

The Prison That Was A Highway: The National Information Infrastructure

Part 1: Introduction

The years 1993 through 1998 saw the emergence of a new communications technology in the US. During this time the **Internet** evolved beyond its prior status as a tool for academia, the military, and the computer industry. It became a general use instrument for commerce and correspondence.

Two divergent metaphors emerged during these years for this new form of computer-mediated communication:

- Al Gore, who was then US Vice President, spearheaded a national movement to create a public information utility. Dubbing it an “Information Superhighway,” Gore painted the proposed National Information Infrastructure as a beacon of shining hope, promising abundant access and interaction for all.
- Another vision of this selfsame technology used an 18th century prison design as its metaphor. The Panopticon was a penitentiary which used a complete loss of privacy to instill obedience in its inmates. Advocates of this vision chronicled how government and corporations were secretly gathering information about the general public through computer-mediated transactions and other forms of online activity.

Examining the Paradox

In the Spring of 2001, we are just beginning to gain perspective on the origins of the general-use Internet. How accurate were each of these visions in their time? Were they rooted in fact or were they designed as propaganda devices to motivate and manipulate their adherents? And are they still applicable in Spring 2001? These questions, which are at the heart of the highway vs. prison paradox, are explored in this essay within the following sections:

- [The Information Superhighway](#)
The history and the aims of the National Information Infrastructure
- [The Panopticon](#)
How this penal metaphor has been invoked to describe various elements of the information age
- [Beyond the Gold Rush](#)
How these two metaphors are evolving in the nascent Bush Administration

Part 2: The Information Superhighway

The general-use Internet, as we know it today, is the result of decades of research and political action. This section describes the selling of the Internet by Al Gore, in concept and execution, to the American people as a revolutionary shift in the way this country accesses information and does business. This discussion will include:

- [A Burgeoning Technology](#)
A very brief description of how the Internet was developed.
- [Al Gore's Internet Involvement](#)
How he supported Internet development at several key points and proposed bringing the Internet into the American home.
- [Building The Information Superhighway](#)
The selling of the Internet to the American people.
- [A Digital Gold Rush](#)
How corporations began assimilating the Internet.

A Burgeoning Technology

Internet technology is barely 40 years old. The present form of the Internet can be traced back to the year 1962 and the work of J.R. Linklinder. That year Linklinder became director of the Advanced Research Projects Agency (ARPA), a research organization for the Department of Defense. In 1962 Linklinder also published a series of memos entitled "On-line Man Computer Communication," in which he described a "Galactic Network" connecting computers (and their users) all over the globe. ARPA became a key player in the initial phases of Internet development, instigating and/or funding research for many of the stepping stones toward the creation of ARPAnet, its first nationwide network

By the 1990's, Linklinder's initial vision was becoming a concrete reality at the rapid pace:

- Number of Internet hosts surpassed 100,000. (1989)
- The first commercial provider for dial-up access, The World, came online. (1990)
- The National Science Foundation (NSF) upgraded its cross-country Backbone, the central hardware of the national Internet system, to T3 (44.736Mbps). (1990)
- The first World Wide Web pages, designed under the direction of Tim Berners-Lee, were displayed publicly for the first time. (1991)

Like a quiet avalanche, Internet technology was swiftly developing. By 1992, the number of Internet hosts had exceeded the 1,000,000 mark. Still, the Internet was a tool that remained outside of the public sphere, belonging primarily to the realms of computer science, academia, governmental research, and military operations. Few “civilians” knew anything substantial about the Net, how it operated, or how it might be beneficial.

If the Internet was ever going to be a mass-market communication tool, the general public would need to be educated. They would need to understand the medium’s possibilities and challenges. It wasn’t until 1992 that a spokesperson for Internet technology would grab the public spotlight. That spokesperson was Albert Gore.

Al Gore’s Internet Involvement

During his 2000 presidential campaign, Gore was repeatedly ridiculed for stating, "I invented the Internet." In retrospect, this was an extremely foolish declaration for Gore to make. The development of such a complex technology cannot be attributed to a single individual. Given its speciousness, Gore’s self-aggrandizing claim became a totem during the campaign for deceit, egoism, or self-importance (depending upon how his opponents used his words in any specific ad.)

