

# The Cybernetic Delirium of Norbert Wiener

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[M]y delirium assumed the form of a particular mixture of depression and worry... anxiety about the logical status of my... work. It was impossible for me to distinguish among my pain and difficulty in breathing, the flapping of the window curtain, and certain as yet unresolved points of the potential problem on which I was working. I cannot say that the pain revealed itself as a mathematical tension, or that the mathematical tension symbolized itself as a pain : for the two were united too closely to make such a separation significant. However, when I reflected on this matter later, I became aware of the possibility that almost any experience may act as a temporary symbol for a mathematical situation which has not yet been organized and cleared up. I also came to see more definitely than I had before that one of the chief motives driving me to mathematics was the discomfort or even the pain of an unresolved mathematical discord. I even became more and more conscious of the need to reduce such a discord to semipermanent and recognizable terms before I could release it and pass on to something else.

-- Norbert Wiener [1]

All around me, inside me, flowing through me, between me and others, it is easy to discern signs of the flexible, mass marketing of cybernetic delirium. This is a delirium associated with both cyber-products and cyber-experience. "Cyber-this" and "cyber-that". Its hard to do the ritual of the check-out line these days, without some magnetic cyber-commodity-connectors wrapping their seductive sensors, cheek to cheek, in feedback loops with yours. Commanding attention. Inviting a try. Not that the effects are homogeneous. Nor the possibilities. From cyber-sex-shopping-surveillance, to cyber-philosophy, and even utopian dreams of cyborg revolts - whether for fun, or out of desperation, flaming desire, or for want of more passionate and politically effective connections - the world around and within me appears increasingly mediated by a kind of delirious cyber-hyphenation of reality itself. This is a short (sociological) story of the history of this hyphenated world. This story revolves around the delirium of Norbert Wiener, the so-called "father" of cybernetic perspectives on physical and social reality. Today, Wiener's delirium has become our own.

My suggestion is this : that for worse and for better, we are today virtually all struggling to survive and communicate - if differently and in different modes - within the hegemonic exigencies of cybernetic culture. Fast flows of British Telecom. Quick jolts of profit. Bye bye MCI. 182,000 jobs in motion. Seventy countries. Market value \$64 Billion. An implosion of tears. "Hi, Mom. Happy Valentine's Day !" A looping fragment of memory catches my eye/"I", as information enflames the sensory manifold between us. Turning me on. Off. Turning history inside outside. The flapping of a window curtain. The digital smoothness of the screen separating my body from a data-driven images of yours. The flickering of electronically mediated fantasies between us. And fears. Wired bodies. Hard bodies. Micro-soft hearts. Energetically aroused, then fashionably abandoned. I love the advert tattooing your sex. You love my CK Infinity. Or so I'm led to imagine. Day dream. On credit. This is cybernetic capital. This is ultramodern power. A digitized white grid of anxious informational pleasures and pains. "As the CEO's and the specialist consultants of the virtual class triumphantly proclaim : 'Adapt or you're toast'" [2]. The smell of burning flesh.

Cybernetics typically denotes the interdisciplinary study and strategic deployment of communicative control processes in "complex systems" constituted by humans, other animals, machines, and the rest of living-nature. In what follows, I wish to suggest an even broader use of this term. Cybernetics, not simply as a field of technoscience research and application, but as a term connoting the most far-reaching of ultramodern forms of social control. In this sense, I will be using the phrase, social cybernetics, to provisionally configure the fluid, high speed, and densely layered webs of communicatively driven positive and negative "feedback" which, this very moment, affect the ways you are receiving my words. This is a story of how loops of cybernetic feedback are informing the energetic ritual organization of power between ourselves and others. Within the fast-flexible boundaries of global capital, the most dominant, but certainly not all, of these feedback loops carry a masculine, heterosexist, and racially inscribed charge. This is a history of the present.

Decentered, as loops of communicative feedback may appear from within various localized scenes of capital, cybernetic control practices today guide the hegemonic marketing of both meaning and material survival within the bodily confines of a cruel, complex, and contradictory socio-economic system. Increasingly, this system - capital in its ultramodern or cybernetic mode - is incorporating the entire world as its parasitic playground for profit. I make this suggestion, not to further existing loops of communicative feedback, which make the televisionary marketing of paranoiac fears (and fascinations) big business. Instead, this is to join in some minor way, with others, in encouraging a heterogeneous affinity of collective, energetic, and "power-sensitive" efforts to reflexively double back upon and, thereby, better (theoretically) converse about - as well as jam, subvert, detour, and, by any means possible, contribute to the ritual transformation of - the violent and sickeningly hierarchical "order of things" in which I find myself writing to you. Partial and provisional transformations; transformations in the direction of ritual organizational forms which are more just, more life affirming, and more loving.

The word, cybernetics, derives from the Greek term, *kybernetics*, referring to mechanisms of steering, governing, or control. The term was first used with reference to "human engineering" by MIT mathematician Norbert Wiener, during and in the years immediately following World War II. Perhaps deliriously. It was, after all, a time of war. First hot, then cold. And, as Paul Virilio astutely observes, a culture of war is also a culture of delirium - a culture where the ordinary "tools of perception" are suggestively, ritually, magically, spectacularly, technologically, almost hallucinatorily, retooled [3]. Wiener was somewhat of a child prodigy and Harvard Ph.D. in mathematics by age nineteen. He was also a pioneer in the application of statistically-based nonlinear mathematics to problems of "circular causation" and "self-adjusting feedback". As part of the war effort, Wiener collaborated with Julian Bigelow and other mathematicians and scientists, gathered under the auspices of the MIT Radiation Laboratory. Directed by Warren Weaver of the Rockefeller Foundation, this lab was a high priority, D2 Section, project, under the command of the National Defense Research Committee. Wiener and Bigelow, made innovative and unprecedented complex use of "ergodic theorems" and "integral equations", in what has been described as a "revolution" in (computational) communications engineering. During the final years of the Second World War, this revolution triggered significant advances in the design, production, and strategic deployment of anti-aircraft guns and precision bombing equipment. After the war, it would change an entire way of life.

