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The Machine Starts: Computers as Collaborators in Writing

While I was preparing this paper, the 11-year-old I live with asked me what I was doing, and I told him I was preparing a presentation about how great machines are at telling stories. "How can machines tell stories?" he asked incredulously. I realised that should have been my title! I originally chose to reference E. M Forster's short story, 'The Machine Stops' in my title because I think it is necessary to invoke at once the dystopian vision that the idea of storytelling machines conjures. The idea of sentient machines - which surely they must be to compose tales - is popularly horrific, alienating, and dangerous. Intelligent machines always turn out to be evil. Often popular adaptations of this trope present clear lines between human and nonhuman 'intelligences', thereby permitting a war between them in which the happy outcome is the one in which the unfeeling machines are vanquished.

Forster's story is dystopian and has the contours of such an ethical boundary, but is more subtle, exploring the way in which the humans who inhabit the machine world are shaped by its demands and imperatives. A transgressing wanderer reaches close to the surface of the subterranean world of the machines, and later reports:

"There was a ladder, made of some primæval metal. The light from the railway fell upon its lowest rungs, and I saw that it led straight upwards out of the rubble at the bottom of the shaft. Perhaps our ancestors ran up and down it a dozen times daily, in their building. As I climbed, the rough edges cut through my gloves so that my hands bled. The light helped me for a little, and then came darkness and, worse still, silence which pierced my ears like a sword. The Machine hums! Did you know that? Its hum penetrates our blood, and may even guide our thoughts. Who knows! I was getting beyond its power. Then I thought: "This silence means that I am doing wrong." But I heard voices in the silence, and again they strengthened me." He laughed. "I had need of them. The next moment I cracked my head against something." (Forster, 1909)

I love the idea that the all-pervasive rumble of the machine is so constitutive of life that it withdraws from consciousness even as it guides our thoughts, and I'm going to return to the idea that how we think is shaped by the machines we live

with. First though, I'm going to quickly talk about some work I've been doing with the digital writer, Tim Wright. In a project called '*Hauntology*', we've been exploring how we can create interactive and participatory narratives using a combination of poetry, software, antique objects and digital sensors and circuits - and increasingly now - walking. In one piece, a chest of drawers was 'haunted' by the spirits of its previous owners. A user could access snippets of their lives by interacting with the chest of drawers and objects on and in it, as well as eventually 'haunting' it themselves with the sounds they left behind for the next users to hear.

We're currently exploring how we can use an old wooden box, wired up with an audio device and some sensors, to act as the focal device for a walking, talking, poetic experience based on the poetry of Thomas Hardy and the geography of the outskirts of Dorchester. In this we are trying to compose a narrative experience which is absorbing, authentic, haunting and provocative - out of antique bric-a-brac, digital sensors and media, physical space, sounds, smells, scenes, embodied and interpersonal interactions, and both reading and writing poetry. To this end I've been experimenting with wiring electronic devices into old wooden boxes.

One of the things I've noticed about the process is the feeling that the electronic systems and circuits, and the antique wooden boxes and drawers, are all exerting their own influence on the proceedings. They only allow certain sorts of behaviours and affordances to get the go-ahead. At first I thought this is an artefact of my own imprecision and inexperience. The further I get, though, the more I'm sure that the objects I work with have intentions of their own. Just as a sculptor seeks to find the form already within the matter at hand, as if discovering the spirit in the material, so I am collaborating with the devices I coerce and adapt to perform as they want to, as though I am obeying a ghost in their machine.

I'm now afraid that I'm sounding crazy, so I want to run through a quick and very partial history of writers collaborating with devices, to see if I'm alone in my craziness. I'm thinking here about the production of textual artefacts through the action of some sort of device - something I'm therefore going to call a *device-oriented narrative* - produced by some sort of rule or algorithm or heuristic process. I think this is a fairly good, low-level definition of a 'writing machine' - an apparatus or assemblage which performs some sort of function on the raw materials of textual production.

Here's an example of an electronically produced poem:

"Sentences begins.
money must
Sentences
Parsing

Sentences
Sentences
Sentences for love forsaken."

(Hartman and Kenner, 1995)

Nick Montfort explains the provenance of this piece of text, taken from a book by Hartman and Kenner, "Sentences":

"To write Sentences, Hartman and Kenner took 457 19th-century "Sentences for Analysis and Parsing, Thayer Street Grammar School" and providentially generated an intermediate text, using Claude Shannon's Markov chain technique as implemented in TRAVESTY by Hugh Kenner and Joseph O'Rourke. The resulting text was corrected and used as input to Hartman's program DIASTEXT, which carried out diastic selection as developed by Jackson Mac Low." (Montfort, 2008)

I don't want to dwell on the detail of the particular processes that were used to produce these texts - just to note that Montfort's description illustrates very clearly the notion that a non-trivial operation has been performed to produce the work: the raw input is worked on in some way to produce a text at the end. In this case at least two sets of iterative actions were performed on the input to produce strangely evocative words. This therefore is a machine text.