Nevertheless, Gore had undoubtedly supported the Internet on several occasions during its developing years. His office spearheaded both a key piece of legislature and a persuasive article outlining the Net’s potential. His involvement with the Internet included:

1976

Gore began his political career in the House of Representatives as a congressman from Tennessee. During this term, he introduced a bill calling for the construction of a "data highway."

1986

Senator Gore sponsored the Supercomputer Network Study Act, a project which called for a mapping of the information needs of the general public onto the existing networks run by various universities, corporate research facilities, and military technology centers.

1991

Gore wrote an article for Scientific American, "An Infrastructure For The Global Village." This article describes his vision for the Internet as a mass media communication tool. In retrospect, it may be difficult to unravel the possible motivations behind Gore’s interest in the Internet. The degree to which his interest was genuine, or merely political opportunism, remains unclear. But for whatever reason, Gore found in his Vice Presidency an occasion to leap onto the Internet bandwagon.

During his first year in office, Gore announced an initiative that sparked the imagination of the entire country. This initiative was the National Information Infrastructure (NII), or as dubbed by the Clinton Administration, the "Information Superhighway."

Building The Information Superhighway

Using the term highway was an inspired choice on the part of Gore and his staff. One could easily explain then-current features of the Internet in terms of a common American experience – traveling on a highway:

- Travel on a highway mirrored flow on the Internet, both use addresses and place names
- Highways, like digital hardware, connected far-flung parts of the country.
- Toll roads require payments for use, just like connection and other user fees.

This highway metaphor was instantly accessible to most people. Superhighways connoted large capacity, swift movement, and community progress.

In his first public address on the NII, on January 11, 1993, Gore presented a conceptual blueprint for his project. He spoke of its benefit to schools, to the medical profession, and to a more effective government. In the proceedings of a later conference dedicated to the design of a generic NII interface, Gore's vision was said to include:

the telephone system, the radio and television networks, all of the libraries and every computer in the country, including various other communications and storage facilities and services. The term 'NII' was coined recently because of the possibility of tying together a great many (if not all) of these elements into an integrated network complex that will be accessible (with some limitation) to essentially everyone... (National Research Counsel, 1997)

Gore and his staff clearly intended that the NII would be a radical extension of the current infrastructure. The idea of including all digitized communication systems into a single entity would require huge amounts of money, time, and cooperation on both national and local levels. In his 1993 talk, the Vice President likened the building of the NII to the implementation of the national telegraph system:

I referred earlier to the use of the telegraph in 1860, linking the nation together. Congress funded Samuel Morse's first demonstration of the telegraph in 1844. Morse then suggested that a national system be built with federal funding. But Congress said no, that private investment should build the information infrastructure. And that's what happened -- to the great and continuing competitive advantage of this country. (Gore, 1994)

To hasten this privatization, the Clinton-Gore administration "sold" the NSF Backbone upon several corporations in 1995. The intention was to foster growth through competition, while mandating these corporations to widen accessibility to schools and community organizations.

A Digital Gold Rush

Private investors flocked to become a part of the next communication paradigm. While government spearheaded the marketing of the NII, public investments in the Information Superhighway topped \$400 billion USD according to some estimates. Corporations and small

businesses alike sought to profit from this lucrative "equivalent of what the automobile-oil-rubber-highway industrial complex was in the first half of the twentieth century." (Castells, 1996)

A fever seemed to take hold of the country during the beginning years of the NII. Venture capitalists saw an opportunity for significant profits by providing goods and services to the consumer via online retailers. If many of these early businesses collapsed, no one seemed to take heed. Venture capitalists simply poured another dollop of that \$400 billion into additional start-up companies. Employment at a dot.com brought the potential for seemingly instant wealth via stock options for most of the workforce. The Cyber Gold Rush was on...

Part Three: The Panopticon

While the Clinton administration was attempting to build the type of groundswell for the National Information Infrastructure (NII) that characterized Kennedy's Space Program, a troubling vision of the proposed information matrix was coalescing in academic circles. If the NII was to usher in an era of technological freedom, its opponents saw a dangerous nightmare that was already present. This section outlines:

- [The Inspection House](#)
How an 18th-century architectural design illustrated the perils of the NII
- [Inspection As Power](#)
How covert surveillance was a growing concern in academic and computer industry circles
- [Inspection As Control](#)
Self-censorship is the natural consequence of continual surveillance

The Inspection House

In 1791, Jeremy Bentham proposed a new era in penal reform with the publication of his book, *Panopticon or The Inspection House*. He envisioned a novel prison architecture based on a simple idea: implied surveillance. A central tower was placed at the hub of a circular building, the individual prison cells fanning out from this tower in a mandala-like pattern.