Wiener and Bigelow's innovative mathematical labors were themselves in a complex and militarily mediated loop of communicative feedback with other exponential leaps being made at the same time in both computing and telecommunications. Many of these advances were made possible by the refined development of the vacuum tube. Nevertheless, in Wiener's account of these events, it is clear that it was the context of war which hastened the production of the cybernetic imagination.

Though the vacuum tube received its debut in the communications industry, the boundaries and extent of this industry were not fully understood for a long period. There sporadic uses of the vacuum tube and its sister

invention, the photoelectric cell, for scanning the products of industry, for example regulating the thickness of a web coming out of a paper machine, or for inspecting the color of a can of pineapples. These uses did not as yet form a reasoned new technique, nor were they associated in engineering mind with the vacuum tubes other function, communications.

All this changed in the war. One of the few things gained from the great conflict was rapid development of invention, under the stimulus of necessity and the unlimited employment of money... At the beginning of the war, our greatest need was to keep England from being knocked out by an overwhelming air attack. Accordingly, the anti-aircraft canon was one of the first objects of our scientific effort, especially when combined with the airplane-detecting device of radar or ultra-high-frequency Hertzian waves. The technique of radar used the same modalities as the existing radio besides inventing new ones of its own. It was thus natural to consider radar as a branch of communications theory.

Besides finding airplanes by radar it was necessary to shoot them down. This involves the problem of fire control. The speed of the airplane has made it necessary to compute the elements of the trajectory of the anti-aircraft missile by machine, and to give the predicting machine functions which had previously been assigned to human beings. Thus the problem of anti-aircraft fire control made a new generation of engineers familiar with the notion of a communication addressed to a machine rather than to a person" [4].

If the problem of "anti-aircraft fire" is a problem of "goal-directed communications", for the emerging science of cybernetics, its solution lies in the notion of regulated feedback. In cybernetics, the principle of feedback is (aesthetically) imaged as the operative force guiding a "contingent world" of beings in reciprocal energetic communication. For Wiener, this occurs in both animals and the new high-speed computing machines his mathematics helped bring into being. Each makes use of "sensory organs" and magnetic "memory" devices. Together these operate to produce ongoing comparisons between past and present exchanges between information and energy. In humans and other animals, this involves what Wiener described as "a kinaesthetic sense", which keeps "a record of the position and tensions of their muscles" [5]. In the new computing machines, this function was handled by a combination of data scanning and taping devices. But in addition to logging an ongoing "comparison of inputs to goals", cybernetic feedback processes involve something more interactive - "a reciprocal flow" of "two-way interaction between controller and controlled". This operates "not only to communicate influence from the former to the latter, but also to communicate back the results of this action" [6].

This image of interactive feedback strikes me as, at once, perverse and utopian. On one hand, it celebrates the control of some subjects over others. On the other, it decenters the communicative practices these subjects use to exert control within a dynamic web of interactive feedback, shaped, in part, by the communicative actions of those being controlled. In other words, cybernetics substitutes for a simplistic one-way command model a vision of message-sending and message-receiving "subject-objects", each mediated by the agency of communicative practice itself. This is an agency of letters, icons, and moving pictures. Don't be surprised if you here find resemblances between cybernetics, with its imaginary of decentered communicators ensnared within flowing webs of scriptural, textual, and textural feedback and the image of social life offered by certain versions of poststructuralist theory. Cybernetics and poststructuralist thought emerge in related (mid-to-late-twentieth century) historical times and spaces. Neither is genealogically innocent of the other. Neither materially; nor in the imaginary realm. When read critically, each also suggests (potentially) reflexive "power-sensitive" images of sacrifice [7]. And repetition.

The command, control, and communicative possibilities of cybernetics are rooted in the repeated sacrifice of other ways of being in and communicating about the worlds "we" are in. This makes cybernetics a restrictive economic practice [8]. It sacrificially banishes other possible worlds for the purpose of provisionally fixing, stabilizing, and communicatively controlling the boundaries which stake out the "contingent world" of which

cybernetics is itself constitutively a part. Cybernetics also seeks to monitor, regulate, and modify the dynamic loops of feedback governing this contingent world's continuance. And its change. In cybernetics, the material effect of dynamic flows of feedback is the ongoing informational shaping of some worlds, to the statistical reduction of others. In this sense, there is also more than a bit of existentialism guiding Wiener's cybernetic imaginary. But, then, Wiener, like Sartre, was writing to combat what he discerned as the deadly freeze-framings of fascism. In contrast to the reductive and homogenizing violence of fascism, Wiener pictured cybernetics as offering a dynamic image of communicative exchange between heterogeneous beings; energetically scanning, monitoring, reading, interpreting, and adjustively responding to one another; all the while reproducing, modifying, defending, resisting, yielding, penetrating, and/or blurring the boundaries between themselves and others; these others now appearing ecologically, as if environments, as if spatially, temporarily outside.

