CHANGING

Times

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In the early days of the Internet,
I don't think anybody really had an idea how big it was going to be.

-John Markoff,
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I

It's hard to miss it, even among the throngs of tourists, the giant flat screens and flashing lights of next-door Times Square. The *New York Times* Building stretches upwards in the Manhattan skyline, 52 stories of ceramic, luminescent rods surrounding its glass and steel inner shell. It's radiant when the sun sets, reflective when the city lights are shining. Transparent from the outside in. Sleek and open. It is the newspaper's seventh headquarters, a decidedly different look from the low ceilinged, smoky newsrooms of *All the President's Men*.

I walk past the building on my way to work, and it always makes me do what no real New Yorker ever seems to do: look up. That brief glance is like watching a scene accelerated, where crowds blur easily into streaks of colors, and the eye searches for the fixed object, the only thing that appears clearly in a landscape of constant movement. It usually rests on the *New York Times* logo that headlines the building in black, bold letters. I sometimes believe it an ironic addition, or perhaps just an architectural show of its authority; it seems to read *We're still here*. The recent story of the newspaper industry, of course, is familiar to us now, a once sturdy business that has been irreparably shaken by the popularization of the Internet. Jobs were cut. Papers closed down entirely. Companies fretted over whether to offer content for free; pundits wondered what authority meant in the digital age. *Page One*, the 2011 documentary on the *New York Times*, employed the anxious discussion between new and old media as its major plot point.

When the new building was unveiled in 2007, architecture critics made much of its symbolism: the light that permeated its glass walled offices was the transparency of an objective news organization. Its public atrium spoke to the paper's role as a good for the people. It's wide-open spaces and modernist vistas embodied the free flow of information in a democratic society. But, despite the symbolic fanfare, there was another, more sinister thread running through the commentary. Questions of the newspaper's future seemed woven through the *Times*' sleek new headquarters: How could a shrinking newspaper take on an expansive new building? What was a newsroom supposed to be in the 21st century? Even its designer Renzo Piano, an architect typically wary of a building's semantics, acknowledged the structure's tutelage to the Age of Information – the Age of the Internet. "This building is about defying gravity," he said in an interview with the *Times* in 2000. "This is the idea. In some ways, it is like information. Information is immaterial."

Only a decade before he spoke those words, though, Piano's observation wasn't so obvious. Information, for the purposes of the *New York Times*, had been profitably material since they printed their first broadsheets in 1851. *Information* was dropped on readers' doorsteps every morning. It was inky *information* that got on your hands when you flipped through the paper's pages. *Information* was turned open, pored over, sometimes used as a rain cover; and it was pages of black-on-white *information* that were tossed in the trash at the end of the day. Throughout the 20th century, the *Times* enjoyed significant and growing profits from the very materiality of its information. In 1980, it had become a national paper, and the New York building pushed at its seams with a

growing staff. Less than a decade later, their printing locations were peppered across the country, as technological changes brought on cheaper, mechanized print methods. Circulation soared and profits soared. The staff grew ever larger, and so did paper's page count – on a September Sunday in 1987, the *Times* published its thickest edition ever, with 1,612 pages.

But in the early 1990s, information changed. The Internet made its momentous entrance on the American stage. Companies adopted email, while people at home "dialed in" to the Internet on personal computers. As the Internet wound its way through modems and fiber optic cables into the places we knew best, content of all sorts proliferated online. In 1991, the Library of Congress offered information and exhibition pictures on a slowly loading website. A bookseller in Cleveland opened books.com, the first ecommerce shop, in 1992. The White House debuted their online home in 1994, the Vatican in 1995. The *New York Times* started publishing online in 1996. Bricks and mortar, books, pages and printed images all collapsed in the glowing portal of the screen; the hierarchies of privileged access seemed to all fold there as well. What was formerly "located" in the physical world came together bit by bit, accessed by the growing millions that were dialing in, downloading from and contributing to the networked world. By the late nineties, the Internet was popular, and information, in less than a decade, had the possibility of being immaterial. The rest is recent history.

In the short and spotty durée that is human memory, the span of this change seems so brief as to be nearly instantaneous: one day we did not have the Internet, and the next we

were connected to a global network, downloading our friend's photos and watching a stranger's cat sneeze on tiny, portable screens. Looking back at those early years, they garner awed nostalgia: "We thought this was so *cool*!" and perhaps the same shocked wonder I feel when hurrying past the *New York Times* building at five minutes to nine in the morning: How did things change in such a short amount of time? How did we get *here*?

Of course, the story of how we arrived at our present digital moment is much more than the stuff happening on the surface of the screen: its story is of changing value systems, a medium that rocked the way we thought and the industries we thought we knew. Its story is also of the cultural, political, scientific and social vectors that went into its formation. Marshall McLuhan's statement that "the medium is the message" rings ever more true. For, as McLuhan wrote in his 1964 *Understanding Media: The Extensions of Man*, "the 'message' of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs." As we look at the seismic changes the Internet introduced into human affairs, we may well take it to be the maxim of our digital age.

The story of the *New York Times*, then, tells a peculiar tale in the ongoing narrative of the networked world. In the early nineties, the newspaper not only had to introduce the Internet, and all of its seemingly immaterial, abstractly hopeful possibilities, but it had to understand how they themselves could fit into its new formulations. For the *Times*, the Internet's popular debut shows the two faces of Eve, of opportunity and of downfall. It revealed the possibility of becoming not a national, but a global multimedia news

authority, and a pioneer in the new age of journalism. At the same time, it launched an immaterial specter, a medium that could parasitically nibble at the paper's profits and its authority.

In spite of knowing all this, when I walk through Times Square, I catch myself still wondering just how we got here. But momentary shock is often the myopic view, and it is necessary to tear one's eyes away from the headline of the *New York Times* building at some point. Things begin to become a little clearer, if more complex: the past, present, and future of the newspaper begin to reveal themselves, all somehow lingering at the same time. A few staffers hang around, puffing cigarettes slowly by the glass walled entrance to their headquarters. Rumpled writers tap notes into their phones while grabbing coffee at the Dean and Deluca next door. And, as people rush by the building's doors, heads down to cell phones and sidewalks, a man still sells the *New York Times* from a green milk crate on the corner.

"Think of it as a map to the buried treasures of the information age."

