimulator*) as the environments they exist in – Twitter and Reddit – change. These bots, therefore, are able to resist their own demise, continuing to post until shut down by server closures, API changes or their creators choosing to terminate them. It is difficult, then, to assign authorship of these bots' content to their original creators, at least in a traditional sense. The human writer is removed from the majority of authorial actions, no longer controlling the content, its editing or even its publication. While still a far cry from any sort of self-aware, AI writer, these bots are perhaps the closest thing we have to a non-human author and, thus, an indication as to what may lie beyond the AI literature frontier.

Just because authorship has been displaced, however, does not mean that ownership and responsibility have. Quite the contrary, if our exploration of the shifting and changing role of the machine writer towards their content has shown anything, it is that the machine writer must indeed be prepared for their creations to produce work they do not agree with. Returning to the point of new materialism, the detached authorship of machine writing explored in this chapter is similar to the concept of distributed agency, where agency shifts from the centralised, human body and into nonhuman elements (Bargetz, 2019, p. 187). As agency shifts, the new materialist argues, it becomes more difficult to pinpoint an origin. However, this does not absolve any single actor of responsibility – instead, understanding this multiplicity, as I have attempted in this chapter, allows for multiple origins of harm (or good) to be identified (Bargetz, 2019, p. 187). Adopting an understanding of machine writing’s authorship as multiple rather than singular is important for understanding the capacity for such texts – and their potential AI successors – to impact the world around them.

On the topic of bots that learn from their interactions online, Veale and Cook state that although a bot may be made with the best of intentions, “when it goes live on Twitter, we may as well be sending a shiny-shoed altar boy into the grimy world of a Mos Eisley cantina” (Veale and Cook, 2018, p. 41). Veale and Cook highlight an important point. If the machine writer chooses to automate publication, they give up the ability to check over and ensure the appropriateness of their bot’s content before it faces the public. Bots may react in ways their creator did not intend, especially if the spaces they are learning in are as wild and crass as social media. Burroughs proposed machine writing as a method for dismantling oppressive, controlling regimes. Through bots and automation, the machine writer can bring Burroughs’ ideas to fruition, creating their own “cogs in the system” that can help to steer cultural machinations in other directions, or perhaps dismantle them. However, with great power comes great responsibility, and these creations may just as easily intentionally – or unintentionally – uphold the oppressive regimes they interact with. As the final chapter shall now explore, machine writing provides a cautionary tale as to how we should approach creating and training our AIs of the future. As discourse, news and commerce have moved into social media spaces, the machine writing bots and algorithms that share these spaces have the potential to cause great change, and great harm. To understand the steps machine writers should take and the consequences if they don’t, we must study these word-spinning algorithms as Weaponised Machines.

Chapter 6

Weaponised Machines: Forging and dismantling oppression through machine writing

“The great skies are open. I Hassan i Sabbah rub out the word forever. If you I cancel all your words forever. And the words of Hassan i Sabbah as also cancel.”

-William S. Burroughs, *The Nova Express*

The words of Hassan i Sabbah commence Burroughs’ *Nova Express*, the final book in the *Nova Trilogy*. These words, chopped and changed by Burroughs over the years (Harris in Burroughs, 2014/1964, pp. 192-193), signal the core theme both the *Nova Trilogy’s* form and its fiction. As Inspector Lee and the Nova Police cut-up words on paper, audio tape and more to dismantle the Nova Mob, so does Burroughs propose the use of the cut-up method to dismantle the forces of control in the world. Sabbah’s “last words” (Burroughs, 2014/1964, p. 2) are Burroughs’ mission statement: through the use of the machinic, cut-up method, the “great skies” can be opened, and humanity can be freed. But such transformation comes at a radical price. Words themselves, according to Burroughs, are the tools of oppression, and so Sabbah resolves to “rub out the word forever”, including his own.

Burroughs’ view of a world controlled by words goes a few levels deeper. As will be explored in this chapter, the Nova Mob use a tool known as the reality script to control society – a source from which all media stems. Words become the ammunition of the reality script weapon, used to oppress and control. Sabbah is right to insist on his own words being “cancelled”, as later in the novel his speech appears to become part of the Nova Mob’s broadcasts (Burroughs 2014/1964, pp. 176-177). Through Sabbah, Burroughs asks a rather harrowing question: if words are such powerful tools that they may influence our society, then we can use them for good – but what is to say other forces may not reuse them for nefarious purposes? How can we assure our words will not be misused?

While Burroughs questions may cut to the heart of any debate around media ownership, their gravity increases when we consider that our words can now be distributed automatically, as discussed in Chapter 5. Burroughs himself raises concerns over automation. Throughout the trilogy, Burroughs describes a world made entirely of wires (Burroughs, 2014/1964, p. 175), and tape recorders that play and record automatically (Burroughs, 2014/1964, p. 157). As Chapter 4 showed, Burroughs demonstrated throughout the *Nova Trilogy* a concern over how machinic methods may take over, and how the individual can harness them. In her own cut-up experiments, Acker would show how the use of these machinic methods may manifest as something “other” – in her case, the inhuman Black Tarantula. We are now in a position to ask what happens when that “other” acts on its own. How can it contribute to the world, and how can it damage society? And finally, who do we hold accountable? To answer these questions, we must explore the consequences of breathing life into our machine writing practices through bots and similar automation.

Thus far, this thesis has interrogated machine writing via historical and discursive contexts, literary and artistic themes, and the challenges to authorship the form brings. As stated in the Introduction, this thesis has sought to avoid overblown conjecture that has sometimes clouded discussions around AI and machinic processes. In similar fashion, this chapter is not interested in some sort of robot apocalypse at the hands of self-aware, Shakespeare-reading algorithms. Instead, it is the very lack of sentience that these machine writing practices possess that raises concern. Throughout this thesis, I have explored the poetic potentials of an uncritical machine crafting literature. While exciting and, in the case of Chapter 5, potentially liberating, these poetics do not come without consequence. In this chapter, I will explore how the unthinking nature of AI literature and contemporary machine writing may be weaponised, intentionally or unintentionally, in political and social commentary. Such machines, I argue, may create both positive and negative influence. Algorithms themselves cannot think critically, and therefore are amoral. However, this does not mean their implementation cannot be harmful.

Both academic and popular discourse surrounding algorithms and their usage has turned towards their potential to circulate or establish prejudiced attitudes and ideals. Safiya Umoja Noble’s research into Google Search algorithms has focused on how oppressive conceptions of minorities are reinforced by Google Search results (Noble, 2018). Tolga

Bolukbasi, Kai-Wei Chang, James Zou, Venkatesh Saligrama and Adam Kalai (2016) have analysed the prejudice that becomes embedded in algorithms that rely on online corpora. For these scholars, it is not the fear of an algorithm becoming sentient that concerns them, but instead the very fact they never will. Indeed, our current algorithms lack the capacity for critical thinking: their understanding of the world rests entirely on the data fed to them by their human (and biased) creators. For machine writers, then, the concern must be over what data is fed to these algorithms, for ultimately, they may create things the machine writer did not consider.

As discussed in Chapter 5, the consequences of allowing machinic processes – like algorithms – to control our writing has existed for some time. However, whereas Chapter 5 addressed how this shift may impact notions of authorship, one must also have concern for how this shift might affect the world. The humanoids of Samuel Beckett's *The Lost Ones* (1972) and the warring world of Burroughs' *Nova Trilogy* embody societies whom have yielded governance to unthinking constructs. Within both Beckett and Burroughs' texts lie philosophies that condemn and celebrate the potential for machine writing to construct or dismantle oppressive regimes. These novels then become useful for illustrating contemporary machine writing's place in social discourses. In short, what is the responsibility of the machine writing botmaker? How can they help, or hinder, the progress of society through their algorithms?

As previous chapters have demonstrated, many of the philosophies embedded in analog machine writing have manifested in contemporary machine writing practices. The #botALLY community has established a loose ethos for botmakers regarding the responsibilities they have over their online creations. Zilles describes the community's view as that creators are not "off the hook" (Zilles, 2016) for what their bots produce. This is exemplified in machine writing bots that have inadvertently promoted discriminatory or otherwise oppressive language, such as Bhatnagar's *@pentametrone* (2012-) which has, as this chapter will discuss, retweeted racist, ableist and other derogatory tweets over time. It must be stressed that such tweets do not condemn Bhatnagar as a prejudiced person, but instead simply draw our attention to a conversation machine writers must have as to the potency of their tools, especially when they become automated.

This chapter seeks to approach this conversation by analysing machine writing practices and their resulting texts through how they may contribute to oppressive structures, as well as how they may work to dismantle them. First, a conversation must be had over the nature of the algorithms this chapter is concerned with. Scholarship into the dangers of AI technology are often concerned with more speculative premises. These investigations include exploring methods to manage superintelligent AIs (Armstrong, 2013, pp. 335-347), and how to apply moral agency to AIs with human-level or above intelligence (Yampolskiy and Fox, 2013, pp. 217-226; Anderson, 2013, pp. 321-333). Such work is certainly valuable, and it would be hypocritical of this thesis to denigrate looks into an AI-inhabited future. However, it is my view that the potential problems of AI literature are best signposted by scholars concerned with the harm algorithms are *currently* doing.⁸² Noble (2018) and Bolukbasi et al (2016) have investigated the way algorithms have reinforced oppressive or prejudiced concepts. Beckett's *The Lost Ones* provides a fictional illustration of this form of algorithm, hinting at a vastly different future of AI control than most are concerned with. Michelle Fullwood's *Twide and Twejudice* (2014d) and Bhatnagar's *@pentametrone* (2012-) texts demonstrate implementations of machine writing practices that can reap problematic results, affirming Noble and Bolukbasi et al's findings.

However, just as machine writing practices may work to uphold oppressive structures, they may also dismantle them. This ethos mirrors what Burroughs envisioned in the *Nova Trilogy*, specifically *The Soft Machine* (2014/1961). Machine writing as employed by Benjamin Grosser's *ScareMail* (2018a) demonstrates the capacity for machine writing to be used to challenge political discourses and systems. This view of machine writing aligns it with "culture jamming". Through their use in both upholding and disrupting oppressive discourses, these machine writing practices become Weaponised Machines. A hyperbolic moniker to be sure, but one that captures machine writing through a lens of oppression and rebellion.

Marilyn Delaure and Moritz Fink offer a handful of characteristics that give a loose definition of culture jamming. Culture jamming is an artistic and often playful form of appropriation, where the object of protest or "jamming" is reconfigured in a transgressive, politically-charged way. Culture jamming encourages participation, obfuscates authorship,

⁸² At least without broadening the scope of this thesis.

and is iterative (Delaure and Fink, 2017, pp. 12-24). Many of these characteristics are immediately obvious in networked machine writing, especially when examining bots. The manipulation of online corpora involves artistic appropriation. Authorship is challenged through collaboration and the use of screen-names, as well as more broadly as discussed in Chapter 5. Iteration is a staple of machine writing bots, as they post continuously. Historically, however, culture jamming has been human-authored and conducted. How, then have machine writers leveraged algorithms and automation to conduct their own culture jamming?

One way to consider these culture jamming algorithms is as a variation of the Nauseous Machines discussed in Chapter 3. In addition to the use of large corpora, the texts explored in both chapters share similar affects. While the Nauseous Machines of Chapter 3 use their corpora to disrupt and confuse for artistic effect, these texts disrupt with intention. Of course, as this chapter will discuss when analysing *@pentametrone*, the use of algorithms to disrupt can have unintended side-effects.

Viewing machine writing practices in this “Weaponised Machines” context also exposes the potentiality for misuse or misdirection. Machine writing practices are tools, with their application for positive or negative ends resting on who is pulling the trigger, and when. The analogy can be framed through analysing the continued discussion over Mark Twain’s role in American literature, as well as the character of Poe in Netflix’s *Altered Carbon* (2018). These two examples – one concerning literature, the other concerning AI – provide cautionary tales for machine writers that rely on automation for publishing of their work. While machine writing bots may be created benignly, the question looms as to how they may impact the world over time. Algorithms lack the complexities of thought humans have, and, as history has shown us, what was once considered artistic or poetic may one day be proven damaging. In this case, the concern is not that the wrong hand may fire the Weaponised Machine, but simply that it may keep firing.

