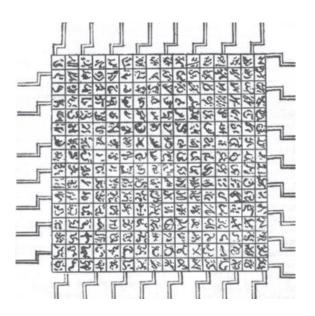*David Pascoe*

Author and Autopilot: The Narratives of Servomechanics

Oratie

Uitgesproken bij de aanvaarding van het ambt van Hoogleraar in Engelse Letterkunde en Cultuur aan de Universiteit Utrecht op woensdag 19 mei 2010.

Voor Sam
il miglior fabbro

Mijnheer de Rector Magnificus,
Leden van het Bestuur,
Beste studenten,
Geachte toehoorders,

Strictest Computations

A Professor, installed within though not yet inaugurated by his institution, should always recall Lemuel Gulliver's visit to the Academy of Lagado in Book III of Jonathan Swift's extraordinary travel book. Among other schemes the hero encounters are those to extract 'Sun - Beams out of Cucumbers, which were to be put in Vials hermetically sealed, and let out to warm the Air in raw inclement Summers'; to transform excrement back into food, 'separating the several Parts, removing the Tincture which it receives from the Gall, making the odour exhale, and scumming off the Saliva.'[1] (For this particular experiment, this researcher 'had a weekly Allowances, from the Society, of a Vessel filled with human Ordure.' But then this is Swift, after all, never one to turn up his nose as he wipes the bottom of the barrel).[2] In an adjacent room, a physician tries to cure patients by blowing air into their backsides, in a preposterous travesty of the kiss of life.

Leaving aside the possibility that a Dutch university -- Leiden -- may have determined some of the satire, the structure of this Academy is not dissimilar to those one moves through today, even if, thankfully, the projects proposed are.[3] For, passing swiftly on, Gulliver sees a range of researchers engaged in wildly speculative learning; or, to put it another way, Professors going about their business:

> The first Professor I saw, was in a very large Room, with Forty Pupils about him. After Salutation, observing me to look earnestly upon a Frame, which took up the greatest Part of both the Length and Breadth of the Room, he said, Perhaps I might wonder to see him employed in a Project for improving speculative Knowledge, by practical and mechanical Operations. But the world would soon be sensible of its Usefulness; and he flattered himself, that a more

noble, exalted Thought never sprang in any other Man's Head. Every one knew how laborious the usual Method is of attaining to Arts and Sciences; whereas, by his Contrivance, the most ignorant Person, at a reasonable Charge, and with a little bodily Labour, might write Books in Philosophy, Poetry, Politics, Laws, Mathematics, and Theology, without the least Assistance from Genius or Study. He then led me to the Frame, about the Sides, whereof all his Pupils stood in Ranks. It was Twenty foot square, placed in the Middle of the Room. The Superfices was composed of several Bits of Wood, about the Bigness of a Dye, but some larger than others. They were all linked together by slender Wires. These Bits of Wood were covered, on every Square, with Papers pasted on them; and on these Papers were written all the Words of their Language, in their several Moods, Tenses, and Declensions; but without any Order. The Professor then desired me to observe; for he was going to set his engine at work. The Pupils, at his Command, took each of them hold of an Iron Handle, whereof there were Forty fixed round the Edges of the Frame; and giving them a sudden Turn, the whole Disposition of the Words was entirely changed. He then commanded six-and-thirty of the lads, to read the several lines softly, as they appeared upon the frame; and where they found three or four words together that might make Part of a Sentence, they dictated to the four remaining Boys, who were Scribes. This Work was repeated three or four Times, and at every Turn, the Engine was so contrived, that the Words shifted into new Places, as the square Bits of Wood moved upside down.

Six Hours a -Day the young Students were employed in this Labour; and the Professor showed me several Volumes in large Folio, already collected, of broken Sentences, which he intended to piece together; and out of those rich Materials, to give the World a compleat Body of all Arts and Sciences; which, however, might be still improved, and much expedited, if the Publick would raise a Fund for making and employing five Hundred such Frames in *Lagado*, and oblige the Managers to contribute in common their several Collections.

He assured me that this Invention had employed all his Thoughts from his Youth; that he had emptied the whole Vocabulary into his Frame, and made the strictest Computation of the general Proportion there is in Books between the Numbers of Particles, Vouns, and Verbs, and other Parts of Speech.[4]

'The Engine was so contrived'; in itself, this is typical of Swift's literary contrivance, as it is both exposition of ('so *contrived'*) and exasperation with ('*so* contrived') a mechanism -- a contrivance, as a matter of fact -- whose sole function is the creation of the possibility of broken sentences, the 'strictest Computation' of which create programmes for further researches, further machinations, *ad infinitum*.

