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Information Power

The Information Society from an Antihumanist Perspective

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WHEN WE THINK ABOUT INFORMATION as power, we usually think about individuals, groups, and nations using information and information goods as a resource that helps them gain advantages over others. In this chapter, however, I am interested in how the globalized information networks create new forms of power that transcend people's conscious design. Digital information technologies, I shall argue, enmesh individuals, groups, and nations in proliferating networks of power that they neither fully understand nor fully control, and that, in fact, are controlled by no one in particular.

To explain this phenomenon, I offer three portraits of our current situation, which I call the *memetic* model, the *Gaia* model, and the *proliferation of power* model. Each model focuses on forms of power that shape human beings, exercise control over them, and reshape their attitudes, their self-conception, and their modes of behavior. Each perspective suggests that larger forces are reshaping and even sacrificing human values and human interests to serve goals that no human being in particular is seeking. And in these models, the choices people make are consequences

of the way these larger forces play out. Thus, these models take human agency as both an input and an output of the global information system. For this reason, they are all antihumanist approaches—that is, they treat human beings as the constructions and unwitting agents of larger forces produced by the concatenation of individual human belief, desire, and action.

The point of this analysis is not to deny the role that human agency plays in making the world we inhabit. All of the mechanisms I describe in this chapter are produced by the actions of individuals, working either separately or collectively in groups. Nor is it to reject the importance of human values and interests as goals of information policy. Quite the contrary: I hope to identify features of our current condition that we might otherwise overlook. If we care about promoting human freedom and human flourishing in a globalized information society, we need to think about all the various forces that might affect them.

The Internet from a Meme's Point of View

The memetic model, as its name implies, asks how the evolution of the Internet looks from a meme's point of view. Memes are bits of information that replicate themselves in human minds and in human-created methods of information storage and retrieval.[1] (In fact, there is some dispute about whether the latter should properly be called memes, but for ease of discussion I shall include them in what follows.) Memetics holds that culture, knowledge, and information consisting of complexes of memes replicate themselves by spreading from mind to mind through communication, imitation, and social learning. Replicating memes compete for space in limited human memory and human attention, evolving in a Darwinian process. Human beings are hosts for memes; we use memes to think with, but memes use us to communicate and spread them, in the process generating cultural evolution.

Memetics studies how culture evolves as memes employ their human hosts to proliferate and compete with other memes for limited space in human minds and methods of information storage. Like genes, memes survive to the extent that they successfully propagate; therefore we may talk about them *as if* they were seeking to ensure their own copying and

survival. But that conceit is largely metaphorical. For the memetic perspective to be useful, it isn't necessary that there actually be roaming around our heads little bits of culture that are secretly working to further interests of their own. All that is necessary is that features of culture reproduce and develop as if this were the case.

How do the Internet and globalization look from a meme's point of view? Daniel Dennett once quipped that "a scholar is just a library's way of making another library."[2] He meant that successful memes use human beings as their witting or unwitting vehicles for reproduction and spread. Human beings use memes to think with, so from our perspective memes are just tools for our understanding—they form part of what I call our "cultural software."[3] But from a meme's perspective it is we humans who are a means to an end—that end being the replication and propagation of memes.

To survive, memes must either win a competition against other memes for limited space in human memory or attention, or they must create additional space for themselves. Hence memetic competition favors ideas and behaviors that promote communication and increase the number of places where memes can propagate and be stored. Note once again that if we define memes as brain states, bits of information stored in books or sent through telephone wires aren't memes in that narrow sense. But the forces of cultural evolution might generate new kinds of informational entities that can exist in formats outside the human mind. Indeed, that is precisely what a memetic perspective might predict.

New forms of memory storage and communication benefit many different types of memes. Although memes compete with one another, some memes assist one another's survival (just as some genes do). Hence many memes would welcome the spread of ideas that lead human beings to develop ever more powerful methods of communication and information storage. A memetic perspective would predict that, over time, human beings would generate and spread many ideas and behaviors that would lead people to expand communications and information technologies and facilities for information storage and retrieval. These might include (1) ideas promoting education, literacy, and the spread of knowledge; (2) ideas for technologies that let people send information and ideas to one another easily, quickly, and cheaply; and (3) ideas for technologies that make it possible to store vast amounts of information easily, quickly,

and cheaply. Eventually these ideas and behaviors might lead to something like the Internet, which connects billions of people around the world and—in conjunction with the world's computers—can store and transmit enormous amounts of information and ideas. To vary Dennett's aphorism, we might say that the Internet is a device made by memes for making other memes.

