Psychotechnographies: Why All Machines Are Imaginary Machines

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As I have thought about various kinds of imaginary machines, teleportation machines, perpetual motion machines, cyberneiric machines, influencing machines, time machines, and other devices yet to come into existence yet flourishing in imagination, I have become more than ever convinced that there is a continuing work of imagining involved in all machines and indeed, that all machines are in fact imaginary machines. By this, of course, I do not mean that no machines in fact exist. I mean that the acts and arts of imagining, and the spectrum of comportments and affective investments they convoke, are essential to the ways in which machines are 'existed', in Sartre's transitive usage – that is, made to exist, brought to and kept in existence, made livable, and even, often, lovable. I have the following reasons for considering machines as imaginary, or seeing the imaginary dimensions of machines as essential and irreducible.

1. All machines are contingently imaginary because all machines need to be imagined. Machines must be imagined not just as part of the process of their invention and design, but as part of their habituation and use. This is true because machines have to be designed, engineered and maintained, but also because we need to learn their use and to adapt and engineer ourselves in order to make use of them.

2. Consequently, machines are also imaginary because of our strong investments in them. This is my reason for seeing all technographies, the ways we write and picture machines, as suffused with affect, and so therefore as psychotechnographies. The feelings we have about machines – as it may be, rapture, fascination, awe, frustration, boredom, rage, terror, even at times a kind of tenderness or pity – are not only intense but also complex, and for this reason are also the subject of unremitting work: we not only have feelings about the workings of machines, we also undertake a kind of feeling-work – like Freud's dream-work, and joke-work – or affect-engineering. Feelings are not just what connect us to machines, or give them a sort of adjectival aura or caption; machines are also what connect us to our feelings and the way in which we work on them and imagine them at work in and on us. We might borrow here the name of particular nineteenth-century apparatus, the polygraph, so-called because it detected and traced simultaneously many different kinds of physiological data – heartbeat, perspiration, respiration, etc. Perhaps machines, actual and quasi-actual, may all be thought of as polygraphs, ways of mediating and monitoring our states of feeling. When we speak of feelings, as opposed to thinking hard about them, we tend to assume that, unlike thoughts, we simply undergo, or even simply are them, rather than having them as representations. But the machinery of representation is in fact necessary to the ways in which our feelings exist, or are existed.

3. Our strong investment in machines has two dimensions. On the one hand, we want to explicate their workings, to work out how they work, thereby demonstrating our priority and superiority over them. On the other hand, we want those workings to be absolute and autonomous of us; we want them to be implicit or hidden. The last thing we do following the repair or maintenance operation is to replace the cover, whether of the car, television or computer. We image machines the better to imagine

them working without our needing to hold them in view. Machines are imaginary because we want to imagine them as independent of us.

4. As such, all machines are liable to become ways of imagining our own bodily and psychological mechanisms. All machines have the capacity to form a kind of self-image, of a machinery we cannot fully conceive or encompass, but is us in our ideally self-maintaining form. Machines provide ways of imagining the otherwise unimaginable workings of lungs, livers, immune systems, hormone cycles and nueral networks. They provide ways of imagining the unimagable machinery we take ourselves to be. Most importantly, machines allow us to maintain the ambivalence that enables us to be sure that we both are and are not machines.

5. All machines are avatars and adumbrations of ideas of an absolute machine, or an absolute idea of machinery. Just as Jürgen Habermas imagines all utterances as promises or proleptic fragments of an ideal speech situation, so every instance of the mechanical seems to be an anticipation of an ideal mechanical apparatus, that would work without limit or impediment. The absolute machine would transcend time and undo the Second Law – a perpetual motion machine is a machine for overcoming the fundamental imperfection of the machinery of the cosmos, namely that it is subject to time. The ideal or absolute machine would also be absolutely independent of our use of it, and independent too of any particular kind of embodiment. Humans are highly productive of such ideal or limitless machineries, which are at work in all logical systems, whether metaphysical or mathematical. Such machines would both emanate from and encompass us.

Ingenuity

Imaginary machines are not quite the same as imagined machines, though of course they can overlap. An imagined machine is an imaged machine, in which a machine that does not yet exist that is brought into a condition of discernibility, either in the eye of the mind or through some form of external description or visualisation. Such work of concrete imagining is an important, even a necessary part of the development of any machine. Indeed, one may say that the making of a machine begins when conception moves into contrivance, which must always involve visualisation, as the first stage of making actual. There are cogs in cogitation.

But an imaginary machine is something more than this. An imaginary machine is a fictive machine, not just one that has been postulated. Imaginary numbers, numbers expressed as the square root of a negative quantity, are different from imagined numbers, since they will never become actual as numbers. An imagined country might well turn out to be in existence somewhere; an imaginary country never could. The word 'imagined' is orientated towards the object to be imagined: the word 'imaginary' is orientated towards the work of imagining.