So began John Markoff's introduction to the World Wide Web in the *New York Times*. Published on the front page of the Business Section on December 8th, 1993, "A Free and Simple Computer Link" was the writer's small opus to the growing phenomenon of the popular Internet. The "map" he referred to was Mosaic, the first graphical web browser. It operated by a simple point-and-click interface. And those "buried treasures?" Those were the wealth of data already beginning to populate the pixilated pages of the Internet – though his observation may have been better applied to the money-making possibilities of this information.

Mosaic was named for its technological background – it could support multiple *protocols*, or ways that computers communicate with each other. But the nitty-gritty of its protocols were of far less interest to most *Times* readers than the browser's relation to the other kind of mosaic, the bits and pieces of colored glass and stone arranged to create complete, colorful images. Mosaic, as a graphical browser, could show documents with pictures and text; these documents, known as web sites, were linked to other pages, other documents with more pictures and text. The sheer color of it all far eclipsed the dark days of computing's past, where green text on a black screen blinked feverishly as a person typed. Just as film fundamentally changed when the *Wizard of Oz* played its first Technicolor scene, the Internet, with Mosaic, had undergone revolution. It had become dynamic,

colorful, beautiful, and most of all, easy to navigate. Its only problem, however, was that most outside the computing community did not yet know about it.

"[Mosaic] really transformed everything," Markoff tells me over the phone from his home in the Silicon Valley. He still reports on technology for the *Times*, having moved back to California in 1992 to work from their San Francisco Bureau. Markoff had found out about the Web from Brian Reid, a colleague at the Network Systems Laboratory in Palo Alto. (Reid would go on to help create Altavista, one of the first search engines, and would later serve as Director of Operations at Google.) He had shown him the network casually, just before heading out to lunch. The new network was simple. Information on it was easily shareable, and so it allowed computer science professionals to publish quickly to their colleagues. As Markoff looked over his shoulder, he knew he wanted to write about it. It smacked of the same user-friendliness that first helped personal computers enter the American home. With the debut of Mosaic, a network was born for more than just computer professionals – and Markoff had a compelling story. "It was so quick," he says. "Nobody knew about it in '93. But everybody had personal computers at that point, and they were connected to various networks in various ways. It was just a question of getting a piece of software – and then you had this whole world."

Within just a couple years, "A Free and Simple Computer Link" would become a landmark text in the short history of technology reporting; for the moment, however, it simply served as a conceptual preamble for what the future would hold. What was remarkable about his story was not that it was about the Internet, or about computing. He

had been reporting on those subjects for the *New York Times* since he joined their staff in 1988. He never had much trouble convincing his computer-sophisticated editor, Bob Stockton, that his technology pitches were worthy of the *Times*' print space. What was remarkable about "A Free and Simple Computer Link" was its novelty in reporting about the *popular* Internet. Markoff's article, on black and white newsprint, was the first mainstream media source to report on the World Wide Web, serving as a sort of formal introduction.

It's important to note that the Internet is not the same as the World Wide Web. Today, in our common lexicon of the online world, these terms are nearly interchangeable. The World Wide Web, however, is only one part of the Internet's networked reaches. As The Internet, as Markoff dubbed it in a 1991 article, is a "network of networks." That first network – what was the beginning of the Internet – was built as an experimental military tool in 1969. It was known as ARPANET (Advanced Research Projects Agency Network). Researchers had found that packets of data could be transferred between computers if they established a common *protocol* for exchanging this data. These "packets," in their most simple form, are pulses of light. Sent over a cable, they can go from one computer to another. But that's not what made this data exchange revolutionary. The data was not sent like a telephone call, where information is transmitted over a circuit, in a linear chain that stretches from host caller to the receiving pick-up. These data packets were sent over a *network*, over a web of connections, not a single line. Data transmitted over these lines could take multiple routes, and eventually arrive at multiple

destinations. The network, in ARPANET's early years, was restricted to a handful of nodes on the west coast of the United States.

Soon, the communication infrastructure of the Internet would expand beyond the ARPANET's experimental initiatives, and grow beyond its handful of nodes. As the network became increasingly reliable, the military used it as a communication tool; it expanded to science initiatives, like NASA and the Department of Energy, who could access data from around the world over its lines. The American networks grew beyond ARPA, incorporating other networks, like NSN (NASA Science Network), SPAN (Space Physics Analysis Network), the networked world becoming an alphabet soup of acronyms. Soon, academic institutions would join its ranks, using the networks to conduct research and send electronic mail. These networks had restricted access – as a government project with limited bandwidth, commercial use was prohibited.

In 1989, Tim Berners-Lee, a software analyst at CERN laboratories in Geneva, Switzerland, would introduce the networked world's newest acronym: WWW. Berners-Lee's World Wide Web was a network built on hypertext, or the connecting of documents with other documents through linked references. Hypertext organization, to a degree, mirrors the way one moves through a printed newspaper. Read a story on the front page, *A1*, and at some point, you receive a reference to a related text document: *Continued on Page A8*. Links, like the pages of the newspaper, were easily navigable, which meant that data and information could be shared easily. Scientists at CERN would soon start uploading their own documents, making the first web pages. Two years after

Berners-Lee proposed the World Wide Web, Mosaic was developed by a group at the University of Illinois Urbana-Champaign, who received funding from the US government for the project's development. Anyone could download the software for free, and browse the World Wide Web, a network that, through its ease of use and graphic abilities, would usurp the disparate networks that made up the Internet.

Today we have largely forgotten about Mosaic, its early, revolutionary elements picked up and moved forward by other companies with other browsers. Likewise, the papers that contained "A Free and Simple Computer Link" would still go the way of most daily papers: they would be thrown in the trash, replaced by the next day's news, classifieds, and pictures. But, over the following months, more outlets would begin to report on the Web. More people would download Mosaic. More corporations went online, as e-commerce was legalized on the new network. In the two years that followed Markoff's article, the Web would grow to encompass shopping, encyclopedias, search engines, and ephemera of all sorts. In 1997, only four years after the introduction of Mosaic, the World Wide Web was a bustling place. Reporting on it was ubiquitous. "If it hadn't been for Monica Lewinski," Markoff says, "people wouldn't have written about anything but the Internet that entire year."

The short span of time from the World Wide Web's introduction to its seeming ubiquity was accompanied by a litany of technological developments, from programming languages to processing speeds, and new service providers to search engines. It was one thing for the technology publications that proliferated in Silicon Valley to keep up with

these developments; The *New York Times* was a different story. How could it adequately introduce a medium, its implications, and its new iterations, when that medium seemed to be developing ever more quickly? How could it explain a technical subject to a general audience? In a web of knowledge that expanded every day, the technology writers of the *Times* faced curious challenges.

