ONE

The Race

In the twilight at the Los Angeles Coliseum, sprinter Carl Lewis bounced on his toes, shook his arms loose, and then stepped into the blocks. From high in the stands, where Sam Ginn sat, you could pick out Lewis wearing a red USA singlet and shorts and sporting a distinctive square, brush-cut hairstyle. Slowly, the chants of "USA, USA" subsided and a tense quiet enveloped the stadium. It was a perfect southern California evening, warm and clear. A night for making history. Although the politics of the Cold War were ever present – the Soviet invasion of Afghanistan, the U.S. boycott of the Moscow Olympics in 1980, and now the absence of the Soviets and their allies from the games in 1984 – they seemed banished to the shadows tonight. Lewis hoped to vanquish those shadows by winning four gold medals, just as his idol Jesse Owens had done, triumphing over politics in Hitler's 1936 Olympics in Berlin. The 100-meter dash was Lewis's first test.

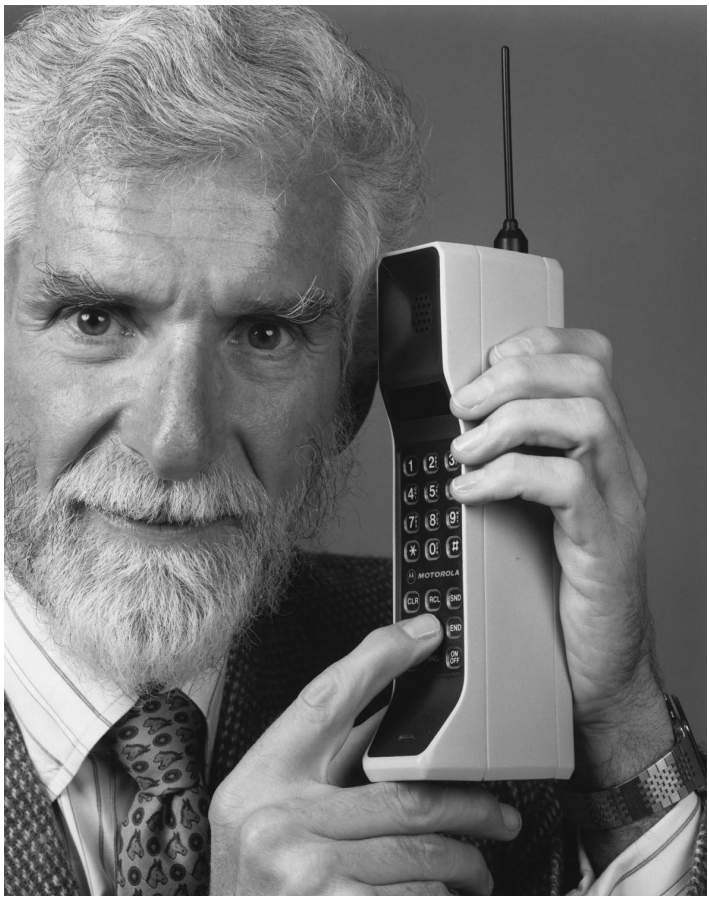
Rising with the crowd for the start, Sam Ginn watched the runners come to the set position. Tall and trim, and looking considerably less than his 47 years, Ginn relished the moment: the sudden quiet in the stadium, the flickering of the Olympic flame at the western end of the stadium. Like Lewis, Ginn had been born in Alabama. He was raised in Anniston, a small city that embodied many of the disappointed industrial dreams of the post–Civil War South. As a child in a working-class family, Ginn had dreamed of crossing over the tracks to the side of the city where big houses lined the boulevard and where people had the money to travel to events like the Olympics. In high school, sports gave him his first opportunity to enjoy a privileged status, and he had developed a taste for winning. Smart, intensely competitive, and personable, Ginn had reached Los Angeles by racing up the corporate ladder over the course of a 24-year career

with the largest company in the world – American Telephone & Telegraph (AT&T).

Now a top executive with the newly launched enterprise known as Pacific Telesis Group (one of the seven "Baby Bells" created by the breakup of AT&T), Ginn was a guest at this event, hosted by the company he had spent all of his career serving. As a result of the breakup, AT&T had become Pacific Telesis's largest customer, competitor, and supplier in the marketplace for telecommunications; it was AT&T that had provided Ginn with tickets to this track and field event. Being wooed by his former employer, however, was only one of the many strange aspects of the world Ginn confronted in 1984. The settlement in the antitrust suit had completely restructured his economic setting, seriously disrupting his sense of mission and purpose in life.

