Chapter Two

Time and Motion

Machines and the Making of Modernity

By failing to understand our own time system we also fail to fully understand ourselves.

HANNAH GAY, "Clock Synchrony, Time Distribution, and Electrical Timekeeping in Britain, 1880–1925"

We tend to think of high-speed society as a recent phenomenon associated with the growth of digital technologies. However, claims about technology annihilating time and space are not new. Here I will consider the impact of the vast technological changes that took place over the last century or so, some of which are arguably as sweeping as those wrought by the Internet.

My aim is not to dispute that contemporary temporalities have been radically altered with ICT, but rather to inform our understanding by adding a historical perspective. After all, arguments about the increasing pace of life only make sense against a putative slower past. We will see that our present-day embrace of speed has well-established antecedents. Indeed, much that is attributed to mass migration to the online world has roots sunk deeply in earlier phases of technical evolution.

In the modern world, timekeeping is an essential and habitual activity, and we constantly monitor and check the time. Social theorists trace our obsession with measuring time to the institutionalization of clock time under capitalism. The classic text is Edward Thompson's framing of clock time as disciplinary and as intimately related to the commodification of time as money.[1] The tyranny of clocks is essential to the narrative of the

accelerating world. I will consider this argument in light of research that suggests that timekeeping has been a longer standing practice, and not necessarily a negative one.

While the time discipline involved in capitalist forms of production has played a key role in the shaping of modern time, by itself it cannot explain the changing cultural significance of speed. It is hard to exaggerate the effect of steam engines, railways, and the telegraph on people's experience of time-space compression. The railway journey, depicted by Charles Dickens and Marcel Proust, is iconic of a transformed sense of the tempo of everyday life. The traveler's view of landscape as a multitude of swiftly moving visual impressions was unprecedented.

However, it is only with the rapid shift to urban living that speed and change for its own sake have become celebrated as the general condition of modernity. Speed is one of several aspects of modern metropolitan life that becomes culturally valorized by artists and intellectuals, and it remains a key explanation of the time-pressure paradox. Georg Simmel's depiction of the emergent modern time consciousness as one involving immediacy, simultaneity, and presentism still resonates today. So too does his astute analysis of the alternate responses it would continue to incite, signaling both extraordinary opportunities and the corrosion of moral character. (Richard Sennett would later go on to identify short-termism as a unique consequence of new capitalism; see chapter 4) In my view, Simmel can well be reclaimed as the first theorist of the acceleration society.

In the twentieth century, the automobile came to symbolize speed, freedom, and liberty. It held out the possibility of change for groups and individuals who wished to escape traditional social confinement. The viability of boundless physical movement undoubtedly had political implications and examples of this will be discussed. However, as with all technology, the automobile's impact was far from straightforward. The same motorcar that promised unlimited movement also led to gridlock. And while the velocity of machines increasingly came to signify the driving force of progress and economic growth, the euphoria of constant motion also became associated with violence and destruction. These cultural contradictions remain central to the dynamics of acceleration.

Yet, the allure of pure speed continues to seduce. This is evident in the sociological turn to mobility, fluidity, and travel as the key descrip-

tors of our present condition. Speed and perpetual motion are assumed to be universal desires of existence, realizable only through faster, more efficient machines. Accounts of this ilk are tied to linear narratives about the role of technical innovation in making modern times. In reality, technologies evolve through practical use and therefore come to mean quite different things to different people. Indeed, the ability of some to move fast and frequently can itself cause stasis for others. As such, technological acceleration is always accompanied by various kinds of slow down. It is no wonder, then, that our response to acceleration has always been characterized by profound ambivalence.

Punctuality and Progress

The need for people to coordinate their activities has been important throughout history, but never more so than today. We take for granted that our lives are shaped by the hours of the day, as measured by the clock. From childhood, we are taught the worth of punctuality, the imperative to be on time and not to squander it. The valorization of speed was central for the development of the industrial way of life. As Jeremy Rifkin remarks, "Efficiency and speed characterize the time values of the modern age. . . . The idea of saving and compressing time has been stamped into the psyche of Western civilization and now much of the world."[2]

Yet, what has come to seem natural and normal is the outcome of centuries of technical innovation and the circulation of ideas about time. Chronologies of standard technological history give the clock pride of place. And it is through the lens of Thompson's essay, "Time, Work-Discipline, and Industrial Capitalism," that social scientists primarily view modern time in economic terms, as market time.