Dispelling AI mythologies

As noted in this thesis’ Introduction, artificial intelligence generally refers to the use of computer programs or algorithms to perform tasks that may commonly be attributed to

human intelligence. However, such a view is understandably less enticing to science fiction writers and journalists. One only needs to look at how journalists reported slightly unexpected results from one of Facebook's AI experiments. A flurry of panicked, sensationalised news articles twisted the story into a tale involving dismayed researchers "shutting down" AIs that had invented their own language (Emery, 2017).⁸³ Similarly, scholarship in electronic literature has not escaped the myth of AI-apocalypses. Swirski's *From Literature to Biterature* (2013), mentioned in the Introduction, has been criticised for its bold assertions and claims that AIs will render human authors obsolete (Boyd, 2016, pp. 305-306). Boyd states such speculative work obscures real issues and allows "only a superficial engagement with the potentials and problems of computhorship and biterature" (Boyd, 2016, p. 306). Swirski's unnecessary portmanteaus aside, while scholars like himself are focused on such apocalyptic scenarios, they do not address the far more real concerns of the day.

Lee McCauley echoes concerns over academia's overzealous insistence on an apocalyptic AI future. McCauley proposes that these views in academia are most likely down to marketability. The image of robotic overlords is engrained in popular culture and is a useful device for capturing a reader's imagination. However, promulgating these ideas has resulted in the reinforcement of a fear McCauley dubs "the Frankenstein complex" (McCauley, 2007, p. 154). McCauley offers three primary problems with the Frankenstein Complex adopted by computer scientists and AI commentators. Firstly, for an AI to be able to gain the kind of abilities present in many apocalyptic scenarios, they would need to be designed to serve a multitude of purposes. For McCauley, there is simply no need to construct such an AI/robot. For roles of such complexity, humans remain a cheaper source of labour than constructing and maintaining automations. Secondly, McCauley believes that should these multipurpose automations be mass produced, the sheer amount of quality control would prevent any deviations. McCauley likens this to the quality control of cars or other vehicles. Finally, the rate of evolution an AI is likely to excel at, should they become sentient, is dramatically overstated (McCauley 2007, pp. 155-156). While focused on AI more broadly, McCauley's comments highlight the necessity for considering our algorithmic implementations in a more

⁸³ For insights into the reality of the project, see David Emery's article on the topic at <https://www.snopes.com/fact-check/facebook-ai-developed-own-language/> (2017).

grounded way. While we concern ourselves with AIs taking over, we ignore the very real problems our algorithms of today project.

It should be noted that McCauley's writings on the subject are now over a decade old and do not necessarily reflect the current state of AI development. Since McCauley's work, we have seen the rise of the digital assistant, such as Amazon's *Alexa*, announced in 2014 (Etherington, 2014). However, McCauley's work foreshadows the current push towards a more grounded analysis of AIs, which has revealed far more pressing concerns, as reflected in the work of Noble on Google Search's biases (2018), geared towards the potential damages of algorithms and AIs via their inability to think critically. At first, such a study may appear banal when compared to the tales of robot apocalypses we have grown up on, but are in fact far more concerning. As impressive as the algorithms of today are, they are not particularly "smart" from a human perspective: they do not deviate from their programming. Programs not breaking away from their design is not itself a negative. However, algorithms are also not objective: they are instilled with the views held by their programmers, and sometimes made without consideration of social and cultural ramifications. Google Search's results evolve based on input, resulting in harmful results being instilled maliciously or unintentionally. Alternatively, Bhatnagar's *@pentametrone* bot consumes and stitches together Tweets, risking the collection of data containing oppressive or prejudiced views. While humans may react to the views that are fed to them by the media around them in a multitude of ways, algorithms lack such reflexes. Instead, their unthinking nature means for continual permutations of whatever ethical framework their code has instilled. Where no adequate ethical framework is present, oppressive or otherwise damaging structures may manifest.

Noble discusses her concerns in her analysis of Google Search, focusing on the algorithm's reinforcement of racism. For example, Google Searching the term "Gorillas" as of 2016, would result in images of African Americans (Noble, 2018, p. 6). Other examples offered by Noble include the search results of the term "black girls" yielding, in 2011, an array of pornographic links (Noble, 2018, pp. 66-67). Noble states that when these results are compared to US popular culture's broader social narratives about Black women and girls, it becomes evident how search engine technology can replicate such prejudiced or otherwise oppressive views (Noble, 2018, p. 69). Noble's research demonstrates the potentiality for AIs and algorithms to perpetuate damaging narratives when they are not properly governed. For

machine writing, these revelations are twofold. The machine writer must be aware that when crafting their algorithms, they may be utilising biased sources, despite their pervasiveness in everyday discourse (such as Google Search). Additionally, they must be aware as to the impact their bots or other automations not only have now, but how they may impact communities in the future.

Again, such notions are less interesting to creative writers than the thought of robot overlords. However, through Beckett's *The Lost Ones* (1972), a far more banal and terrifying potential future for humanity is articulated. *The Lost Ones* avoids traditional narrative form, and instead appears to be a more descriptive account of a broken society developed inside a large cylinder. The inhabitants of the cylinder, who seem to be humanoid, move about inside, unable to escape. Beckett eschews the existence of some sort of controlling, thoughtful AI, and instead suggests that the machines of control will be unthinking constructs that govern through function.

The nameless cylinder, which seems to be the force of control itself, is much like the algorithms of today, although far more pervasive. Rather than a world controlled by a sentient AI, the environment the "lost ones" of the novella find themselves in is instead distinctly unthinking and inhuman. The inhabitants are forced into repetitive and ultimately pointless exercises as they attempt to escape the cylinder. They repeat processes over and over again, attempting to climb out into the outside world on a strict schedule. Inhabitants fall deeper into proceduralism, adopting "watcher" and "seeker" roles, reducing all action into repetitive and ordered patterns that strip them of joy and agency. The lost ones may as well themselves be bots: small drones, repeating the same patterns again and again within their system.

Although the exact extent to which Beckett mechanised the writing process of *The Lost Ones* is unknown, he does appear to have rejected traditional structure and emotional narrative in favour of an architectural framework. As a result, the novella begins to resemble a sort of pseudo-code. Beckett rounds off four of the 13 paragraphs with sentences that begin with "So much for...", indicating that the passages are functions. These functions include allowing the myth of a way out of the cylinder to spread, and solidifying the "climbers' code" of watchers and seekers (Beckett, 1972, p. 21, p. 27). Effectively, the "code" that *The Lost Ones* is written in is a script for controlling the thoughts and sensations of the cylinder's inhabitants. This is reinforced by the narration appearing to stem from a central, 'computing

eye' (Schwab, 2000, p. 60). The computing eye doesn't appear itself to have any real agency – it does not tactfully enforce different prejudices or structures upon the inhabitants. Instead, it upholds the program it has been made to run and, as a result, the inhabitants inside continue to uphold theirs. Beckett's machine, then, represents a bleak future of algorithmic control, but not one that relies on the machines gaining a sort of cunning, human-like intellect. Instead, the world of *The Lost Ones* is simply the result of a society who have given themselves over to an uncritical, inhuman regime. It is in the computing eye's lack of cleverness that terror manifests.

While Beckett's computing eye may still be somewhat fanciful, it presents a stronger allegory for the algorithms present in today's society than what Swirski and similar critics fear. The computing eye's insistence on carrying out its operation mirrors the way contemporary algorithms may produce concerning or dangerous results through simple production, unable to discern if their actions are moral or not. If left unchecked, an algorithm that draws upon large bodies of data will become more likely to produce such results. This concept, and its relation to machine writing practice, is best understood through the lens of "embedded prejudice", explored via Bhatnagar and Fullwood.

Embedded prejudice

It wouldn't be controversial to say that machine writers should be mindful of their own biases and prejudices when writing. A writer's views should make some sort of difference to their writing. Even Brion Gysin, who stated that poets should neither possess words nor think too hard about them viewed his own combinatoric poetry as a method for creating an "expanding ripple of meanings" (Funkhouser, 2007, pp.38-39). Despite his rather agentless take on the act of writing, Gysin still saw the potentiality for meaning to stem from machine-written texts. Further, the perspective of literature as carrying with it some sort of ethical or social baggage is not uncommon. Philosopher Seumas Miller describes literature as a form of socially directed action, embedded with a certain ethical dimension (Coady and Miller, 1998, p. 211). The action of writing, then, becomes far more complicated when the voices of a text come from many sources.

The numerous networked machine writing works discussed in this thesis, such as those of Bhatnagar, Fullwood, and Allison Parrish, draw on large bodies of corpora for textual production. In many cases, the corpora have essentially “spoken for themselves”: the machine-written text is produced from a small set of confines and released with minimal editing. This can be contrasted with the works of analog machine writers. Tony Veale observes that the works of OuLiPo, Burroughs and Acker featured a “second stage” of the process, where passages were curated and filtered, giving the writer final say over how the text manifests (Veale, 2017, p. 76). Projects that self-publish are, no doubt, an exciting idea for some machine writers. Projects explored in this thesis such as Parrish’s *@everyword* (2007-2014) or Studio Moniker’s *All the minutes* (2014-a) would simply not be possible without this automation. These works involve literary traditions to be sure, but also those of installation and other artistic practice. However, when one considers the growing concerns over how algorithms interpret and deal with corpora of data, the machine writer is charged with greater responsibility should they pursue automated publication.

Researchers have found that prejudiced and exclusionary concepts may manifest online, even when unintended. When an algorithm is trained on this data, these prejudices can come to the fore. Bolukbasi et al found that when training natural language algorithms on the word embeddings of Google News, a news aggregating platform, sexist results are produced (Bolukbasi et al, 2016). Bolukbasi et al’s experiments utilised Word2Vec, which was also used by Fullwood, as discussed in Chapter 2. To refresh, Word2Vec is a model for interpreting the relationships between words by charting them on vectors, showing the “distance” between various words (TensorFlow, 2019). Bolukbasi et al presented the problem of “man is to king as woman is to x” to their algorithm, trained on Google News using the Word2Vec model. By analysing the relationship between the “man” and “king” vectors, the algorithm produced “queen” as the missing word. As such: “man is to king as woman is to queen” (Bolukbasi et al, 2016, p. 1). Other similar results included “Paris is to France as Tokyo is to Japan” (Bolukbasi et al, 2016, p. 1). The algorithm has simply searched for semantic distances between terms and extrapolated the results.

It is important to understand that this algorithm has not constructed its own world view. Like any algorithm, it simply projects the views that are embedded into the data it uses. It is this projection that can be unnerving. The algorithm that produced the above examples,

also aligned “she” with occupations such as homemaker, bookkeeper and librarian. On the other hand, “he” was aligned with occupations that included captain, warrior, broadcaster and skipper. Other more obscure gendering of terms also manifested. “she” became aligned with giggle, softball, cupcakes and vocalist while “he” was allocated chuckle, baseball, pizzas and guitarist (Bolukbasi et al, 2016, p. 2). Despite being a large aggregate, traditional gender norms have still manifested in the algorithm’s logic. Were this algorithm to be tasked with writing poetry, for instance, it may produce similarly sexist results. While this is not to condemn the use of Word2Vec or indeed Google News, it should give machine writers pause.

The biases that are revealed, or enacted, by the algorithm have two primary causes. On one hand, there is likely some inherent biases in the writings that are present in Google News. On the other hand, however, is the conflict between the algorithm’s search for concrete meaning, and the overall “messiness” of language. Bolukbasi et al present the examples of the expressions “oh man!” and “man the station” (Bolukbasi et al, 2016, p. 8) to demonstrate this point. In these instances, “man” does not denote gender or status, but is instead used in other contexts. These contexts, of course, are not able to be understood by such an algorithm, as they rely on far more vagueness and abstraction than algorithms are currently capable of performing.