For nearly a quarter of a century he and his peers in the Bell System had believed they were the public stewards of one of the greatest engineering feats in the history of mankind – the national telephone network. With the breakup, however, regulators and the courts had made it clear that competition, not Bell System planners, would shape the future. Ginn and his peers in the other Baby Bells were still trying to understand what kind of future lay ahead of them. Many were giddy with the prospect of entering new lines of business and developing the potential of new technologies. After all, they reasoned, their companies had access to enormous amounts of capital and tens of millions of existing customers. The capabilities of their organizations, as history had shown, were prodigious. Many people on Wall Street, however, feared that – because of their size and bureaucratic organizations – the Baby Bells would lumber down the track and finish far behind the fresh-faced newcomers to the telecommunications industry. Ginn favored neither of these two extremes. He was cautiously optimistic about Pacific Telesis and the industry. But in 1984 neither he nor the other Bell executives had a positive fix on their prospects, and none of them could possibly understand how much the past would shape their future.

That future was on Ginn's mind at the Olympics because he carried – while attending all of the events – a device that most people had never seen before. It was a brand-new $3,500 Motorola portable telephone. Known in the fledgling wireless industry as "the brick," the heavy, putty-colored device with a black face was one of the first portable cellular phones to be offered to consumers. It looked like it should be used by someone at NASA, not by a fan in the stands of the Los Angeles Coliseum. When Ginn turned it on, the phone transmitted radio signals to a tower that was part



Martin Cooper and the Motorola DynaTAC phone – While the Bell System focused on phones in vehicles, Martin Cooper and his team at Motorola concentrated on portability. The result was the DynaTAC, known in the industry as "the brick."

of the cellular wireless network Ginn's company had raced to complete in time for the Summer Olympics.

People stared and listened when Ginn made a call from his seat. They nudged their friends and pointed. Frequently, Ginn turned and offered them the phone. In a warm voice that still betrayed traces of his Alabama roots, he asked, "Would you like to call home?"[1] Ginn showed them how to punch in the numbers. Then inevitably they would shout to some distant friend or relative – inaugurating what would become one of the rituals of mobile telephony – the statement of location: "You won't believe this. I'm in the stands at the Olympics, talking on this radio phone." A Japanese

businessman called Tokyo. Another man called his wife thousands of miles away. Each was delighted in a way that Ginn would never forget.

The mobile phone brought people together and gave them a new freedom. No longer forced to wait until they could "get to a phone" to share news with friends and family, people could reach out and touch someone from wherever they were. Here in the midst of the crowd in the Coliseum they could report on events live, and those listening on the other end could share in that exciting moment. Watching people talk on his phone and pass it through the stands, Sam Ginn had an epiphany. He recognized for the first time that these new phones represented more than an incremental improvement on existing technology. They created a whole new paradigm for communications. For years he had tried to imagine how Alexander Graham Bell must have felt at the beginning of the telephone era, at the realization that his new technology could become basic to the lives of millions of people. In Los Angeles, Ginn sensed that he was experiencing an "Alexander Graham Bell moment."

As the gun sounded down on the track, Ginn watched Lewis and the other sprinters bolt out of the blocks. Over the first fifty meters, Lewis lagged behind the two leaders, but then he changed gears and accelerated. Throwing his arms up at the finish, he won by nearly two meters. Ginn clapped with the crowd as Lewis took a huge American flag from a fan. He jogged through his victory lap beaming and waving to his cheering fans. Already the sprinter had embarked on the path to history.[2]

Ginn had a sense that day that he, too, was at the start of something big. But while a sprinter like Carl Lewis could look down the track, see his destination, and know what it would take to get there, Ginn faced a more uncertain future. It was obvious in 1984 to everyone in telecommunications that the industry was changing dramatically at the national and maybe even the global level. But it was not at all obvious what role wireless would play in this transformation. Nor was it clear whether Pacific Telesis or any of the other existing firms in the industry would be the leaders who would champion new technologies, styles of organization, or approaches to doing business. Over the next few years, it was sometimes hard for Ginn and his peers to tell what race they were running and who exactly was the competition.

For consumers around the world, however, wireless was an obvious winner, an innovation that introduced a whole new way of life. Today, there are more cell phones in use than personal computers, and increasingly people connect to the Internet through a wireless device rather than a PC. Awkward as it was, the Motorola brick was thus launching something

extremely important for millions of people. It was not designed for astronauts. At the beginning of the wireless era in 1984, it allowed any ordinary person to do what had been a pipedream for decades – communicate with anyone, anytime, anywhere.