The two are delicately contrasted at either ends of a stanza of Shakespeare's *The Rape of Lucrece*, which evokes the way in which a painting of the siege of Troy provides synecdochic hints to be completed by the viewer's imagination:

> For much imaginary work was there:
> Conceit deceitful, so compact, so kind,
> That for Achilles' image stood his spear,

> Griped in an armed hand; himself, behind,
> Was left unseen, save to the eye of mind:
> A hand, a foot, a face, a leg, a head,
> Stood for the whole to be imagined. (Shakespeare 2007, ll. 1422-8, 224)

Shakespeare's 'imaginary work' does not mean that the work is not real, but rather that it is the work of and for the imagination. Indeed, we might say that Shakespeare's own evocation of this painting is imaginary as well as imagined, if only because it is given in words that make us imagine it rather than in pigment that would let us see it (that is, imagine we do). 'Imaginary work' hints not just at the work required to imagine something, but also at the possibility that that the work of imagining is a work that is itself *under imagination*, as we might say, on the analogy of the things, like roads or websites, that are described as 'under construction'. 'Imaginary work' makes us work at imagining the work of imagining. The imagining work gets to be imagined (needs to be), along with what it imagines.

The use of the word 'imaginary' as a noun, to mean a style or distinctive set of imaginative procedures, in phrases like 'the Gothic imaginary', the 'spatial imaginary', the 'oral imaginary' (LaBelle 2014), the 'transplant imaginary' (Sharp 2014) and even the 'technological imaginary' (Punt 2000), often partakes in this duality, since it will usually mean at once what is imagined and the way in which it is imagined, so at once the issue and the operation of imagining. When Michael Punt evokes the 'technological imaginary' of early cinema, for example, he means the set of social and economic conditions that make possible, in the sense of making it possible to imagine, the specific technological inventions and developments of cinema:

> innovations are not the outcome of an internal property of technology, but are the consequences of contingent responses to the conflicting imperatives of both individuals and groups relative to the material state of technical possibilities…[T]hese forces must be satisfactorily stabilised and integrated before a technology (whether at the level of the individual artefact or the general system) can arrive at an accepted cultural meaning which, in turn, is one of the preconditions for its social uses and economic success. (Punt 2000, 10)

This sounds very much like the account of a prior, priming mechanism which is required for the secondary mechanism that is the technology of film to be set going. The mechanism must be socially imagined, through a process that is imagined as itself a kind of mechanism.

So imaginary work is work that imagines itself in operation, indeed, imagines itself as an operation, as though it were itself a kind of imaginary machine, or machine of imagining. Perhaps this reflexivity is always at work when we imagine a machine, since in doing so we might always also be drawn to imagine the work of imagining itself. And to imagine this work, we will commonly draw on or dream up machines, devices, instruments, techniques and technologies of all kinds, imagining imagining for example as a process of drawing, shaping, projecting, breeding, brewing, weaving, etc.

The mixing together of machinery and imagination is paralleled in the family of words to which engine and engineering belong. Latin *ingenium* signifies an inborn genius, from *in + genere*, to engender or beget. By the middle of the sixteenth

century, the word *ingenious* starts to be used not just to mean possessing, wit, intelligence or good sense, but also to signify the capacity of invention, or giving rise to other things. At around the same time, it also starts to be applied to the contrivances themselves: so both an inventor and his invention might be called *ingenious*. The same movement of meaning is found in the word *engine*, which, from the 14th century meant artfulness and ingenuity, as in Gower's *Confessio Amantis*: 'Tho wommen were of great engyn' (iv. l. 2438). Chaucer's Parson tells us that 'Goodes of nature of the soule ben good wit, sharpe vnderstondynge, subtil engyn, vertu naturel, good memorie' (Chaucer 2008, 302), while St Cecilia, in the *Second Nun's Tale*, assures her brother-in-law Tiburce that God has three persons, just as 'a man hath sapiences three –/Memorie, engyn, and intellect also' (Chaucer 2008, ll. 338-9, 266).

The engine is both the contriving, the inborn quality of mind that gives rise to some contrivance and the externalised contrivance itself. The *Medulla Grammatice*, a collection of fifteenth-century Latin-English glosses in a manuscript in Stoneyhurst College, explains the Latin word 'machinosus' as 'ful engines' (MS Stnh A 1.10, 39 a/b). If the word engine has moved from the faculty to its material products, so the contemporary term *search engine* seems to have gone in the opposite direction, from material form to abstract operation. Nobody really has in mind any kind of material arrangement or contrivance when they use the term 'search engine', a term that is witnessed as early as 1984, but by around the middle of the 1990s was being used almost entirely for searching internet information.

The term 'engine' in this phrase has an oddly archaic feel, but may derive from the 'Automatic Computing Engine', a calculating machine designed by Alan Turing for the National Physical Laboratory in 1945 that has a claim to be the first computer. According to Michael Woodger, the term 'Automatic Computing Engine' was devised by John Womersley, superintendent of the Mathematics Division of the NPL (Copeland 2012, 37, 83), and it is assumed that this was in conscious homage to Charles Babbage's two calculating machines, the Difference Engine and the Analytical Engine, only the first of which was actually constructed (Campbell-Kelly 2005, 156). Turing is said to have despised Womersley, but agreed that the name was well-chosen (Numerico 2012, 177). The link with Babbage is suggested by the fact that one later researcher mistakenly referred to it as the 'Analytical Computing Engine', (Vowels 2012, 226). Turing's paper of 1945 refers to an 'Electronic Calculating Machine', nowhere alluding to Babbage, or to any sort of engine (Turing 1945).