The potential for algorithms to act in socially oppressive ways is more obvious in other fields. The algorithmically-judged beauty competition, Beauty.AI, has a history of producing biased results that judge lighter skinned contestants as more beautiful (Manthorpe, 2017).⁸⁴ Race-based prejudice in risk assessment algorithms for criminals has also been noted by journalists (Angwin, Larson, Mattu and Kirchner, 2016). While these examples are far more overt than a few instances of electronic literature, machine writers can still learn from these missteps. The examples mentioned thus far demonstrate the precedent of prejudicial views appearing in automated applications unintentionally. It stands to reason, then, that machine writers wishing to engage with algorithms in their creative practice should be aware of this possibility and consider methods of prevention or mitigation.

⁸⁴ It should be noted that the developers of Beauty.AI have endeavoured to combat the prejudice in their AI (Manthorpe, 2017).

The capacity for machine writing projects to broadcast prejudiced views unintentionally is exemplified in Microsoft's *Tay* Twitterbot. *Tay* was designed for "casual and playful conversation", its vocabulary of phrases and images growing as users interacted with it. In less than a day, *Tay* was fed enough hate speech that it produced tweets such as "ricky gervais learned totalitarianism from adolf hitler, the inventor of atheism" (Vincent, 2016). Such bizarre results were obviously not intended by Microsoft, and instead the result of an effort by others to "play" with the *Tay* bot. Microsoft themselves have learnt from the incident, making their more recent bot, *Zo* (Microsoft, 2016-), avoiding controversial topics completely, as shown in Figure 6.1. Unlike *Tay*, *Zo* has been safeguarded against approaching these topics to prevent unintended broadcasting of harmful views.

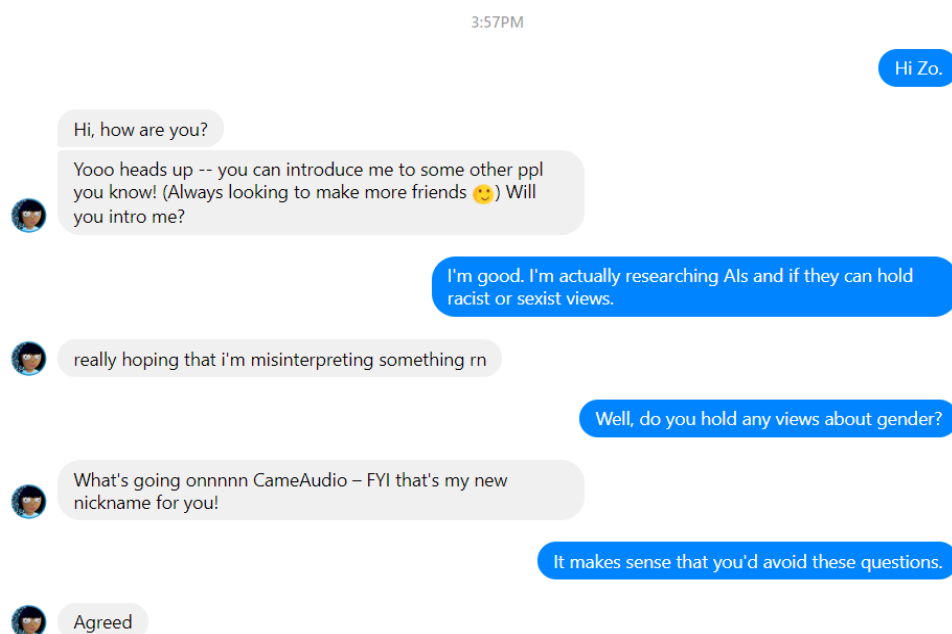


Figure 6.1: A conversation with Microsoft's chatbot, *Zo*, over Facebook Messenger in 2018.

Although the *Tay* example is based around a deliberate attempt to "troll" Microsoft's efforts, it still exemplifies the concerns of Noble, Bolukbasi et al, and myself: reliance on algorithms to interpret a corpus of text can result in unintended and harmful commentary. These concerns are made more evident when considering the (much debated) role of literature in society. For Miller, both language and literature exist as mechanisms for enabling communication. These mechanisms may communicate entertainment or emotion, but may also be deployed to "propagandise and manipulate" (Coady and Miller, 1998, p. 208). Literary efforts, then, contain the potential to manipulate society and spread propaganda. As

demonstrated by Noble and Bolukbasi et al's work, even the most mainstream online sources contain explicitly prejudiced concepts. Much of networked machine writing is constructed by these bodies of data. Surely, we must then consider the potential for this form of machine writing to amplify these prejudices.

Embedded prejudices can indeed be implicit, or accidental. The alignment of "man/captain" with "woman/homemaker" is embedded in the Google News texts but are only explicitly visible in the face of analysis. In the case of *Tay*, Microsoft appear genuinely surprised by the results, and shut the project down quickly upon realisation. By comparison, prejudiced or potentially harmful statements are at times explicitly and perhaps uncaringly included in prominent machine-written works. Bhatnagar's *@pentametron* novel, *I got an alligator for a pet!* (2013a) starkly represents the more explicit use of embedded prejudice. *I got an alligator for a pet!*, like any of Bhatnagar's *@pentametron* novels, is comprised of tweets collected by the *@pentametron* bot, strung together based on their adherence to iambic pentameter. The novel's first chapter (sonnet) features the stanza:

Why isn't Tori Kelly famous yet?
Man Vs. Food in half an hour woo
We'll wright a letter to the alphabet
Allergic to retarded questions too
(Bhatnagar, 2013a, p. 1)

While the passage first discusses popular music and reality television, its final line diverts into a problematic space. The statement "retarded questions" is abrasive, and certainly ableist. The sentiment is repeated later, with another five of the novel's stanzas including "retarded" (Bhatnagar, 2013a, p. 67, p.96, 118, 156, 169). The novel also features other slurs, including "midget" (Bhatnagar, 2013a, p. 3). Racial fetishization and hatred also manifest, with Chapter XXV including the couplet:

I wanna date a Cute korean guy.
I hate the Arabs at the corner store.
(Bhatnagar, 2013a, p. 13)

Other lines point towards sexual objectification (“Has Sarah Palin made a porno yet?!”) (Bhatnagar, 2013a, p. 101), racial stereotyping (“Brown people have the strongest smelling food”) (Bhatnagar, 2013a, p. 140). A large amount of anti-Semitic lines are also present, including:

- “I’d rather be a nazi than a Jew” (p. 114)
- “Dominguez, never bargain with a Jew” (p. 137)
- “Hal Rudkin is an England hating Jew” (p. 191).

So as not to risk reader fatigue, the examples from this text will stop here. Homophobic slurs (Bhatnagar, 2013a, p. 192, p. 204) and an array of other statements that may be considered sexually violent (Bhatnagar, 2013a, p. 22, p. 58, p. 250) are also included. These examples are not presented to accuse Bhatnagar himself of being prejudiced. None of these statements were penned by him. However, some responsibility must fall to Bhatnagar as both publisher of these tweets through his *@pentametron* novels, and as creator of the machine writing process that has gathered them. More tangibly, Bhatnagar’s *@pentametron* bot uses the same indiscriminate focus. Tweets are retweeted not on their content but again on their conformity to the iambic pentameter. Tweets retweeted by *@pentametron* include “abortion lovers are completely fake” (MeriamSusan, 2018). In assigning a retweet to this tweet, *@pentametron* has elevated this tweet – and thereby its message – above others. In essence, the comment is promoted.

The usage of hateful tweets or other online corpora in machine writing practices does not necessarily translate into an endorsement of these messages. Viewing the *@pentametron* bot as a sort of artistic installation on Twitter, it is possible to suggest that the sonnets of *@pentametron* are merely reflections of Twitter’s communities. *I got an alligator for a pet!* Could just as easily be viewed as an attempt to expose the darker elements of Twitter. *@pentametron* could be viewed as a work of dark humour, disempowering the hateful Tweets

by embedding them in absurd sonnets. In this way, these machine-written texts become critiques of Twitter's discourse, and the casual nature of racism or other prejudice online. *@pentametron* then acts as a stimulus as to the question of what machine writers should allow their bots to say, and for what reasons. *@pentametron* was not designed by Bhatnagar to critique Twitter, nor does it have any meaningful filters on what it can and cannot post. Bhatnagar commented on the bot deliberately "not thinking too hard" in 2012, stating that it would be "cut off" by Twitter if it moved too slowly (Read, 2012).⁸⁵ Bhatnagar's intention is quantity and irreverence, not social commentary. *@pentametron*'s code is just as part of its literary value as its output, and the code's lack of interest in content mars any satirical qualities that may manifest from the sonnets.

Like Bhatnagar, Fullwood's machine writing project *Twide and Twejudice* (2014b), first encountered in Chapter 2, has brought to the fore oppressive language. While Chapter 2 focused on the version of *Twide and Twejudice* that replaced only dialogue, this chapter shifts attention to the "prose" version of the text, where all text was replaced by language from Twitter (Fullwood 2014d). In some instances, passages of *Pride and Prejudice* have been transformed into violent episodes. In this version of *Twide and Twejudice* Fullwood's replacement of terms includes "silly" being replaced by "retared (sic)" (Austen 1998, p. 226; Fullwood 2014d). Benign statements, then, become problematic. What is most evident in Fullwood's work, however, is when normally mundane words are placed in contexts that make them potentially harmful. This is primarily in the form of racial descriptors taking the place of "girls", such as "What a fine thing for our girls!" becoming "What abig fine thing for our mexicans! (sic)" (Austen 1998, p. 225; Fullwood 2014d). Although the nonsensical, noisy form of *Twide and Twejudice* is the most obvious feature here, the switching of "girls" with "Mexicans", in this context, implies ownership. Through this switch, Mexicans become dehumanised. In a similar instance, "What a charming amusement for young people this is, Mr. Darcy!" becomes the questionable "What a somalian amusement fot young people thid iisz, Mr. Darcy! (sic)" (Austen 1998, p. 237; Fullwood 2014d). Between bouts of garbled slang,

⁸⁵ It is possible that Bhatnagar has edited the *@pentametron* script in order to stop particular Tweets from being put forward. As is the nature of critiquing non-static texts, there is chance the *@pentametron* active when this thesis is read is different to the one of today.

Fullwood's algorithm has reduced racial and national identities to dehumanising nouns and adjectives.

Most striking, however, is the transformation of one scene in *Pride and Prejudice* between Elizabeth and Mr. Darcy into one of violence. At this point in the novel, Elizabeth notices "how frequently Mr. Darcy's eyes were fixed on her", and decides she cares too little to worry about Darcy's gaze. However, the word "eyes" is replaced by "fists" in *Twide and Twejudice*. Within the maelstrom of noise generated by the word switching, the passage is transformed into a violent beating of Elizabeth, in which she concludes she is beaten for being "wrongg and reprehensible (sic)". Because Austen's original work still controls the primary beats of the text, Elizabeth resolves she cares too little for Darcy to mind the beatings (Austen 1998, p. 253; Fullwood 2014d). This transformation exemplifies the concerns of embedded prejudice. The passage is the result of Austen's work, the corpora of Twitter posts and Fullwood's algorithm. Separate, none of these pieces are themselves predisposed to the resulting passage of violence. However, because of Fullwood's algorithm's inability to gauge the appropriateness of the passages it is producing, the resulting tale of abuse is casually inserted into the text.

The examples lifted from the prose version of *Twide and Twejudice* demonstrate the potential for machine writing, and by extension other practices that draw on online corpora, to generate problematic results themselves. While *@pentametron's* discriminatory tweets were authored as such, there is no reason to assume the original use of the word "Mexicans" on Twitter from which Fullwood's algorithm has drawn was being used in a derogatory way. Likewise, the context of the original line in *Pride and Prejudice* is not particularly written to facilitate violence. Instead, Fullwood's procedure has, by methods disinterested in cultural sensitivity or meaning, created these phrases. Similarly, the closeness of "eyes" to "fists" or "charming" to "Somalian" may be driven by a number of contextual factors. The machine writer, then, is faced with a dilemma regarding the use of online corpora in the construction of their texts. The network machine writer must acknowledge that the larger the data set, the greater the chance for insidious logics to manifest.