The key to Bentham's design was the tower's visual supremacy. All inmates could see the tower, the tower could see into every cell. But inmates never knew whether anyone was in the tower or whether they were watching. Bentham suggested that this ever-present surveillance, whether actual or implied, would stop the inmates of his Panopticon from behaving in an inappropriate manner.

George Orwell, in his famously dystopian novel *1984*, generalized Bentham's ideas from a single building to social control on a grand scale. His characters live in a society under constant

surveillance, where every word they utter, every gesture, every thought could become evidence of their own guilt. And, as in the Panopticon, this surveillance is never relegated to the background. The inhabitants of 1984 are constantly reminded of their subjugation:

Though the sun was shining and the sky a harsh blue, there seemed to be no colour in anything, except the posters that were plastered everywhere. The black-moustachio'd face gazed down from every commanding corner. There was one on the house-front immediately opposite. BIG BROTHER IS WATCHING YOU, the caption said, while the dark eyes looked deep into Winston's own.

Inspection As Power

The panopticon as a symbol for contemporary methods of social control was revitalized by Michel Foucault in the late 1970's. Calling upon his early studies of eighteenth-century medical architecture and penal reform, Foucault explored the organizing and isolating tendencies of the panopticon in a series of works. In his book *Power/Knowledge*, Foucault invoked the panopticon with its promise of seeing-without-being-seen as a symbol of the ultimate power of authority: "There is no need for arms, physical violence, material constraints. Just a gaze. An inspecting gaze, a gaze which each individual under its weight will end by interiorization to the point that he is his own overseer..."

Social theorists eagerly applied Foucault's reading of the panopticon metaphor to subjects ranging from cultural history to pedagogy. While several authors in the 1980's began to write about newfound threats to personal privacy, it was cultural theorist Oscar Gandy who galvanized the growing concerns about the loss of autonomy in the burgeoning information society. His seminal 1993 book, *The Panoptic Sort: A Political Economy of Personal Information*, used Bentham's model to denote the digital infrastructure as being both the circular walls and the central tower of a modern panopticon. Gandy vividly painted the "panoptic sort as a type of high-tech cybernetic triage through which individuals and groups are being sorted" to meet corporate and political ends.

The author detailed the types of "all-seeing" institutions that covertly track, collect and manage the continuous flow of personal data that pulse across the globe every minute. His list of panoptic watchers included the CIA, various financial institutions, and the IRS. In addition to "real world" transactions, Gandy warned of the potential for clandestine surveillance of consumer activity on the Internet.

Other authors of this period took up the panoptic metaphor to warn the general public of the deleterious consequences of the digital infrastructure. Howard Rheingold, in *The Virtual Community*, also predicted the rise of electronic consumerism as a surveillance tool:

It will begin not by secret police kicking in your doors but by allowing you to sell yourself to your television and letting your supermarket sell information about your transactions, while outlawing measures you could use to protect yourself. (Rheingold, 1993)

Rheingold's prediction is slowly being realized. Several years after the publication of *The Virtual Community*, the Safeway grocery stores instituted a new program by which shoppers could get discounts on products by using their Safeway card when making purchases. This red plastic card resembled any credit card. It was the same shape and had the familiar magnetic strip on the back. The shopper had the grocery clerk scan the card while making purchases, and a discount was taken off the bill. Unfortunately, customers didn't know that their personal information and their purchasing patterns were being collated by the corporation. Who knows what Safeway does with that information? There may be no way of knowing how they use it or to whom they sell it. Rheingold was predicting the future.

David Lyon, in his *Electronic Eye: The Rise of Surveillance Society*, also drew parallels between Bentham, Orwell, and the information infrastructure. Lyon also points to the role of digitized transactions as the foundation of the panoptic sort:

Orwell's dystopic vision was dominated by the central state. He never guessed just how significant a decentralized consumerism might become for social control. The Panopticon, on the other hand, offers scope for social analytic interpretation in precisely such contexts.