According to Thompson, prior to industrialization, people depended on "natural rhythms" oriented to a variety of tasks related to an agricultural economy, task-oriented time. These older notations were replaced by a new manufacturers' time, a commodity measured in monetary terms and regarded as precious. He saw this as the result both of advances in timekeeping and of a Puritan ethic which helped people internalize the idea that time was not to be wasted. By the nineteenth century, according to Thompson, the idea of time thrift had become culturally embedded. Traditional rhythms began to look indolent and even primitive. The divi-

sion and synchronization of labor became the norm in many manufacturing sites and, over the course of a century, manufacturers' time came to seem natural.

Time had become money. And, as Dickens foresaw in his novel *Hard Times*, while clock time standardizes time, not everyone's time is of equal worth. As Mr. Bounderby, the businessman, put it to the freedom-loving circus people, "We are the kind of people who know the value of time, and you are the kind of people who don't know the value of time." To which the circus performer, Mr. Childers, retorted, "If you mean that you can make more money of your time than I can of mine, I should judge by your appearance, that you are about right."[3]

Throughout their extensive publications, both Barbara Adam and Helga Nowotny trace the historical shift in the way people understand time to the clock culture that developed in modernity. They stress that industrial time engendered the pursuit of a disciplined and frugal use of time in the quest for efficiency. Time became commodified, compressed, colonized, and controlled.[4] And once the linear system of time was set:

> Acceleration could start in the form of motion making everything dynamic, which seemed to stop at nothing. In the *tourbillon social* which broke out with the industrial revolution and wrenched people out of their countless "small worlds" . . . acceleration became the experience of modernisation overshadowing and shaping everything else. The pace became more important than the destination: anyone who stands firm stands still; everything, above all time, becomes frantic motion: the new myth was speed.[5]

Marx's analysis of the commodification of time remains the touchstone for such writing.[6] Marx's central argument was that an empty, abstract, quantifiable time, applicable anywhere, anytime, was a precondition for its use as an abstract exchange value on the one hand and for the commodification of labor and nature on the other. Only on the basis of this neutral measure could time assume such a pivotal position in all economic exchange. Since "moments" are "the elements of profit," it is command over the labor time of others that gives capitalists the initial power to appropriate profit as their own.[7]

Struggles between owners of labor and capital over the use of time

and the intensity of labor have been endemic. What Thompson's account highlights is that it took several generations for the new labor habits and the new time discipline, "the familiar landscape of disciplined industrial capitalism, with the time-sheet, the time-keeper, the informers and the fines," to be instilled. The time discipline was based on obedience to the clock and to the appointments specified on it, such as the time to begin work. In a much quoted passage, Thompson records how two nineteenth-century factory workers testified that they were not allowed to have their own clocks or watches on company grounds:

> In reality there were no regular hours: masters and managers did with us as they liked. The clocks at the factories were often put forward in the morning and back at night, and instead of being instruments for the measurement of time, they were used as cloaks for cheatery and oppression. Though this was known amongst the hands, all were afraid to speak, and a workman then was afraid to carry a watch, as it was no uncommon event to dismiss any one who presumed to know too much about the science of horology [clock and watch making].[8]

Furthermore, if people could be taught the new time discipline early in life, they would be better prepared to meet the growing synchronization demands of the workplace. As a result, there was an increased emphasis on teaching punctuality in schools in both England and the United States. Such practices continued in the twentieth century. Allen Bluedorn notes that in 1903, his American maternal grandmother, at the age of thirteen, received a school attendance certificate with the telling phrase "having been neither absent nor tardy during the month ending."[9] To this day, meeting attendance requirements is an essential criterion for graduation at the London School of Economics.

In recent years there has been a lively discussion about the historical accuracy of the major prevailing accounts of clock time. In their volume *Shaping the Day: A History of Timekeeping in England and Wales 1300–1800*, Paul Glennie and Nigel Thrift critique the technological determinist version based on drawing direct relationships between technical developments in clocks and the hegemony of clock time.[10] They also maintain that Thompson's account draws too direct a relationship between eco-

nomic changes and clock time. Echoing my own perspective, the authors argue that while we need to take the devices seriously, it is important to understand clock times as everyday *practices*, which were (and are) remarkably diverse.