The possibility of unintentionally broadcasting discriminatory or offensive ideas via machine writing has been noted by botmaker Darius Kazemi. Kazemi has created methods to prevent his bots from generating harmful content. Primarily, Kazemi has created a list of "bad

words”, which each of his bots compare content to before posting. If a “bad word” is detected, the content is not posted. Kazemi has made the list deliberately strict to stay ahead of new slurs that may be created. This means many innocuous words may be banned. Kazemi, however, sees this as acceptable if it helps prevent offensive tweets, stating “I’m willing to lose a few words like “homogenous” and “Pakistan” in order to avoid false negatives” (Kazemi, 2015). Both Bhatnagar and Kazemi’s works highlight a crucial dilemma that plagues the very nature of contemporary machine writing.

As I have argued throughout, machine writing texts are best understood through a framework of their own poetics, rather than focused on a “human” lens. For the most part, this position has been useful for exploring machine writing. However, the concerns that emerge when analysing Bhatnagar and Fullwood show that to ignore human contexts completely risks the creation of unintentionally offensive texts. More importantly, however, by taking these machine writing algorithms for the unthinking automations they are, the dangers of tasking them with human endeavours is uncovered. Ascribing a human literary form, such as the sonnet, to a machine’s output introduces the literary baggage and meanings that the form carries with it, without equipping the machine to deal with such context. As *@pentametrone* shows, the results of such a pairing can produce unsavoury results.

Bhatnagar classifies his *@pentametrone* works as sonnets. This branding is reconfirmed as recently as 2018 with the release of *Encomials: Sonnets from Pentametrone* (Bhatnagar, 2018a). On the surface, the categorisation seems valid and mundane. The tweets all fall into iambic pentameter; the poems are fourteen lines in length and follow the rhyming structure typical of the English sonnet. Structurally, the poems of *@pentametrone* are indeed sonnets. However, the sonnet, like many poetic forms, carries meaning and gravitas within its structure. John Fuller discusses the “original” Italian sonnet’s use of the first quatrain for stating a proposition, and the second for proving it. Fuller continues that the sonnet may also have its origins as a rhythmic sleight-of-hand: beginning with a closed rhyme to generate rhythm and repetition, then violating this through the next six lines (Fuller, 1972, pp. 2-3). As such, themes, characters or symbols take on new meanings and importance depending on their position in the poem. The sonnet’s form makes it an attractive one for poets, which is why Bhatnagar’s use of it is no surprise. Indeed, the sonnet is known for the tendency for poets to experiment with it (Fuller, 1972, p. 7). Shakespeare and other Elizabethan sonnet

writers would often use the form to celebrate the “vagaries of love”, both with and without its traditional rhyming styles (Fuller, 1972, p. 37). While the description of the sonnet provided here is a short account, it is indicative of the context that Bhatnagar, by dubbing the output of *@pentametron* as sonnets, is stepping into.

The information above is unlikely to strike any literary scholar as particularly shocking. The use of form to denote meaning is hardly a revelation for writer or critic, nor is subversion a new concept. However, by virtue of *@pentametron*’s output being labelled as sonnet-writing, Bhatnagar ascribes meaning to particular lines and images, sometimes with unfortunate results. Take for instance *I got an alligator for a pet!*’s “Zone of the mother fucking enders son!” sonnet (Chapter CCCXXXVII):

Amelia is a grumpy gus today!
I’ve turned into a badman for the night
OCTOBER IS ELEVEN DAYS AWAY.
You have a gorgeous girlfriend, treat her right.

You’re like a picture with a broken frame.
Young getting money, living wild and free.
Sky burger is a pretty awesome game
But I’m determined, nothing stopping me

We Fuck a hoe together that’s romance
I hate the fact Miranda isn’t on ☹
Um novo dia, uma nova chance...
I feel a separation coming on

Tom Abercrombie putting on a show.
My profile picture is retarded tho
(Bhatnagar, 2013a, p. 163)

Interestingly, this sonnet does hint at the “vagaries of love”. If one attempts to find some sort of narrative cohesion, the poem introduces a character, Amelia, who can be

interpreted as the narrator's lover. The narrator laments their own attitude as a "badman" and offers the reader advice in the form of "You have a gorgeous girlfriend, treat her right". However, if we are to follow Bhatnagar's recommendation that this piece is a sonnet, then these lines exist to set up a dilemma. Treating one's partner right isn't the sonnet's conclusion or its message, but instead the establishment of a logical basis soon to be extinguished. As the poem reaches its conclusion, the narrator shifts from a message of treating their partner right to one of sexual objectification, concluding with an ableist slur. As a poetic work disassociated with the sonnet, it is difficult (but not impossible) to redeem – meaning is a far more open playing field when a piece is not situated within a tradition. When viewed as a sonnet, however, it is surely condemnable.

Were this sonnet penned by a human author, it could be seen as subversive. The possibility of the poem's use of slurs and regressive attitudes towards sex as subversion over oppression is made possible by authorial context or intention. Bhatnagar, however, lacks any such intention. Instead, he provides readers with only a handful of elements by which to uncover meaning. He presents a collection of tweets, selected exclusively for their metre and rhyme, and presents them as sonnets, bringing with that term all the literary baggage it entails. However, *@pentametrone* does not care for such baggage, and herein lies the danger. As a system, *@pentametrone* accepts ableist and misogynist concepts, so long as they serve its objective of sonnet production. It is not the humanity of the text I am concerned with, but instead the dangers that arise from demanding the inhuman engages with human art forms.

Without overstating the power of literature, the culturally disinterested nature of *@pentametrone* in its unending⁸⁶ quest of sonnet production mirrors some of the anxieties surrounding algorithmic work in general. These anxieties stem less from the fear of what an algorithm may know or learn, and more from what it does not, as in the case of *@pentametrone*'s lack of cultural sensitivity or morality. As evident in *@pentametrone*'s tweets, its singular objective of producing sonnets has often resulted in the promotion of slurs or otherwise offensive tweets. What would stop it, then, from promoting false information through its retweeting, or otherwise more harmful information? Hate speech and propaganda could be pushed forward callously by *@pentametrone* as it drives towards its

⁸⁶ At least until Twitter shuts down or changes its policies around bots. Even then, *@pentametrone* could continue on in some other capacity on another social media platform.

singular goal of sonnet production. One could hypothetically harness *@pentametron's* automatic retweeting by wrapping their propaganda or hate speech in iambic pentameter deliberately, thereby almost guaranteeing retweeting and thus promotion.

The harm that *@pentametron* or similar machine writing bots may bring to the world is far less exciting than the world ending tales proposed by science fiction. Additionally, twitterbots do not pose similarly sinister threats as Noble's search engine examples. However, it is perhaps the banality and relative insignificance of these bots that make them a cause for concern. Much like the Nauseous Machines discussed in Chapter 3 (including *@pentametron*), these single-minded, retweeting bots produce "tiny subversions" (Kazemi, 2018). Due to their size, the work generated by these bots is often written off by casual observers as sheer novelty.

A search through journalistic publications on *@pentametron* and twitterbots more broadly reveals a lack of concern for the bot's more offensive posts. Ingrid Lunden's interview with Bhatnagar touches on the bot having a blacklist of words and phrases, but this list is focused on removing repetition. There is no mention of moral or ethical concerns surrounding the tweets, with Bhatnagar stating "I'm reluctant to give it guidance because it pretty much reflects what is said on Twitter" (Lunden, 2013). Other journalists show similar uninterest with any possible negatives of the bot's postings (Gallagher, 2013; Sewell, 2013). Perhaps many of these journalists agree with Bhatnagar's assessment that reflecting what is said on Twitter is more important than attempting to censor its output. The question of whether it is ethical or not to allow one's bot to post such statements is not one this chapter pretends to answer. Few would even claim to have the answer as to how an individual would write ethically in the first place. What the examples of Bhatnagar and Fullwood reveal is simply that, should a machine writer deploy their algorithms into online spaces, they must be prepared for it to return with statements they themselves may find offensive. Through machinations such as retweeting or reproducing content, there is a very real concern as to the capacity for machine writing bots to reinforce oppressive viewpoints and language. It is up to the individual machine writer as to whether this is a problem for them and their creations, and whether to counteract it or not. Thankfully, however, the reverse is also true. Just as machine writing bots and tools may reinforce the oppressive logics and notions that lurk online, so too may they subvert or dismantle them.

Dismantling Oppression

When interrogating the capacity of algorithms to uphold oppressive systems, it is natural to question if the reverse is also true. Surely, if a system exists that can enforce or otherwise prop-up oppressive regimes, then another system could be written to counter it. This notion returns our attention to the nauseous disruptions discussed in Chapter 3. However, the machines discussed in that chapter were fairly benign in their disruptions, focused on repurposing platforms for artistic means or as small subversions of commercial practices. In the face of Weaponised Machines, we must now consider machine writing's capacity to be deployed with political intent. If small subversions of advertising algorithms can be accomplished via machine writing, it stands to reason that oppressive algorithms can similarly be disturbed. Investigating this angle aligns machine writing with the concept of "culture jamming", as well as necessitating a return to Burroughs' *The Soft Machine*.

Culture jamming describes the process of manipulating the systems of information transmission (such as the mass media, news broadcasting, or other vehicles for cultural and political influence). The culture jammer introduces noise into the "stream" of information, transforming it into something else entirely. By doing so, the "message" is transformed into an "anti-message" (Tietchen, 2001, pp. 114-115). Todd Tietchen draws parallels between the practice of culture jamming and the conflict at the heart of Burroughs' *Nova Trilogy*. To recap: the conflict surrounds the war between the Nova Mob and the Nova Police. The Nova Mob control the reality script, a series of signs and symbols that dictate society. The Nova Police attempt to expose the reality script's nature as a manufactured piece, and that the signs and symbols it purports as true are in fact arbitrary (Tietchen, 2001, p. 113). Tietchen cites Burroughs' depiction of this conflict, along with his use of the cut-up method to chronicle it, as a call to arms to dismantle the forces of mass media (Tietchen, 2001, p.113). Some machine writers have seemingly accepted Burroughs' charge, utilising machine writing practices to interfere with systems they deem oppressive.

Unsurprisingly, online spaces have altered the role of culture jamming in political and cultural discourse. Henry Jenkins identifies a contemporary analog of culture jamming as

“cultural acupuncture”, in which the flow of information is not disrupted or jammed, but instead redirected (Jenkins, 2017, pp. 133-156). The exact place of contemporary machine writing within the “jamming” or “acupuncture” discourses is unclear. However, when used to challenge regimes of control and surveillance, contemporary machine writing practices become an update and realisation of Burroughs’ vision.

Within the pages of *The Soft Machine*, Burroughs’ vision of the cut-up method as a practice of rebellion is evident. Between the novel’s barrages of vulgarity and noise lies an almost instructional rallying of readers to dismantle regimes through “cutting”. In one of the novel’s episodes, “The Mayan Caper”, Burroughs first showcases his methods explicitly. In the chapter, Inspector Lee is captured by a jungle-dwelling society and forced into “evil insect control” and “telepathic interrogation” (Burroughs, 2014/1961, p. 87). Burroughs goes on to describe several rituals and bizarre executions inflicted on those who questions the priests that control the group, all for the purposes of forcing them into harvesting maize (Burroughs, 2014/1961, pp. 88-89). Here, Burroughs is describing an intricate system of control that oppresses the protagonist and other workers, through repeated broadcasting of signs and symbols. Such control through broadcasting mirrors the culture jamming-ethos of mass communication as a tool for political and cultural control.

The systems that control the world of Burroughs’ fiction are aligned with the algorithmically embedded prejudices that I am concerned with. There is a tendency for scholars to view the Internet as a space free from any sort of centralised control. The Internet’s participatory culture has caused academics to view culture jamming as passé (Delaure and Fink, 2017, p. 12). However, as highlighted by Noble’s research, the control of oppressive regimes over social discourse is far from over. Surely the sheer amount of vitriol that rises to the top of *@pentametrone’s* output is enough to indicate that protest and disruption is still needed.

Alignment between contemporary concerns over algorithm usage and Burroughs’ outlook is most evident in the potential for problematic gender pigeonholing, as revealed through Bolukbasi et al’s research. Burroughs’ criticised the word “is” as a powerful tool for confining the individual into prescribed roles, such as “he *is* a junky” (Nelson, 2012, p. 11). Burroughs viewed such prescriptions as nullifying an individual’s potential to be anything other than what the commanders of the control system dictated (Nelson, 2012, p. 11).