I want to draw a distinction here from what Espen Aarseth has refered to as a 'cybertext' - a text which requires work on the part of the reader to traverse it (Aarseth, 1997). I want to think of texts which require some act of delegation by the writer to a machine to produce them. We could get horribly metaphysical about what constitutes mechanism, machinism and what does not. Is a pen a machine? A typewriter? While it is tempting to say that in the term 'machine' I exclude devices which merely reproduce mechanical extensions of the writer's actions, this may become a moot point as we proceed. Katherine Hayles in *How We Became Posthuman* (1999), deals with the difference, for example, between a typewriter and a computer by noting the non-linear disruption that occurs when dematerialisation is introduced into the machinic action. I want to avoid this distinction, as there are perfectly good examples of writerly delegation that can occur within entirely material parameters.

I'm going to go with Richard Sennet's understanding of the machine in *The Craftsman* (2008), which I read as an intermediary device between the hand of the craftsman and the work itself, which effects some non-trivial transformation. This allows me to include devices such as horoscopes and Tarot cards, runes and tea-leaves, dice and difference engines, as well as electronic circuits, random algorithms, neural networks and artificial intelligences.

As the inclusion of Tarot hints, divination or possession by a deus ex machina seems to have a provenance in machine thinking. The 'I-Ching' was not only a repository of confucian wisdom, but a device for answering questions. Aarseth describes it thus:

"The I Ching is made up of sixty-four symbols, or hexagrams, which are the binary combinations of six whole or broken ("changing") lines [...] A hexagram [...] contains a main text and six small ones, one for each line. By manipulating three coins or forty-nine yarrow stalks according to a randomizing principle, the texts of two hexagrams are combined, producing one out of 4,096 possible texts. This contains the answer to a question the user has written down in advance (e.g., "How much rice should I plant this year?")." (Aarseth, 1997)

From a European, humanist point of view, there is no particularly significant difference between a blind algorithm and the pronouncements of oracles and fortune-tellers - both are equally meaningless, and in the post-Enlightenment mind it is difficult to think otherwise. Educated people are supposed to scorn horoscopes and prophecies. Yet this adoption of a rational, materialistic ontology doesn't extend to our celebration of the transcendence of human agency and intelligence, with which we persevere in cherishing against the blind heuristic principle of automatons.

The automative principle of composition is evident in the work of Raymond Roussel, such as in *Locus Solus* (1914). Although after his death he inspired the OuLiPo writers and the nouveau roman, during his lifetime, after some initial popularity amongst the surrealists, he was largely ridiculed and certainly critically panned. His works are very unusual, as can be gleaned from this account of his composition technique from John Ashbery:

"Sometimes he would take a phrase containing two words, each of which had a double meaning, and use the least likely ones as the nucleus of a story. Thus the phrase 'maison á espagnolettes' ("house with window latches") served as the basis for an episode in Impressions of Africa about a house (a royal family or house) descended from a pair of Spanish twin girls. [...]

"Just as the mechanical task of finding a rhyme sometimes inspires a poet to write a great line, [...] "rhymes for events" helped him to utilise his unconscious mind. " (Ashbery, 1995 [1962])

The French surrealist writer Michel Leiris suggested that Roussel is tapping into an ancient tradition of eliciting myths from words, seeking out the 'disease of language', which is the source of mythology or collective unconscious." (ibid) Here, though Leiris is still perhaps seeking to legitimise the text for its inner human truth, its interpretation of the human unconscious. The text may be unconventionally produced, but its defender still seeks to recuperate it into the

realm of human desires, motives and meanings, against the criticism that the work is a joke of no obvious inherent merit.

Similar recuperations might be made of other device-oriented narratives. In the 1920s the Dadaist Tristan Tzara, cited by Burroughs and Gysin later as an inspiration for their employment of the composition algorithm called 'the cut-up', apparently started a riot by pulling a poem out of a hat. In his dada manifesto, his wrote:

"TO MAKE A DADAIST POEM

Take a newspaper.
Take some scissors.
Choose from this paper an article of the length you want to make your poem.
Cut out the article.
Next carefully cut out each of the words that makes up this article and put them all in a bag.
Shake gently.
Next take out each cutting one after the other.
Copy conscientiously in the order in which they left the bag.
The poem will resemble you.
And there you are - an infinitely original author of charming sensibility, even though unappreciated by the vulgar herd.