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Consumer enthusiasm for wireless prompted a race to develop a new wireless world. The race, which is the central narrative of our story, took place amidst a series of dramatic transformations that occurred around the world in technology, politics, and trade, and we have tried to describe these transitions and the way they played out in wireless. The race was between entrepreneurs and their organizations, and we devote considerable attention to the nature of that entrepreneurship and its role in a long-established industry experiencing sudden change. Back in the darkest days of the Great Depression of the 1930s, when scholars of "the dismal science" were struggling to explain the collapse of the global economy as well as the factors that would lead the world back to happier days, Harvard University republished a study by Moravian-born economist Joseph Schumpeter. He was an unusual scholar who had many years before advanced a unique theory of economic development. Schumpeter's ideas about economic growth flew in the face of neoclassical and Marxist explanations. Innovation, he said, is the engine of economic growth, and the agent of innovation is the entrepreneur.[3] Capitalist economic progress was inherently uneven but entrepreneurs, if allowed to continue, would inevitably spur another surge of growth.

Schumpeter told his readers that entrepreneurs were not intellectuals, tinkers, or inventors. They were individuals in business who saw the potential for a new product, service, or process, or who perceived the opportunities in a new source of raw material, a style of organization, or a market. Entrepreneurs also had the temerity to act despite the serious challenges they faced. Uncertainty stemmed from a lack of reliable data. The path ahead was always unclear when innovation was taking place. Doing what was familiar was always easier than doing something new. Society normally resisted change, making it difficult for the entrepreneur to obtain capital. Banks were conservative. Established interests – public as well as private – that were threatened by innovation threw up roadblocks to change. Even if buyers could see the benefit of some new product or service, they often preferred what they already knew. To succeed, the entrepreneur had to overcome the resistance of individuals, organizations, and sometimes an entire society.

For the most part, economists, public officials, and the general public ignored Schumpeter's ideas for decades. He labored away, continuing to elaborate his theory and history of capitalism, but meanwhile economics was transformed in the late 1930s and 1940s by the ideas of John Maynard Keynes.[4] For several decades following the Second World War, the Keynesian model and national planning were the centerpieces of political economy in the capitalist democracies. In recent years, however, the Schumpeterian perspective on economic growth has experienced a remarkable revival as academics, business leaders, and policymakers – the neo-Schumpeterians – have sought to understand the dynamics of capitalism and the intricate relationships between economic growth and entrepreneurship in industries like wireless.[5]

Thanks in large part to the research of Alfred D. Chandler, Richard Nelson, and other scholars, neo-Schumpeterians recognize that much of the innovation that takes place in modern capitalism comes out of very large corporations. Schumpeter was suspicious of great corporate combines, not because they were monopolistic but because they tended to be organized along bureaucratic lines. Bureaucracy, Schumpeter said, was the enemy of the entrepreneur. It would stifle creativity. His ideal entrepreneur was the great individual who, in the nineteenth-century style, built and dominated an innovative business empire. It remained for a host of historians, economists, and business school analysts to show how, in the twentieth century, large corporations began to perform the entrepreneurial function. The most obvious manifestation of this major economic transition was industrial research and development (R&D), which yielded new products and new processes. Meanwhile, the top executives and managers of the corporations were organizing and reorganizing their enterprises in an ongoing effort to improve efficiency and foster further innovation. While this was happening, neither the old style of heroic entrepreneur nor the small innovative business disappeared; both remained important aspects of capitalist development. But they coexisted with large, multinational enterprises that achieved innovation through bureaucratic means.[6]