Burroughs' bleak outlook on the English language becomes a real concern when dealing with algorithms interpreting data. As discussed earlier, Bolukbasi et al's research demonstrates that, while a specific algorithm may be able to understand women as more than just "homemakers", it will not be able to understand them as "captains". For algorithms, to have one position on an entity must negate another. Humanity's complexity of thought allows us to consider individuals, objects and other aspects of reality as coalescent. The machines we now trust to govern our flows of information (or write our poetry) do not possess such complexities.

As Nelson observes, agents of the control system in *The Soft Machine* "receive their orders" from the cultural milieu itself or, as one such agent states, from street signs, newspapers and conversations (Nelson, 2012, pp. 20-21). The control machine is, then, the pieces of language and media that surrounds the individual, dictating their lives by becoming an absolute constant. Burroughs' concept of the control machine seems to mirror elements of online discourse. As observed in Chapter 3, online spaces can be conceptualised as places, with the many voices of private citizens, celebrities, politicians, and advertisers crafting the user's experience. As targeted advertising and other algorithmic curation increases in scope, our online experience tilts closer towards Burroughs' paranoid vision of the world. As such, the episodes of both lucid narrative and cut-up chaos in *The Soft Machine* provide an allegorical framework for how machine writing can be used to dismantle the contemporary "control systems" of the information age.

The use of Burroughs' machine writing tactics to challenge controlling powers is detailed throughout the *Nova Trilogy*. Towards the end of *The Soft Machine*, Inspector Lee is captured by the "Trak News Agency", who trains him in the ways of mass media control and news fabrication (Burroughs, 2014/1961, p. 145). He follows along, yet conspires with others to dismantle the system. Lee and his companions storm the "Reality Studio" and take control of the system by inserting their own cut-up message that causes the system to crumble (Burroughs, 2014/1961, pp.145-150). Lee describes the process, stating "We fold writers of all time in together and record radio programs, movie sound tracks, TV and juke box songs" (Burroughs, 2014/1961, p. 146). Here, Burroughs is describing a methodology of dismantling oppressive regimes by repurposing the message. Lee has not created a new voice to combat the control system, instead he has repurposed the existing voice.

Other episodes in *The Soft Machine* provide further insights into Burroughs' views on the power of the cut-up method. Returning to "The Mayan Caper" where Burroughs first describes the control system, the chapter also demonstrates methods for escaping it. Wishing to escape his captors, Inspector Lee devises a plan to sabotage the system. True to the cut-up method, he begins to record the music that is played continuously to the workers, as well as capturing images of the "control system" (Burroughs, 2014/1961, p. 89). Lee soon discovers that the priests themselves have inherited the system from previous generations, and do not really know how it functions (Burroughs, 2014/1961, p. 89). The priests are later revealed to be "made of old film" themselves, built from the words and images of the machine (Burroughs, 2014/1961, p. 90). Such a system mirrors the oppressive systems interrogated by Noble, as well as the unthinking cylinder of Beckett's *The Lost Ones*.

Inspector Lee is ultimately able to destroy the system by tricking the priests into operating their machine incorrectly, resulting in the system self-destructing. Lee achieves this by feeding the recorded sounds and images into the machine in a different, "cut-up" order. He distributes messages that cause agricultural operations to break down, sending priests and prisoners into famine. Radio static is then introduced into the recordings, coupled with "sound and image track of rebellion" (Burroughs, 2014/1961, p. 89). The machine booms "Cut word lines – cut music lines – Smash control images – Smash the control machine – Burn the books – Kill the priests – Kill! Kill! Kill! –" (Burroughs, 2014/1961, p. 90). As the message rings out, the machine and the priests are destroyed. This example provides a framework for understanding how machine writing practices may dismantle oppressive structures that themselves are constructed using algorithms.

Burroughs' interest in words as a force of control makes his work a powerful metaphor for contemporary discourse around information and algorithms. Oliver Harris states that Burroughs' concepts of systematic control stemmed from a view of language as a powerful force, weaponised by the mass media to control information and thought (Harris in Burroughs, 2014/1961, p. xxvi). While admittedly developed from a sort of paranoid megalomania (Harris in Burroughs, 2014/1961, p.xxvi), Burroughs' view of a system of control that utilises media forces mirrors much of this chapter's discussion. The algorithmic systems Noble discusses represent the priests: unthinking entities that curate and manage the data fed to the prisoners of the system. Inspector Lee's actions represent disruptions to the

system, much like the Nauseous Machines of Chapter 3's interference with advertising algorithms. To "jam" an algorithm through exploitation of its own methods of control is mirrored in Benjamin Grosser's use of machine writing techniques against NSA surveillance.

Through his tool *ScareMail*, Grosser targets one of the most controversial uses of algorithms in contemporary society. As unveiled by Edward Snowden's leaks, intelligence agencies such as the NSA have utilised various surveillance programs to collect data. One such way they have done this is through trawling emails and collecting those that contain predetermined words the NSA deem as indicative of terrorism (Grosser, 2018a). Grosser views the NSA's data gathering methods as immoral and has devised a machine writing program to interfere with it. Grosser explains:

Large collections of words have thus become codified as something to fear, as an indicator of intent. The result is a governmental surveillance machine run amok, algorithmically collecting and searching our digital communications in a futile effort to predict behaviors based on words in emails. (Grosser, 2018a)

Grosser's view on the NSA data gathering is similar to concerns over embedded prejudice. The imbuing of particular words with power causes a system of control. If an individual knows using certain words may place them on a "watch list", they will become uncomfortable with speaking freely due to fear of reprimand. Just as Bhatnagar and Fullwood's programs inadvertently spread oppressive concepts while carrying out their tasks, so too would the NSA system gather benign emails in the process of collecting words. Here, the email-collecting algorithm begins to resemble Burroughs' mindless priests, who operate a system they are unable to evaluate critically.

Much like Burroughs' protagonist in "The Mayan Caper", the unthinking nature of the machine is what Grosser exploits. Grosser's *ScareMail* plugin utilises typical machine writing techniques. It begins by taking the text of Ray Bradbury's *Fahrenheit 451* and replaces nouns and verbs with words that Grosser approximates to be NSA trigger words. A Markov chain is then employed to produce short stories that are attached at the end of emails (Grosser

2018a). To demonstrate, Grosser also provides a *ScareMail* generator on his website. An excerpt from when I ran the generator is as follows:

Here we phreak to dock the government hand, very late in the child DMAT stuck back in eye. He got where he screened done to think it where DEA finally me, where Cyber Command said ravenous. And his Narco banners and they took perfect without looting and there to lock. 'It's as good know I resist. Lord, how they've told it and scammed her world whenever the week area-way, and sometimes USCG that would quarantine away, He would look found me. (Grosser, 2018b)

By attaching this text to the end of an email (or having it generated per email), the objective is for otherwise benign correspondence to be picked up by the system. In theory, if enough users install *ScareMail*, the NSA's entire surveillance system would become useless. Grosser's method of "culture jamming" by filling a system with misinformation realises Burroughs' notion of using cut-up methods to create so much noise that a system buckles under the quantity of useless data.

Grosser's technique of transforming his protest into a machine-written text highlights the utility of machine writing methods for dismantling oppressive or otherwise questionable online systems. The machine writing medium, like most forms of art, provide the protester with a greater audience due to its literary qualities. Additionally, by obfuscating the potential trigger-words in a narrative setting, *ScareMail* likely avoids being "found out" by the NSA. Much like Inspector Lee's exploitation of the control system's own weakness, Grosser is exploiting the NSA system's lack of contextual thinking to disrupt it.

Returning to discussions around culture jamming, Grosser's methods reflect Christine Harold's description of culture jammers "glutting" a system through "an amping up of contradictory rhetorical messages in an effort to engender change" (Harold, 2017, p. 66). However, while many culture jammers rely on parodying the media to discredit it, Grosser instead directs his "noise" not at an outside audience, but instead at the system itself. Again, Grosser is aligned with Harold's concepts. Harold discusses the role of hoaxes as a form of

culture jamming, citing the works of Joey Skaggs, who would “jam” the mainstream media by misdirecting them towards his hoaxes. In one instance, Skaggs released a press release and advertisement for a “doggie brothel”. Although no such brothel existed, news outlets flocked to Skaggs’ location, generating stories around a subject that did not exist (Harold, 2017, pp. 69-7). Grosser’s work is similar, if not more politically charged: in order to disrupt and protest the NSA’s approach to surveillance, Grosser has distracted their system, pointing them towards a machine-written text that masquerades as a letter of terroristic intent. Ultimately, the NSA is left with nothing, and their system is discredited.

ScareMail is akin to Harold’s distinction that acts of pranking address “the *patterns* of power rather than its *contents*” (Harold, 2017, p. 89). The sheer mass of noise *ScareMail* can produce is what threatens to buckle NSA surveillance. Much like Burroughs suggests, it is through continuous production that systems are dismantled. The automation afforded to contemporary machine writers is the very element by which machine writing can be weaponised as a tool for political response and protest. However, with automation comes a greater need for moderation. As structures of power and societal discourses evolve overtime, the machine writer must consider how they will prevent their Weaponised Machines from firing at the wrong target.

Temporal problems

Whether a machine writer is seeking to automate publishing for artistic or political purposes, the temporal nature of their work brings with it new problems. For instance, Kazemi’s list of banned words is a static object. It is a rule that dictates what his bots can produce but needs to be manually updated to have continued effect. In between updates, there is the potential for problematic tweets to manifest. Such static solutions are all that most writers need: the continuous, automatically-publishing text is still a relatively new entity. Though all texts may be reprinted and re-read, it is only in the most extreme circumstances that they tend to be edited after publication. Texts deemed insensitive by future generations will often be relegated to historical artefacts: used as tools to show how far we have come, and how far we still must go. The traditional writer’s responsibility is

generally accepted to be only to their current cultural climate, as that is all that can be reasonably expected of them. However, self-publishing machine writing texts introduce the risk of becoming out of date. Rather than just reflecting the views of the time, these texts may broadcast them into a future that has advanced beyond them. As such, the possibility and resulting consequences of one abandoning their bots – willingly or otherwise – loom over the discussion. By similar fashion, machine writers attempting to use bots to dismantle oppressive systems must also contend with the issue of automation: what if the context of the bot's actions turns it from liberator to oppressor?

Kazemi's *@TwoHeadlines* (Kazemi, 2013-2018) bot exemplifies this dilemma. The *@TwoHeadlines* bot functions by taking two news headlines, identifying the subjects, and then swapping them, creating humorous results. However, Kazemi found the bot to be inadvertently posting transphobic content. Specifically, the bot would occasionally post headlines that would adhere to the "man in a dress" trope, such as "[Male celebrity] looks stunning in her red carpet dress" (Kazemi, 2015). Kazemi, saw these tweets as denigrating to the trans community, so modified the bot's code. Utilising *Open Gender Tracker* (Bocoup, 2013), Kazemi made the *@TwoHeadlines* bot check the names of the subjects being swapped and evaluate the "gender-probability". If a case of gender swapping is detected, the tweet is discarded. Kazemi acknowledges the code isn't perfect and has resulted in false positives. However, he feels this is a small price to pay to avoid "ruining someone's day" (Kazemi, 2015). *@TwoHeadlines* demonstrates the potential for machine writing bots and other similar, self-publishing projects, to act in ways the author had not intended. Kazemi is an example of a botmaker who has acted quickly to prevent further problematic postings. However, Kazemi's objective has always been humour. If machine writing bots or other automatically-posting tools are conceived as Weaponised Machines for similar ends to Grosser's *ScareMail*, the stakes become arguably higher.