The closeness of engines and ingenuity seems to have encouraged the formation of the portmanteau-word 'imagineer' in 1940s America, a usage which was appropriated by the Disney corporation, with reference in particular to theme-park entertainments. Disney's idea of Imagineering is related closely to the actualising of the magic of Disney movies in theme parks, first conceived by Disney in 1951, in order that 'visitors who stepped into this new park should feel as though they stepped into a movie' ('The Imagineers' 1996, 11). Disney set up a company called WED Enterprises (the initials standing for Walter Elias Disney) in 1952 to design and build Disneyland, the name being changed after the arrival of Michael Eisner and Frank Wells to the Walt Disney Company in 1984 to Walt Disney Imagineering. The term 'imagineering' may have been devised in the 1940s by the Aluminium Company of

America, who placed an advertisement in *Time Magazine* for 16th February 1942 that read:

> It takes a very special word to describe making aluminium cheap, making it versatile, finding totally new places to use it and then helping people use it where they should. In war times it takes a very special word indeed to describe, also, the ingenuity and daring that can make, almost overnight, three and four and five times as much aluminium as was ever made before, and make it cheaper than ever.

> IMAGINEERING is the word. What aluminium did for civilians, what aluminium is doing for our armed forces, what aluminium will do in the future, all come out of that one word. (Anon 1942, 59)

The advertisement concludes that 'Imagineering is letting your imagination soar, and then engineering it down to earth', implying that the engineering comes after the imagining, but there is room in the term for the idea that it is imagination itself and in the first place that is being engineered. Disney filed for copyright in the term in 1967, claiming first use of the term in 1962' (Kerzner 2014). Despite Disney's appropriation of the term, 'imagineering' has found employment elsewhere, for example in Serge King's *Imagineering for Health*, a book explaining the process of 'creating a state of health in yourself, using your own spiritual, mental, and emotional resources. "Imagineering" is the term I use for doing that, because it implies the process of building something with your mind' (King 1981, vii). The book offers training in the use of various tools, including the 'Tool of Imagination', the 'Tool of Motivation' and the 'Tool of Concentration' in order to prime and activate forms of self-healing.

Black Boxes

There is in every machine a tension between appearance and operation.

It is necessary for every machine to have workings, moving parts that may be distinguished from each other and the ways indicated in which those moving parts work on each other. And yet it seems to have become necessary, sometimes for the more effective operation of the machine, but more often as a more obscure kind of necessity, for those parts to be modestly obscured from view. It is this which seems to make all machines magical. Perhaps it is because all machines act through workings that must remain concealed for the machine to continue to work. That is, all machines seem allotropes of the concealed automaton that is the human body. The ghost hidden in the machine is the very soul of the machine, as this quality of being hidden or withdrawn from view.

There is a certain obscenity about a machine that operates in full view, with everything that should be off-scene drawn into the field of the visible. It is the obscenity of the body opened up to view, or the obscenity of the writing machine in Kafka's 'In the Penal Colony', at the end of which the machine that has been so immaculately described and demonstrated starts to vomit up its working parts:

> [H]e heard a noise from up in the Inscriber. He looked up. Was a gear wheel still causing trouble? But it was something else. The lid on the Inscriber was

lifting up slowly. Then it fell completely open. The teeth of a cog wheel were exposed and lifted up. Soon the entire wheel appeared. It was as if some immense force was compressing the Inscriber, so that there was no longer sufficient room left for this wheel. The wheel rolled all the way to the edge of the Inscriber, fell off, rolled upright a bit in the sand, and then fell over and lay still. But already up on the Inscriber another gear wheel was moving upwards. Several others followed—large ones, small ones, ones hard to distinguish. With each of them the same thing happened. One kept thinking that now the Inscriber must surely be already empty, but then a new cluster with lots of parts would move up, fall down, roll in the sand, and lie still.

The machine is an apparatus for making manifest, for exposition. Its aim is to make the condemned man, his crime and his sentence all identical, in a form that leaves nothing, as we say, to the imagination, by inscribing the judicial sentence as a corporeal sentence, in the body of the Condemned Man. But this making visible turns out to be dependent on the absence from view of the actual workings of the machine. The exposure of the machine somehow undoes all the work of the exposition, indeed, seems to make it palpable that there has been no machine at all, but only the fact of torture:

> once the last gear wheel had left the Inscriber, he had a new, even more unpleasant surprise. The Harrow was not writing but only stabbing, and the Bed was not rolling the body, but lifting it, quivering, up into the needles. The Traveler wanted to reach in to stop the whole thing, if possible. This was not the torture the Officer wished to attain; it was murder, pure and simple.