There is mounting evidence of the widespread use of clocks and timekeeping practices from the fifteenth century onward, long before private ownership of clocks and watches was commonplace, let alone the emergence of factories. In early modern England, for example, diaries and letters indicate that schools were already imposing a temporal discipline: "Now at five of the clock by the moonlight I must go to my book and let sleep and sloth alone" ran a saying that dates from around 1500 and is attributed to a twelve-year-old boy.[11] Whether he actually arrived on time is lost to history. Nonetheless, there was a timetable and an intended discipline, known to the young, confirming "the sheer density of temporal infrastructure" at that time.

The issue of periodization need not detain us, but the case that Glennie and Thrift make is salient to my argument here. They eschew a linear view whereby early forms of timekeeping were wholly replaced by clock time. Instead, they stress the very different registers and dimensions of overlaying clock times that coexisted in the past, as they were embodied in complex sets of practices in different temporal communities. There was no sudden rupture, whether for better or worse, with the advent of industrialization. We were and are able to internalize and live with many different time notations, astronomical, biological, private and public, and so on.

It follows, therefore, that we cannot accept the influential commentaries about the preeminence and triumph of clock time. The authors subscribe neither to a story of technological supremacy in the later eighteenth century, heralding a glorious modernity, nor to a jeremiad on the imposition of strict timetables and the loss of preindustrial freedom.

Indeed, they firmly reject the increasingly popular view that the procedures and practices of aggregation that we call "clock time" are to blame for all the ills of the world: "clock time has been as much a liberatory as an oppressive force. It has allowed as much as it has disciplined. New entities, capacities, and experiences have become possible which did not exist before and there is no reason to believe that all of these have been negative."[12] Fear of the omnipotence of clock time runs through contem-

porary narratives about the accelerating world and betrays a tragic teleological tale about modernization.

The continuing role of clock time in relation to labor productivity is a theme I will pursue in chapter 4. There is certainly much evidence that the use of clocks to increase the rate of work was even more marked in the early years of the twentieth century, with developments such as scientific management and Taylorism.[13] It would later be immortalized in Charlie Chaplin's 1936 film *Modern Times*, which depicts the alienated factory worker literally fighting the clock to slow down production.

What is undeniable is that by the early twentieth century a new sense of temporal exactitude was developing. Inhabitants of that era would have been conscious of a change in the pace of working and social life; of living in a culture in which accurate timekeeping, efficiency and punctuality were becoming normative.

However, in order to understand how speed enters the modern cultural imagination, we need to move beyond a narrow focus on clocks as talismanic artifacts. Arguably, communication systems like the railway, the telegraph, the telephone, and wireless communications were as significant as increasingly accurate timepieces in leading to novel ways of experiencing both time and human affairs. As we shall see, this new material world paradoxically brought both an optimistic sense of security, of being in control of events, and a sense of insecurity, a sense of a world speeding out of control. And, as Hannah Gay observes, "In the early twentieth century these two sensibilities ran in parallel and played off each other."[14]

Machine Speed and Modernity

Much has been written about the massive social and technological changes that took place from the mid-nineteenth to the mid-twentieth century. The cultural historian Stephen Kern's well-known account describes how innovations in art, architecture, literature, science, and technology mutually influenced and inspired each other.[15] The achievement of higher speed was integral to those developments and permeated every aspect of society. Speed, in the sense of modern machine velocity, formed a powerful cultural narrative during this period, yoking together machines, money, and progress. The telegraph presaged many of these

changes, so altering the structure of social relations that it has been christened the Victorian Internet.[16] I will therefore consider this case before turning to look at modernist avant-gardists' celebration of speed.[17]

But first it is befitting to reflect on the abiding connection between machine speed and progress. Although the idea of progress can be traced back to the classical world, it only becomes a powerful social ideology in the first part of the twentieth century. Our common sense notion of "modern" denotes a historical process of steady advance and improvement in human material well-being, occasioned by technological innovation. How, though, asks John Tomlinson, does speed itself become a prime mark of *social* progress?[18]

One answer is the straightforward association between the pace of mechanical production and the delivery of material improvements. The speed of manufacturing, transportation, and communication technologies saved vast amounts of physical effort and time as well as providing affordable material goods. For the first time, human ingenuity deploying mechanical power appeared to overcome the natural order, giving rise to engineering notions of control and regulation. Rational mechanical speed promised to overcome the physical realities of space, distance, and separation—obstacles to the fulfillment of human needs and desires.