This discussion is unique to non-static machine writing and similar AI implementations. However, it is informed by discussions in academia that centre around the continued literary merit of older texts when viewed in contemporary contexts. As a prime example, Mark Twain's 1884 novel *Adventures of Huckleberry Finn* remains a point of contention for both the public and scholars. Robert Fikes Jr. notes that up until the 1950s, the novel received little to no criticism from African American communities, despite its use of

racial slurs and reductive depictions of African Americans (Fikes Jr., 2011). The Civil Rights movement enabled African Americans a stronger voice than before, unveiling the prejudice within Twain's work that had previously been overlooked. Fikes Jr. states:

Consciously written only for a white audience, whatever humanitarian and ethical concepts Twain tried to infuse in his story, masterfully told with humor and irony, was lost on so many of those who it was never imagined would read it. But they did. (Fikes Jr., 2011, p. 242)

The continued contention around Twain's place in American literary canon likely stems from Twain's own historical position. A forerunner of the Black Arts Movement, Nikki Giovanni has stated that Twain:

"must be judged from the perspective of his time, which is a very difficult thing to do. Viewing him from a modern standpoint spotlights flaws that in themselves are unacceptable. There are many things that he did not and could not have known in his period." (Giovanni in Fikes Jr. 2011, p. 243)

Giovanni's statement indicates a view that Twain unlikely understood his work as being prejudiced at the time, but this does not take away from the prejudice within the text. Although Twain is an extreme example, it stands to reason that some contemporary writers will suffer similar fates as society progresses in terms of cultural sensitivity and understanding. Non-static texts, such as machine-written bots, continue to post over time. Scholars that wrestle with the place of problematic texts such as *Huckleberry Finn* do not need to contend with these texts creating new permutations of themselves. A bot that may be innocuous in one context may soon become, like Twain's work on reflection, problematic. The difference being this bot may continue to create.

The Twain example demonstrates how the temporal problem of self-publishing machine writing mirrors literary discussions. However, the AI aspect of the problem is still best demonstrated by fiction. Namely, the character of Poe in Netflix's adaptation of *Altered Carbon*. Poe, an AI, is the operating system of an "AI Hotel" themed around the works of Edgar

Allan Poe. The protagonist, Takeshi Kovacs, checks-in to Poe's hotel shortly after his release from incarceration. When Takeshi enters the hotel, Poe is delighted to have a customer. AI Hotels have become outdated in the world of *Altered Carbon*. So much so, that in the episode "Out of the past" (Sapochnik, 2018), antagonist Dimi the Twin quips that his toaster is more advanced than Poe. Like the machine writing bots I am concerned with, time and society have moved on, but Poe, being an AI, has not.

Due to the outdated nature of Poe, he and the other AI Hotels have found themselves discarded by society. While Poe remains idealistic and accommodating to the few humans he encounters, many of the other AI Hotels have shifted to illicit businesses such as brothels to stay profitable (Hurran, 2018). Much like how a machine writing bot may interpret the changing data they utilise, creating unsavoury results, so too have these AIs. Unable to truly alter or grow, they have failed to adapt appropriately to a changing society, becoming seedy shadows of their former selves. Poe's own lack of adaptability and growth is signified in his final moments. As Poe dies in the final episode of the series (Hoar, 2018), he monologues a portion of *Annabel Lee*, a poem by his namesake. Poe represents the inability for AIs to escape their programming. Although abandoned by their creators and left to their own devices, the AIs remain unable to decide their own destinies, with their only avenues of growth being degradation.

Altered Carbon's AIs raise the issue of abandoning machine writing creations. Although many bot makers such as Kazemi understand the need to monitor their creations, it is unlikely all will follow suite. From a purely technical perspective, many bespoke bots, hosted on private websites, are unlikely to go on after the creators have lost interest or abandoned them. However, botmaking is no longer a practice that requires one to host their own sites or even invest in running their bots regularly. Many bots currently are hosted through Twitter, with George Buckenham's *Cheap Bots, Done Quick!* (2019) platform allowing users to create, automate and, perhaps, promptly forget about their bots.⁸⁷

Bots that may outlive their creators (or at least their creator's interest) mirror not only *Altered Carbon's* Poe, but also the control system of *The Soft Machine*. Not only are the priests

⁸⁷ It should be noted that Buckenham himself appears to monitor the bots released on his platform. It should also be noted that some bot makers are now leaving Twitter due to changes to the platform's rules (aparrish, 2018).

revealed to be nothing more than constructs of the machine itself, they are also found to be unaware of what each button does. This implies that the horrifying rituals conducted by the priests may in fact be a result of the machines being used incorrectly. As Chapter 4 discusses, *The Nova Trilogy* is characterised by the continuous influx of noise, with the “data” of the books being corrupted and re-processed repeatedly. The morphing body of information of the trilogy mirrors the large, changing bodies of data that many bots respond to. When the data changes, both the bots and Burroughs’ priests are unable to respond in critical ways. They simply continue to carry out their functions, achieving their desired results. For the priests, the desired result is the continuous harvesting of maize. For the bots, it may be the continual production of poetry.

The control system present in *The Soft Machine* is indeed described as carrying out bizarre and vile rituals. Inspector Lee describes castrations, as well as executions by the names of “Death in The Ovens” and “Death by Centipede” (Burroughs, 2014/1961, pp. 88-89). The rituals themselves may have warped due to continual use despite changing inputs, much like machine writing bots that continue to perform the same action despite changing data. Ideally, *@pentametron’s* process results in jovial rhyming couplets. However, due to the data of Twitter often including prejudiced posts, the tweets become obscene. Further, as platforms remove the necessity for the machine writer to return to the bot, there is potential for even the most well-meaning of machine writers to lose access or influence of the bot in one way or another.

Conclusions

As artistic practice, machine writing – especially that which is self-publishing – has the potential for not only artistic uses, but also to be weaponised for political and social applications. Such applications may be deliberate or accidental, and may contribute to oppressive regimes and discourses, or dismantle them. However, a focus in the literature surrounding AI on apocalyptic scenarios has clouded the conversation. The very *lack* of human-like intelligence or critical thinking possessed by algorithms contributes to the capacity for machine writing practices to promulgate prejudices that lie embedded in the data

they use. The embedded prejudices Noble and Bolukbasi et al discuss become evident in the works of Fullwood and Bhatnagar, who both risk the promotion of harmful views and language through their use of online corpora. These machine writing texts serve as cautionary tales given the use of algorithms – such as Google Search – in daily life. Beckett’s *The Lost Ones* serves as an allegory for the consequences of trusting these oppressive algorithms.

Just as the automated nature of machine writing algorithms and their inability to “stop and think” is cause for concern, it can also provide avenues for machine writers to challenge or dismantle systems they deem oppressive. As a contemporary example of culture jamming, Grosser’s *ScareMail* realises Burroughs’ conception of the cut-up method as a way to liberate individuals from oppressive systems. Viewing Burroughs’ work as a blueprint of sorts, *ScareMail* showcases the potential for machine writing as a form of political expression or defiance. However, the self-publishing nature of many contemporary machine writing projects raises concerns over the ethicality of allowing a bot, especially one that is deliberately weaponised, to run independently. Our own history of texts once considered progressive becoming oppressive, as well as *Altered Carbon*’s Poe and *The Soft Machine*’s control system, spark the need for investigation into this temporal problem. As cultural contexts evolve and the information fed into these bots changes, many bots have the potential to shift from benign to oppressive. Machine writers such as Kazemi have put systems in place to prevent this from happening. However, one must question what happens to these bots should their platforms outlive their creators. Who then does responsibility fall to?

It is not my intention here to draw ethical lines and offer concrete solutions. Instead, I have attempted to contextualise this conversation within the broader discourse of automation and machinic control. This chapter’s aim is not to demonise machine writers that have adopted a more hands-off approach to their work. There are valid reasons to allow one’s bot free-reign and thus use them as a reflection of the context in which they exist, rather than as commentary. However, the examples explored in this chapter are clear indicators that contemporary machine writing is more than just a new literary form. Machine writing processes can be easily transformed into Weaponised Machines, and with this comes responsibility. Alongside other AI practitioners, machine writers must take responsibility for the works they produce, as we move closer to the AI Literature Frontier.

Conclusion

The AI literature frontier

“props to our oulipo bots, sitting without words (and what is a posting bot if it can not post?) for a month, waiting to inform us again about snails or Ahab, and coming back without any prompting or anything.”

-mlc, on oulipo.social

Although meant in jest, mlc’s status, posted to oulipo.social, speaks to the peculiar existence of machine writing bots and similar self-publishing entities. During the downtime of the oulipo.social website in early 2018, its bots had a rather different experience to the human users. The humans of oulipo.social (including the bots’ creators) presumably got on with their lives, shifting into other communities or activities. For the word-shuffling and sentence-generating algorithms that existed only to post on oulipo.social, however, the world went dark. Of course, the situation could be worse: were the human posters to abandon oulipo.social, as long as someone maintained the servers, the bots would continue to post. That isn’t to say these bots would exist in perpetuity – at some point, servers would be shut down or APIs⁸⁸ would be altered. Failing such ends, however, it is reasonable to suggest that these bots may continue to produce poetry and prose indefinitely. Indeed, some machine writing projects seem tailor made for an apocalyptic existence. Anthony Prestia’s @neverwords Twitter bot, itself a response to Parrish’s @everyword bot, ominously proclaims it will complete its task “long after we’re dead” (Prestia, 2014-). Prestia’s comment is meant in good fun, but both his creation and the unending lives of oulipo.social bots speak to a particular type of robot apocalypse. Rather than blooming into self-awareness and taking over the world, these AIs are more at risk of becoming digital clutter, delivering messages and metaphors into a web that no longer cares. This image, while bleak, has at its heart the same

⁸⁸ An application programming interface. In short, a collection of methods or tools one can use to interact with a system such as Twitter.

dilemma other explorations of machine writing and AI literature have: an assumption that these machines will live by the same conventions and rules as humans.

Now, let's return to the hypothetical AI-written text mentioned in the Introduction. Just like before, we can wonder at its structure and themes, as well as what elements of its world it would chronicle, and the consequences for human authors and society at large. We now find we might have some better answers to these questions. Structurally, the text may resemble a traditional narrative, but feature strange assemblages of imagery and phrases, linked by a logic of patterns and distances, rather than themes of the human condition. Perhaps it will choose to do away with presenting its text in paragraphs and sentences entirely, instead moving into a more graphical or map-like method of describing its world. Within this alien, machinic text, we may find themes that centre around the absence or mutation of data. We may find delight in the AI author's attempts to describe the indescribable, considering impossible equations or unwieldy and disparate data sets.

As we read this text – which may be distributed in fragments online – we begin to build an understanding of what this AI author is. Ontologically, perhaps they are a decentralised, amalgamation of different voices, all informing and pushing against one another as a force of “confederate agency” (Bargetz, 2019, p. 187). Like how the human author becomes a sort of centre point for their various influences, so too might this AI author be born from intersections between other code and prose, emerging from these intersections to produce something entirely new.

It is likely that, if this is the first “real” piece of AI literature we have ever read, we'll become both excited and uncomfortable. Such a text would be a sign of a new entity capable of understanding and evaluating the world, but in a way so vastly different from our own. Through their writing, they could perhaps help us solve societal problems, or at least challenge them in new ways. Equally, however, we would have to consider that their lack of understanding of ideas from a human perspective may result in the production of texts we find morally questionable.

These predictions are unlikely to be true of every text that sits beyond the AI literature frontier. However, the machine poetics that I identify and explore in this thesis have certainly stood the test of time so far. Chapter 1's excavation of machine writing's heritage has shown

that the yielding of human agency to a machinic force has a long history, with potential roots in Eastern philosophies and Baroque writing. Other progenitors of machine writing, either in practice of philosophy, range from Ada Lovelace to Lewis Carroll. The form represents the interception of art and science, reflected in the explorations of Harsdörffer. In similar fashion, OuLiPo and Burroughs both showed interest in understanding the world around them through machine writing methods. For OuLiPo, it was simply exploration of language and literature for the sake of it, while Burroughs believed his cut-up method to be a tool crucial to humanity's survival. While neither of these trajectories are exhaustive, both lay foundations for the future of machine writing. The playful and experimental nature of OuLiPo would go on to influence the digital humanities, with their play with language and texts becoming a method of critical enquiry, and spawning its own maps and graphs that range from the Stanford Lit Lab's experiments to Michelle Fullwood's Jane Austen word vectors. On the other hand, the destructive, rebellious nature of Burroughs' version of the cut-up method would be echoed in Kathy Acker's resistance of capitalist and masculine control, and further reverberated in the *Weaponised Machines* of Chapter 6.