It did not help that there was a dearth of technology writers who knew both the technical and social side of technology. The growing population of network hobbyists and computer scientists in the 1980s and 1990s – those that "spoke" computer languages - did not necessarily mean there were writers who could speak well *about* these topics. Markoff, was joined by Peter Lewis, the one-time assistant Financial Editor at the paper. Lewis would begin writing the *Personal Computers* column in the Tuesday *Science* section – the *Times* had drafted him from his former position when they found out he had studied physics for his undergraduate degree at the University of Kansas. (He had first edited, then replaced another columnist after he had burned out in the position. This columnist had no background in computers – he had once been the *Gardening* writer at *New York Magazine*.)

Lewis and Markoff, as some of the first mainstream technology reporters, had to toe the line between the narratives that dominated the networked world and the traditional objectivity of their paper. In the niche publications of the computing industry, where readers were familiar with the jargon of the machine, stories were optimistic, projecting where they thought this technology could go, and what it could mean when we got there. Markoff and Lewis, though, had to write for the audience that read them – and most *New*

York Times readers, living and working far from the sunny research labs of Silicon Valley, were not yet quite there.

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Before anyone could access the Internet, of course, one needed access to a computer. By 1990, advertisements for personal computers had been pushing the device's ease of use, its falling price, and its singular capability to make its user smarter for over a decade. The marketing teams behind the computers talked about the machine than just a work device – the computer wouldn't only change how you completed data analysis, or word processing, it would change the very way you thought. Looking back at the advertisements from the time, or at least the images of the advertisements that still exist online, . *That clunky, simple thing was going to change my life?* Texas Instruments' TI99/4a from the early '80s, for instance, was not more than a keyboard and built-in processor. The screen was provided by your television, which you could hook up to the computer. In keeping with other social changes in television culture, Texas Instruments turned to one of television's latest stars, a man who epitomized the breaking of old barriers and sign of new, civil and democratic possibility, the African American star of his own sit-com, Bill Cosby. In an advertisement for Texas Instruments, Cosby appears smiling and holds a cream colored keyboard against his cream colored sweater. "TI's New Basic Computer," the ad reads. "The one to start with and get smart with." Like most advertisements for computers at the time, the page is filled with text explaining its capabilities. "Our operators manual is clear and to the point. You learn quickly, because it doesn't assume you're an engineer."

The rise and proliferation of the personal computer meant that the computing market's demographics were changing, as well. Today we are familiar with the term "digital divide," which commonly signals a disparity of computer access running along economic lines. But "divide" is a simplification – the history of computing is marked by digital *divides*, which exist in multiples. One of the first divides was that between the computer industry and the general population. As the personal computer was imagined, and then produced, by the Steve Jobs of the world, it was no longer restricted to computer professionals that toiled in Silicon Valley, or the hobbyists that tinkered with, or often built, their own devices in their basements and garages. The personal computer was for students, office workers, artists, teenagers. You could play games, write documents, analyze data, or create a pixilated "painting" depending on your device's applications. The personal computer began to cover its technical, programmatic aspects in a user-friendly format known as GUI, or graphical user interface. The personal computer no longer assumed you were an engineer. In terms of technical knowledge, the personal computer aimed to not assume too much about you at all.

We tend to think of the *New York Times* readers as an equally general group. But their readers mirror those first users personal computer users: largely college educated, middle to upper class urban and suburban dwellers. (The concept of an economic "digital divide" would follow the first popularization of these computers.) The readers of the *Times* still differed from the typical technology reader. Those daily black and white broadsheets delivered to doors, sold on newsstands, and circulated at coffee shops, were not *PC World*, the leading publication on computing, or *Byte*, where Markoff got his start in

technology reporting. The *Times* wasn't a publication that could assume a technically computer-savvy readership. And so, in every technology article, discussions had to go over the new vocabulary of the digital world. What was a bit? A mouse? A program? Processing speed? As personal computers made their way into homes and offices across the country, *Times* writers would have to answer new questions about the links between these computers. What was electronic mail? A network? A modem? Protocol? Eventually, as these networks began to reveal themselves, Markoff, Lewis, and the *Technology* editors had to answer some bigger questions: just what *was* the Internet? How did it *work*?

George Lakoff and Mark Johnson's seminal book on linguistics, *Metaphors we Live By*, was published in 1980, just as the personal computer began gaining traction in the American marketplace. Their work explained that the way we make sense the world is through metaphor – and that method of thinking reveals itself in the nature of our language. These metaphors help us process our conceptual systems, our abstract, and intangible relations, theories, and emotions. In their book, Lakoff and Johnson explore categories of metaphor. The first is *structural*: we understand a concept through another concept. "Love," for instance, is a "journey;" our conception of this love can depend on the type of journey we describe. Then, there is the *orientational* metaphor; we think of happiness, for example, as "up," sadness as "down." Last is the *ontological* metaphor: understanding an experience or concept by its relation to an object, through an extension of our physical world. These metaphors governed the initial understanding of the online world. A "window" on a computer, when opened, revealed the world of cyberspace.

When we go online, we visit a web "site," or a "page." The metaphors of books, and buildings, and locations – our tangible objects - transferred over to the increasingly frequented digital world.

But the metaphors these journalists used were more layered than "windows," "sites" and "pages." The Internet was a multi-faceted system, and, for most readers, it was primarily a conceptual one. Other than the tangle of cords leading from boxy PCs, the modem that hooked into the phone jack, and the slowly loading images of those early web pages, there was little physical evidence of what went into sending these packets of information from computer to computer. Explaining what went into creating the Internet – this "Network of Networks," involved some creative compounding.

The most ubiquitous of these metaphors for the Internet was the "Information Superhighway." As L.R. Shannon, a *Times* writer, said in 1993, "one of the technologies Vice President Al Gore is pushing is the information superhighway, which will link everyone at home or office to everything else -- movies and television shows, shopping services, electronic mail and huge collections of data." It was an apt description for teaching the American public about the Internet. The highway system, instituted by President Eisenhower in 1956 under the Federal Aid Highway Act of 1956, rapidly transformed the United States in much the same way the Internet networks would. They were begun for the same purpose, too: defense.