From a meme's point of view, the Internet is little short of paradise. It greatly amplifies the spread of ideas, knowledge, and bits of culture. In fact, all communication on the Internet occurs through copying, which is how memes reproduce. If cultural reproduction is a meme's version of sex, then the Internet is just one big orgy, an endless informational bacchanal. The Internet copies information from everywhere and then transmits it in redundant copies to millions of places around the world. From a meme's perspective, the Internet is not a great achievement of human liberty. It is the most powerful technology yet devised for memes to reproduce themselves in perpetuity. The glut of information produced by the Internet leads to increasingly powerful technologies of search and retrieval—like search engines—that become central to the network because they lower the costs of finding information. These new search and retrieval technologies, in turn, produce and propagate vast amounts of metadata—information about information—thus spewing ever more memes into the global information environment.

Memetic reproduction isn't concerned with whether human beings are making wise choices or bad choices in how they globalize the flow of information. Rather, the globalization of information and the push for ever more efficient methods of information transfer and storage arise from a memetic imperative. Memes use us to create an ever more suitable environment for their replication and spread. The memetic imperative isn't interested in what is good or bad for human freedom or human flourishing. It cares about what is good and bad for memes. Some things that help memes spread may assist human freedom and human happiness. But some may be indifferent or even hostile to them. Two obvious examples are the spread of hate speech and the self-replicating informational entities we call computer viruses. The proliferation of information can make human life more complicated and hectic; it can also threaten our health and even our survival when dangerous or harmful information proliferates.

The point of viewing globalization from a meme's point of view is not to get you to believe that tiny, inanimate bits of information are secretly in control of your life. The point, rather, is that although we may think that we are promoting the growth and spread of information technology to serve the goals of human enlightenment, the story is far more complicated. The memetic perspective helps us see that the proliferation of information and information technology takes on a life of its own, and that thinking in terms of memetic imperatives, and not human values, will help us understand why this is so.

Mother Earth Thinks about Herself

The Gaia model offers a second perspective on the global spread of information networks. It takes its name from the Gaia hypothesis, which proposes that the Earth's biosphere, atmosphere, oceans, and soil form a single entity that evolves over time and produces and maintains the conditions necessary for life. James Lovelock formulated the Gaia hypothesis in the mid-1960s; he sought to promote environmental values, and he emphasized the complexity of the global ecology and the necessary interdependence of all life on the planet.[4] Robert Wright offered an informational version of the Gaia thesis, arguing that the development of human intelligence is the next step in the evolution of the planet's biosphere and that globalization is a largely positive force that will draw human beings into increasingly interconnected economic, political, and informational cooperation, leading ultimately to a "global brain."[5] Wright was influenced by the work of the Jesuit philosopher and theologian Pierre Teilhard de Chardin, who argued that the "noosphere" of human thought would evolve toward a maximum level of complexity and consciousness, which he called the Omega Point.[6] In the Teilhard version, the world is not just a single organism evolving; it is also becoming more conscious of itself over time. There is an obvious analogy between Teilhard's model and the Hegelian notion of a world Spirit that comes to understand itself through history.

As in the memetic model, human beings in the Gaia model are a means to a larger end. We are information-processing nodes in a developing central nervous system. We are parts of an emerging world brain that

increasingly makes new neural connections and, in the process, becomes more aware of itself. Individual human beings are neither the beginning of this story nor its end. They are merely a historical stage in the world's development from relatively primitive forms of ecological feedback and information exchange to an ever more complex and sophisticated system of information flows and information potentials.

In the Gaia model, the world is a self-organizing computing system that collects and distributes increasing amounts of information about itself to itself, so that, in the end, the world becomes fully aware of itself and its own operations. Hence every new bit of information and every new mechanism for collecting, distributing, and analyzing information, even if pursued by human beings for completely selfish ends, increases the world's awareness of itself. Technological advancement creates ever new methods of informational feedback; the Internet draws ever more connections and pathways of informational flow; every new information collection and storage device increases the possibilities for information and feedback about the states and functions of the world and its elements. At this stage in the world's history, we are its neurons, and every bit of technology we develop helps the planet create new connections and promote new information flows, spurring the system onward toward intelligence and sentience.

Like the memetic analogy, the Gaia hypothesis of a single organism increasingly able to think about itself may be no more than a helpful metaphor that helps us to see historical processes from a different perspective. Yet there is some truth in the notion that increasingly complex self-organizing entities spontaneously produce new feedback mechanisms, so that they respond in ever more nuanced ways to signals and changes in information potentials flowing through the system. In this sense we can say that self-organizing entities "know" about themselves and respond to that knowledge.