There is a simultaneous necessity, in the thing we call a machine, for the machine to be imagable yet imagined. Often this will mean that the machine will work best if its smooth operation can be monitored better by the ear than by the eye – the thrum of the washing machine, or the steady thud of the turbine, the smooth hum of the propeller. Henry James was soothed by the click of the typewriter operated by his secretary Theodora Bosanquet as he dictated, as though it were a guarantee of the smooth operation of the machine of his imagination, an operation which would be subject to disruption if he were actually to try to imagine it. Sometimes, it is useful to the functioning of a machine that it should operate in a sealed or invisible environment; but for the most part there is no mechanical advantage to having the working parts of the computer, the television, the automobile, hidden from view. The invisibility of the machine seems to answer to some ulterior kind of necessity, some desire for the machine to have to be imagined, or imaginary.

Machines, that is, operate on the principle of the black box, a contrivance where one can specify precisely an input and an output, without being able to specify precisely the process in the middle which results in the conversion.
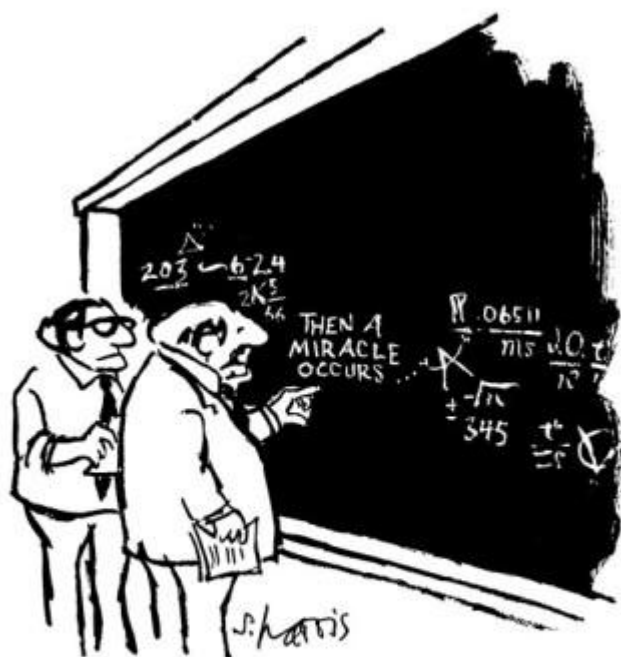
"I think you should be more explicit here in step two."

The machine which best displays this tension between display and concealment is the Mechanical Turk. This was a contrivance invented by Wolfgang von Kempelen in 1769, in which the mechanical figure of a Turk seated over a cabinet appeared to play games of chess. After having been displayed in a number of European cities, it was acquired in 1805 by a showman and engineer Johann Nepomuk Maelzel. Having sold the automaton, he repurchased it in 1817 and took it on tour in the United States. Despite the fact that von Kempelen was a maker of genuine automata, having to his credit a machine for producing vocal sounds by artificial means, and the fact that the Turk appeared to be able to play chess to the very highest standard – among its celebrity opponents were Napoleon and Benjamin Franklin – it was in fact, as many suspected throughout its career, a hoax, in that it was not a machine at all. The Turk was operated by a chess master, as it appears, in fact, a succession of chess masters through its long life, hidden inside the cabinet.

Edgar Allan Poe said of the machine that 'we find every where men of mechanical genius, of great general acuteness, and discriminative understanding, who make no scruple in pronouncing the Automaton a *pure machine*, unconnected with human agency in its movements, and consequently, beyond all comparison, the most astonishing of the inventions of mankind' (Poe 1836, 318). The machine is pure because it is supposed to operate without human intervention. It is invention without intervention, without anything coming between the machine and its operation.

There is no machine. And yet there is a machinery for the production of the conviction that a machine is at work. The machinery of the spectacle, the making

visible of the machine, is all intervention, in that it is insinuated between the seer and the seen. Poe carefully explains the procedure by which the machine is presented.

> Maelzel now informs the company that he will disclose to their view the mechanism of the machine. Taking from his pocket a bunch of keys he unlocks with one of them, door marked 1 in the cut above, and throws the cupboard fully open to the inspection of all present. Its whole interior is apparently filled with wheels, pinions, levers, and other machinery, crowded very closely together, so that the eye can penetrate but a little distance into the mass. Leaving this door open to its full extent, he goes now round to the back of the box, and raising the drapery of the figure, opens another door situated precisely in the rear of the one first opened. Holding a lighted candle at this door, and shifting the position of the whole machine repeatedly at the same time, a bright light is thrown entirely through the cupboard, which is now clearly seen to be full, completely full, of machinery. (Poe 1836, 320)

Maelzl follows conjuring convention in seeming to act out a kind of logical demonstration, in order to convey to the spectators the conviction that they have 'beheld and completely scrutinized, at one and the same time, every individual portion of the Automaton' (Poe 1836, 320). Everything is laid open to view, leaving the conclusion that the machine consists of nothing but its machinery. In fact, as Poe goes on to demonstrate, the device contains a chess player, who is trained to move his body into different postures as different doors are opened which allow the illusion to be given that the machine is machinery and nothing but machinery. This includes mirrors 'so placed to multiply to the vision some few pieces of machinery within the trunk so as to give it the appearance of being crowded with mechanism' (Poe 1836, 323). The 'direct inference' Poe makes from this is 'that the machine is not a pure machine. For if it were, the inventor, so far from wishing its mechanism to appear complex, and using deception for the purpose of giving it this appearance, would have been especially desirous of convincing those who witnessed his exhibition, of the *simplicity* of the means by which results so wonderful were brought about' (Poe 1836, 323).