Inspection As Control

Over the next several years, references to the Panopticon were used liberally to bring together ideas of digital surveillance, consumerism, and social control. In 1995, Gandy's views were applied directly to the National Information Infrastructure by Alex Wexelblatt of the MIT Media Lab in a paper entitled "How The NII Is Like A Prison."

In his paper, Wexelblatt expands upon Foucault's (and Gandy's) thesis that the corporate and governmental panoptic sort would necessarily lead to self-censorship:

People trained to expect denial (of services, credit or opportunity) will soon cease applying for more. Subject to observation at any time by unknown persons with unpredictable means of retribution, we chill our own speech and action in ways antithetical to democracy. This process is already in evidence in America today. (Wexelblatt, 1995)

These words directly reflected Foucault's concern that implied surveillance created a self-limiting stance of censoring one's own thoughts and desires. However, Wexelblatt is not talking about overarching cultural mores and behaviors as did Foucault. He is describing the effect of a concrete technology that was actively being built at the time. This author was calling for a rethinking of the NII concept from the ground up.

While Gore was heralding in a radiant era of technological marvels, Wexelblatt and his peers warned of the already-emerging dangers inherent in the NII. If the Information Superhighway was to be built on the pre-existing network of corporate and governmental computer hardware, wouldn't the existent privacy issues necessarily escalate? What systems were being devised that would ensure that these new technologies were being used responsibly?

Within a week of Gore's first public address on the NII in 1993, journalist Brock Meek posted the following on a bulletin board in the "Wired" section of the cybercommunity The Well:

Buried deep in his speech, in a single ominous sentence, Gore made a pledge that is sure to send a chill into privacy advocates everywhere: "We'll help law enforcement agencies thwart criminals and terrorists who might use advanced telecommunications to commit crimes." In laymen's terms: We're f*cked. (Meeks, 1993)

For all of the Vice President's shining rhetoric, the increasingly panoptic potential of his program was clear. Meek's comment in an online bulletin board visited mostly by computer scientists attests to the growing consciousness in that field of the dangers of the NII. While America was beginning to pour money into Gore's project, many people were also beginning to feel an acute case of buyer's remorse.

Part Four: Beyond The Gold Rush

What has become of Gore's dream for a national information utility? Were the panoptic references to the Internet simply a fear-based response to Gore's hyperactive initiatives? This section explores the state of both of the preceding metaphors in 2001:

- [The Fallen New Economy](#)
A brief description of the current state of affairs.
- [The Current Debate Over Privacy](#)
The panoptic perspective has spread to the general public, even if the metaphor has not.
- [Shifting The Locus of Control](#)
The responsibility for responsible use of information shifts from the collective to the individual.

The Fallen New Economy

To view the online remnants of the National Information Infrastructure (NII) in the Spring of 2001 is an experience in digital archeology. Several sites supporting some of the NII's chief projects still exist, including the Virtual Library, but these sites have not been updated for several years. When searching the Bush Administration's webpages, the only mention of the NII is in legacy content left over from the Clinton era. One could propose many reasons for the NII's fall, ranging from unrealistic expectations to political infighting. But, for all purposes, the NII ended with the fall of the Clinton Administration. As of June 2001, the Information Superhighway metaphor has become a cultural anachronism.

When billions of dollars were being poured into the technology sector in the mid-1990's, the resultant economic upturn was called the New Economy. Technology stocks gained their own listing on the NASDAC, stock purchasers bought in droves, money flowed freely. Interestingly,

the demise of the Information Superhighway has coincided with a potent downturn in Internet-related and personal computer industries:

- The journal *InternetWeek* reported in April 2000 that 369 “major” Internet companies had shut down in the previous 15 months, 147 of those in the first quarter of 2001 alone.
- Many of the major computer-based corporations, including Intel and Microsoft, are presently laying off employees or imposing hiring freezes.
- The transformation of dot.coms into dot.gones has become an everyday occurrence, ushering in a new social event – the Pink Slip party for laid-off workers.

It was only natural that dynamic surge accompanying the New Economy should correct itself. The venture capital wellspring was not bottomless. Since the initial glamour of the newfound investment and business medium has faded, the Internet has become a somewhat fractious field for investors. The business community has begun to pay attention to patterns of online consumer purchasing and response to promotion. Economic and transactional business cycles in the online arena are slowly being understood. The New Economy is integrating with more traditional economic forms.