Over time, such feedback mechanisms can be multiple, increasingly complex, and highly differentiated. Markets, to take only one example, are a kind of self-organizing system that produces continual informational feedback with powerful real-world consequences. We already live in a world of globalized markets in which the unexpected frost of an orange crop in one part of the planet has ripple effects throughout the

world economy. Globalized economies not only make different parts of the world more interdependent, but they also create incentives to collect and transmit ever more information from one part of the world to another, so as to anticipate the economic causes and effects that come with this interdependence. Similarly, globalized financial systems require elaborate network surveillance to ensure security and trust and to forestall attacks on the system.

The Gaia hypothesis suggests that the globalization of information technology represents the latest stage of a far more complex self-organizing system that collects information about what happens on the planet and combines it with multiple mechanisms of feedback and control. Before human beings evolved, ecology itself was the major carrier of informational feedback, but now human beings and human technologies do an increasing share of the work. Imagine a world in which every street corner has multiple cameras that collect visual information from every angle; every street has multiple sensors that monitor traffic flows; every house is a "smart" house that collects and analyzes information about what happens within it; every market transaction is dutifully recorded, collated, and analyzed by computers around the world; every computer network continuously monitors its security and tests its vulnerabilities to attack; every search engine perpetually sends out bots seeking new connections and new information to copy; every Internet service provider keeps continuous tabs on what information is being requested and where it is being sent; and that various entities, some public, some private, some human, some automated, continuously gather all this information, sifting it and analyzing it for patterns to predict future behavior and forestall future problems. Such a world would indeed begin to approach a global information processing system, if not a world brain.

The twin forces of globalization and Internet penetration have accelerated this process. We are still at the beginning of a fully globalized network that collects information from around the world, collates it, analyzes it, and sends it to anywhere and everywhere. In this sense, it is not so strange to say that the world is becoming increasingly "aware" of what is happening within it. Perhaps more important, in this emerging world we are not necessarily the central characters. Although these systems of informational feedback grow through the motivations and actions of

individual human beings, they do not necessarily evolve to benefit us; rather, our interests, expectations, values, and desires will increasingly be shaped to mesh with the imperatives of this self-organizing world. We will become the sort of beings who are fully immersed in global information flows; who are continuously tracked, traced, and monitored; who can send and receive information from anywhere to anywhere anytime; who have at their disposal multiple methods of communication and infinite sources of information from around the world; and who can no longer imagine what it would be like to live otherwise.

The Proliferation of Information Power

This brings us to the third perspective for understanding informational globalization—the proliferation of power model. The idea of proliferating power is inspired by the European social theory tradition of Karl Marx, Max Weber, and Michel Foucault. Marx pointed out that the evolution of economic forces drives people to make history but not as they intend, creating ever new forms of economic subordination that are repeatedly justified under the name of increasing freedom (although Marx believed the story would conclude with the happy ending of a proletarian revolution). Weber argued that modernity produces an iron cage of increasing bureaucratization in which individuals are subjected to expanding forms of rationalized organizational power. Foucault heralded the age of a disciplinary society in which surveillance and professional knowledge increasingly normalize and regiment human behavior; he imagined new forms of power that, rather than being controlled by any single group or agent, disperse themselves in ever finer webs throughout society.

A proliferation of power perspective argues that the information technologies which human beings implement to transfer, store, and analyze information do not necessarily bring a net increase in either human freedom or human empowerment. Rather, the rise of the global information economy enmeshes human beings ever more tightly into digital information networks, while simultaneously monitoring, shaping, directing, and controlling human beliefs, values, behaviors, and actions. Power does not disappear in a digital networked world. Power shifts from the arbitrary will of specific individuals and the imperatives of large bureaucratic orga-

nizations to the channeling effects of software code, surveillance technologies, and information networks. Increasingly, software architectures and information networks direct, block, filter, categorize, monitor, and normalize behavior; they drive the pace and possibilities of human interaction, the scope of human imagination, and the search for and realization of human desires.

Information, information filtering, and information transfer become central to everyday human life, shaping human expectations and possibilities while they expand our powers. Although we are increasingly integrated into information networks in some ways, we are also alienated from them in others. Information in the form of computer code, databases, information-collection systems, and data analysis turns information into a thing and a tool that does more than empower human beings. The proliferation of power model predicts that digital information flows will increasingly monitor and control human beings, reshaping their activities, intentions, hopes, and desires. Instead of being subjected to the arbitrary will of another, human beings will be subjected to the distributed power of networks. Digital networks tie people together and, in tying them, bind them in ever new ways. Power, instead of being increasingly concentrated in individuals and organizations, is increasingly diffused, so that its effects are felt everywhere.