Elsewhere in his work, Swift, of course, was especially impatient with the notion of the 'mechanical'. In Book IV of *Gulliver's Travels*, narrating his departure from happy life, among the Houyhnhnms, he says 'I shall not trouble the Reader with a particular description of my own Mechanicks; let it suffice to say, that in six weeks time [...] I finished a sort of *Indian* Canoo', in which he sets off for New Holland.[5] In the *Discourse Concerning the Mechanical Operation of the Spirit* he had derived much pleasure in reducing faith to a mechanism whose design, at least on second thought, '*was thought neither safe nor Convenient to Print*'.[6] Hence, the mystery of the faith is concealed by a box picked out asterisks; faced with ultimate truth, we see stars before our eyes.

But here, the 'mechanical Operations' of the device are described precisely, and the intricacy of its design, however absurd, is rendered intelligibly and transparently. Fundamentally a generator of random text, Swift's 'Frame' -- what might now be called a 'mainframe' -- creates lexical (or even, since the illustration of the machine seems to depict individual characters on the cubes, sublexical) combinations and permutations, to produce chance 'Sentences' which are collected in volumes for future interpretation, and then, one imagines, *mutatis mutandis*, fed back into the 'Frame', or other such similar frames of reference.

The machine's random processing suggests that any correspondence between world and word is an entirely accidental matter, and one which moreover, could only ever be appreciated statistically: the fascination of virtually infinite possibility within the constraints of finite probability. But the genius of Swift's satire, though rooted in our fascination with such limitlessness, is committed to assisting us, gently but firmly, never to succumb a wish so mechanically; so automatically. After all, this academic machine is driven by the crankings of its operators, and so, inevitably, the grand designer, the Professor who 'flattered himself, that a more noble, exalted Thought never sprang in any other Man's Head,' can only be regarded as a Narcissistic crank who renders the 'broken Sentences' into a hopeless language, a desperate Esperanto. And yet it may be that Swift countenances what Marshall McLuhan would urge over two centuries later:

> Words are a kind of information retrieval that can range over the total environment and experience at high speed. Words are complex systems of metaphors and symbols that translate experience into our uttered or outered senses. They are a technology of explicitness. By means of translation of immediate sense experience into vocal symbols the entire world can be evoked and retrieved at any instant.[7]
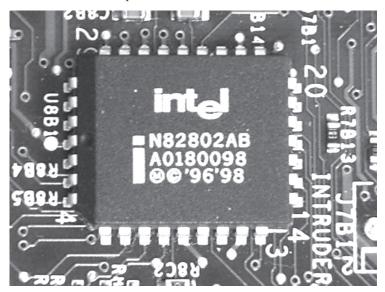
The machine described here so explicitly, so transparently, and with such awed gullibility by Lemuel *Gulliver*, has been plausibly described as 'one of the first literary uses of the machine as metaphor': a 'tangible proof of the success of our scientific techniques, and yet a testament to what is sadly diminished and insufficient in our blind faith that our techniques of discovery will tell us the whole story'.[8] Yet beyond this significance, in its utilization of a primitive critical feedback loop, this machine could also announce the most important metaphorical device of the Enlightenment: *the servomechanism*.

Broadly speaking, this is a device for controlling large amounts of potential energy by means of small amounts of power, and which constantly corrects direction and performance to a desired standard by means of positive or negative feedback; a device which, according to Norbert Wiener, might in our own times include 'thermostats,

automatic gyrocompass ship-steering systems, self-propelled missiles -- especially such as reach their target -- anti-aircraft fire control systems, automatically controlled oil-cracking stills, [and] ultra-rapid computing machines', which, collectively, signify 'the age of servomechanisms'. [9] And for McLuhan, his contemporary, those devices such as Swift designed for 'strictest computation', had become the ultimate kind of controller:

> By consistently embracing all these technologies, we inevitably relate ourselves to them as servomechanisms. Thus, in order to make use of them at all, we must serve them as we do gods. The Eskimo is a servomechanism of his kayak, the cowboy of his horse, the businessman of his clock, the cyberneticist--and soon the entire world--of his computer. [10]

Critical Mechanisms

Gilles Deleuze has observed: 'Tools always presuppose a machine, and the machine is always social before being technical' [11] Hence, in Section III *of A Tale of a Tub*, ' A Digression *Upon* Critics', Swift reports the general opinion that 'a *True Critic* is a sort of Mechanic set up with

a Stock and Tools for his Trade, at as little Expense as a Tailor; and that there is much Analogy between the Utensils and Abilities of both.'[12] Needles and quill pens, sharp implements for close work then; but now the tool of the trade is the laptop, and literary critical involvement with computing hyperlinks humanistic concerns to technological progress. But what might that signify for the practice of literary criticism, which at least since Samuel Johnson onwards, has been concerned with feedback loops:

> It is, however, the task of criticism to establish principles; to improve opinion into knowledge; and to distinguish those means of pleasing which depend upon known causes and rational deduction, from the nameless and inexplicable elegancies which appeal wholly to the fancy, from which we may feel delight, but know not how they produce it, and which may well be termed the enchantresses of the soul. [13]

Given that in this neo-classical model, criticism feeds back into the literature that generates it, flicking the switch between known and nameless, between rational and inexplicable, so as to bring about a stable 'reading', what happens when technology becomes part of an interpretative programme, such as that depicted in Swift? What role does criticism, feeding back into the text, have when faced with servomechanisms, those control devices whose workings have become less transparent, as they become more opaque?