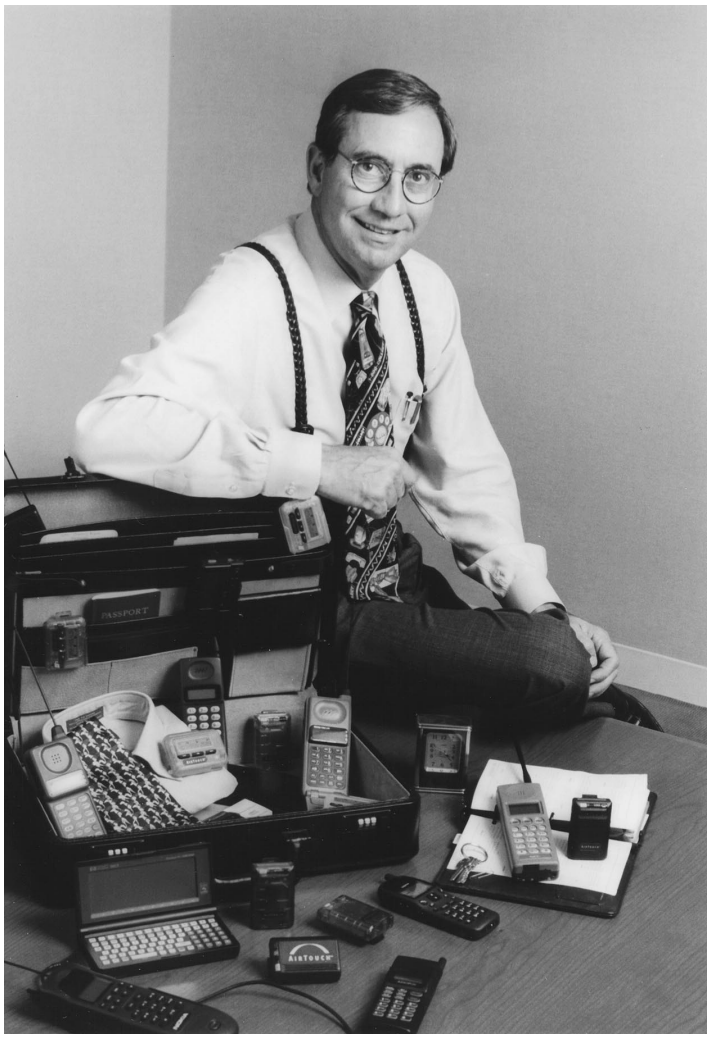
By political fiat, the modern wireless industry included both types of entrepreneurs. Early in the 1980s, the U.S. government made a fateful decision that would turn the development of wireless into a race between these two kinds of innovators. In every city across the country, two companies would be allowed to offer cellular telephone service. One would be run by people (like Sam Ginn) who had spent their entire careers working for AT&T or some smaller local telephone company. The other would be launched by individuals and organizations from outside the Bell System.

This experiment with a contrived form of dual competition would shape the future of the entire telecommunications industry and ensure that the grand legacy of the Bell System would not quickly wither away in the era after the breakup.

In the short history of the wireless industry, Craig McCaw was the kind of entrepreneur who delighted Schumpeter and still today makes American legends. An industry outsider from the Seattle area who risked everything to place the biggest bet possible on an emerging technology and an opportunity that he believed would change the world, McCaw and his team challenged the Baby Bells in the race for dominance in the U.S. wireless industry. McCaw became a major rival to Sam Ginn and the Baby Bells, and his vision and daring made him a billionaire when he sold out to AT&T. Confident that there would be a mass market because what customers wanted most was the freedom to roam, McCaw had a powerful influence on the fledgling industry.[7]

But Sam Ginn's story may tell us more about the development of wireless and the changes taking place today in global telecommunications. It also offers us insight into the future of other industries that were once state-run or highly regulated. Ginn and his managers at Pacific Telesis Group and later AirTouch Communications launched their revolution from the inside. Like their peers at the six other Baby Bells (Nynex, Bell Atlantic, Southwestern Bell, BellSouth, U.S. West, and Ameritech), they were handed cellular as a birthright with the 1984 breakup of the Bell System. Entrepreneurs like McCaw pushed them to become more flexible and competitive, and by responding successfully the former Bell System companies – Verizon, Cingular, and AT&T Wireless – emerged on top of the wireless world in the United States. At the end of 2001, these companies controlled more than 60 percent of the market.

Their main challenger today is an upstart British company called Vodafone. Led by Chris Gent, Vodafone has grabbed the inside lane in the wireless race by assembling an intimidating collection of assets on nearly every continent. With its acquisition of AirTouch in 1999, Vodafone began the race toward global consolidation while its main competitors were still focused on consolidating national markets. As a result of that acquisition, Gent had to integrate two very different corporate cultures and traditions. One was deeply rooted in the history of the Bell System; the other had succeeded by challenging the dominant telephone company in the British market. Fortunately for Gent, the two organizations shared a common strategy based on the assumption that wireless was the way of the future.



Sam Ginn – Sales and marketing were far more important to wireless than they had been to the Bell System. As CEO of AirTouch, Sam Ginn cultivated a new image that emphasized his role as the company's lead salesman.