People routinely praise the Internet for its decentralizing tendencies. Decentralization and diffusion of power, however, is not the same thing as less power exercised over human beings. Nor is it the same thing as democracy. Consider technologies that trace position and identity, such as global positioning systems, radio frequency identification tags, and biometric readers. These devices are widely diffused throughout the system, collecting information from anyone who interacts with them. Or consider digital rights management systems, technical protection measures, and digital watermarks. These forms of control travel wherever files go, carrying their instructions and controls with them. Finally, consider search engines and related systems of categorization and accreditation. Millions of people contribute to the results that search engines provide, but search engines are not a form of democracy. Rather, they are a form of normalization. Individuals do not vote for links in the way they vote for candidates who will represent them and who are accountable to them.

Links construct a regime of norms and expectations. The same is also true of network services that provide accreditation and relevance, filter, collate, and categorize. We can design these systems so that no single individual controls them. But this does not eliminate their power over human beings. It simply enables power to flow everywhere through the system. The fact that no one is in charge does not mean that everyone is free.

An Antihumanist Perspective on Internet Regulation

Familiar issues of Internet regulation look quite different from these three perspectives. Consider pornography as an example. From a memetic perspective, pornography is a "killer app"—that is, an application that motivates people to invest in new technologies or more powerful versions of existing technologies. Pornography harnesses human sexual desires to push human beings to use and develop ever more powerful ways to deliver sexually explicit content. Once the informational pathways have been created, however, they enable many more memes to flow through digital networks and gain storage space on computers. It is possible, even likely, that the Internet as we know it would not have grown so far or as fast had it not been for pornography. Pornography is still driving new markets and new innovations for video phones, portable video players, and virtual worlds. Moreover, each new advance in information technology becomes both a delivery device and a magnet for pornography.

The Gaia model views pornography in similar terms. Pornography drives human beings to create ever more powerful communications networks. It facilitates and fosters the creation of the global neural network that helps the world become more conscious of itself. The proliferation of power model adds an additional wrinkle: The proliferation of pornography not only drives the creation of informational networks that people eventually cannot do without, and which eventually control their lives, it also proliferates forms of sexuality that rob people of their dignity and keep them preoccupied with sexual entertainments and therefore docile and more easily controlled.

From a standard policy perspective, pornography is a problem of public morals let loose by the Internet, or it is a necessary consequence of the

freedom of expression that the Internet offers individuals. From the Gaia perspective, however, pornography multiplies neural connections in the world brain. From the proliferation of power perspective, it drives people to communicate incessantly about sex. And from a meme's perspective, pornography is a collection of good (i.e., successful) memes. Pornography not only thrives in existing information environments, but it also drives the creation of new information environments that benefit its survival and propagation. The closest analogy in the natural world might be the genes that cause beavers to alter their environment—through building dams—to help ensure their continued reproduction. In fact, pornographic memes are not only incredibly successful, they are also altruistic—because the new environments they drive humans to create work to the benefit of many other memes as well.

Spam offers a second example. As with pornography, new information environments both proliferate and attract spam. In fact, a very significant percentage of e-mail traffic is spam, which suggests that spam, no matter how annoying it may be to human beings, involves very successful and adaptable memes. From the perspective of public policy, of course, spam is objectionable content. We either work to eliminate it or else we must accept it as an inevitable by-product of the benefits of the digitally networked environment. But consider spam from the antihumanist perspectives offered in this chapter. Objectionable content—and the reaction to this content—drives technological advancement in information technology, which serves the propagation of memes, increases the number and the power of the neural connections in the world brain, and promotes the proliferation and diffusion of ever more finely grained forms of power. Spam, like porn, drives human beings to build, design, and implement information controls that later can be used for other tasks.

Objectionable content—like pornography or spam—leads to new investments designed to control its flow and propagation, in addition to laws that prohibit its spread. These include elaborate filtering systems and devices for tracking and locating the source of objectionable content. Legal and technological measures, in turn, lead to an arms race between pornographers or spammers and those determined to limit or stop them. The same is true of other types of objectionable content, including fraudulent advertising, phishing schemes, and, in those countries determined

to control it, political dissent and blasphemy. The arms race between those who promote content deemed objectionable and those who try to control or block it, in turn, produces ever new investments in technology and inventive ingenuity—including, for example, encryption technologies (and methods of breaking them), routing and control technologies (and methods of evading them), and devices for anonymization (and devices to unmask identities). Each of these information control technologies, once implemented, has multiple uses beyond its original purposes, thus driving the increasing power and complexity of global information networks.