At this kind of special occasion, it is time not simply to declare one's intellectual interests, but also to profess one's professional allegiances. Mine obviously lie with McLuhan, whom I mentioned a little earlier, that maverick genius who began as a literary critic and then moved, or swerved, into media theory, only to top out his career with a stand-up role in a Woody Allen movie; but also, and more certainly, with his one-time student, Hugh Kenner, latterly Professor of English at Johns Hopkins before he died in 2003, at the age of eighty. Described shortly after his death as the 'Newton of Modernism', Kenner wrote numerous books including studies of Pound (1951; 1971), Wyndham Lewis (1954); Joyce (1956; 1978; 1980), Eliot (1959), Beckett (1961 - 1973), a sequence of 'High Modernism' which culminated in *The Pound Era*

(1971), a bewildering compendium of analysis and anecdote devoted to establishing the centrality of the American poet who commanded that we 'MAKE IT NEW'; the editor whom Eliot, after, addressed as *il miglior fabbro*, the better maker; and the needlessly irascible man who sneered at the ambitions of the young Samuel Beckett when he first encountered him at Joyce's Paris apartment in 1929.

But it is another strand of Kenner's work that drew me to him: his compelling suggestion that 'Technology alters our sense of whathe mind does, what are its domains, how characterised and bounded'.[14] He wrote that sentence in 1987, the first line of the Epilogue of his electrifying collection of talks, *The Mechanic Muse*, a book which I read as a final year undergraduate and which transformed my perspective on the reach of literary studies. His argument was that the greatest writers of the last century -- Pound, Eliot, Joyce, Beckett, -- had evinced a faith that 'technology need not consign the arts to irrelevance', and so 'the Modernist enterprise evolved its verbal technologies, its poem- and novel-machines of intricate interacting discrete pieces.'[15] The pattern of those last four words, echoing, partly anagrammatical, cumulatively complex, are typical of Kenner; born deaf, he was drawn to sequence, to mathematics, and finally for computer programming. (He wrote a column in *Byte* magazine, and, in 1984 published *Travesty*, a piece of software that creates a new text based on how often sequences of characters appear in the original text; a travesty, perhaps, of Swift's contraption.)

Because of the time he spent with code, Kenner was always more patient in substantiating details than in formulating principles; details would feed back into the larger critical programs of the Modernist enterprise, such as Joyce's *Ulysses*, of which he observed:

> The technology on which it drew for tacit analogies is largely obsolescent now: as much as, say, Dante's Earth-centred cosmos. The Dublin trams are long gone, and the linotype machine; the typewriter is going [...] That world survives now, like Dante's world, in art. Its assumptions survive in the structures of its art: complex artifacts we even sometimes take apart for maintenance.[16]

In practice, the routines of Kenner's own 'maintenance' programme are best seen in *The Counterfeiters* (1968), which marvellingly and mischievously argues that the rise of narrative prose (since the 'complex artifacts' produced by Defoe and Swift) corresponded with a general cultural shift to Empiricism. He suggests that, once it was generally accepted that knowledge was derived only from the experiences our senses communicated to us, writers quickly began to explore the limits of that perception, and to systematize it as 'the engineering of the mercantilist': the servomechanism.

Late in the book, Kenner turns to establishing the genealogy of his own intellectual mentors -- Charles Babbage, in the mid-nineteenth century, and Alan Turing a hundred years later, both pioneers of computing rather than criticism -- and claims to be able to trace the line all the way back to *Gulliver's Travels* via Turing's Test, which famously considered the question: 'Can Machines Think?' The experiment, proposed in a famous 1950 research paper, is simple enough: a human interlocutor engages in a natural language conversation (limited to a text-only channel such as a teleprinter) with one human and one machine, each of which tries to appear sentient.[17] All participants are placed in isolated locations, and if, after a series of question and interactions, the judge cannot reliably distinguish the machine from the human, the former is said to have passed the test.

According to Kenner, this test of Artificial Intelligence is obliquely prefigured in *Gulliver's Travels,* where the creatures Swift's hero turns up along the way have great difficulty in concluding (at least, on the evidence of Lemuel Gulliver himself) what a human being might be. The irony lies in the fact that Swift had fabricated his protagonist as the 'Compleat Empiricist,' a self who lacks the capacity for accepting abstract ideas, whose notion of 'experience' is confined to what he can hear, see, and compute, and whose career is, for Swift, 'the hallmark of the new barbarism, this subjection of the mind to sequences of physical evidence, since it undid the revolution Socrates had effected when he turned its attention to wholly moral questions.'[18] Furthermore, in this situation of of double vision, of cold calculation, Gulliver as '*our* spokesman', witnessing the inhuman schemes and designs at the Academy of Lagado, shows himself quite incapable of explaining 'what

it may mean to be human'; and for that reason, 'he represents a modern ultimate, carrier and incarnation of the values we really value: notably accuracy, cleanliness, and the power to adjust.' [19] Hence, Gulliver, Kenner seems to imply, might just be the prototype of 'digital man'.