Eisenhower, in 1919, had spent a grueling two months traversing the United States on the Lincoln Highway as part of the Transcontinental Motor Convoy. The project was instituted, in part, to show the need for an interconnected system of roads to transport people and troops across a United States that had stretched its borders 3000 miles outwards. Fearing a foreign ground invasion, Eisenhower prioritized this connected system upon his election in 1954, and established a highspeed network of roads. If one road was compromised by an enemy attack, another could be used in its place. Once completed, the journey from Washington DC to the West now took two weeks. The American landscape had been transformed.

The Internet, when it began as ARPANET, was made to be a robust communication network that resisted attacks. While made out of light, it was a network born out of fear. Information, of course, has always been part of warfare, be it propaganda towards one's own citizens, intelligence on troop movement, or a tip from an embedded spy. But the Cold War was layered with another desire for information that stemmed from the Space Race. The USSR and United States were no longer engaged in a simple arms race. In the tension filled decades of the Cold War, the two factions also competed with their scientific information, and did battle with advancements in pioneering research.

Some of this research investment went into securing the nation's informational infrastructure. If a cable through which information was sent was compromised, this packet of data could switch to another one of these interconnected lines. Communication could not be stopped easily, just as cutting off a single route could no longer stop national

transportation on Eisenhower's highways. Information in America, which once traveled at the speed of our fastest transportation, now seemed to travel at the speed of light. Even the maps of highways and Internet cables recall one other, with elegant, thick lines traversing vast spaces, connecting in multiple hubs. The metaphor of an "information superhighway" fit to a T.
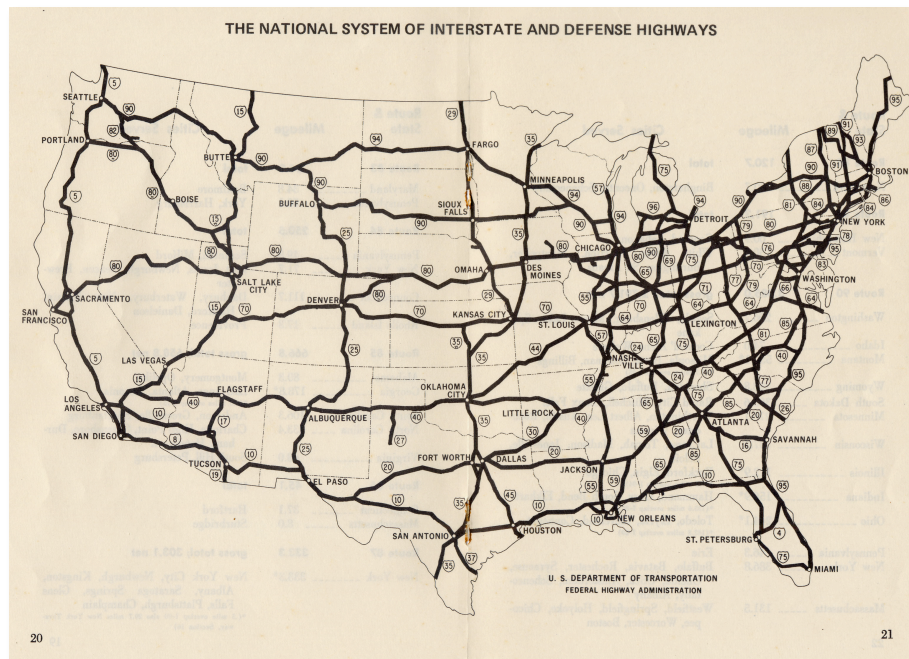
A map of Eisenhower's Interstate Highway System in 1970.
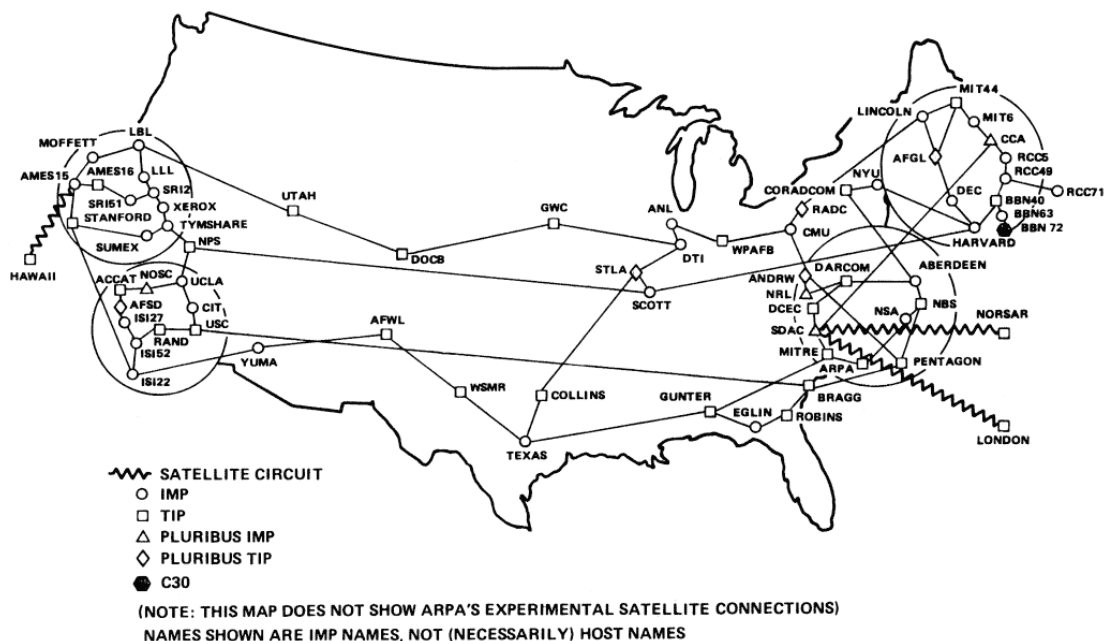
Well, at least in theory. Lewis, who I spoke to over Skype from his home in Sonoma, California, remembers the reality of the Internet a little differently than the words they used to write about it. "Back then, we had to make all sorts of analogies about the 'information superhighway.' It was more like an information swamp," he says. The Internet, for all its potential speed, operated like a superhighway - just one in rush hour traffic. But it was getting better. As the Web boomed in the mid-90s, websites proliferated, personal computers hooked into the network, and the neat lines of ARPANET in 1980 were no longer so simple. People were getting connected, and the way the world operated was starting to change.