Inside and out, cybernetics offers a model of "circular causation". Can you picture it ? Wiener did. Which comes first : the cybernetic chicken or a golden egg ? The answer, of course, is neither. Both are circularly caused : interactively, dynamically, reciprocally. Not mechanically, but in information-governed energetic exchange. Not one-way. But not all ways at once, either. Because when that happens, things lose their shape, liquefy; lose their distinction, their distinctiveness, their boundaries. Like water spinning in water; or lovers embracing from the outside in. But, orderly loops of communicative feedback control against such lovely, if dangerous, plays of chaos. As such, orderly feedback processes facilitate the erection of secure boundaries; helping to quiet, absorb, silence, control, construct sound proof boundaries against noise. All this replaces earlier modern (scientific and popular cultural) images of "cause leading to effect". Substituted for such linear modelings of causation is a more complexly suggestive theoretical-statistical imaginary : a computational modeling of "interactive" shapings and reshaping of the energetic boundaries between communicative agents - not all of whom need be human.

By making informational objects out of each other, ceaseless and circular cybernetic communicators alter the environments within which they and others energetically interact. Consider the information produced by a radar screen in communication with a human operator, two of the earliest "subject-objects" to be wired into the teleelectronic circuitry of the cybernetic imagination. Here, information is "processed to calculate the adjustment on gun controls to improve aim; the effectiveness of the adjustments is observed and communication via radar, and then this new information is used again to readjust the aim of the gun, and so on. If the calculations are automated, one is dealing with a self-steering device, if not the whole system inducing the participating human beings can be viewed as a self-steering device" [9].

While situating the "new science" of cybernetics within the old sciences of war, Wiener simultaneously expressed horror at the contributions of other mathematicians, scientists, and engineers to the construction and use of nuclear weapons. Wiener was profoundly suspicious about structural complicities between elite scientific institutions and governmental-military sources of funding. In 1941 he resigned from the National Academy of Science in protest. Soon, thereafter, he withdrew completely from governmental and military-based service, never again to receive state funding for the production of knowledge. Indeed, throughout his subsequent career, Wiener operated somewhat doubly - as both a scientist and ethical commentator on the practice of science. Still, the wartime successes of cybernetic technologies inspired Wiener and others to search for an ever-widening "interface" between command, control, and communication processes in a diverse array of machinic, biological, and social systems [10]. In pursuit of this interface, from 1946 to 1953, Wiener met regularly with John von Neumann (whose mathematical labors, unlike Wiener's, contributed directly to digital computations necessary for U.S. military experiments with atomic weaponry against Japan) and other early cyberneticians, in a series of intensive conferences on cybernetics, sponsored by the Josiah Macy Jr. Foundation. Also attending some of these sessions were leading figures of post-war social science - Margaret Mead, Talcott Parsons, Gregory Bateson, Kurt Lewin, and Robert K. Merton, among others. Overall, the Macy conferences sought to "generate a new kind of link between engineering, biology, mathematics on one hand and psychology, psychiatry, and all

the social sciences on the other" [11]. And, in this, they succeeded. If not exactly in the blink of an eye/I, then exponentially and steadily over the last half-century.

As a young American white boy in the 1950s, cybernetics enveloped me like a second skin, a second nature. Indeed, night after night I would be lulled into half-dream states, swollen with telecommunicative feedback. The radio rocking me, rolling me, somewhere between wakefulness and electronic slumber. Phone now ! Vote for your favorite stars ! Request your favorite black tunes sung by white voices ! And, of course, I did. Nothing has been the same since. This is no confession. This is a description of collective cybernetic signalings which run through my body, like blood, only much faster. This is also a description of a most material aspect of recent social history. For indeed, practical embodiments of the cybernetic world view have spread to virtually all fields of power, knowledge, and culture. As such, boundaries have become blurred between "once artificially separated areas of thought" as "more and more of the world is seen in terms of information. Just look at the account books, the projections, the numbers and the returns... Stocks and commodities, the securities markets, banking, currency, options, futures... [A]ll these markets must now be rethought and restructured", because today each is increasingly experienced as little but a kind of "telematic" exchange of feedback between information and energy [12].

From a doctors' imagination of her patient to the CIA and IBM's imagination of its competitors and clients and, maybe, even your imagination of me, vast "flows" of the world as "we" have come to know it over the last fifty years have been (ritually) coded and recoded as seemingly nothing but matters of information. "Even the simplest of conversations are separated, reconfigured, sent and priced. And those who live in this new world are losing their grip on... older [and other possible constructions of] reality. As for those who have no access to, no participation in, this newly imposed world, they are [forced] out of the world's new information economy, doomed to obsolescence and death" [13].

## **Somewhere between the Real and a Militarized Imaginary**

Returning to Wiener's delirium : in 1950, the MIT mathematician declared : "It is the purpose of Cybernetics is to develop a language and techniques that will enable us to indeed attack the problems of control and communications in general" [14]. Despite his critical attitude toward military appropriations of scientific know-how, it is important to note the militaristic resonances vibrating in Wiener's own phrasings. To... attack the problems of control and communications. Such resonances remain deeply entrenched within contemporary social cybernetics. Adapt or you're toast ! Moreover, given the omnipresence of cybernetic control mechanisms across a wide range of contemporary institutions, it is vital to remember the ritual origins of this logic and its limits. Wiener, of course, was not alone in providing military undertones for this new science. This is clear in the work of Donna Haraway. Haraway draws attention to the relationship between cybernetics and the militaristic economy of capitalist patriarchy out of which it has evolved. Conceptualizing the logic of cybernetics as a powerful "theoretical fiction" which forecloses other ways of making sense of the world, Haraway, like Wiener, traces the roots of this ideology to the labor of interdisciplinary teams of government funded researchers during and after the Second World War. Indeed, the "extraordinary organization of scientists in the war effort in Britain and the United States threw biologists together with engineers, linguists, physicists, mathematicians, and administrators in intense activity that had profound consequences" for both the conceptual and practical reorganization of sciences, such as biology. And for the management of everyday socio-economic systems as well [15].