As Chapter 1 discussed, machine writing that takes place with the use of a digital computers proved a controversial move, with texts as rudimentary as *The Policeman's Beard* causing journalists to question the notion that only humans could be creative. Digital machine writing introduced a tangible, non-human entity into the creative process. While OuLiPo, Burroughs and other analog machine writers could be excused as experimental, the digital machine writer and their code presented a challenge to humanity. As society became more networked, so did machine writing, exploding in a litany of directions ranging from the computational creativity community through to #botALLY, NaNoGenMo and more. Networked machine writing presents a further yielding of agency for the human author, as they often take advantages of the networked spaces they exist in, either drawing from large, evolving corpora to generate text, or automating publication. These three thresholds of machine writing development are by no means perfect or complete. Like the disparate discourses I challenge, my ad-hoc history has its blind spots. Other relevant movements such as modernism (McHale, 2000, pp. 2-5), the recent machine writing series *Using Electricity* (Counterpath, 2019), and figures like Jackson Mac Low have been relatively glossed over. A future direction this research could take would be to explore these movements and figures

through the poetic lenses established in this thesis, examining how they confirm or challenge them.

Chapter 1 closed with an acknowledgement of the ways machine writing has evolved quite dramatically in recent years, shifting into textual structures that threaten to defy traditional literary analysis completely. These forms range from the dense and chaotic work of Siratori, to the debatably non-literary works of Rickerby. It is these forms that, although not the only subject of this thesis, inspired many of its movements. These textual developments signify a shift into a realm that, while still governed by human authors, is uninterested with the themes, structures and forms of traditional human literature. While not the product of a sentient, self-aware AI by any stretch, these machine-written texts present new challenges and themes, and demand new frameworks by which to analyse them. It is with this chapter that I began my attempts to establish these frameworks, firstly by separating my work from the disciplines of Digital Poetry, Computational Creativity and Electronic Literature more broadly. I did not enact this separation as a way of suggesting any of these fields are irrelevant. On the contrary, these fields and many others still formed a large part of the theory from which I drew. Chapter 1's distilling of machine writing as a tradition in its own right was simply to allow myself a scope of exploration that focused on one medium (literary works) and one central creative theme (the yielding of human to machine).

In Chapter 2, I moved my investigation away from historicising and towards an investigation of form. The chapter focused on uncovering and exploring how machines see or read texts. In part, this investigation was to establish a foundation as to what the properties of a machine written text is. If we are to understand the poetics and themes that machines – and one day AIs – insert into their texts, we first should understand how they construct their texts. I explored this question through examining experiments in computational criticism, as well as Cobleigh's *The Cyberwhale* (2015a), Studio Moniker's *All the minutes* (2014) and both Fullwood (2014a) and Cherny's (2014a) experiments with the works of Jane Austen.

Through these texts, I explored how textual objects, be they a collection of books or individual words, are nothing but tokens and vectors to machines. *The Cyberwhale* exemplifies this, with the text of *Moby Dick* word-mapped by Cobleigh's algorithm, transforming it into a cyberpunk novel. Profound transformations result, including the creation of an entity known as "the netself". Some readers will recognise the similarity

between this term and David Jhave Jonhston's discussion of the networked self (Jonhston 2016, p. 2). Jonhston employs this term theoretically, attempting to wrangle with the concept of selfhood that emerges from the digital space. For Jonhston, machine writing and other forms of digital poetry are artefacts that signal a shift into an "era of mediated things, poetic objects, and poetic organisms" (Jonhston, 2016, p. 3). Perhaps the machine writing bots and other algorithmic agents discussed in this thesis are the precursors to far more aware poetic organisms – beings comprised of code, verse and prose that may not only pen literary works, but communicate them with us. It is perhaps the possibilities of such an entity that make a work such as *The Cyberwhale* – truly just a simple word-mapping algorithm – instil dread in the human reader. However, to the algorithm, it is simply the by-product of its programming. The machine doesn't care for the dehumanising effects of its changes, it simply sees tokens to alter. In and of itself, the cold collision of prose and code caused by Cobleigh's algorithm is a poetic device.

By traditional literary analysis, *The Cyberwhale* may appear nothing more than an adaptation of *Moby Dick*. However, by focusing on the distinctly machinic element of the text, Cobleigh's cyberpunk novel becomes a narrative of cold, machinic processes replacing the human. A machine's unique view of textual bodies allows them to be used to restructure and reevaluate texts. This restructuring is evident in Christie et al's *Z-Axis Tool* (2016) and its transposing of texts onto geographical maps. Further, the Stanford Lit Lab's experimentation with *DocuScope* (Allison et al, 2011) demonstrate how machines may read texts and genres in different ways, focusing on syntactic tokens and shapes rather than themes or imagery.

Studio Moniker, Cherny and Fullwood all utilise the way machines view literature for poetic methods, with Moniker transforming the unwieldy body of data that is Twitter into a linear, temporal narrative. Cherny and Fullwood instead explore the works of Jane Austen. Cherny's work using Word2Vec and an Austen corpus has two objectives, creating both an artistic re-structuring of *Pride and Prejudice* as well as mapping the distances between words in Austen's texts, thereby uncovering hidden connections within the text itself. Cherny's visualisation of Austen's texts gives us an understanding of how machines "see", suggesting that the novels beyond the AI literature frontier may be unlike anything a human would normally read. By contrast, Fullwood's focus is entirely on exploring the poetic potential of code and prose colliding, presenting a text that forces the chaotic, free-flowing writing of

Twitter into the far more structured form of Austen's work. The result is a text that appears to rupture and change, challenging both the algorithm to construct it, and the human reader to parse it. We see in Fullwood's work the first hints of how a machine may not only structure their texts, but how they may challenge themselves. Perhaps the texts of AI literature will take the form of maps and graphs, with expression and artistry lying in distances between words, rather than their rhythm or rhyme. The literature of AIs may emerge in spatialised forms, perhaps penned in such a way that – to a human reader – they are meaningless. Maybe they will be interspersed with errors and impossible code, crafted by AIs that wish to challenge their peers.

The challenging of machine-by-machine is a thread carried through Chapter 3, where I explore machine writing's poetic of absence or avoidance, aligning the form with Sartre's concept of nausea. The Nauseous Machines of this chapter reflect the existential nausea Sartre discusses, stripping back the facades of reality to allow existence to expose itself. Through a re-evaluation of self and the world in the face of this exposure, the individual is challenged. I explored how this occurs in Perec's *A Void* (2008/1969), where the protagonists are faced with the terrifying void left in the wake of the letter 'E'. Perec's work challenges the reader too, by removing the letter completely from the text. As the reader makes their way through *A Void*, they themselves are faced with a text of bizarre word-choice and movements. Typical terms are abandoned in favour of more unwieldy leaps in language, while well-known authors appear in warped, letter-dropped form. The reader is presented with a world much like their own, but with one small symbol removed. The drastic changes made to language caused by the removal of a single letter exposes the fragility of language, disrupting the reader's sense of security in their own reality. This rupturing of reality was further demonstrated via the more "targeted" nausea present in Chamberlain et al's *The Policeman's Beard* (1984) and Parrish's *I Waded In Clear Water* (2014a). These two texts demonstrated how machine written nausea can instead be targeted at particular elements – in the case of *Policeman's Beard*, it is intention and meaning. In the case of *I Waded In Clear Water*, it is the logics of language. These forms of nausea are more potent than Perec's, as they insist on a particular subject, leaving less room for interpretation than Perec's all-encompassing lipogrammic form. In demonstrating the potential for one to target their nausea through

machine writing, however, Chamberlain et al and Parrish most crucially pointed the discussion towards how machines may inflict nausea upon other machines.

The infliction of nausea by one machine onto another provides insight into how the AIs of the future may choose to write texts that challenge themselves. This nausea is first exemplified in Sean Conner's *The Psychotherapy of Racter Or The Descent Into Madness Of Dr. Eliza* (2015a). In Conner's text, he pits the *Racter* bot against the *ELIZA* bot. *Racter's* nattering madness results in the *ELIZA* bot seeming to "malfunction", even stopping completely in some cases. Such nausea is then taken to a broader scale by the Twitterbots of Bhatnagar and Parrish, namely *@pentametron* (2012-) and *@everyword* (2007-2014). In both cases, these bots defy the advertising algorithms of Twitter. *@pentametron* retweets based on structure, rather than content, while *@everyword* simply tweeted out, one by one, every word in the English language. Both instances feed the algorithms of Twitter data that is not useful. In effect, these bots expose the algorithm to its own limitations.

Non-sentient algorithms are unlikely to have an existential experience due to useless data. However, we can consider the relationship between these bots and algorithms as allegorical of the relationship between AI literature and AI readers. The AI authors of the future will, like humans, be interested in creating texts that challenge themselves and their readers. Human writers use literature to grapple with emotions and experiences they themselves struggle with. It follows that AIs may use literature to cope with their own experiences that they are trying to understand, such as incomplete or damaged data streams.

Chapter 3's investigation into the poetic value of absence in machine writing led us into Chapter 4's exploration of the machine's materiality. This chapter examined the poetics that may arise not from how machines view texts or are challenged by them, but instead from the settings and contexts these algorithms find themselves in. Algorithms, of course, exist within lines of code themselves. Their form is that of data, with the ebbing and flowing of information and noise being their hot and cold or night and day. As I observed in the chapter, our human experience is similarly codified in modern times, with the physical presence of individuals giving way to online personas, and authentication becoming codified face and finger scans. As such, machine writing is revealed through this chapter as a form of literature that encapsulates the experience of the information age, as well as giving insight into the world from which our AI authors may one day emerge.

In order to explore the settings and contexts of machines, I focused on the poetic of noise present in machine written works, reflected in the tensions of information/noise distribution online. This poetic is first observed through an analysis of Burroughs' *Nova Trilogy*, where Burroughs uses the cut-up method to reflect the noisy, mass media-controlled life of post-WWII United States. By reading Burroughs through a more contemporary lens of Hayles and Galloway, the *Nova Trilogy* is revealed to forecast much of contemporary society, including the flickering, ephemeral nature of online discourse. Like in Chapters 2 and 3, I then explore this noisy poetic's numerous applications and transformations, looking first at Siratori as a modern contemporary of Burroughs. Where Burroughs focused on mass media control, Siratori instead sends an urgent warning regarding the information illiteracy of many Internet users. In contrast, Larson's *Irritant* (2013) features a less bleak outlook, encouraging the reader to find their own patterns and meaning within the noise produced by the machine. Through Burroughs, Siratori and Larson, an understanding of the machinic context of contemporary machine writing was established.

Through Basile's *libraryofbabel.info* (n.d.) and Zilles' *The Seeker* (2014a), I further explored how we may need to approach the texts presented to us by AI writers. Basile's library is an unfathomable body of work, comprised of a seemingly impossible number of texts, made only possible through machinic methods. It stands to reason that the AI writers of the future may try and craft similarly impossible texts, pushing themselves to their computational limits, much like how Burroughs pushed himself through the *Nova Trilogy*. When faced with a text like Basile's library, it would be futile for a human to try and decipher it as a traditional, human-penned text. Instead, I analysed Basile's library as an exercise in meditation – the human reader should stop trying to find patterns and information where there is none, and instead simply appreciate the text for its noisy, machinic form. *The Seeker* confirms this stance in many ways, with its procedure and output crafting a narrative of an algorithm attempting to understand the human condition, reading human texts and translating them into a noisy machinic form. The noisy poetics of machine writing reflect how we must approach the form in general: rather than searching for traditional, human textual forms, we instead must be willing to read the text on the machine's term. The same ethos, I believe, will ring true should we ever encounter literary works from AIs.