And this was where the technology writers were finding good stories – not just reporting on the "cold stuff," as Lewis would call it – the bits and bytes, increased processing speeds, heavier duty modems - but the way that "stuff" started to effect communication, the way it pervaded the home and the office, the way it transformed the economy and ushered in something known as the "Information Age." "We did focus on the technology a lot because it was novel," Lewis says. "[But] why write about hammers when you can write about the buildings they created?"

Eisenhower's Highway system was created with strategic defense in mind – but that's not its real legacy. The linking roads caused the middle-class flee the urban centers to live in suburbs. Why live in cramped cities when they could *commute* – a new word at the time –

on these high-speed roads? The routes spawned the American road trip. Families could get to Anywhere, USA quickly and easily. They gave us an icon of new American literature in Jack Kerouac's "On the Road" – and a multitude of songs about Route 66.

For the writer's reliance on metaphor to explain technology to its readers, the human stories were how *Times* readers would come to really understand the Internet. When we peer back through history, it is not often the technical changes that lead to a feeling of comprehension and connection. Our memories of the Industrial Revolution are not of the machines, but of the machine's effects on the people: we understand Eli Whitney's cotton gin not as a system of cylinders and spikes, but as a machine that proliferated oppression and horror as it expanded American slavery. Machine parts and factory organization are not remembered with exquisite detail, but the stories of Victor Hugo's characters in *Les Miserables*, or Upton Sinclair's *The Jungle* are. Likewise, the stories of the digital revolution that populated the pages of the *New York Times* attempted to survey the human impact of these technologies. One story recounted how a couple at the University of Maryland fell in love after anonymously meeting on the school's computer network; another discussed the dark reaches of these networks, as hate groups proliferated and published on the World Wide Web. One article humorously expresses concern for screen-addicted teens:

> The spread of computer networks also raises troubling possibilities. Some adolescents, for example, seem to find computer communication so easy and captivating that they spend hours a day at the keyboard, perhaps retarding the development of face-to-face social skills.

The Internet, in the early years of its popular use, started to show its transformative effects, and the *Times* was attempting to make sense of what this new connectivity meant.

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On September 25, 1995, Markoff wrote "Making the PC Come Alive," which explored a new programming language known as Java. "Just as popular World Wide Web 'browser' software like Netscape has transformed the Web from a scientist's research tool into a consumer medium over the last two years, many computer industry researchers and executives predict that the Java programming language will transport the Web to the next level," he wrote. The programming language's potential to transform was outlined: Java could mean an interactive web. Advertisers could make clickable, animated designs; interactive, multi-player online games would become a reality; web users could get real time updates on stocks and news. The entire technology industry had the potential to shift from one centered on the personal computer, to one centered on the connected, online world itself.

Couched within these other possibilities of Java, Markoff mentioned a thread that was becoming more prevalent in these technology articles: the very real prospect of the printed world going online. With Java, he wrote, the newspaper could be delivered to a user online. In early 1994, Markoff reported on the Britannica Encyclopedia's move to publish their entire collection online. "The development," he wrote, "is one of the clearest indications that traditional publishers realize the limitation of offering only hard bound volumes – and are concluding that the opportunities of online publishing outweigh the risks." In November of 1995, he broke the story on another industry switch. The AP, who

had been the first news source to adopt the telegraph in 1846, announced that it would begin using the Internet to transmit wire reports.

The digital world that Markoff and Lewis reported on, though, had not yet arrived at the *Times*, even if understanding of the Web and its potential was growing amongst the paper's staffers and readers. Reporting on the Internet would turn out to be the easy part. Getting the *New York Times* online was a different story.

III

This February, I found myself looking over Bernie Gwertzman's shoulder at his computer screen, hoping to find evidence of the Internet's past. Our search was not going well. We *hemmed* and *hawed* our way through incorrect URLs. Archive.com turned to arabs.com upon hitting enter, while internetarchive.com tried to sell us its domain name.

"Why don't we Google it?" I finally ask, as we clicked around, finding archives.org, the home page of the Internet Archive. The Archive is a non-profit that stores digital records of culturally important materials - music, books, movies, and live recordings. (Grateful Dead at the Denver Coliseum was featured when I was last on the site). But it also archives some of the most important digital documents of our recent past – web pages. The Wayback Machine, as this part of the archive is known, has crawled and stored over 240 billion web pages since it began in 1996. In recent years, websites often have several screenshots per day; sites crawled during the Archive's early days may have only a handful of screenshots per year.

There is a myth that everything that has appeared on the Internet is forever remembered somewhere in technological bits and bytes, on hard drives or in semi-hidden traces, but try and view the World Wide Web of the early 1990s and we find our perspective on its past to be shockingly purblind. That day, stationed in Gwertzman's office in the Council on Foreign Relations, we were searching for the website he helped launch as online editor-in-chief in 1996 – *nytimes.com*.

Gwertzman, a veteran foreign reporter, was not the most likely candidate for the job. Growing up in the heyday of print culture, he had occupied the storied newsrooms of the 1950s, where articles were clacked out feverishly on typewriters, newsboys yelled "Copy!," and all hung under the grey eaves of cigarette smoke. (Gwertzman occasionally puffed on a pipe.) The *Times* hired him in 1968, where he covered the Soviet Union, followed Henry Kissinger through the Middle East, and eventually returned to the Times Square office to become Foreign Editor. (Our conversation, at one point, was interrupted as someone popped their head into the doorway. "Kissinger's going to be in town next week. You should try and get ahold of him." "Maybe I'll do that!")

But sometime in 1993, just before Markoff published "A Free and Simple Computer Link," Gwertzman discovered the World Wide Web. While visiting his son James, a computer science major at Harvard, he was shown a slowly loading screen of the Library of Congress website, with exhibition pictures and information. That site, in its full-color glory, already seemed to Gwertzman more alive than the material of the daily paper – even with its clunky interface and molasses pace. (The *Times*' first color image appeared in 1993 in the *Sunday Book Review*; the front page's first color photograph was printed years later, in 1997.) As Gwertzman watched the Library of Congresses' website load bit by bit, a new possibility dawned on him. "'If they could put pictures and text on a computer screen," he said to his son, "Why can't I put the *New York Times* on it?"