Haraway's work points us to a particular social scene : a series of white male dominated research settings organized around the demands of hot and cold war, a theater of perpetual war it seems. Within this theater,



"command-control systems, called animal societies and populations, came to be known through technical, theoretical and practical procedures that [sacrificially] acknowledged natural-technical objects as problems in military strategy; industrial production, in which the worker is a system-component whose error rates must be controlled by information and resource management; in psychiatric management of overloaded, stressed communicative systems; and in engineered design of automated control systems" [16]. "Ether, having once failed as a concept is being reinvented. Information is the ultimate mediational ether. Light doesn't travel through space : it is information that travels through information... at a heavy price" [17].

Consider, for instance, the electrifying ideas of information theorist, Conrad Hal Waddington. Waddington sought to model "information flows" in relation to differentially constrictive boundaries of energy. In so doing, he facilitated a general transference of methods associated with operations research in military organizations to the emergent field of molecular biology, where a new image of the body as an information-driven communications system was already beginning to take hold. In this regard, it is crucial to recognize that Waddington himself developed his ideas in feedback with a program of war-time research, sponsored by the Royal [British] Air Force Operations Research Section and aimed at countering the effectivity of German "U-boats" [18]. This is not to deny the value of Waddington's discoveries. The value is high. But so are the costs. It is, instead, to suggest that - like Kant, during an earlier, if related, time and space within capital - when searching for language to justify the (alleged) universality of particular aesthetic judgments, Waddington theorized life as basically a problem in sublime military gamesmanship. In this deadly and delirious game, as Waddington figured it, bodily life itself was imagined as little but a battlefield constructed around and between flows of energy and information. This is also evident in the language of W. Ross Ashby, an early theorist and popularizer of cybernetics. According to Ashby :

[T]he inborn characteristics of living organisms are simply the strategies that have been found satisfactory over centuries of competition and built into the young animal so as to be ready for use at the first demand. Just as so many players have found "P-Q4" a good way of opening a game of chess, so many species found "growth teeth" to be a good way of opening the Battle of Life [19].

If this sounds a bit like a delirious replay of Herbert Spencer's imperial sociological rhetoric of "survival of the fittest", this should be no surprise to those familiar with the social cybernetics advanced by long time Harvard sociologist, Talcott Parsons. Parsons' functionalist theories dominated U.S. sociological thinking throughout the 1950s and early 1960s. Moreover, Parsons' vision of society as a communicative "social system" represented an explicit synthesis of Spencer's thesis concerning adaptative societal evolution and recent developments in the science of cybernetics. Parsons pictured human subjects as "behavioral organisms" whose "communicative actions" were guided by "a cybernetic system located mainly in the central nervous system, which operates through several intermediary mechanisms to control the metabolic processes of the organism and the behavioral use of its physical facilities, such as the motions of limbs" [20]. Indeed, for Parsons, the "same basic principle of cybernetic hierarchy", where information communicatively commands the expenditure of energy, and the reverse, was said to be "the fundamental basis for classifying the components of social systems" [21]. Of particular importance was the communicative role of money as "a cybernetic mechanism at the symbolic cultural level", capable of integrating instrumental economic action within "the total society as a system" [22].

Parsons used the term "cybernetic hierarchy of control" to describe the orderly adjustment of rationally evolving social systems. In this sense, Parson's cybernetic functionalism combines Spencer's evolutionary viewpoint with ideas about adjustive feedback drawn from mid-twentieth-century biology. In Parsons' own words, his ideas about the evolution of social systems in their entirety "coincided with a set of developments within biological theory and in general science - notably the 'new genetics' and cybernetic theory - which indicated a far greater continuity between human socio-cultural evolution and that of the organic world then had been [previously]

widely appreciated" [23]. Parsons visualized a communicative exchange between information and energy as a core steering mechanism underlying evolutionary social development. "One source of change may be excesses in either information or energy in the exchange among action systems. In turn, these excesses alter the informational or energetic outputs across systems and within any system. For example, excesses of motivation (energy) would have consequences for the enactment of roles or the normative structure and eventually of cultural value orientations. Another source of change comes from an insufficient supply of either energy or information, again causing external and internal readjustments in the structure of action systems" [24]. For example (informational) conflict would cause normative conflict (or anomie), which in turn would have consequences for the personality and organismic systems.

Inherent in Parson's cybernetic hierarchy of control are concepts that point to systemic interconnections between both stasis and change. If Parson's seemingly "neutral" depiction of social change, as a genetic-like mechanism of coded communicative adjustment, appears inattentive to the sacrificial exigencies of human historical struggles over the shaping of power, perhaps, this is because Parsons tautologically defines power as but the "capacity of a social system to mobilize resources to attain collective goals" [25]. This ignores the effects of historically rooted social hierarchies and the struggles of people oppressed by unequal power. Such thorny issues are smoothed over by the fluid machinic metaphors of cybernetic theory. But as Arthur Kroker observes, this shift to a cybernetic concept of power signals "a grand reversal" in sociological understandings of the relation "culture and economy" and between "categories of power and capital" [26]. Even when formulated in the crudest of Darwinian terms by Spencer, this conception already contained "the essential bourgeois discovery that political economy would now take place within a 'regulatory' order of dominations and powers" [27]. A central aspect of Parson's massive contribution to the disciplinary character of North American sociology was the "normalization" of such a self-preserving system's logic. This represents an institutionally guided "descent into a virtual reality" where "all the referents, from money and power to health and intelligence" become coded as if "pure cybernetic processes" [28].