In this way, speed presents itself as the prime condition for economic growth and prosperity. The associated increase in the pace of life, though it may not be attractive in itself, may appear as a matter of "pragmatic acceptance as part of the cultural 'bargain' with modernity." However, there is also a quasi-moral linkage between speed as dynamism and visions of the human good. The ideological nub of progress, Tomlinson argues, is its *impatience* with the way things are, that human good lies in the struggle for improvement. Change thus comes to be valorized over continuity, and once this is accepted, the speed of change becomes a self-evident good. "This moral underpinning of mechanical speed combines with the material benefits if offers and its sheer excitement, to construct a hugely powerful cultural narrative of social acceleration."[19] That notions of speed and progress are still so intertwined in contemporary political discourse is integral to the insistent sense of time pressure.

Although our own experience of time-space compression is unique in detail, its structure is characteristically modern. The dramatic effect of

the electrical telegraph on the mental maps of Europeans and Americans is illustrative of this. For the first time, a communication machine could separate communication from transportation, allowing information to move independently of—and much faster than—transport. It caused people to wonder, much as the Internet does today, about the rapid and extraordinary shifts it wrought in the spatial and temporal boundaries of human relationships. Indeed, James Carey argues that "the innovation of the telegraph can stand metaphorically for all the innovations that ushered in the modern phase of history and determined, even to this day, the major lines of development of American communications."[20]

Compared to the telegraph, the Internet does provide a spectacularly enhanced degree of speed. However, many of the claims for the revolutionary consequences of the Internet presume a putatively different past, and a belief that our current ambivalence toward technological change has no precedent. For example, the emergence of global space is not as new as we think. The telegraph also promised to annihilate time and space and to bind all of mankind together "on the face of the globe." In the words of the British prime minister, Lord Salisbury, in 1899, the telegraph "has, as it were, assembled all mankind upon one great plane, where they can see everything that is done and hear everything that is said, and judge of every policy that is pursued at the very moment those events take place."[21] Likewise, the consequences of this for the very nature of language, knowledge, and human awareness led to both the kind of euphoric claims and accusations of trivialization that bear an uncanny resemblance to discussions about Twitter.

The telegraph had a profound impact on the conduct of commerce, government, the military, and colonialism, dramatically altering the ways in which time and space were understood by ordinary men and women. The telegraph's role in establishing standard "railway" time is well known. The eventual adoption of Greenwich Mean Time brought the world within one grid of time, uprooting older, local ways of marking the passage of time. Similarly, standard units of distance and territorial measurement incorporated space into a single regime of measurement.

It is precisely these transformations that Anthony Giddens famously situates at the heart of the constitution of modernity. The new systems of calibration provide the means for "precise temporal and spatial zon-

ing" and thereby produce new topographies and chronologies of experience, new divisions between public and private space, work and home, labor and leisure, employment and retirement.[22] In other words, the very dynamism of modernity "derives from the separation of time and space and their recombination." The result is a fundamentally changed consciousness of temporality in social and cultural life.

However, Giddens is unclear about the precise forces that produce these shifts. His discussion moves between offering a metatheory of space and time and a focus on how modern societies actually organize these dimensions. Either way, he does not pay much attention to the role of communication systems in shaping the modern experience.[23] This is at least in part because he treats technology as an autonomous force rather than as a sociomaterial ensemble of humans, machines, infrastructures, institutions, and everyday practices. The modern experience of time was actively reconstituted together with the technologies that fostered it. And the commodification of time that underpinned industrial capitalism relied on a whole range of interconnected technological innovations.