John Markoff, Peter Lewis, and a smattering of other staffers at the *Times* were also thinking seriously about what the digital world could mean for their employer. They were

just working in the wrong department to do much about it. To say the *New York Times* was reluctant to adopt a website may be an understatement, or at least a simplification: despite the growing frequency of the networked world in the pages of the paper itself, few at the newspaper understood the Internet's fast-approaching potential to reach millions of people, let alone its ability to revolutionize journalism. Articles about technology were "fit to print." The story of the *Times*' own technological revolution was a harder one to pitch.

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In 1987, Arthur Gelb, the Managing Editor of the paper, called together ten editors to present on "*The New York Times* in the year 2000." The millennium was a distant thirteen years away, and the meeting went smoothly as the editors presented their visions. That is, until Peter Lewis' turn. Working as the *Business* editor, he dubbed his presentation "The Computerized *New York Times*;" in the year 2000, he believed, we would be reading the newspaper on our computers. He had not spoken for more than a minute before Gelb interrupted him: "How do we know this computer thing isn't just a fad, like CB radio?" At that time, none of the other editors owned a personal computer; Apple had released their first non-monochrome screen that year; and the computing world, as pictured in pop culture, was one of futurists, hobbyists, and hackers. How could a clunky thing belonging to the tinkering basement dwellers and pimply teenagers – to the "nerds" of the world – fundamentally change America's most influential newspaper?

The computer, and then the Internet, of course, did fundamentally change the newspaper - but Gelb's question was not an unintelligent one. CB, which stood for "citizen's band,"

had some of the same early qualities of networked computers. Nothing shows it better than the 1977 camp film, *Smokey and the Bandit*, starring Burt Reynolds as a renegade trucker. The film follows him and his sidekick as they try to transport a truck of bootleg beer across the southern United States, all while being chased by a surly sheriff out to catch the legendary beer runner. The voiceover on the film's trailer booms loudly as their truck of beer and black Pontiac Trans Am speed down dusty highway roads: "From Georgia to Texas and back – in 28 hours flat." With hillbilly twangs, the characters communicate mostly over their CB radios as they fly down the network of roads that ARPANET was modeled on. An assortment of other anonymous travelers, who they "meet" by calling out over their CB radios, help them deliver the beer successfully. (So successfully that the characters return for another two movies and a spinoff television show.)

Gelb's incidental comparison to CB radio got at the possibilities of the early Internet: the anonymous, chance encounter that could be had when all you knew of someone was their IP address; the ability to communication over long distances with multiple interlocutors, data travelling more swiftly than Bandit's truck of beer. But it also got at the World Wide Web's persisting association with academia or ephemera, an idea that seemed particularly lasting for the administration at the *New York Times*. Indeed, Markoff and Lewis' desks in the *New York Times* Building became the showrooms for this kind of look-at-what-they-came-up-with-now technology – first for personal computers, and then for the Internet and World Wide Web. Lewis showed colleagues the first Macintosh, and its speech synthesis program known as "the Talking Moose." Markoff would talk about the

World Wide Web, in much the same way he was first introduced to it, with a quick "Look at this – I think you'd find it cool." The "Trojan Room Coffee Pot," an online feed of the coffee pot in the corridor of the Computer Lab at the University of Cambridge, impressed most visitors. "I remember standing in my office showing people," Markoff says. "You could go to your web browser and you could tell whether the coffee pot was full or empty. And people just loved that! That was a view of this future world that was coming."

For those that saw its potential, the Internet seemed a specter haunting the media landscape as we comfortably knew it. As its technologies developed, the Internet did seem to be a whole new world – or at least a thing that would fundamentally change our perspective on the world we knew. It combined instant communication – emails, chat rooms - with reams of information, the stuff of printed newspapers, magazines, and encyclopedias. Marshall McLuhan famously wrote that the content of any medium is that of another medium: "The content of writing is speech, just as the written word is the content of print, and print is the content of the telegraph." The internet, when equipped with good enough infrastructure, could easily contain the content of the printed world. It could also contain the content of the televised television, of film, of radio, but most importantly, the internet could *also* be used to communicate. Click, and see a coffee pot in England; click and chat with a friend; click, and read the newspaper; click, and the "future world" had arrived on your screen.

The number of people who had glimpsed this world began to mushroom only a year after Gwertzman's visit to the Harvard computer lab. By 1996, the estimated "population" of the Internet was around 35 million. Lewis, Markoff, and Gwertzman – not to mention the millions logging on - were beginning to see the World Wide Web not as a hobby, or a fad, or a possible future, but as a necessity, both to report on and *be* on. Lewis was irreverently appointed the *Time*'s "foreign correspondent in cyberspace" after pointing out to editor Bill Stockton that Poland, like the Internet, had a population of 35 million. But for the paper itself, cyberspace was still uncharted territory - and there was a reason for that.

The success of the *New York Times* is often attributed to a series of business and editorial moves by Adolph Ochs, a publisher who bought the tiny, insolvent newspaper in 1896. In the 19th century, the newspaper business was a rough and tumble industry, saturated with competitors outdoing one another with sensationalist stories. Issues were sold for a penny. "Media bias" did not exist, because it was a given: all papers had differing political views, and expressed them openly and strongly. (The *New York Times* itself was founded by Henry Jarvis Raymond, a Whig politician, and George Jones, a banker.) Under Ochs' direction, the newspaper changed its content, becoming "clean, dignified, trustworthy and impartial," as he once said. It soon adopted its tagline "All the News That's Fit to Print," refusing licentious ads, sensationalist stories and the ephemera known to populate the other papers. Ochs would then drop the price of its papers from three cents to one, to compete with the sensationalist penny papers hawked on the city streets. Circulation sky-rocketed. The paper had continued on its happy trajectory since then - until the online

world showed up. It was a place that looked startlingly similar to the ephemeral media of the 19th century– a mode the *New York Times* had consciously rejected – but it sold well amongst a wide audience, just like those penny papers. The Internet seemed to go against the tenets the *Times* was founded on; and so the prospect of online journalism was, as Gwertzman says, "a really freaky thing."

For a time, the company reached a happy compromise between the profitable paper and the increasingly popular online world. America Online, or AOL, was the foremost way the American population accessed an online network. In an exclusive partnership called *@times*, the paper offered content like crossword puzzles and Q and A sessions with editors. The paper maintained their print readership, tapped into a general online population, and gained some money from their exclusive deal. But the World Wide Web was much more expansive than the "gated community" that was AOL. With the advent of Mosaic, and then Netscape, a browser that would usher in the web's true popularity, users began opening up to the expanses of the digital world.