In all of this, Poe himself relies upon what he calls 'demonstration'. That is, he is following, and mimicking, the logic of the original demonstration. 'It is quite certain', he writes, 'that the operations of the Automaton are regulated by *mind*, and by nothing else. Indeed this matter is susceptible of a mathematical demonstration, *a priori*' (Poe 1836, 319). But where Maelzl's demonstration, itself a kind of theatrical apparatus, is designed to produce the idea of a machine, Poe's demonstration is designed to show that not everything has in fact been laid open to view. Poe aims to demonstration the machinery of dissimulation, the machinery by which the Mechanical Turk convinces us that it is a machine.

But this means that there is in fact a deeper analogy between Maelzl's operation and Poe's. In both cases, demonstration is used to show definitively that there is nothing of what we interestingly call the 'workings' of the machine that cannot be seen, and yet that there is also something that cannot be seen, namely how the machine works. For Maelzl, this is a machine that works in secret; for Poe, it is the secret that it is not the machine that works at all, but rather a mind. The Maelzl-machine and the Poe-machine are meshed together in an act of writing that must itself be a 'pure machine' of logical inference if it is to demonstrate that the machine is in fact pure mind – or rather, must convince its reader that it is such a machine, and not in fact the staging

of its demonstration. In both cases, the machine is at once laid open to view, and operates in concealment.

There is an even more surprising form of black box concealment, in which the operation of the machine is not hidden from view, but is rather exhibited, yet with a complexity that seems entirely incomprehensible. This illegibility allows the machine to be at once visible and withdrawn from view: one sees but does not know or cannot say with it is that one sees, meaning that once cannot be sure whether one is viewing hoax or authentic artefact. Some of the most mysterious machines found in art are of this kind, for example the strange apparatus devised by the inventor Canterel, which combines a machine for instant and painless extraction of teeth with an aerial device able to predict and exploit every change of wind direction, the whole operating to effect constant adjustments to a mosaic of discarded teeth of different colours (Roussel 1983, 24-36).

In 2005, Amazon borrowed the name for a system it made available to bring together employers and workers on Human Intelligence Tasks that human beings find relatively easy, but are difficult or expensive to automate, such as classifying images, editing and transcription of podcasts, and even searching image databases for traces of missing persons. The system was originally devised by Amazon in order to use individual workers to identify which of the millions of pages produced by Amazon were duplicates, a job which surprisingly was difficult to automate. In this kind of crowdsourced microtasking, the workers are the 'Turks', or 'Turkers', who enable the machinery to work. They are, in the words of Jeff Bezos, 'artificial artificial intelligence' (Cushing 2013, 2). Turkers earn tiny amounts of money, which makes it odd that so large a proportion of them should be from the US (the other largest source of Turkers is India, which makes a little more economic sense). In fact, Mechanical Turk is a symptom, a largely hidden one, in that it is not much known about or discussed, of a much larger and more structural dependence of artificial systems of intelligence on human ones. Many internet businesses are finding ways to make use not of labour time but of the data by-products of our other activities. We imagine a world in which more and more human actions and interactions are replaced by automated ones. A large part of the reality is that we are in fact working the machine, only, unlike the inmate of Malzl's apparatus, we don't know how or even that we are doing it. This then becomes artificial artificial artificial intelligence, the black boxes that dissimulate the work forming multiple encapsulations.

This machine is to him

It may appear to us today that we have moved from actual to imaginary machines. Vannevar Bush published in 1945 an essay entitled 'How We May Think', in which he imagined a desk that would operate as an automatic retrieval system for microfilmed documents that would constitute a personal archive for an individual:

> If the user wishes to consult a certain book, he taps its code on the keyboard and the title-page of the book promptly appears before him projected onto one of his viewing positions. Moreover he has supplemental levers. On deflecting one of these levers to the right he runs through the book before him, each page in turn being projected at a speed which just allows a recognizing glance at each. If he deflects it further to the right, he steps through the book ten pages

at a time; still further, 100 pages at a time. Deflection to the left gives him the same control backwards. (Bush 1945, 121)

The illustration makes it clear that this machinery is imagined as a microfilm reader. Bush suggests that this machine would allow, not just for the rapid access to a huge archive of microfilmed materials, but also for the construction of networks of association, allowing whole complexes of notes to be rapidly retrieved, though he offers no account of how machine would scroll through to the appropriate position on the microfilm.