It is salutary, then, to recall the less familiar tale of the telegraph's role in the development of commodity markets. According to Carey, the telegraph was the critical instrument in making time the new frontier for commerce. Before the telegraph, markets were relatively independent of one another and the principal method of trading was arbitrage: buying cheap and selling dear by physically moving goods around. When the prices of commodities were equalized in space as a result of the telegraph, however, commodity trading moved from trading between places to trading between times, shifting speculation from space to time, from arbitrage to futures.

In eliminating space as an arena of arbitrage, therefore, the growth of communications gave rise to the futures market. In order to develop, futures markets required three conditions: that information moved faster than products, that prices were uniform in space and decontextualized, and that commodities be separated from the receipts that represent them and be reduced to uniform grades. The shift of market activity from certain space to uncertain time was, Carey remarks, "the first practical attempt to make time a new frontier, a newly defined zone of uncertainty, and to penetrate it with the price system."[24] In a sense, the telegraph invented the future.

The Allure of Speed

No wonder, then, that central to the intellectual projects of many European thinkers of the early twentieth century was a radical questioning of the Newtonian world of calculable, linear time, and space. From H. G. Wells's classic novel *The Time Machine* (1895) to Albert Einstein's papers (1905), many of the questions of the new century were centered around the malleability of space and time.[25] Could time be stretched or compressed? Could it be accelerated or reversed? Was time perceived differently by different observers, and, if so, could there be a universal time?

Most commentators agree that there was a maelstrom of creativity in the aesthetic realm during this period. A whole new world of representation and knowledge resulted, which qualitatively transformed what modernism was about. Inventions such as the telephone, wireless telegraph, X-ray, cinema, the automobile, and the airplane led to major material changes in daily life and precipitated new modes of thinking about and experiencing space and time. David Harvey persuasively argues that the simultaneity derived from this rapidly changing experience had much to do with the birth of modernism. And to be modern, Marshal Berman reminds us, is to "find ourselves in an environment that promises us adventure, power, joy, growth, transformation of ourselves and the world—and, at the same time, that threatens to destroy everything we have, everything we know, everything we are."[26]

It is in relation to speed that I want to examine this distinctly modern experience of living in and with profound ambivalence. Where better to start than with the Futurist Manifesto's (1909) declaration that: "the splendor of the world has been enriched by a new beauty: the beauty of speed. A racing automobile with its bonnet adorned with great tubes like serpents with explosive breath . . . a roaring motor car which seems to run on machine-gun fire, is more beautiful than the Victory of Samothrace"? This was one of the first documents to celebrate the automobile as an object of beauty and to cite speed and acceleration as aesthetic elements.

Futurism was an artistic, cultural and social movement that passionately embraced the future, exalting speed, power, technology, youth, and violence. As its founder, Filippo Tommaso Marinetti, continues, "Time and Space died yesterday. We are already living in the absolute, since we have already created eternal, omnipresent speed." The movement was

part of the modernist avant-garde of the early twentieth century whose followers sought to revolutionize everyday life by leading by example. Although they issued party-like manifestos, they did not usually seek change by violent means. The Italian futurists' protofascist glorification of war was the exception, while the Russian avant-gardists tended to act in support of the Bolshevik Revolution until the suppression of artistic autonomy in the Soviet Union.

A common feature of the avant-gardists was their wholesale rejection of the past, of everything old, and an exuberance about "the new." Accordingly, they were especially enthusiastic about new technologies, such as the car, the airplane, and the industrial city. Steel, concrete, and sheet glass were preferred over brickwork, the legacy of which can be seen in every major city of the world. From the outset, modernist architects sought to rebuild the urban landscape through rational planning and engineering in order to deliver an enhanced, dynamic lifestyle. As Le Corbusier famously said, "A city made for speed is made for success," and the car was therefore integral to its design.[27]

Italy was the birthplace of futurism, and it was here that the first motorways were built. By the end of the 1920s they covered over four thousand kilometers and were touted by Benito Mussolini as one of his greatest achievements and proof of his commitment to progress and modernization. The pure hedonism of speeding on a motorway would later be captured in the electronic, repetitive rhythms of the German technoband Kraftwerk's song "Autobahn," named after the expressway system, which uniquely has few speed limits.