In reflecting upon his own interest in cybernetics, Parsons notes the influence of such "systems-oriented" biological theorists as Claude Bernard and W.C. Cannon. But the impressions made by Harvard biochemist L.J. Henderson were of particular significance. During the depression, Henderson's influential seminars on the Italian sociologist and economist, Vilfredo Pareto, underscored the role of living systems in the organization of all social forms and were attended somewhat religiously by a variety of thinkers, including Parsons, sociobiologist E.O. Wilson, and social scientists of various ilk, such as George Homans, Robert K. Merton, Henry Murray, and Clyde Kluckhohn. "Henderson stressed the importance of Pareto's model of a social system and the notion of equilibrium in his teaching although it is also true that the Harvard physiologist's support for the Italian intellectual's ideas was connected to his anti-Marxist elitism. Henderson was an extreme conservative in his political views and saw Pareto's theory as many others with his opinions saw it - as the one social/economic theory which could counterpose Marxism in accounting for the depression" [29].

For Henderson, as for Parsons and many others who would soon develop an enthusiasm for cybernetics, Pareto's theories heralded "the commencement of a new era in the history of thought" [30]. They also presaged a dissolving of informational boundaries between sociology, biology and economics. "That the America of the depression proved receptive to Pareto's thought is not surprising... [H]is work appealed to two major strains in the climate of opinion of the thirties : belief in the saving authority of science and loss of belief in the authority of tradition [time compresses into space; then the reverse]. His positivism appealed in an intellectual climate in which only the claims of science still stood unchallenged, and his debunking stance was congenial to intellectuals whose moorings had been severely shaken ever since the bottom dropped out of the stock market in 1929. [As a homeostatic systems theorist] Pareto was largely read as a kind of bourgeois answer to Marx" [31].

Parsons also acknowledged the impact of a continuing "Conference on Systems Theory" held in Chicago from 1952-57 and particularly the role of insect biologist Alfred Emerson who "spoke... in such a way as strongly to

predispose me, and I think others, in favor of the then just emerging conceptions of cybernetic control" [32]. Parsons was also a Kantian thinker who shared the idealist philosopher's dilemma concerning the difficulties of claiming universal knowledge from a strictly phenomenal point of view. And while Kant "solved" this dilemma by attending to the disembodied "genius" of sublime aesthetics, Parsons' cybernetic solution was of a related sort. Like Kantian thought, Christian metaphysics and ultramodern warfare, cybernetics too is "guided by an underlying compulsion to aesthetics" [33]. In this, "the new genetic biology of combinants and recombinants contributes (analogically, it is true, but in the specific sense of structural similitude) to an interpretation of power as a 'site of battle' between genetic inheritance (the categorical imperative ?) and the empirical 'range of variations' (the phenomenal world ?)" [34]. Here the body appears to disappear behind a coded screen of symbols. At long last, and during a Cold War no less, the word (of certain men) takes its place as more originary than flesh and moreover everlasting [35]. In the beginning was the word and the word was made flesh, states John's Gospel. Reducing bodily energies to that which is vocationed by information, cybernetics makes the same assumption. So does ultramodern capital.

## **Digitized Sacrifice, Delirious Flows : kitty cats, missiles and me**

What (or who) is left out of the picture of the world we are in when the world itself is portrayed as if nothing but "pure cybernetic processes" ? And what haunts this most powerful of late twentieth-century theoretical-fictions ? The answer, according to Norbert Wiener, is the "evil" of chaos - the noise of disorganized forms and the entropic erosion of workable boundaries between "subject-objects" in communicative flux. To better understand this, as well as the dominant tendencies within cybernetic control mechanisms, let us return to Wiener's own statement of his theoretical-bodily delirium.

Wiener informs us that his anxiety was sparked by an inability (prompted by the onset of bronchopneumonia) to make clear distinctions between symbols and the objects they represented - an inability to distinguish between words and things. "It was impossible", he suggests, "to distinguish among my pain and difficulty in breathing, the flapping of the window curtain, and certain as yet unresolved points on the potential problem on which I was working". More disturbing was the cybernetician's inability to say whether this pain revealed itself as "a mathematical tension" or whether this mathematical tension was somehow symbolizing itself in the pain he embodied. Unable to clearly discern meaningful feedback about such matters because "the two were united too closely to make such a separation possible", Wiener worries about the randomness which overturns his search for knowledge. Indeed, it appears "that almost any experience may act as a temporary symbol for a mathematical situation which has not yet been organized and cleared up". In reflecting upon this delirious moment, Wiener grasps "one of the chief motives" which drives him toward cybernetics - the need to reduce an "unresolved discord" to "semipermanent and recognizable terms".

Wiener's biographer Steve Heims agrees, observing at the core of the cyber-mathematician's personal and theoretical passions an obsession with "finding predictability through chaos or signal through noise" [36]. But this was a difficult task for Wiener, convinced as he was by the theoretical vision of quantum physics, suggesting ongoing transformations between even the most seemingly solid of matters and the dynamic waves of energy which solid-state particles only temporarily congeal and contain. Wiener sought, through refinements of Gibbsian (non-linear) statistical computations, to provide a flexible mathematical basis for quantum mechanics. And through the communicative imagery of cybernetics provide a dynamic medium for mapping the transformative "interactions" which bind and unbind energy within always only relatively predictable material boundaries. In this, Wiener imagined himself advancing beyond Einstein's theories of relativity. From the cybernetic viewpoint, Einstein's ideas, like Newton's, remained burdened with "absolutely rigid dynamics not introducing the idea of probability. Gibbs' work on the other hand, is probabilistic from the very start, yet both



directions represent a shift in the point of view of physics in which the world as it actually is replaced in some sense or other by the world as it happens to be observed" [37].