Dark Machines

If Kenner's account was ahead of its time, it was not sufficiently so to expand upon the deeper narrative of servomechanics that Norbert Wiener had begun less than two decades earlier, when he claimed that, since the Enlightenment, each age had invented its own simulacrum of humanity. So: clockmakers of the eighteenth century fabricated pirouetting mechanical figures; steam engineers of the nineteenth rendered their engines as versions of the body; while in our own age, 'the present automaton . . . points guns to the place at which a radar beam picks up an airplane' [20]

In late 1943, worn down by war efforts, Wiener, along with several others, had gathered in symposia in Boston to moot a new interdisciplinary narrative of the role of information in systems, a narrative which Wiener termed *cybernetics*, and whose Greek root -- χψβερνετιχσ, meaning 'steersman'-- carries with it a science devoted to describing the pilot in all systems: the controlling intelligence that steers human behaviour, communication, and even artistic expression.
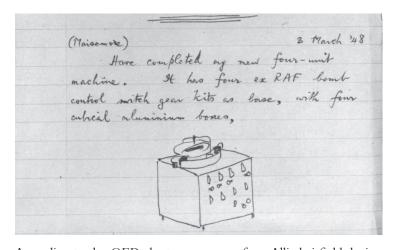
Wiener's narrative emerged out of psychological experiments in aerial warfare, in which there seemed to have emerged a dynamic equilibrium between servomechanism and human. Wiener's early efforts at computation and air defence had brought forth an ambitious but flawed calculating device that he called the "anti-aircraft (A4) predictor," designed to follow an enemy pilot's zigzagging flight, anticipate his future position, and fire a projectile to destroy his plane. The moment of truth came, for Wiener's team, when, rather than simply following a sequence of cause and effect,

> We realized that the 'randomness' or irregularity of an airplane's path is introduced by the pilot; that in attempting to force his

dynamic craft to execute a useful manoeuver, such as straight-line flight or 180 degree turn, the pilot behaves like a servo-mechanism, attempting to overcome the intrinsic lag due to the dynamics of his plane as a physical system, in response to a stimulus which increases in intensity with the degree to which he has failed to accomplish his task.[21]

Despite the failure of his device in practice, this effort to predict an aircraft's location became a theoretical attempt to compute human action, and, ultimately, more than merely a shot in the dark to develop communication between a series of entities—animal, machine, and human. Wiener, working alongside neurophysiologists and doctors and influenced by Vannevar Bush's work on early computational machines such as the Swiftian 'differential analyzer', proposed that human behavior could be mathematically modelled and predicted, particularly under stress—thereby articulating a new belief that both machines and humans might communicate in a shared language. Revelatorily, the crucial notions of positive and negative feedback - especially as applied *equally* to organic and mechanical systems - could now be rationalized by the application of a model for the movement of information that was no longer transparent, merely opaque.

For the unwavering premise of these models was that the specific servomechanism of any entity could not be described or narrated. Instead, it was 'black-boxed', so that only two factors mattered: *input,* what actions an object took in response to a communicative exchange with another entity in its system; and *output,* the prediction of future behaviors from the accumulated data of previous interactions. Philosophically, the consequence was that interest shifted from describing in detail the mechanisms of actions, to only considering the actions *per se*. Rather than describe the world as it is, the focus was to predicting what it would *become*, and to do it in terms of homogeneity instead of difference. This was a system comprising functionally similar entities— Black Boxes—described only by their algorithmic actions in constant conversation with each other, producing a range of predictable scenarios.[22]

According to the *OED,* the term emerges from Allied airfield during the Second World War, it cites, firstly, Eric Partridge in his *Dictionary of R.A.F. Slang*: 'Black box or gen box, instrument that enables bomb-aimer to see through clouds or in the dark'; and then, secondly, its the in the pages of the *Journal of the Royal Aeronautical Society* in 1947: 'British night fighters were crammed with "black boxes" all of which had to be operated by the pilot or his navigator.' In both citations, these bomb control units prevented airmen being left in the dark about their targets or their orientation. Yet despite the material origins, the term soon ceased to denote an object and came to signify a reasoning process; an abstraction of a device or system in which only instead its externally visible behavior was considered and not its implementation or 'inner workings'. In his *Introduction to Cybernetics,* W. Ross Ashby, is keen to return the term to its origins:

> The Problem of the Black Box arose in electrical engineering. The engineer is given a sealed box that has terminals for input, to which he may bring any voltages, shocks, or other disturbances he pleases, and terminals for output, from which he may observe what he can. He is to deduce what he can of its contents.
>
> Sometimes the problem arose literally, when a secret and sealed bomb-sight became defective and a decision had to be

made, without opening the box, whether it was worth returning for repair or whether it should be scrapped.[23]