(Tzara, 1920)

It is difficult not to see the dada movement and Burroughs' later adoption of the cut-up as much a political gesture as one of literary exploration - though this was certainly an ingredient in Burroughs' extensive use of it throughout novels like *The Soft Machine*, *Cities of the Red Night* and others. Burroughs describes it in 1961:

"The cut-up method brings to writers the collage, which has been used by painters for fifty years. And used by the moving and , still camera. In fact all street shots from movie or still cameras are by the unpredictable factors of passersby and juxtaposition cut-ups. And photographers will tell you that often their best shots are accidents . . . writers will tell you the same. The best writing seems to be done almost by accident [...]

"Take any poet or writer you fancy. Here, say, or poems you have read over many times. The words have lost meaning and life through years of repetition. Now take the poem and type out selected passages. Fill a page with excerpts. Now cut the page. You have a new poem. As many poems as you like."
(Burroughs, 1961)

The casual abundance of poetry produced this way directly challenges the idea that a specially gifted and inspired writer is the essential ingredient in the writing - all that is necessary is a heuristic device and some raw materials on which to act. The results are often extremely powerful, as any reading from Burroughs' work will attest:

"Pan God of Panic piping blue notes through empty streets as the berserk time machine twisted a tornado of years and centuries - Wind through dusty offices and archives - Board Books scattered to rubbish heaps of the earth - Symbol books of the all-powerful board that had controlled thought feeling and movement of a planet from birth to death with iron claws of pain and pleasure - The whole structure of reality went up in silent explosions - Paper moon and muslin trees and in the black silver sky great rents as the cover of the world rained down - Biologic film went up.. . "raining dinosaurs" "It sometimes happens. . .just an old showman" Death takes over the game so many actors buildings and stars laid flat pieces of finance over the golf course summer afternoons bare feet waiting for rain smell of sickness in the room Switzerland Panama machine guns in Bagdad rising from the typewriter pieces of finance on the evening wind tin shares Buenos Aires Mr. Martin smiles old names waiting sad old tune haunted the last human attic." (Burroughs, 1961)

The production of literary texts through machinic devices seems to proliferate in the middle of the 20th century. Writers like Barthelme, Beckett, Pynchon, Vonnegut, Robbe-Grillet, Perec and Calvino all produce texts which can be said to have been written with the aid of a heuristic device in the tradition of Roussel and Tzara. Often they are consciously political - David Porush in his work on cybernetic texts named after Burrough's novel, *The Soft Machine*, argues that such fiction:

"...far from being representative of a class of fiction in its decadence, is the most meaningful and hopeful sort of fiction. It cannot as a body be understood without constant reference to its source in a highly technologised society. For that very reason, however, it has the power to invent a new way of seeing, it offers a new language, and along the way it tells a fine, often amusing, often grim story about how far along we are." (Porush, 1985)

This odd combination of decadence and Brechtian self-reference and estrangement is also reminiscent of the flâneur and the psychogeographic movement: Benjamin's flâneur walked, either to revel in decadence, or to ambiguate the scopic regimes of the city's imperative to consume. No doubt, as in the situationist dérive and later psychogeographic texts and actions, there is an important emancipatory element: situationists walked to resist a 'world moving away in to representation'. The algorithmic obedience of tracing out a route that is arbitrarily pre/pro-scribed, but through the elective and playful devices of our own choosing, is actually, (ironically), a way to reassert the agency of the human and the individual against a machinic world of capital and convention.

However I'd like to go much further than Porush goes. He argues that one of the tropes of cybernetic fiction is that of self-dismantling. This is a deconstructive move, and resonates with the late 20th century concerns of continental philosophy, which seeks to dislodge the layers of meaning that stratify human existence in order to bring to notice the complex shifting network of linguistic and textual currents which inform our lives and institutions. However, I'd like to go further than seeing cybernetic texts and device-oriented narratives as merely deconstructive.

Consider that, even though we accept the premise of the intentional fallacy, we still privilege human intentionality as both qualitatively different from and somehow better than the nonhuman world of relations. So, even though we accept the notion that a text might be a device which can surrender novel meanings and effects which the author didn't intentionally encode there, we still find it hard to accept that an algorithmically generated text could offer anything of equal value: note that we still conventionally attribute the richness of a text, and its capacity for renewed interpretation, to the skill of its author - to have written something that 'transcends' the finitude of its human creator.