In truth, Wiener sought to reformulate Einstein's position, suggesting that, "in his theory of relativity it is impossible to introduce the observer without also introducing the idea of the message" [38]. While clearly an advantage over "the Newtonian subordination of everything to [fixed] matter and mechanics", Einstein's reliance on observer-mediated measures of (one-way) optical radiation (from sender to receiver) limited the radicality of his theoretical discoveries. Wiener argued that Einstein's physics closely paralleled Leibnitz's pre-Newtonian notions of a lively universe of monads in optical (space-time distorted) communication with each other. This paralleled Leibnitz's own visual-theoretical fascinations with mechanical "clock-like" automata. For Leibnitz, the temporal "concordance" of these little dancing machines set in motion at the same point in time suggested a "pre-established harmony" of monads signaling to each other. Here, as in Einstein's image of light traveling from source to receiver, "the little figures which dance on the top of a music box... move in accordance with a pattern, but it is a pattern which is set in advance" [39]. Wiener's cybernetic view of physics suggested something more "indeterminate" and energetically "interactive". Whereas, Einstein's light waves and Leibnitz's dancing figures display "no trace of communication with the outer world", except "one-way... communication" guided by a "pre-established mechanism", the movement of things in the world in which Wiener found himself communicating appeared more complex - both computationally and ontologically.

This complex world Wiener shared with "moderately intelligent" animals, such as cute little kittens. Meow. Meow. "I call to the kitten and it looks up. I have sent it a message which it has received by its sensory organs, and it registers in action. The kitten is hungry and lets out a painful wail. [Pain again. Hum. Yes, pain seems a repeated feature of Wiener's cybernetic delirium. Whose pain ?]... The Kitten bats at a swinging spool... This time it is the sender of a message... The spool swings to its left, and the kitten catches it with its left paw. This time messages of a very complicated nature are both sent and received within the kittens own nervous system through nerve end-bodies in its joints, muscles, and tendons; and by means of nervous messages sent by the organs, the animal is aware of the actual position and tensions of its tissues. It is only through these organs that anything like a manual skill is possible" [40].

But accompanying Wiener and his hungry cyber-kitten is another kind of complex communicator - a new generation of flexible automata, the (mathematical) configuration of which underscored the inadequacy of Einstein's and Leibnitz's lingering optic-mechanical rigidities. Unlike the older automata, which operated according to pre-programmed "clock-work", these new cybernetic machines - and believe me there are more each moment - are characterized as feedback-driven automata, possessing sensor organ functions as well taping-memory and translation-comparison capacities. This makes them "interactively" flexible in their command, control, and communicative capabilities. In 1950, Wiener included among their number "the controlled missile, the proximity fuse, the automatic door opener, the control apparatus for a chemical factory, the rest of the modern armory of automatic machines which perform military or industrial functions". I mention this hardly innocent of the machines through which I myself am sending messages to you. Both the real ones and the imaginary.

In Wiener's cybernetic story all these machines face a common enemy - entropy, chaotic disorganization, or noise - the villain of "the second law of thermodynamics". Against this enemy Wiener pits the informational effectivity of commanding communicative feedback. This facilitates the erection of a temporarily "closed system", a "local enclave" against chaos, "whose direction seems opposed to that of the universe at large and in which there is a limited and temporary tendency for organization to increase" [41]. But over time "entropy increases... and all closed systems in the universe, tend naturally to deteriorate and lose their distinctiveness" as they move from (what Gibbsian statistics discerns as) "the least to the most probable state, from a state of organization and differentiation in which distinctions and forms exist, to a state of chaos and sameness" [42]. But having stated this, Wiener then makes a delirious leap from physics to a death-defying onto-theology,

connecting the counter-entropic vocation of cybernetics to the writings of St. Augustine. This, perhaps, is the most problematic aspect of Wiener's work. For by linking the mission of his new science with the moral vision of Augustine, Wiener's writings suggest a dangerous temptation within cybernetics to subordinate finite and relational bodily matters to the infinitely commanding and abstract sign-work of the soul [43]. Whose soul ?

In this philosophical aspect of Wiener's work, cybernetics becomes a moral science fitted to do battle against its evil arch enemy - disorganization. This enemy, Wiener asserts, is not the Manichean devil with its crafty tricks of dissimulation but "the Augustinian devil, which is not a power in itself, but the measure of our own weakness" [44]. But the "Augustinian devil is stupid". And while it "plays a difficult game" of "passive resistance" to orderly communicative coding, "swamping" informational messages with the "noise" of unbounded energy, it is also a devil defeated by a rigorous cybernetic "intelligence as thoroughly as by the sprinkle of holy water" [45].

Here it is important to recall, even though Wiener makes no mention of this, that one of the most arresting aspects of Augustine's theology is its fierce and vehement expression of hatred for the flesh of women. And for pagans. But Wiener mentions only Augustine's hatred of chaos, which he transcodes as a life-preserving pursuit of clearly bounded flows of communicative feedback. In Augustine's writings, chaos is figured in seductive and pagan-feminine forms. Evil forms. Pagan-woman as chaos. Pagan-woman as evil. Pagan-woman as "gateway to the devil" [46]. This is a figure to be combated by closing the finite eye of the (masculine) flesh; all the while, opening inwardly into an infinite mirror play of perfect Trinitarian "three-in-One" identity. Perfectly the same and yet simultaneously different. A perfectly informed communicative erasure of difference, this is also a fantasy of timeless self-perpetuation. Pure autopoiesis. Pure simultaneity. Pure information. It is infinitely easier to imagine, as is the case with both Augustine and Wiener, when no mother is involved. Or, when the only mother involved is a fleshless, holy ghostly info-mother. "Ma Bell" or whoever. No noise. No sin.

Wiener deliriously imagines cybernetics as a holy scientific weapon which uses the study of communicative feedback loops to both uncover and "exorcise" entropic noise. In this, he converts the little (counter-entropic) demons of Clerk Maxwell's nineteenth-century science into the informational angels guiding our own. As gatekeepers regulating the "useful" flow of otherwise ethereal energies, Maxwell's demons seemed to "overcome the tendency of entropy to increase" within defined communicative locales. But in sacrificially carving out protected pockets of organization these demons simultaneously threw the wider universe into disequilibrium. This is because neither humans nor other communicators ever truly exist in "isolated systems. We take in food, which generates energy, from the outside, and we are, as a result, parts of the larger world which contains those sources of our vitality" [47].