And it was from surplus RAF black boxes, interconnected via electrical feedback loops, that Ashby built the device that Wiener would describe as 'one of the great philosophical contributions of the present day'.[24] 'The Homeostat' was an electrical gadget, which took inputs and turned them into outputs; in that respect, it differed little from Swift's machine. However, it constantly monitored its own outputs, and if they were too unstable, it reacted, feeding them back to create a newly stable system. Consequently, the device had 'a kind of *agency*—it did things in the world that sprang, as it were, from inside itself, rather than having to be fully specified from outside in advance; and one could never tell from the outside how it would reconfigure itself next, what it would *do* next.'[25] And for that reason, *TIME* magazine described it as 'the closest thing to a synthetic brain so far designed by man'[26]
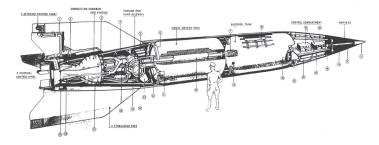
Not surprisingly, writers have been drawn to thinking machines; most notably Thomas Pynchon who worked, for a while in the early sixties, on Boeing's ICBM programme, before becoming a full-time writer. His dazzling and bewildering novel, *Gravity's Rainbow* (1973), is ostensibly a quest narrative set in early 1945, and stretching across Northern Europe, the operational range of the V2 rockets; a.k.a., the 'Zone'. Lieutenant Tyrone Slothrop, his hard-ons somehow hard-wired to the missiles's trajectories, is searching for the *Schwarzgerät*; the dark device, which, for one critic, 'comes to mean everything, including Desire, the searches of his characters, and not least Pynchon's own mysterious authorial imagination'. [27] Slothrop never finds it; nor has he any idea of its function or design. But it emerges, in the final stages, in the nosecone of the V-2 rocket, in the form of a young, narcissistic, blond-haired, blue-eyed Wehrmacht conscript named Gottfried, who has submitted himself to the missile's designs:

> They are mated to each other, Schwarzgerät and next higher assembly. His bare limbs in their metal bondage writhe among the fuel, oxidizer, live-steam lines, thrust frame, compressed air battery, exhaust elbow, decomposer, tanks, vents, valves. [28]

Elsewhere, Roland Feldspath, 'a long co-opted expert on control systems, guidance equations, feedback situations for the Aeronautical Establishment,' worked before his death, on the control system of the V-2 rocket; but now, dearly departed, his speaks out from the spirit world, beyond the Zero of death, out of a metaphorical black box, at a seance:

> Feldspath the cyberneticist explains that it is all about control: 'For the first time it was *inside*, do you see. The control is put inside. No more need to suffer passively under 'outside forces'—to veer into the wind. . . . A market needed no longer be run by the Invisible Hand, but now could *create itself*—its own logic, momentum, style, from *inside*. Putting the control inside was ratifying what de facto had happened—that you had dispensed with God.' [29]

Hence, if the rocket is controlled from within, by servomechanisms constantly monitoring and correcting its course, then individuals

may be directed the same way. If the human mechanism is properly programmed, by autology, as it were, it self-monitors, self-corrects; it has the capacity to run on autopilot.

Giddy Gadgets

Pynchon's positing of 'control' being placed 'inside' is suggestive for the larger frame of modernist literary studies too; for just as 'a market' no longer required an invisible hand from without, so the author, who, in James Joyce's words, 'like the God of creation, remains within or behind or beyond or above his handiwork, invisible, refined out of existence, indifferent, paring his fingernails', was now redundant, replaced by a form of textual autopilot, determining 'logic, momentum, style, from

inside.' [30]And it was Joyce, appropriately enough, who had provided the prototype, at least for McLuhan. In his first book, *The Mechanical Bride*, (1951) he proposed that 'a single mechanical brain, of the sort developed at the Massachusetts Institute of Technology by Professor Norbert Wiener, when hitched to the telepathic mechanics of Professor Joseph B. Rhine, could tyrannize over the collective consciousness of the race in ... science fiction style.' [31] Maybe so; but the echo might return us to none other than Stephen Dedalus, at the close of Joyce's autobiographical novel: 'I go to encounter for the millionth time the reality of experience and to forge in the smithy of my soul the uncreated conscience of my race', where Stephen's use of 'forge' denotes both the act of creation and the crime of counterfeiting.[32] That same year McLuhan wrote to Hugh Kenner to explain how technologies tend to consume their human operators, and, once again, alluded to Joyce:

> They assume, (consume) the consumer. Any instrument under human control acquires human characteristics (point not understood by Norb. [Norbert] Wiener). But any instrument that goes out of human control (via commercial appetites) swallows the operator and consumers. Not just figuratively. 'Man will become dirigible' means both 'directable [sic] like a missile' and 'inflated, conceited, empty, inhuman, stratospheric.'[33]