We no longer need to employ or even imagine the machinery necessary for such a machine to operate, though there are faint, skeuomorpic resemblances in the idea that a computer screen provides a 'desktop' and in the controls that allow us to scroll in various directions.

It seems plausible to suggest therefore that our idea of machines moves from a hard and visible condition to a soft and virtual one; first we invent machines, and then we multiply them in metaphors. But this may not explain things as well as we think. Reading across the page, as well as down the central column, we see an example of the associative cluster of which Bush speaks, as well as a hint of the multimedia machinery required for it – with its deployment of text, image and the image-text of typographical design. Alongside the condensed version of Bush's article in *Life* for 10th September 1945 are advertisements for a range of products designed to make life easier and more productive, including the Mifflin 'isopropyl alcohol rubbing compound', offered as 'The National Rub-Down', Jeris Hair Tonic, Luden's menthol cough-drops to 'chase away that "smoky taste" between smokes', and an Automobile Users' Guide which offers '196 practical suggestions that will help you get better gas mileage, longer tire life, better performance, lower upkeep costs'. Most intriguing of all is the following advertisement, accompanied by pictures of a mother offering laxative in a spoon to a male infant in various grades of willingness to swallow it. I give its legend in full, though with typography slightly adjusted:

Do you believe in spanking a child!

WHEN HE THROWS A TANTRUM?... A good walloping won't help if the tantrum is caused by *fright!* If your child shows signs of fear when you try to give him a laxative – be careful! It may be that the medicine tastes bad or that it upsets him afterwards. You'll have to admit, yourself, that SOME LAXATIVES ARE TOO STRONG!

WHEN HE SULKS?... Before you reach for the hair-brush, remember that sulking is often a child's way of avoiding something unpleasant – like the "sissy" laxative some parents give their children. Unfortunately, some of these supposedly mild medicines may upset a child, without giving the relief that's needed. The fact is that SOME LAXATIVES ARE TOO MILD!

SPANKING WON'T BE NECESSARY ... if you treat the youngsters to Ex-Lax when they need a laxative. Children really enjoy taking Ex-Lax, because it tastes so good ... just like fine chocolate! And mothers like the way Ex-Lax acts – effective, but, oh so gentle! Not too strong, not too mild... EX-LAX IS THE HAPPY MEDIUM! (114)

We may seem to have moved beyond the fantasy of the regulated economy of bodily evacuation that once seemed to be an almost universal concern, though it survives in marginal enthusiasms like colonic irrigation and sexualised enema-discipline, but there can be no doubt of its primacy at this point. So there are various kinds of machine interlocking in the space of this page; the abstract, cogitative mechanism being described by Bush, the procedure for regulating corporeal evacuation, along with its means of modulation through excitation, punishment and reward, and the textual association-machinery of the magazine itself, which Bush's article seems only just to have stumbled on. James Joyce's *Ulysses* anticipates just this kind of textual-corporeal machinery in his account of Bloom reading on the lavatory and the wondrous account he gives of the advert for the Wonderworker in Bloom's drawer:

> It heals and soothes while you sleep, in case of trouble in breaking wind, assists nature in the most formidable way insuring instant relief in discharge of gases, keeping parts clean and free natural action, an initial outlay of 7/6 making a new man of you and life worth living. Ladies find Wonderworker especially useful, a pleasant surprise when they note delightful result like a cool drink of fresh spring water on a sultry summer's day. Recommend it to your lady and gentlemen friends, lasts a lifetime. Insert long round end. Wonderworker. (Joyce 2008,)

So the first machine is not in fact the actual machine, but the imaginary machine of the human economy. This is made explicit in Arnold Bennett's *The Human Machine* of 1908. Bennett begins by evoking the passionate involvement of the inventor

> They are continually interested, nay, enthralled. They have a machine, and they are perfecting it. They get one part right, and then another goes wrong; and they get that right, and then another goes wrong, and so on. When they are quite sure they have reached perfection, forth issues the machine out of the shed--and in five minutes is smashed up, together with a limb or so of the inventors, just because they had been quite sure too soon. Then the whole business starts again. They do not give up –that particular wreck was, of course, due to a mere oversight; the whole business starts again. For they have glimpsed perfection; they have the gleam of perfection in their souls. Thus their lives run away. 'They will never fly!' you remark, cynically. Well, if they don't? Besides, what about Wright? With all your cynicism, have you never envied them their machine and their passionate interest in it? (Bennett 1911, 8-9)

Bennett identifies an envious longing for absorption in a perfect, or perfectible machine: 'have you not wished – do you not continually wish – for an exhaustless machine, a machine that you could never get to the end of?' (Bennett 1911, 10). In fact, Bennett urges his reader, every man does indeed possess such a machine – the machine that is himself:

> It has never struck you that you do possess a machine! Oh, blind! Oh, dull! It has never struck you that you have at hand a machine wonderful beyond all mechanisms in sheds, intricate, delicately adjustable, of astounding and miraculous possibilities, interminably interesting! That machine is yourself. (Bennett 1911, 10-11)

What is a human? A human is a creature who dreams of machines. *Homo mechanicus*.