Internet development still moves ahead. Research continues on improving the nation’s digital infrastructure. Next Generation Internet and Internet 2 projects are all in the development Pipeline. Businesses continue to enter the online business arena, offering an increasingly wide range of goods and services. Software companies create new and interesting applications for general users on the personal computer, handheld devices, and cell phones. Even if the Information Superhighway has run aground, the Internet continues to expand.

The Current Debate Over Privacy

Many Americans are concerned about their personal privacy and the security of sensitive information in the information age. On May 8, 2001, at a hearing of the House Subcommittee on Commerce, Trade, and Consumer Protection, Dr. Alan Westin summarized the results of over 45 national surveys on privacy issues polled between 1979 and 2001. In his testimony, Westin stated:

- Concern about privacy is the most cited reason Net users give for not making purchases and for non-users declining to go onto the Net.
- The potential misuse of personal information was listed by 9 out of 10 Americans as a problem; over three-fourths of them (77%) say they are now “very concerned” about this misuse.
- Over three-quarters (79%) of those polled believe they would add privacy to the Declaration Of Independence trinity of life, liberty, and the pursuit of happiness.

- In 1999, 92% said they are concerned about threats to their personal privacy, with 69% saying they are “very concerned”; 94% say they are worried (77% of those “very worried”) about “possible misuse” of their personal information

The subjects of Westin’s studies have reason to be concerned. Identity theft is fast becoming a nationwide phenomenon. The Federal Trade Commission reports receiving approximately 40,000 calls to their Identity Theft hotline in the year 2000, its first year of operation. Of these calls, 64 percent were victims of identity theft, and the remaining 34 percent were requesting information that would help safeguard against identity theft. (FTC website, 2000) As the flow of information in this country becomes increasingly digitized, our ability to manipulate information is surpassing our capacity to keep that information secure.

Even if the panoptic metaphor itself never came into use by the general public, concerns about covert surveillance continue to escalate nationwide. One deviation from the more traditional usage of the panoptic metaphor is the statistical information about identity theft listed above. Most of the available information suggests that identity theft is perpetrated by individuals or small groups, rarely by large entities such as governments or corporations. With the continued proliferation of sophisticated online tools, any person can be a watcher in the panopticon.

Shifting The Locus Of Control

As indicated by the statistics at the beginning of this section, concerns about privacy and the respectful use of personal information have continued to expand outside the domains of critical theory and governmental regulation. Indeed, a soon-to-be published textbook on website design contains guidelines and reminders about the ethics of online association. Written for a general audience, *Website Design: Theory and Principles* by Farkas and Farkas includes an entire chapter focusing on the “the societal implications and ethical issues that arise from the enormous influence of corporations in our lives...corporations that are involved in the communications media and the Web.” (In press.)

Those authors who initially used the panoptic metaphor were pointing out the presence of hidden corporate and governmental malfeasance. They sought to awaken a culture-wide response to a very real but hidden danger. Farkas and Farkas, on the other hand, are writing in a culture which has been startled awake by contact with cyberstalking, online deception, and identity theft. These authors are writing to those who directly participate in the maintenance and expansion of the digital infrastructure, those who can have an impact on current corporate practices.

Farkas and Farkas propose unequivocal ethical guidelines, which suggest Internet professionals:

- Take personal responsibility for learning to recognize unreliable and deceptive content
- Refuse if their employers or clients ask them to engage in unscrupulous practices
- Abide by copyright law

- Maintain ethical behavior in virtual communities, and help others do the same

In short, they advocate dismantling of *panopticon* one piece at a time.

As the gold rush surrounding the Information Superhighway fades, we have come full circle. That intensely argued dichotomy of the radiant technological utopia and the dark prison has collapsed; the utopian prophets and the digital doomsayers have both retreated from their roles as cultural catalysts (if only temporarily). Using ideas expounded by Farkas and Farkas, it is now the responsibility of the individual to take action, to disengage from panoptic practices at whatever level they personally encounter them, and to help those with whom they interact to develop ethical practices.

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(A link to an audio version of this talk is on:

<http://energycommerce.house.gov/107/hearings/05082001Hearing209/hearing.htm>)