The line glossed here is from p. 112 of *Finnegans Wake,* that full-term life sentence that sent Joyce to his own grave; and both the possibilities that are countenanced imply man's agency having been lost in the air either to an autopilot servomechanism or to swollen narcissism.[34] The allusion is not perhaps surprising; McLuhan's masterpiece, *The Gutenberg Galaxy*, which recast the way that artists, scholars, and communicators viewed the role of technological mediation in communication and expression, had its origins in his intention to write a book entitled 'The Road to *Finnegans Wake*', McLuhan having attributed to the Irishman the creation of 'the most luminous analogical order for the unique experience of that age':the servomechanical age.[35] Joyce often described that last work, begun in 1922, and completed seventeen years later, as an engineering project; he told one of his patient patrons that the *Work in Progress*, as it was called during its long gestation, would prove him to be one of 'the greatest engineers', as well as -- for the sake

of good measure, if not modesty -- 'a musicmaker, a philosophist, and heaps of things. All the engines I know are wrong'. [36] McLuhan, for his part, was certainly struck by the servomechanical devices of Joyce and other modernist writers. Having read *Cybernetics* he wrote to Wiener, and observed that the book's

> account of the uses of the vacuum tube in heavy industry is an exact description of the poetic techniques of Joyce and Eliot in constructing their works. Their use of allusion as situational analogy effects an enormous amplification of power from small units, at the same time that it permits an unrivalled precision[37]

Hence the devices of allusion, such as those seen in *The Waste Land* or the *Wake*, systems of signal and return, of loops fed back between present and past, primary and secondary, were only ever a kind of servomechanism; what Joyce called 'a giddy gadget'. (*FW* 597.9)

Over the last twenty years, the intricate machinery of Joyce's last text has frequently been reverse engineered to show the extent of its information technological systems, culminating in Jacques Derrida's notorious claim that Joyce intends:

> in advance, decades in advance, to compute you, control you, forbid you the slightest inaugural syllable because you can say nothing that is not programmed on this 1000th generation computer-- *Ulysses, Finnegans Wake*--beside which the current technology of our computers and micro-computerfied archives and translating machines remain a bricolage of a prehistoric child's toys. And above all its mechanisms are of a slowness incommensurable with the quasi-infinite speed of the movements on Joyce's cables. [38]

This is a travesty, since it misrepresents Joyce's intellectual generosity as control freakery, insisting that the *Wake* is opaque yet stable, when it designedly exists only to render volatile connections transparent. Its main character, Earwicker, an everyman figure also known initially as HCE is, among other things, a communicating machine, a ' harmonic condenser enginium'(*FW* 310.1), an electric transmission-receiver system, which sends out signals looking for response: 'So This Is

Dyoublong? Hush! Caution! Echoland! (*FW* 13.4–5). The mechanism asks: 'This is Dublin; do you belong?' Since this world is consciously a world of echoes, permutations, combinations and probabilities, one of Joyce's basic techniques of signification exploits minimal differences within simple syllables and multiple plays on basic vowel sequences, thus:

> For, with that farmfrow's foul flair for that flayfell foxfetor, (the calamite's columitas calling for calamitous calamitance) who that scrutinising marvels at those indignant whiplooplashes; those so prudently bolted or blocked rounds; the touching reminiscence of an incompletet trail or dropped final; a round thousand whirligig glorioles, prefaced by (alas!) now illegible airy plumeflights, all tiberiously ambiembellishing the initials majuscule of Earwicker (*FW* 119)

In the cranked revolutions of Swift's machine, 'the whole disposition of the words was entirely changed' before Gulliver's very eyes; and, at first glance, so the *Wake*, too, could be a text generated by the Lagado mainframe. But while Joyce, like the Professor, had 'emptied the whole vocabulary into his frame', he did not seek to create some closed system, but instead, he sought to propel his grand designs into thin air, as 'illegible airy plumeflights'. After all, his *nom de plume* was Stephen Dedalus, the fabulous artificer, maze designer, wing-maker, and pilot.

Looping the Loop

Shortly after he completed his first novel, *Murphy,* in 1936, another Dubliner, Samuel Beckett, weighed up his various career options, one of which was to take to the air:

> I think the next little bit of excitement is flying. I hope I am not too old to take it up seriously, nor too stupid about machines to qualify as a commercial pilot. I do not feel like spending the rest of my life writing books that no one will read. It is not as though I wanted to write them'[39]

What is striking about this is not simply the naivety of a thirty-year old graduate of Modern Languages who had, at the time of writing, never flown before; but also the revelation that he composed automatically, without desire. Thankfully, perhaps, he never took to the skies as a pilot (though he once took off from Orly in an Air France Caravelle flown by one Capitaine Godot; we do not know is Beckett had been kept waiting for departure); but the sound of flight is sometimes heard over his texts, as in this passage from *Malone Dies*:

> An aeroplane passes, flying low, with a noise like thunder. It is a noise quite unlike thunder, one says thunder but does not think of it, it is just a loud, fleeting noise, nothing more, unlike any other. It is certainly the first time I have heard it here, to my knowledge. But I have heard aeroplanes elsewhere and have seen them in flight, I saw the very first in flight and then in the end the latest models, oh not the very latest, the very second-latest, the very antepenultimate. I was present at one of the first loopings of the loop, so help me God. I was not afraid. [...] The aeroplane, on the other hand, has just passed over at two hundred miles an hour perhaps. It's a good speed, for the present day. I am with it in spirit, naturally. All the things I was always with in spirit. In body no. Not such a fool. Here is the programme now, the end of the programme.[40]

This is Beckett's prosaic genius: his style follows the memory of a machine moving in its element, and a mind caught in a loop, banally feeding back positively and negatively, ('like' and 'unlike'; 'here' and 'elsewhere') and so working to achieve some kind of stability out of instabilities; instabilities staged by the estranging echo of 'flying' and 'fleeting'; by the repetitions of 'in flight', rendering the possibility that the aeroplane was seen as the witness himself was taking flight, as Beckett did from the gestapo during the war; by the shift into degrees of unverifiable nonsense from 'very first' to 'very latest, the very second-latest, the very antepenultimate'; by the witless grandeur of 'one of the first loopings of the loop', which makes one wonder whether 'so help me God' is an oath sworn on the Bible, or a petition for safe passage, faintly heard across the oceans as 'good speed'; and by the possibility that an angel of death has 'just passed over'. And then the final conundrum: what would it mean to be only with an aeroplane 'in spirit, naturally',

and 'in body no'? Perhaps when it is being flown by an autopilot, servomechanically, according to a 'programme', about to end?

Such patternings and permutations are characteristic of Beckett's deepest works, in which an astonishing fluency of phrasing coexists with an appalled delineation of frustration; the sense of being blocked or baulked by loops of feedback. Hence, in *The Mechanic Muse*, Kenner always so closely attentive to the details of style, analyses another sentence from *Malone Dies;* one that, he claims, feeds back and reverses itself 'with the sudden logic that attends a switched point of view', so exhibiting a 'Calculus of Propositions . . . close to the languages of digital computers'. Going still further, he rearranges Beckett's writing on the page visually in a way that approximates to the widely used programming tool of the late sixties, Pascal, to claim that one of Beckett's sentences is 'written in a proto-computer- language: its options, its branches, take precedence', to create a self-regulating version of the periodic sentence, whose meaning is withheld until the end. Thus any signification that emerges in Beckett's sentences is a significant adjustment, or even a reversal, of what has preceded it; for example, 'Here is the programme now, the end of the programme', where 'end' is both objective and termination.

Kenner confidently claims that 'High Modernism did not outlast transparent technology', by which he means a *visible* and comprehensible intricacy, performing sequential functions in such a way that a spectator, like Gulliver, can understand a mechanism by watching it carefully. By contrast, Beckett, he claims, 'carries it into the intangible realm of information theory', where 'intangible' suggests something simultaneously immaterial (rather than immediately grasped) and opaque (rather than transparent): a Black Box, as in *Not I*:

> on and off . . . writhe she could not . . . as if in actual agony . . . but could not . . . could not bring herself . . . some flaw in her make-up . . . incapable of deceit . . . or the machine . . . more likely the machine . . . so disconnected . . . never got the message . . . or powerless to respond . . . like numbed . . . couldn't make the sound . . . not any sound . . . no sound of any kind . . . no screaming for

help for example . . . should she feel so inclined . . . scream . . . [*Screams.*] [41]

Such unnerving opacity invites us to respond by thinking about the strange relation of Beckett's writing to the dominant technology of its time, which is not mechanical, as in Joyce, but digital, in which mere information does not denote meaning, only the choice between possibilities within a *structured* situation; in Beckett's case, a formally defined system where the range of possibilities for communication is circumscribed by binary-encoded signs, as here, in *Worstward Ho*:

A place. Where none. A time when try see. Try say. How small. How vast. How if not boundless bounded. Whence the dim. Not now. Know better now. Unknow better now. Know only no out of. No knowing how know only no out of.[42]

For many years, Beckett, served that fellow Dubliner in exile, Joyce; and served him right. When Joyce's eye problems dictated it, some portions of *Finnegans Wake* were transcribed in Beckett's own hand, and he collaborated in the French translation of the 'Anna Livia Plurabelle' chapter under Joyce's direction. But, most manfully, he had contributed an essay to the famous collaborative exegesis of the *Work in Progress*, later collected in *Our Exagmination round His Factification for Incamination of Work in Progress*, in which he stated famously:

Here, form is content, content is form. You complain that this stuff is not written in English. it is not written at all. it is not to be read -- or rather not only to be read. it is to be looked ast and listened to. His writing is not something; *it is that something itself.*[43]

As has been often observed, this statement accords better with Beckett's work, particular his later writings, which wiped from his prose those very features of post-Enlightenment literature which once made it capable of transcendence: fictions; imaginative re-creations of history; invented lives. Beckett's own precise phrase for this process was ' autologie créatrice': the scientific programming of self, cast in texts of mathematical routines and feedback loops, showing the point at which author shifts into automation.[44]