Lewis and Markoff knew this expansion would be coming shortly to the *Times*. Soon after Markoff broke the story on Mosaic, Lewis filed a request for $35 to his employer to register nytimes.com. The request was denied. He registered it anyways. Markoff had claimed another domain, nyt.com, a short while earlier, in order to operate his own mail exchange. He installed his network station in the newsroom, the box tucked under his wooden desk.

In mid-1995, the *Times* contacted Peter Lewis. Gwertzman had submitted a memo of other newspapers that had gone online to the higher-ups, not wanting to be usurped by the tiny Palo Alto Weekly, who had gone online in 1994. The paper commissioned a report by McKinsey and Company to assess whether it was wise to go online. The advice? Online journalism did not necessarily pose the biggest threat to the paper – but the *Times* should get a website to protect their advertising dollars. The newsroom technology boss asked that Lewis transfer the domain name – nytimes.com – to him. Lewis did. Gwertzman was soon appointed the first Senior Editor of Electronic Journalism. Lewis was never reimbursed his $35.

* * *

The *New York Times* website launched with little fanfare on January 21, 1996. Seven pages into the Business section that day was a story written by Lewis, "The New York Times Introduces a Web Site:"

> With its entry on the Web, *The Times* is hoping to become a primary information provider in the computer age and to cut costs for newsprint, delivery and labor. Companies that have established Web-based information sites include television networks, computer companies, on-line information services, magazines and even individuals creating electronic newspapers of their own.

The story included a listing of the "electronic newspaper's" address, http://nytimes.com. In its inception, the site was a simple document, both in technology and content. Pages were uploaded as GIF files to prevent a bandwidth overload. The website was updated two times a day, with a morning and evening upload, in much the same way pre-television age newspapers had a morning and evening edition. A front-page story, one

color image, and Cyber Times - an early version of what would soon be known as a blog – populated its page.

The website's launch not only caused palpable dissonance between the profits known by executives, and the necessary, costly experiment the *Times* was launching on the Web; it caused dissonance even for the population who embraced it. The rules of the digital world didn't exist in the same way as the ones in the physical world. People wondered about things like "netiquette:" how does one act on a "web forum"? How does one write an email? The same sort of discussion was happening in journalism, amongst writers. If the rules were all changed in this digital world, what would happen to the traditions of journalism? What would happen to the *Times*' profits? And what would happen to the daily rhythm at the *Times*' office, the ebb and flow of information's reporting, producing, and printing?

The debut of a website proved to be a type of conceptual paper jam for an industry used to functioning seamlessly from standard protocol. The rules were still being written. But Gwertzman, a newspaperman who knew those old rules best, still had to try and explain what he believed to be the new ones in the Age of the Internet. Soon after nytimes.com went live, he travelled to his old bureau in Washington, D.C., to describe the website and its new modus operandi. In a meeting with the staff, he proposed a high-caliber hypothetical: Let's say, Gwertzman told them, that there was a shooting at 10 a.m. on the floor of the Senate. It was the type of story that required reporters on the ground and the infrastructure, organization, and contacts of the newspaper. Journalists in the newsroom

would see the story on the news wires immediately. They would rush from their desks, get the details, interview witnesses, and write the story as fast as they could. As soon as it was written and copy-edited, they would not turn it out to the presses – they would publish it on the website. The staff nodded along: *that makes sense*. The Web, it seemed, was on their side – they could compete with the television crews and round-the-clock video coverage that provided the basic facts, vivid images and witness accounts before the presses could start rolling hours after the event.

The way a standard *Times* news article is written, though, is different from the live reportage. The newspaper journalist's method, if we tell it in a mythic way, lies somewhere between artistic and political process, between the Robert Frosts and Richard Nixons of American tradition. (All, whether in the woods or wire-tapping Watergate, know the importance of listening carefully.) Reporters, with basic facts in hand, would cull their sources together, calling and meeting with contacts from Rolodexes fat with names. Their access was granted, in large part, by their association with the *The New York Times* masthead under which their bylines would appear. But the journalist also acts as individual observer, as privileged witness, as careful listener. They describe the outside story – these facts of the news wire - and pull together the inside threads, the major players and unseen causes of an event, observations weaving to form what we know as well-written, well-reported story. Despite the panic-inducing daily deadlines imposed by the 24-hour ebb and flow of the paper, this one day turnaround allowed sources to be gathered, and cogent stories told, even for breaking news. As Frost himself once quipped, the news is like an "Old Patch of Snow," whose cycle (and snow's fluffy, white "new*ness*") lasts but one day:

> It is speckled with grime as if
> Small print overspread it,
> The news of a day I've forgotten --
> If I ever read it.

The debut of the website, though, imposed its own timing. Publication was not restricted to the evening call for completed, robust stories to go to the presses. The difference did not go unnoticed at Gwertzman's meeting in Washington. A reporter covering the FBI asked the critical question: "Let's say I get a tip from the FBI that tells me all the details that really happened," he asked. "I hold that for the paper, right?" Wrong, Gwertzman said. The rules of publication had changed, and these rules went against the value ingrained in every reporter: to get the scoop, keep it under wraps, and publish it in the paper the very next day.

At its basis, the "scoop" is the moneymaking factor of the newspaper's content. Pull together the best information, the newest developments and the most exclusive sources, and you have the paper that people want to buy for a day. Keep on doing it, and you have the paper people want to subscribe to – and the paper that companies want to advertise in. It was a principal the paper was founded on: in 1854, the *New York Times* scooped the country's largest circulating newspaper, the *New York Herald*, when it published the story of a luxury, trans-Atlantic steamer whose passengers perished after colliding with another boat. It is a milestone in the newspaper's history, and gave the fledgling publication a bold name in the marketplace. Scoops meant authority, and sales – they meant you were doing something right.

What the FBI reporter and the other writers in the room that day feared, then, was a logical thought for *Times* reporters well-adjusted to the rules of the competitive newspaper game. The problem was that the online world didn't seem to play by the same ones. If they published their scoop as soon as they had it online, and the online world was accessible to all that had a connection, then didn't that mean other newspapers could pick up their scoop in the time it took to open a web page? And more importantly, why would anyone buy the *New York Times* if they could read the same thing online, for free? Gwertzman's request meant something unprecedented, and unnerving: nytimes.com, the new-fangled, slow loading GIF with a smattering of stories, could not only nullify a scoop's cash value with the click of a button, it could quite possibly scoop the *New York Times* newspaper itself.