The same holds for Wiener's cybernetic angels, watching at the teleelectronic doors of communicative feedback, securing the boundaries of some worlds against others, digitally transcoding energy into information. But at what or whose expense ? This was a question Wiener continuously posed to himself and other cyberneticians. And with good reason. After all, Wiener's own work was situated within a very specific "local enclave" - the military-industrial-scientific web of Cold War capitalist America. This enclave was fighting, and in large measure with information, not merely against entropy in general, but against historical and material resistances to the systematic exploitation of the energies of others, as well as against tendencies for the rate of exploitative profit to fall.

Wiener's ethical vigilance about such matters initially inspired reflexive and critical scholars, such as Gregory Bateson, Anthony Wilden, Heinz Von Foerster, and Stafford Beer, to make use of cybernetic imagery and techniques in struggling for a more just and ecologically sane order of things. "Power-sensitive" cybernetic or cyborg imagery is also politically configured in the writings of numerous contemporary writers, some of who appear in this book. But, I feel, for worse more than better, Wiener's cybernetic delirium, as well as his Augustinian search for "closed systems", are today most materially embodied, for exploitative profit and

control, within the dominant military-cultural institutions of corporate capital world-wide [48]. But this is less to dismiss cybernetics than to caution a reflexive, collective, and historically informed socio-economic engagement with the somewhat "hypnagogic", almost dreamy, loops of televisionary feedback which today interact so thoroughly with so much of our everyday lives. How, then, to effectively double back upon such cyber-social scenes of sacrifice, so as to better notice, communicate, and simultaneously expel the unjust and sickening flow of the energies these informational forms bind and those they exile, deplete, or deaden ? The answers to this question are neither simple nor singular. They depend also on the feedback we give and receive from one another.

Having said all this, I leave you with a final bit of feedback from Norbert Wiener. And I wish you good cyborg dreams. In discussing his own "free-flowing" attempts to make imaginative theoretical sense of the "simultaneous aspect" of a problem, Wiener directs attention to certain moments when key aspects of the solution begin to crystallize.

Very often these moments seem to arise on waking, but; but probably this really means that sometime during the night I have undergone the process of deconfusion which is necessary to establish my ideas. I am quite certain that at least part of this process can take place during what would ordinarily be described as sleep, and in the form of a dream. It is probably more usual for it to take place in the so-called hypnoidal state in which one is awaiting sleep, and it is closely associated with those hypnagogic images which have some of the sensory solidity of hallucinations but which, unlike hallucinations, may be manipulated more or less at will... The main ideas are not yet sufficiently differentiated to make recourse to symbolism easy and natural, they furnish a sort of improvised symbolism which may carry one through the stages until an ordinary symbolism becomes more possible and appropriate... What remains to be done is very often the casting aside of those aspects... that are not germane to the solution [49].

## Notes

1. Norbert Wiener, as quoted in Steve J. Heims, *John Von Neumann and Norbert Wiener, From Mathematics to the Technologies of Life and Death*. Cambridge, MA : MIT Press, 1980, pp. 147-148.
2. Arthur Kroker and Michael A. Weinstein, *Data Trash: the Theory of the Virtual Class*. New York : St. Martin's Press, 1994, p. 7.
3. Paul Virilio, *War and Cinema: the Logistics of Perception*. Minneapolis : University of Minnesota Press, 1990, pp. 4-6.
4. Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society*. London : Free Association Books, 1989 (1950), pp. 147-148.
5. Ibid., p. 24.
6. Norbert Wiener, *Cybernetics: or Control and Communication in the Animal and the Machine*. 2nd ed. Cambridge, MA : MIT Press, 1961, p. 11.
7. I here borrow the term, "power-sensitive", from Donna Haraway, who uses it to suggest a critical dimension of "situated" approaches to objectivity, as these work self-acknowledgedly within (or against) the grain of contextual configurations of power. See, for instance, *Simians, Cyborgs and Women: the Reinvention of Nature*. New York : Routledge, 1992, p. 196. Elsewhere I myself use the term, "power-reflexive", to indicate related methodological concerns. See, *Images of Deviance and Social Control: a Sociological History*. 2nd ed. New York : McGraw Hill Book Co., 1994.
8. My use of the term, "restrictive economic", invites a comparison between cybernetics and the social physics of Georges Bataille. Bataille, a contemporary of Wiener's, offers a theory of a "general economy" which, like cybernetics, situates the movements of life itself within a dynamic field of flowing

intercommunications. Nevertheless, Bataille underscores the limited and repressive character of restrictive economic communications, those which "usefully" establish "workable" boundaries between subjects and objects. Cybernetics restricts itself to the study of these "minor" communicative forms which, despite their utility, tragically limit the convulsive radiance of "major" communications. For Bataille, the vertiginous poetry of major communications is associated with the ecstatic realm of a more intimate "communion" with the abundant life energies. Bataille's model of communication was thus spiral : suggesting periodic exchange, not only between identifiable beings "imprisoned" within the feedback loops of restrictive communicative forms - the stuff of everyday life - but also between minor and major forms of communication themselves - festive moments of sacred effusion where boundaries dissolve and beings dance undifferentiatedly as in "the flow of water or that of electric current". See, for instance, Georges Bataille, "Sacrifice", *October* 36 ((Spring 1986), pp. 61-74.