Once put in place, the digitally networked environment attracts an increasing share of commercial and government operations. Eventually it becomes indispensable to support the world banking system, the delivery of health care services, everyday commercial transactions, and national security. Its centrality to our lives attracts new forms of cybercrime and new forms of attacks on the network. In order to protect their interests, governments and private businesses must invest ever more heavily in computer security technologies and information collection and analysis methods that can identify security threats and prevent them before they happen. The arms race set off by the digitally networked environment produces ever more surveillance of the system, ever more collection of analysis and data to predict and head off potential dangers, and ever more powerful technologies of control over information flows.

We can view the current struggles over privacy and intellectual property rights similarly, not as problems in their own right but as spurs to innovation and the proliferation of information technologies. Digital networks undermine intellectual property rights in familiar ways: They allow unlimited copying and transmission of digital content at vanishing costs and undermine the rights holder's legal monopoly over reproduction and expression. This leads to technical measures to protect intellectual property interests, which leads in turn to new devices to route around these measures or disable them, producing an arms race that enhances technological advancement and proliferation. The need to protect profits in intellectual property drives increasing surveillance of digital networks and attempts to establish more finely tuned control over bits of digital information wherever they travel through the network.

The contemporary fight over digital privacy provides the flip side of the coin, because many of the same technologies and strategies protect both privacy and intellectual property. Digital technologies undermine privacy because they allow new ways of collecting, collating, and analyzing information. The loss of privacy leads to technical and legal measures that attempt to control information flows, producing its own version of the technological arms race.

This story makes particular sense in the Gaia and proliferation of power models. Technological arms races produce ever more finely grained and powerful methods for collecting information about the information that flows through the network. The spread of technologies and countertechnologies enhances flow control and feedback in the global information system, as well as ever new methods for proliferating power over human beings from everywhere in the system. The memetic story, by contrast, is more complicated: Although memes do not benefit from technological environments that prevent their transmission and limit their flow, they do benefit from environments that produce a net increase in their spread and propagation. To the extent that intellectual property protection promotes propagation of ideas, some memes would favor it. Nevertheless, if we see our current struggles over intellectual property and privacy from a meme's point of view—rather than from the perspective of what benefits individual rights and existing business models—we can guess at the long-run result: far less privacy and fairly limited effective protection of digital content (whatever the law may say), combined with increasing amounts of metadata and greatly increased surveillance of digital networks.

Conclusion

Many Internet theorists—including me—have seen the key struggle of the digital era as one between centralization and decentralization, between open and closed systems of innovation, between a culture dominated by a relatively small group of powerful corporations and a truly democratic culture in which ordinary people are producers as well as consumers of informational goods. These theorists argue for increasing decentralization, for increasing connectivity, for increasing democratiza-

tion of culture and information technologies, for putting more powerful information production tools in everyone's hands and making information cheaper and more easily accessible to everyone.

I support these goals. I do not offer the argument in this chapter to suggest that we should abandon them. Instead, I offer this analysis to suggest that we face other issues as well. If we are interested in promoting *human* rights, we must also be interested in how human beings will change in response to changes in information technology and information flows. Culture reshapes what it means to be human. As the network changes, and as we become increasingly subjected to it, we will become human in different ways.

Ironically—or perhaps not—human beings will use the language of liberal individualism to justify and legitimate the world we are entering. We will defend the spread of memes, the deployment of new global neural connections, and the proliferation of information power in the name of freedom—to speak, to innovate, to buy and sell—and in the name of security—from crime, from terrorism and from the theft of intellectual property. But our model of individual liberties and rights—and our political struggles over the same—does not fully capture how power changes and spreads with the evolution of global information architectures and global information flows. That is because the forces of global information evolution are orthogonal to the pursuit of human freedom. Our goal is to divert this new form of power toward human ends. It will proliferate in any event. The real question is how it proliferates.

Notes

1. See Richard Dawkins, The Selfish Gene (Oxford: Oxford University Press, new ed., 1989), 192; Daniel C. Dennett, Darwin's Dangerous Idea: Evolution and the Meanings of Life (New York: Simon and Schuster, 1995); J. M. Balkin, Cultural Software: A Theory of Ideology (New Haven: Yale University Press, 1998).

2. Daniel C. Dennett, Consciousness Explained (Boston: Little, Brown, 1991), 202, 206.

3. Balkin, Cultural Software.

4. James Lovelock, Gaia: A New Look at Life on Earth (New York: Oxford University Press, 1979, 2000).

5. Robert Wright, Non-Zero: The Logic of Human Destiny, 297, 316 (New York: Pantheon Books, 2000).

6. Pierre Teilhard de Chardin, The Future of Man (New York: Harper Torchbooks, 1969).