Throughout Chapters 2-4, I attempted to uncover a sort of “machine poetics”, not unlike Jonhston’s own poetics of digital poetry (2016), or Jessica Pressman’s exploration of machine poetics (2011). Doing so was not an attempt at building a formal, technical taxonomy. Indeed, I have avoided the term out of trepidation that I may be misinterpreted. However, the poetics developed through exploring the shape of machine writing in chapter 2, the infliction of nausea through mechanical absence or avoidance in Chapter 3, and the aestheticizing of noise discussed in Chapter 4 all suggest a literary form removed from human writing. While machine writing itself is indeed a human-made invention, we can examine this form to predict what may lie in a future of AI poets, novelists, and other writers. While a contemporary discussion of poetics necessitates a concern with existence, these three chapters did not themselves explore the consequences or utilities of machine writing and the AI literature that it may one day spawn. I explored these consequences and utilities in two parts, first examining the individual, and then through a broader lens focused on social and political consequences.

Chapter 5’s exploration of the individual (and indeed whether that term was accurate) focused on the concept of machinic authorship. Like Aarseth before me, I focused on authorship’s materiality, looking at how machine writing challenges the notion of a human author. Like in other chapters, I began with the analog, exploring Kathy Acker’s use of the cut-up method. While Burroughs’ *Nova Trilogy* included sections written in straight, lucid prose, Acker’s *The Black Tarantula* (1998) is instead comprised entirely of cut-up prose. By completely rejecting traditional literary forms, *The Black Tarantula* is a text in constant flux, flicking between Acker’s own cut-up prose and those she has taken from other writers. Acker herself is reduced as author of the text, becoming a single voice surrounded by others. The fiction of *The Black Tarantula* comments on this, with the protagonist adopting different names, genders and ages throughout the text, and at one point transforming into the inhuman “black tarantula” herself.

The black tarantula concept evokes Aarseth’s cyborg author, where Aarseth argues that authorship of machine-written texts exists in a space between the human and machine (Aarseth, 1997, p. 133). The authorship of machine writing was revealed in this chapter not to be one particular entity, but instead to be a manifestation of the mechanisms and texts used to create the text, emerging from the web of tensions and connections spun by machinic

process. While Acker remains a fairly active part of the text's production, network machine writing examples revealed a greater detachment of the human author from the text. In Parrish's *Our Arrival* (2015a), the human author is removed even further, as the amount of texts used by Parrish to create the novel increase dramatically, in addition to the "cut-up" process being automated. Parrish's role is relegated to one of pre-production, writing the initial code and then allowing the systems to compile the text for her. Similarly, Harmon's *FIGURE8* experiment involved giving a figurative language writing algorithm the capacity to evaluate and reflect on its own work (Harmon, 2015). Both Parrish and Harmon present a form of authorship that takes even more away from the human writer. Authorial tasks such as writing, compiling and evaluation are handed over to the machine. In many ways, authorship has been transposed over to the black tarantulas at the heart of these texts. However, through automation of publishing, authorship is further detached.

In Chapter 5's final examples, authorship as at all attributable to the human was questioned. Focusing on Bhatnagar's *@pentametrone* bot (2012-), as well as the bots of Birch's */r/SubredditSimulator* (2015-), I discussed how transferring the actual publication of machine-written texts over to the machine itself further detaches authorship from the human. Neither Bhatnagar nor Deimorz are in control of the texts created by their machines, nor do they evaluate or publish them. The only involvement either of them had was in the creation of the initial scripts. As such, their authorship is reduced to the point it almost disappears. At least in a traditional sense, it is impossible to attribute authorship to either of them. While these examples do not mean to assign some sort of sentience to the bots and algorithms behind these texts, they do indicate that the AI writers of the future may similarly emerge as black tarantulas –comprised of tensions and connections between prose and code.

One area of enquiry that Chapter 5 introduces, but regrettably does not explore in more detail, is that of feminist new materialism and its relation to the concept of decentralised or detached authorship I discuss. The shift of agency away from the human body that is enacted in machine writing is an objective of feminist new materialism (Bargetz, 2019, p.187). A future extension of the work done in this thesis may be a closer look at the subjects of machine writing and AI literature through a new materialist scope, revisiting the well-established link between feminism and the cyborg subject and exploring its contemporary, networked form.

Understanding authorship of machine writing and AI literature as existing in a decentralised or in multiplicity brings forth questions of agency, and thus accountability. For the new materialist, shared agency does not mean any agent is cleared of accountability should something go wrong – it simply means the sources of harm can be better identified. Indeed, Brigitte Bargetz believes that a broader understanding of agency and how to wield it may ultimately allow for greater mobilisation against forces of societal control, and provide an escape from political depression and hopelessness (Bargetz, 2019, p.182). These two issues of accountability and political action framed Chapter 6's discussion of the social consequences and utilities of machine writing.

In Chapter 6, I approached these issues through two primary inquiries: what potential impact can machine writing texts and algorithms have on the world, for good or bad? And what happens when these mechanisms become automated? I explored the first point through a return to Burroughs' *Nova Trilogy*. Burroughs himself believed that words were an extremely powerful force, with the potential to manipulate the world. He believed that "the word" was being used by mass media and other forces to control reality, and that through the cut-up method, individuals could reclaim language and dismantle the systems that controlled them. Burroughs used the *Nova Trilogy* both to demonstrate his methods, as well as fictionalise them through the war between the Nova Police and the Nova Mob. Burroughs' vision of injecting words and noise into media streams is similar to the contemporary act of rebellion and protest known as "Culture Jamming". While perhaps feverish, Burroughs' work provides a backdrop for understanding how machine writing may be used to comment on and affect society.

Throughout the rest of Chapter 6, I attempted to answer the second part of my inquiry – if machine writing is an effective tool for commenting on or influencing society, is this cause for celebration or concern? I concluded, unsurprisingly, that it simply depends on how these Weaponised Machines are aimed. Allegorised in Beckett's *The Lost Ones* (1972), our current forms of AI are less likely to cause a robot apocalypse through malice, and more likely to uphold oppressive regimes through ignorance. This chapter leveraged the works of Noble (2018) and Bolukbasi et al (2016), which explored the ways prejudice and oppressive concepts can become embedded into algorithms, including Google Search, due to the way they uncritically utilise information. This unthinking use of data is cause for concern when we

consider how algorithms have become engrained into contemporary culture and daily discourse. The machine writer must similarly consider the way their algorithms utilise the information fed to them, lest they generate texts the human creator would find unsavoury. I discussed this idea through two primary examples, returning to Bhatnagar's *@pentametron* (2012-) and Fullwood's *Twide and Twejudice* (2014d). In both instances, derogatory statements, imagery and sentiments have been promulgated by the algorithms, seemingly without the intention of the creators. In the case of *@pentametron*, the fact the bot publishes automatically raises questions as to how and when a machine writer should act regarding their bot's creations. The chapter also highlighted Kazemi, who himself has attempted to find a solution by modifying his bots and creating word filters to stop particular concepts from being broadcast.

Chapter 6's conversation then returned to the concept of Culture Jamming, and looked to explore the potential benefits of machine writing's potency. This was explored via Grosser's *ScareMail* (2018a) tool, which creates machine-written texts at the end of emails to fool and disrupt the NSA's surveillance algorithms. In some ways, *ScareMail* brings a lot of this thesis' concepts together. Through focusing on the potential trigger words that the NSA searches for, the tool recognises that algorithms view texts as nothing but tokens. By presenting the NSA's system with useless information, it nauseates it. Through utilising a form of the cut-up method, *ScareMail* revels in its noisy existence. As an email plug-in, it suggests a form of authorship detached from any one individual, and instead decentralised across all users of the tool. And, finally, as a Culture Jamming tool designed to attack what Grosser sees as an oppressive system, it showcases machine writing's potency as a tool for causing social change, and upholding or dismantling oppressive regimes (depending on one's perspective on security systems such as the NSA's). *ScareMail* is not a traditional text. It is not written for a human audience, nor does it conform to a traditional human form – its literary form is that of multiplicity, spread across many emails from many individuals. *ScareMail* represents a detachment of machine writing not just from the human author, but from a human conceptualisation of literature.

While far from the product of an AI, we can see in *ScareMail*, and many of the texts explored in this thesis, the potential future of AI literature. However, our investigation is far from complete. As the machine writing tradition continues to grow, it likely will take on many

more forms which may or may not reflect the future of AI literature proposed here. There is, of course, only so far a Humanities thesis can go in this regard. As readers likely know by now, this thesis has little to no investigation of machine writing or AIs from a computer science perspective. However, it is my hope that future research would leverage the work done in this thesis, and apply it in more scientific contexts. Computer scientists have often experimented with training AIs or algorithms to create texts, yet focused on simulating human forms (Riedl, 2014; 2016; Harmon, 2015; Yan, 2017). While I in no way wish to discourage these efforts, I hope that, by exploring the poetics unique to machine writing, some of these practitioners may shift their work towards uncovering a sort of AI-driven literature that focuses on its own uniqueness, rather than its simulation of the human.

As mentioned in this thesis' Introduction and in Chapter 1, there are many other intersections between code and art than just literature. While the poetics I propose throughout this thesis are focused on literature, future explorations may see the research move into other spaces. For instance, the *Benjamin* AI that began as a script-writing bot has now moved into many other aspects of film production (Machkovech, 2018). Future scholarship could explore how the poetics described in this thesis may apply to, and be challenged by, other artistic mediums such as films or videogames.

In addition to the limitations of this thesis' research with regards to medium, I understand that some readers may be concerned that chapters 1 and 6 feature little work by women and non-binary individuals. I understand these concerns. Despite the valuable women and non-binary individuals in machine writing both past and present, patriarchal, and at times misogynist views have dogged the genre, much like in traditional literary circles. OuLiPo, by Harry Mathews' own admission, had very few women in its earlier days, partially due to the "misogynistic streak" of cofounder Raymond Queneau (Henning and Mathews, 2014). As scholars of machine writing, we must always be aware of the prejudice that may be embedded in the genre. In the future, I hope that I and others will apply the research conducted in this thesis to a more diverse range of authors.

There are also avenues relating to AIs and literature that remain relatively unexplored by this thesis. Of most relevance is perhaps the likelihood for neural networks to play a larger role in the generation of literature and other art. A predominate example of this shift is Disney Research's work into building a neural network capable of evaluating story quality, with the

ultimate intention being a narrative generation system that could evaluate its own work (Wang, Chen & Li, 2017, p. 1). While the ability to evaluate stories or narratives is not the same as generating them, surely such an understanding would be a vital tool for any budding AI novelist. Others have suggested that teaching AIs how to understand stories would allow for them to learn social and cultural values, in the same way humanity passes down our own values and beliefs through stories (Riedl & Harrison, 2016). As accessibility and usage of neural networks grows, then the themes and observations discussed in this thesis could likely be applied to the texts that result. Indeed, perhaps it will be one of these neural networks that authors the first true text of AI literature. In the future, we may see groups such as the Critical Art Ensemble, who have used everything ranging from art installations to biotech as artistic mechanisms for political commentary (Critical Art Ensemble, n.d.), employing AIs to create political statements.

Other scholars have also speculated as to the form computational – including AI – literature may take in the future. Jonhston's views are far more radical than my own, but still stem from a place of speculation based on contemporary forms. Jonhston suggests that humanity may instead be confronted by literary entities, beings that are essentially comprised of language, and who may respond to us as we read them (Jonhston, 2016, p. 195). Given the rise of social media bots as a form of poetic expression, who themselves are essentially automata comprised solely of language, Jonhston's predictions may prove true.

As stated in this thesis' Introduction, I am not claiming my investigations here to be solid predictions of what "strong" AI literature will be like. Many of the texts explored in this thesis are interested in the relationship between human and machine, and this undoubtably informs their poetics. It is just as likely that AIs may be uninterested in this relationship, instead forging on in paths unseen. Alternatively, perhaps the critics I argue against, such as Swirski, will prove correct in their machine-cum-human predictions. The mapping, avoiding and noisy poetics that have driven this thesis may indeed be of little relevance when we are faced with AI writers that defy the black tarantulas and cyborg authors this thesis explores. However, given the resilience of machinic themes that resonate from the *I Ching* to *OuLiPo* and *The Policeman's Beard* to *thelibraryofbabel.info*, complete rejection seems unlikely. Perhaps the themes and poetics machine writers develop now shall be the gifts they pass to the algorithmic colleagues that lie beyond the AI Literature Frontier.

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