The first thing that may be said is that not all humans are like this, and that, indeed, a broad distinction can be made between bad, cruel and lifeless people, of whom there are far too many, who are possessed in some unholy fashion by the idea of machines, and good, harmless, vulnerable, blessed people, of whom there are too few, who find machines menacing and dull and incomprehensible.

Humans, even and perhaps especially those who seem to loathe them, like D.H. Lawrence, are fascinated by machines and mechanisms; it is no accident that machines are often also thought of as toys and playthings. Perhaps this is because all machines seem to suggest some kind of state of exception to the rule that material things may be moved by other things but are not capable of moving themselves, are not, in other words, automata, in the early, exact sense of the word, that they move, or move by, themselves. We regard material things that move themselves as living creatures and are correspondingly intrigued by the anomalies we know as machines, which move by themselves and yet are not living. The intensity of this sense of anomaly has dimmed somewhat as a result of the fact that the word 'automaton' has actually come to mean something moved by some external force, rather than moving itself – thus, an automatic or automatistic response is one that is not in your conscious control, but rather one in which you are moved by some alien agency, or as a machine.

It is not possible to be neutral about machines, since the field of attitudes that surrounds the idea of machinery in general means that even one's neutrality will always in fact be highly charged. Machines are unfeeling, of course, you cannot hurt them, and they cannot care about the ways in which they hurt us, which seems to be precisely the reason why we spend so much time feeling such complicated, watchful things about them. Watchful, because it is important to prevent one's feelings about machinery from being contaminated by them; one must avoid at all costs one's feelings becoming mechanical, for this would of course make them no longer feelings at all. But how are we to prevent our feelings about machines becoming feeling-machines?

In a certain sense all living things can be regarded as putative machines, the mechanisms of which are invisible or difficult to imagine. But more importantly the fascination of the machine is that it rhymes so closely with our experience of ourselves, and in particular the fact that I can and must do what I do, think, wish, feel, move, without knowing how I do it. How do I make my fingers move over the keyboard and press the right letters to form these words? I just will it. But I have no idea how I will it, by which I mean I literally can conceive no image of what process I am actually setting on when I will an action. The most mysterious of these actions are mental operations. I know how to think, I can do it actively, directedly and sustainedly, sometimes for minutes at a time, well, let's say very nearly a minute, but how do I know how to do it, and how exactly do I do it when I do? I am less the ghost in the machine than the *persona ex machina*, the ghostly operator effect of an unimaginable machine.

One of the strange things about machines is that they are never self-sufficient. All machines are examples of machinery. We frequently speak nowadays of things that are machine-readable, but the reading of machines is itself a complex and fraught

procedure. A machine is a closed and finite thing, a proceeding that has a definitive beginning and end, because a machine is absolutely what it does. A machine is nothing more than its machinery, or mechanical action. Not only are all machines definitive in this way, this quality of identity between being and action may be the best definition that can ever be given for a machine. Such a quality is, however, always imaginary. For there is something in every machine that falls short or exceeds of this autogenic self-identity.

Shakespeare uses the word 'machine' just once. Polonius is reading out to Gertrude a letter of Hamlet's to Ophelia. Hamlet breaks off from the bit of doggerel he has been composing for Ophelia, protesting that he is '*ill at these numbers, I have not art to reckon my groans, but that I love thee best, most best, believe it*' (Shakespeare II.2, 246). The salutation with which he ends repeats this message of devotion: '*Thine evermore, most dear lady, whilst this machine is to him. Hamlet*' (*Hamlet* II.2, 246). Hamlet's words swivel between two meanings. 'While this machine is to him' is usually taken to mean, 'while this physical frame is his'. The Arden editors provide a full stop before the name with which Hamlet signs himself. But, even with this full stop, it is still possible to absorb the name into the sense of what immediately precedes it, thus: 'while this physical frame is to him "Hamlet" '; 'while this machine is what is understood by "Hamlet" '; 'while this body is the way in which Hamlet understands himself to be "Hamlet" '. Of course, alas, one must go further. For 'this machine' may refer, not only to the body that is performing the action which engrosses or composes it at this point, namely, writing a letter, it must, according to the logic of the machine, be taken as identical with that action. So '*this machine*' may be taken to refer to the action of writing itself, the action that takes itself to be an action of writing that expresses to Hamlet the idea of a machinery producing the idea of "Hamlet".

Perhaps in a sense, all machines are synecdoches or preliminary sketches for the absolute Machine, the machine that inhabits and animates human thought, the Machine that would be identical with thought itself. At that point of comprehensiveness, the Machine might just as well be thought of as God.