9. Steve J. Heims, *John Von Neumann and Norbert Wiener, From Mathematics to the Technologies of Life and Death*. Cambridge, MA : MIT Press, 1980, p. 184.
10. For a discussion of Wiener and von Neumann's wartime scientific contributions see, Steve Heims, *John von Neumann and Norbert Wiener, From Mathematics to the Technologies of Life and Death*. Cambridge, MA : MIT Press, 1980. Von Neumann, already a scientific advisor to the U.S. Army's Ballistics Laboratory in the years before the war, made strategic mathematical contributions to the development of digital computing machines, enabling the complex and high speed computations necessary for the design and production of the atomic bomb. Wiener, whose technical concerns with cybernetic feedback processes were tempered by an ethical concern for the potentially "inhuman" uses of these same sources of knowledge, upon learning of the U.S. use of atomic weaponry withdrew entirely from military and governmental service, becoming somewhat of an "independent scholar" and never again accepting governmental funding for his continuing work with cybernetics.
11. Steve Heims, *The Cybernetics Group*. Cambridge, MIT Press, 1991, p. 17.
12. Yurik, *Metatron*, pp. 40, 74, 12.
13. Ibid., p. 3.
14. Norbert Wiener, *The Human Uses of Human Beings*, p. 17.
15. Donna Haraway, "The High Cost of Information in Post-World War II Evolutionary Biology: Ergonomics, Semiotics, and the Sociobiology of Communication Systems", *The Philosophical Forum*, Vol. XIII, Nos. 2-3, (Winter-Spring 1981-82), p. 249.
16. Haraway, "The High Cost of Information...", p. 246.
17. Ibid., p. 9.
18. Ibid., p. 249.
19. W. Ross Ashby, as quoted in Haraway, Ibid., p. 249.
20. Parsons, "A Paradigm for the Analysis of Social Systems", p. 172.
21. Ibid, p. 173.
22. Talcott Parsons, *Social Systems and the Evolution of Action Theory*. New York : The Free Press, 1977, p. 267.
23. Ibid., p. 238.
24. Jonathan Turner, *The Structure of Sociological Theory*. 5th ed. Belmont, CA : Wadsworth, 1991, p. 67.
25. Talcott Parsons, *Social Theory and Modern Society*. New York : The Free Press, 1967, p. 225.
26. Arthur Kroker, "Parsons' Foucault", in Arthur Kroker and David Cook, *The Postmodern Scene: Excremental Culture and Hyper-Aesthetics*. New York : St. Martin's Press, 1986, pp. 215-242.
27. Ibid., p. 216.
28. Arthur Kroker and Michael A. Weinstein, *Data Trash: the Theory of the Virtual Class*. New York : St. Martin's Press, 1994, p. 51.
29. Peter Hamilton, *Talcott Parsons*. London : Tavistock, 1983, pp. 59-60.
30. Lawrence J. Henderson, as quoted in Lewis A. Coser, *Masters of Sociological Thought*. 2nd ed. New York : Harcourt, Brace Jovanovich, 1977, p. 422.

31. Coser, *Masters of Sociological Thought*, p. 423.
32. Talcott Parsons, "On Building Social Systems Theory", *Daedalus*, (Fall 1970), p. 831.
33. Yurik, *Metatron*, p. 7.
34. Kroker, "Parsons' Foucault", p. 217.
35. Parsons' own complicity with Cold War political demands for information are perhaps themselves symptomatic of the place of cybernetics within a militarized U.S. metaphysics. Indeed, in the years immediately following World War II, at the request of the U.S. Army Intelligence and the State Department, Parsons engaged in a series of secret actions aimed at circumventing official government regulations by helping to recruit Russian-born Nazi collaborators, including a social scientist wanted as a "war criminal", in order to better collect "cold war" information on the Soviet Union. See, for instance, Jon Wiener, "Talcott Parson's Role: Bringing Nazi Sympathizers to the U.S.", *The Nation*, 6 March 1989, cover page and pp. 306-309.)
36. Steve Heims, *John Von Neumann and Norbert Wiener*, pp. 146-147.
37. Norbert Wiener, *The Human Use of Human Beings*, p. 20.
38. Ibid., p. 20.
39. Ibid., p. 21.
40. Ibid, p. 22.
41. Ibid, p. 12.
42. Ibid.
43. My reading of Augustine here is, in part, suggested by Arthur Kroker and David Cook's provocative reading of Augustine as a precursor to the disembodied sign-power of the contemporary "postmodern scene". According to Kroker and Cook : "the postmodern scene in fact, begins in the fourth century with the Augustinian subversion of embodied power", as "the Augustinian refusal" presages a "fatalistic and grisly implosion of experience as Western culture itself runs under the signs of passive and suicidal nihilism". Arthur Kroker and David Cook, *The Postmodern Scene: Excremental Culture and Hyper-Aesthetics*. New York : St. Martin's Press, 1986, p. 8.
44. Ibid, p. 35.
45. Ibid.
46. See, for instance, discussions of these issues in Monica Sjoo and Barbara Mor, *The Great Cosmic Mother: Rediscovering the Religion of the Earth*. San Francisco : Harper and Row, 1987; John A. Philips, *Eve: The History of an Idea*. San Francisco : Harper and Row, 1984.
47. Ibid, p. 29.
48. See, for instance, Les Levidow and Kevin Robins, eds., *Cyborg Worlds: the Military Information Society*. London, Free Association Books, 1989; Chris Hables Gray, ed., with Heidi J. Figueroa-Sarriera and Steven Mentor, *The Cyborg Handbook*. New York : Routledge, 1995; and William Bogard, *The Simulation of Surveillance: Hypercontrol in Telematic Societies*. New York : Cambridge University Press, 1996.
49. Norbert Wiener, as quoted in Steve J. Heims, *John Von Neumann and Norbert Wiener*, p. 150.