AirTouch was a desirable acquisition because Sam Ginn had distanced himself and his organization from some, but not all, of the values of the bureaucrats and engineers who had long guided the Bell System. In order to become fast-moving, customer-focused, and innovative competitors, Ginn and his colleagues had abandoned crucial elements of the Bell way. They had made many mistakes, and they had never completely shucked off the

Bell culture. But their successful efforts to develop a new hybrid culture and organization had enabled them to create the largest wireless enterprise in the world by 1998. In the chapters that follow, we tell the story of this transformation – both personal and organizational – and explore the effects of this style of entrepreneurship on the wireless industry and the global economy.[8]

From this saga of late twentieth-century entrepreneurship, three other major themes emerge. The first involves technological change. Experiments with wireless telephones began nearly a hundred years ago, but it was not until the mid-1980s that this innovation was made available to large numbers of consumers. To a considerable degree, the wireless world we know today depends on the development of the transistor and the integrated circuit, innovations that have catalyzed the Third Industrial Revolution. These new technologies have driven change around the globe just as surely as waterpower and the steam engine propelled the British economy forward in the First Industrial Revolution of the eighteenth and early nineteenth centuries. Information Age technologies have fostered the development of the microcomputer and the Internet and built the great personal fortunes that successful entrepreneurship always yields.

Wireless is a distinctly Third Industrial Revolution industry. Today, miniaturization and increases in computing power are the basis for the new wireless world that fits in the palm of your hand. Although the impact of computers and broadband telecommunications has been discussed in hundreds of books, the social and economic transformations enabled by "anytime, anywhere" wireless communications are only just beginning to be understood.[9]

Another theme involves political change. Around the world, the failure of state-owned or highly regulated industries to sustain a high rate of innovation has led to deregulation and privatization. As a result, former monopolists in large industries, including telecommunications, have for some time been struggling to become effective global competitors. At the same time, regulators have been striving to redefine their roles as they shift from being watchdogs for consumers in a monopoly environment to managers of markets in a world of partially regulated competition. In California, where AirTouch originated, recent regulatory efforts to manage the transition to competitive utility markets have been highly criticized. But neither the critics nor the regulators seem to have noticed that most of the state's contemporary difficulties with electrical power were foreshadowed by the transition to competitive markets in telecommunications during the 1980s and 1990s. That is when business executives, politicians,

and regulators all discovered, as Sam Ginn did, that it is difficult to leave the past behind. Despite enormous changes, the telecommunications industry and its political overseers are still deeply rooted in the engineering, managerial, and regulatory concepts of the previous century.[10]

The modern wireless industry became a global phenomenon very early in its development, and this provides our final major theme. Although corporations and nations have been trading in a global economy for hundreds of years, new transportation and information technologies and new policies toward trade have stitched together the global economy in a novel way, expanding the stage upon which political and economic institutions must act.[11] Sam Ginn and his team came onto this stage from a relatively naïve position as managers of a large-scale telecommunications company – Pacific Telesis Group – operating in only two American states, California and Nevada. In 1994, Pacific Telesis spun off its wireless operations to create AirTouch Communications, with Ginn as chief executive officer (CEO). By then, AirTouch had already become a global company with wireless networks and partners on four continents. But while AirTouch had become a global organization, it was not a traditional multinational corporation. It built its domestic and global enterprise in a new way, using joint venture partnerships and strategic technological relationships – firm structures characteristic of the most innovative Third Industrial Revolution industries.[12]

This book thus offers a personal, a corporate, and a general economic perspective on the wireless industry and a rapidly changing global economy. The study focuses on AirTouch and the efforts made by its managers to combine the technical and organizational virtuosity of the Bell System with the light-footed performance needed in wireless. This was not an easy combination to create. Around the world, former monopolists operating within national boundaries – including telecommunications giants like AT&T, Verizon, BellSouth, and SBC in the United States, as well as Deutsche Telekom, France Telecom, British Telecommunications, and Nippon Telephone and Telegraph – are engaged in a similar struggle to become global innovators.

Like telephone regulators and managers around the world today, the early wireless entrepreneurs were often baffled by events beyond their control and uncertain about the future of their enterprises. None of the wireless pioneers had a crystal ball. Many people believed in the early days of cellular that this new technology would succeed only as a convenience for the urban rich and powerful, a marginal business for existing wireline companies. The pessimists failed to see either the technological potential