Machines work on their own, and something that works on its own, without meaning to, and without the power not to, seems to be just what we have in mind when we think of a machine. Machines are, as we say, *automatic*, they are literally self-moving, only by an immanent rather than transcendent will. So machines do not in fact move themselves, as the word *automaton* might suggest, since that would require some internal division plus relation between an active and passive aspect, but rather move *by themselves*, where the preposition *by* might be taken to suggest something like 'by means of themselves', or through their own agency. Machines seem to have an undivided as opposed to a divided reflexivity, a reflexivity without relation. A non-machine has an intent which may be separated from its action, it can be something other than what it does, whereas a machine just is what it does, without more; a machine just is its purpose in action. Thus, even when they involve self-monitoring and feedback mechanisms, machines are insensate, deaf, dumb and blind, purely objective. They may seem to know what they are doing, but they do not know that they are doing it. They have nothing, it seems, to do with us, precisely because they can have nothing essentially to do with themselves.

And then this is the very reason that they in fact have everything to do with us. Machines are mobile arrangements that have no idea of themselves. We, by contrast,

we unmechanical entities, entities taking themselves to be nonmechanical, are taken up with ourselves, and for that reason are also taken up by the idea of machines, as a way of giving us our idea of ourselves. Machines, which do not and cannot mediate themselves, mediate us to ourselves precisely through their immediacy, through the strange allure of the idea of the immediate they mediate to us.

This is the sense, or one of them, in which all machines are also media. We pass through the relay of the machine, the idea that the machine incarnates, in order to come to or upon ourselves. By helping us be sure of what we are not, machines help us *come to*, as we say – 'or rather from', as Beckett puts it. Because we are such incessant proxy readers of machines that cannot read themselves, and we write and read ourselves off from them by a logic of exception, we appear to ourselves *ex machina*, rendering ourselves machine-readable.

It is this reading and writing of ourselves via the reading and writing of machines that this investigation of imaginary machines is intended to allow. In imagining machines, we are able to assure ourselves we exceed or fall short of the condition of mere machinery, even as imaginary machines may nevertheless seem to edge us towards an ever more precise imaging of ourselves. Indeed, the imagining of ideal machines may be precisely the mechanism – a mechanism which is itself at once imaginative and imaginary – we need to give rise to ourselves. Imaginary machines are always formed by a machinery of imagination that they come to resemble.

The most potent imaginary machine of all, and perhaps the matrix of all other imaginary machines, is the Not-Machine, or machine-which-is-not-one, *ce machine qui n'en est une*, or, put more simply, Life. Life is the not-machine, which sheathes together two meanings of the Not-Machine: that which is not a machine, that which must be defined as beyond machinery, or of some different order altogether, and the machine that 'nots', that says no to the possibility that it is no more than a machine, a machinery for showing the limits and transcendence of the merely mechanical. The not-machine conjoins the negation of the machine and the machinery of negation. The not-machine is paradoxical and a machine for generating paradox, for it is at once that which refuses the idea that there are, and can only ever have been machines, and that which confirms it. The not-machine is the machine that is programmed to say 'I am not a machine'. When the choreographer's doctor declares to his patient at the beginning of *42nd St* 'Good God man, you're not a machine' he means that the choreographer should remember he is not possessed of infinite reserves and cannot push his body and nerves beyond what flesh will stand: in other words, he should remember that he is not in fact an imaginary machine, or the kind of machine he imagines himself to be. He must remember that he is in fact subject to physical limits, that he is, in fact, a machine.

My larger aim in reflecting on the importance of imaginary machines is to show that there must be something imaginary in all machines. This is the sense in which all machines may be said to be media, for they allow for a particular kind of mediation to ourselves, we seeming non-machines, of the idea of the machine. All machines are more or less imperfect surrogates or figurings of the perfect Machine.

So the history of technology tends toward and bends round into a kind of psychohistory, or perhaps rather a psychography of machines. Just as technography moves us from an emphasis on how we know machines to how we write them (verbally, visually, performatively), so psychography might be taken up with the ways

in which selves and selfhood are graphically mediated, with techniques and technologies being one of the principal ways in which this occurs. So technology – the idea of technology, the feelings engineered in the idea of technology – is the self's manner of writing, or making itself known to itself.

The history of the ways in which machines are both written *as*, and in themselves a writing *of* the idea of the machine, is also the historical generation of feelings (of desire and dread, for example, desire for the machine and dread of it, and so the desire of dread which may seem to protect against the dread of that desire). The history of dream machines is therefore also a history of the machinery we use to imagine the kind of dreaming, dreading thing a self might be. Accordingly, my proposition will be that every technography, insofar as it is of any interest to us, must also be a psychotechnography, and every psychology an implied or imaginary technology of self. The psyche comes between machines and writing; machines come between the psyche and its writing. Always this is a matter of kinds of reflexivity, in which machines mediate (come between yet also connect) our self-relation, and we mediate the self-relation of machines. Subjects, machines and systems of mediation are themselves mediated by propagated catachresis, in which one's self-relation is formed through oblique substitutions and 'takings for' – the subject is taken for a kind of writing, which is taken for a kind of machine, which is taken for a kind of subject through being taken for a kind of writing.

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