As I've suggested, we have tended to think of automatically produced texts as somehow lesser than those originated by acts of human imagination alone. It is with this tendency that we also consider the possibility of artificial intelligence as a watershed: the achievement of machine consciousness will be equivalent to lifting those machines up to some lofty, hard-to-reach transcendental threshold which makes them finally equal to humans. I'd prefer to see the problem from the other side, and wonder what it is we think is so different about human agency that separates us from the rest of the universe. This is not to reduce humans to mindlessness; Zizek puts it:

"It is here that the "reductionist" project goes wrong: the problem is not how to reduce mind to neuronal "material" processes [...] but, rather, to grasp how mind can emerge only through being embedded in the network of social relations and material supplements. In other words, the true problem is not "How, if at all, could machines IMITATE the human mind?," but, "How does the very identity of human mind rely on external mechanical supplements? How does it incorporate machines?" (Zizek, 2008)

This is not just deconstruction (in which a philosophy of consciousness gives way to a philosophy of linguistics and signification), but a shift towards "placing humans and nonhumans on an equal footing". To go further then, we have to re-equate humans with the menagerie of other things in the world, the nonhuman - what object-oriented ontologists have called a flat ontology.

Levi Bryant has outlined a book-project called *The Domestication of Humans* in which he considers the way that plants and microbes have transformed human beings:

"The whole point of such a project, of course, is to develop enhanced techniques for thinking in terms of flat ontology. When posing questions in the humanities our tendency is to think in terms of unilateral determination. We talk about humans structuring reality through their perceptions, concepts, and signs, treating the process of structuration as proceeding from the human towards a sort of gooey chaos that then gets structured by the human. Flat ontology calls for bilateral determination, where determination doesn't simply run from human to world, but where all sorts of other entities structure humans and societies as well." (Bryant, 2010)

Bryant derives this notion of a flat ontology alongside Graham Harman, who in turn cites Latour's *Irreductions* as a breakthrough in terms of escaping the realm of the human. Adrift on a sea of other agents and irreducible entities, Harman argues that we should start to rethink the bustling nature of the world of objects, amongst whom the human object is a mere one among many:

"Even as the philosophy of language and its supposedly reactionary opponents both declare victory, the arena of the world is packed with diverse objects, their forces unleashed and mostly unloved. Red billiard ball smacks green billiard ball. Snowflakes glitter in the light that cruelly annihilates them, while damaged submarines rust along the ocean floor. As flour emerges from mills and blocks of limestone are compressed by earthquakes, gigantic mushrooms spread in the Michigan forest. While human philosophers bludgeon each other over the very possibility of "access" to the world, sharks bludgeon tuna fish and icebergs smash into coastlines.

"All of these entities roam across the cosmos, inflicting blessings and punishments on everything they touch, perishing without a trace or spreading their powers further, as if a million animals had broken free from a zoo in some Tibetan cosmology." (Harman, 1999)

Andrew Pickering considers the consequences of putting human and nonhuman agency on the same footing. His work *The Mangle of Practice* (1995) looks at the way that scientific work proceeds in practice, and argues that far from being the logical, deductive unfolding of evidential knowledge, this picture is a retrospective portrait imposed on a messy sequence of stumbling events in which human goals have strived and struggled with the material agency of machinic experimentation. Work of this kind (and I argue that there is a direct parallel here to the way that writers write and texts are produced) is the product of a mangling of ideas and forces, machines and hunches, objects and products. This is a dance of agency between the human and nonhuman, in which such apparently crucial phenomena

as human intentionality emerge from the interplay of possibilities and events, "brought to heel by the cultures in which they are situated":

"Scientists do not simply fix their goals once and for all and stick to them, come what may. In the struggles with material agency that I call tuning, plans and goals are at stake and liable to revision. And thus the intentional character of human agency has a further aspect of temporal emergence, being reconfigured itself in the real time of practice, as well as a further aspect of intertwining with material agency, being reciprocally redefined with the contours of material agency in tuning." (Pickering, 1995)

So I want to conclude by suggesting that I was right to feel that my machines are trying to have their own way. Me and my machines are, to use Pickering's terms, tuning each other to our own 'agenda'. We are both devices which perform machinic captures of input material and transform them into artefacts which, in Tzara's phrase, resemble ourselves. So the computers, circuits, dice, algorithms, typewriters, pens - and even the words themselves - are cybernetic machines with which we are forced into collaboration and partnership, rather than mastery.

Italo Calvino confirms this from his own experience of writing:

"Literature as I knew it was a constant series of attempts to make one word stay put after another by following certain definite rules; or more often, rules that were neither definite nor definable, but that might be extracted from a series of examples, or rules made up for the occasion - that is to say, derived from the rules followed by other writers. [...] The "I" of the author is dissolved in the writing. [...] Writers, as they have always been up to now, are already writing machines; or at least they are when things are going well. [...] And so the author vanishes - that spoiled child of ignorance - to give place to a more thoughtful person, a person who will know that the author is a machine, and will know how this machine works." (Calvino, 1967)

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