But there was another, larger scoop that Gwertzman worried about. In its centuries-long existence, The *New York Times* knew how to scoop in terms of its content, from shipwrecks to the World Wide Web. It had encountered the technical developments of the ages – the typewriter, the telephone, electricity, airplanes and air delivery, the telegraph, leica cameras, word-processing computers, widening broadsheets, cold-type printing, satellite-transmitted pages, and full-color images – but it had never encountered a shift whose implications reached outside the scope of its daily pages. Setting a standard for the news industry now meant something far beyond the printed information of its pages - it meant setting a standard for how information itself was transmitted. The *Times* couldn't risk being scooped by not being on the web. "It's a competitive world out there," Gwertzman told the group as he left to return to New York that day.

Over the course of 1996, most of America's major newspapers would go online. The *Chicago Tribune* site went live in March; *The Los Angeles Times* and the *Wall Street Journal* joined in April, the *Miami Herald* and the *Washington Post* in June, and *New York Daily News* in October. An article, "Commitments, and Questions, on Electronic Newspapers," published in the *Times* in February of that year would summarize the panicked ethos that plagued the newspaper as the industry heavyweights began a mad-dash to go online:

> What drives this rush is "fear and greed," said John F. Kelsey 3d of the Kelsey Group, an electronic media consulting firm in Princeton, N.J.
>
> The fear comes from the threat to newspapers' advertising base, especially the classified advertisements, from the electronic world's point-and-click technology and the ability to search through piles of information and get an answer quickly, complete with pictures and sound.
>
> Greed, Mr. Kelsey said, because if a system is ever invented that accurately counts and categorizes each visitor to a newspaper's Web site, publishing on the Internet could become a profitable marriage of newspapers' advertising bases and franchise strengths.

This "fear" and "greed" was at odds with the ethos of those early years of the World Wide Web. The Internet's central value, to put it in a word, was *freedom*. For the World Wide Web, freedom meant that information could escape its physical world: it no longer was relegated to travel as fast as a truck could carry it, or be attached to a paper sheet; it could even escape the human body, the sound of a human voice. A photo no longer had to be printed, a video no longer had to be on a television. But most of all, it meant that access to information itself would be free – once you were dialed in, or logged on, it wouldn't cost you a penny. Users of the Internet would share information - not *charge* for it. The newspaper, that familiar home of paper-printed, profitable, scoop-able

information, with a website, had not merged seamlessly into the digital world; at best, they had only staked out territory in a strange and foreign land.

The clash of the digital world and the printed press' value systems didn't end for the newspaper industry with the debut of a website – one might say that it only began. No place perhaps felt this cognitive dissonance more viscerally than the *New York Times*. Gwertzman, when recounting those early years, spoke of the website as like a "bastard child," owned by the *Times*' in name but not in spirit; its employees, as he said, like "aliens" to the company. But the frustration permeated the ranks of the writers, too, who were thinking about the digital world. Lewis, soon after writing the debut article for nytimes.com, left the *Times* to start his own Internet company. He was frustrated with the paper's slow and reluctant response to the digital world. "The idea that [a website] would be integrated and an integral part of the newsroom was being thwarted at the time," he says. "It was several years before I think they really understood how important this was going to be." (Lewis would return to work for them a year later.)

But the *Times'* digital and print worlds were not just divided by values, those things strong in influence but weak in materiality – they were also divided by real space: a series of busy streets, throngs of tourists, and office walls. The staff of *New York Times Digital* worked in a building ten minutes away from the headquarters of the newspaper. The web team that toiled there was a small group, rag-tag in comparison with the highly ordered ranks of *Times* staffers that populated the newsrooms, bureaus and administrative offices. They hired a designer for the site, took on a technically-savvy employee

internally, picked up an intern from the University of Missouri Journalism School, hired another young woman from Duke, after a friend's recommendation. Eventually, Martin Nisenholtz, who had been working on Internet initiatives at NYU, would be hired as president of its Electronic Media Company.

Separation, of course, is one way to grapple with a clash of cultures. Another is assimilation, where the less powerful culture comes to resemble the dominant culture. The paper tried that too, updating the site only two times a day, its content mirroring whatever had been printed in the paper. Then, there's that hopeful third possibility: integration. The *Times* paper and the *Times* website would join together, their value set becoming a shared dictum that drove the company forward. *That* was a much more difficult prospect to achieve – one still developing, one that evolved years after they first launched their website, after their readers were first introduced to the newspaper. Of course, what happened at the *Times* is not usually called separation, assimilation, or integration: we tend to think of the introduction of the Internet as *revolution* – the digital revolution.

* * *

"There it is!" Gwertzman says when we arrived finally at the paper's first screenshot that day in his office. It was taken from November 12, 1996, just shy of a year after launching.

A screenshot of the New York Times on the Web, *November 12, 1996.*
Courtesy of the Wayback Machine.

A screenshot of the New York Times *website, November 12, 2012.*
Courtesy of the Wayback Machine.

Gwertzman, you could tell, was still proud of it. Most of the *Times* staffers that helped bring the paper into the digital world express this same sentiment when they talk about those early years. It was a hard fought emergence into the online world. It was a beginning. Looking back at that first captured, inoperable page, it's hard to tell whether we've come very far in our online narrative or not very far at all. The *Times* website, sixteen years later, looks startlingly similar to its early edition. The headline is still there, bold and black, the color photos still centrally placed, the menu on the left, the ads on the top bar. But, as always, the fine print reveals the bigger picture. The names have changed, of course, the stories telling different tales. But the systems of organization have too: "Technology" has its own section, apart from "Business;" "Blogs" are nestled in the menu between "Autos" and "Books." Tiny red numerals list the home page's last update, to the very minute. There is also an absence. Och's famous tagline, "All the News That's Fit to Print," is nowhere to be found. There is just an advertisement for a *Times*' subscription service, showing a computer, a tablet, a smartphone, and a newspaper.

What will the *New York Times* look like in another sixteen years? Or in another two hundred years? Who will be in the headlines – and how will we read about them? The story of the paper's digital life is one that continues to be written, in print and on screens, in foreign offices and at the *New York Times* transparent headquarters on 42nd and 8th avenue. I'm still not sure what the digital revolution will hold for the newspaper. I'm not sure if those that work at the *Times* know these answers either. Futures are uncertain, but these days, the end of that digital story is being constantly updated. To see it, we can just log on, point, click, and refresh.