One of the most notorious of these texts is *Ping,* its title denoting variously and busily, the noise of rifle bullets, the sound of a typewriter's carriage, the ultrasonic signal sent out, and the echo returned, in the use of sonar, the rhythm of an ECG; and anticipating further contemporary uses in IT environments. Oddly, this energised text has no verbs, and is orchestrated with a sequence of rests, and repetitions: 'Light heat white planes shining white bare white body fixed ping fixed elsewhere. Traces blurs signs no meaning light grey almost white. Bare white body fixed white on white invisible'. It all culminates in: 'ping silence ping over', which implies a transmission is at an end, all trace lost, or the voice of command, indicating the expectation another reply. [45] *Lessness,* announced a further diminution still. In its twenty-four paragraphs, perhaps marking hours of the day, frames per second, each sentence is repeated once, and the sixty sentences that compose the work are divided in tens, within which each set features a recurrent word or phrase. Clearly, Beckett seeks to divert us away from the textures; but once more, listening closely to 'planes', 'passing', we perceive the narrative of a servomechanism overhead:

Ruins true refuge long last towards which so many false time out of mind. All sides endlessness earth sky as one no sound no stir. Grey face two pale blue little body heart beating only up right. Blacked out fallen open four walls over backwards true refuge issueless. Scattered ruins same grey as the sand ash grey true refuge. Four square all light sheer white blank planes all gone from mind. Never was but grey air timeless no sound figment the passing light. No sound no stir ash grey sky mirrored earth mirrored sky. Never but this changelessness dream the passing hour.[46]

In the mid-sixties, as part of his PhD research, J.M. Coetzee ran Beckett's measureless texts through a computer project; after crunching the numbers, he could only offer the following conclusion:

The subject of *Lessness* is the plight of consciousness in a void, compelled to reflect on itself, capable of doing so only by splitting itself and recombining the fragments in wholes which are never greater than the sums of their parts. This endless enterprise of splitting and recombining is language, and it offers not the promise

of the charm, the ever-awaited magical combination that will bring wealth or salvation, but the solace of the game, the killing of time. [47]

Swift, you remember, had a Professor build a device for such 'splitting and recombining' with a view to his own 'wealth and salvation'; but for Beckett, a graduate of Swift's old College -- Trinity, Dublin -- all that remained for an artist writing during the age of the servomechanism was to take comfort in an automatism that takes over human action, directing the solitary 'game' to be played out, computing the 'time' to be wasted; or, finally, a time to die.

Dankwoord

'I can't go on, I'll go on.' Het is mij derhalve een eer en genoegen vanaf deze plaats een paar personen te bedanken. Ik dank het College van Bestuur en de decaan Wiljan van den Akker, vice-decaan Keimpe Algra van de Faculteit Geesteswetenschappen van de Universiteit Utrecht en Maarten Prak, Directeur van het OGC, voor het in mij gestelde vertrouwen. Ik dank ook Harald Hendrix die, als Hoofd van het Departement Modern Talen, alle kneepjes van het vak kent; en Wim Zonneveld, mijn opleidingscoördinator en een in meerdere opzichten navolgenswaardig voorbeeld. En ik begroet mijn nieuwe collega's in het DMT alsmede Peter de Voogd, mijn voorganger op deze leerstoel, en Hans Bertens, mijn mentor.

Met veel plezier noem ik hier verder mijn familie: mijn vader, Sidney, mijn moeder, Joan, mijn zus, Deborah, een mijn oma, May, bijna honderd jaar oud, die mij de afgelopen vijfenveertig jaar zoveel steun en liefde hebben gegeven. En ik groet mijn vrienden, oud en nieuw, in binnen- en buitenland, die mede hebben mogelijk gemaakt dat wij hier vanmiddag bijeen zijn: jullie weten zelf wie ik bedoel.

Mijn oratie eindigde met een Sam; mijn leven draait om een andere Sam, mijn jongen van overzee, aan wie ik deze oratie opdraag.

Ik heb gezegd.

Notes

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13 Samuel Johnson, *The Rambler* 92 (2 February 1751)

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28 Thomas Pynchon, *Gravity's Rainbow* (NY: Viking Press, 1973) p. 750.

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30 James Joyce, *Portrait of the Artist As a Young Man* (1916) ch. 4.

31 Marshall McLuhan, *The Mechanical Bride: Folklore of Industrial Man* (NY: Vanguard, 1951) p. 30.

32 Joyce, *Portrait of the Artist as a Young Man* ch. 5.

33 Marshall McLuhan, letter to Hugh Kenner, 30 January 1951. The Kenner Papers, held at the Harry Ransom Humanities Research Center at The University of Texas at Austin. In the same letter, he informs Kenner that the media… 'are dramatic components in our situation, and it is not what they say but what they do that has to be considered'.

34 'Yes, before all this has time to end the golden age must return with its vengeance. Man will become dirigible, Ague will be rejuvenated, woman with her ridiculous white burden will reach by one step sublime incubation, the manewanting human lioness with her dishorned discipular manram will

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Curriculum Vitae

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