In extolling the virtues of rational, functional planning, what modernists like Le Corbusier overlooked was the fundamental ambiguity that the urban experience would induce. It was the German sociologist Georg Simmel who anticipated the nervous stimulation and sensory overload generated by the tempo of metropolitan life, as we shall see. But first, I want to pause for a moment to describe the two opposing facets of machine speed itself—that it represents both economic growth and violent destruction.

The futurists best captured the aesthetic excitement of those transformations in everyday life associated with the new celebratory culture of machine speed. In doing so, they identified three core elements of the modern twentieth century's cultural imagination, as Tomlinson outlines:

1. That the sensual-aesthetic experience to be derived from fast machines is valuable and desirable in itself and that the risk and danger associated with speed offers satisfactions beyond those generally sanctioned within mainstream society.
2. That courting this risk and danger has an "existential"/heroic/transgressive dimension.
3. That speed and violence are inextricably intertwined.[28]

Why people find speed itself intoxicating is a complex psychological matter. My interest is rather in the cultural association between machine speed and sensuality, risk, thrills, and danger. I have already mentioned the essential affinity between speed and modern warfare in relation to Virilio. The more general point about the emotional power of "affiliative" or "evocative" objects, and the pleasures that can be derived from the mastery of machinery, is a long-standing theme in science and technology studies.[29] My own technofeminist writing has examined the gendered nature of this technical culture, not something Tomlinson touches on, and I will return to it later.

Tomlinson's observations about the contradictory impulses of capitalist modernity, that "the impulse to promote speed in one area of life begets the need to regulate, even to suppress it, in others" are, however, astute.[30] The resulting tensions of life in an accelerated culture are vividly illustrated by driving. On the one hand, there is the powerful mythology of iconic rebels such as James Dean, who live recklessly and die young at the wheel, and heroic individuals like Chuck Yeager, the first pilot to travel faster than sound (revered in Tom Wolfe's novel *The Right Stuff*). On the other hand, driving has become a mundane, everyday necessity, and, in a time-pressured culture, people's desire for speed is incessantly frustrated by speed limits and traffic congestion that inhibit them from driving fast.

But speed is literally lethal. The car is an instrument of violence and destruction, a vehicle of "mass murder," according to Norbert Elias.[31] The World Health Organization estimates that well over one million people are killed on the road every year. This varies for different countries, with high rates in Latin America and Africa. Even so, road safety is largely seen as the sole responsibility of individual road users. Automobility only "works" because its accidents are denied.[32] The traffic accident is not seen

as a normal social occurrence, but as an aberration. While there is a morbid fascination in the media with spectacular car crashes, and they are the stock in trade of Hollywood action movies, their routine occurrence is only news to the extent that they disturb traffic flow.

Car accidents are, however, predictable and preventable. As any STS scholar would tell you, the technical solution to dangerous driving is not a speed camera or Latour's iconic road bumps. The way to regulate speed is to design slower cars. But car engines are specifically designed and marketed for their capacity for high velocity and fast acceleration. Cars are not only transport machines but also intimate objects expressive of individuality and lifestyle choices. (Even I must admit to being seduced by the allure of speed, having owned an MG sports car as an eighteen-year-old in Australia and enjoying its close-to-the road feel.) According to J. G. Ballard's novel *Crash*, the car crash may even be a source of sexual fetishism. The incongruity of the automobile's promise of freedom of movement with the actuality of a largely sedentary existence in a landscape dominated by traffic-overloaded motorways is even more pronounced today. However, it is the speed of information flows rather than of motorcars that is at the forefront of our imagination.

The Metropolitan Pace of Life

A sense of acceleration has thus accompanied the path of Western modernity since its origins. The modern metropolis is the prime site for the intensification of time use, as it creates a dense set of possible interactions in a small space. As we move into an era where more than half the world's population lives in cities and the number of global cities has mushroomed—estimated to number about seventy worldwide—the urban experience is becoming ever more pervasive.[33]

It is in this context that Simmel's writings have once again become resonant. For Simmel, in contrast to other social theorists, it is the metropolis rather than the industrial enterprise or production or rational organization that is key to modernity. His insights about the increasing pace of life in *fin de siècle* Europe, his take on the zeitgeist, have such affinity with postmodern discussions of our contemporary condition that I want to recall them here.

In *The Philosophy of Money*, Simmel analyzes the ephemerality and

briefness that have become signifiers of the temporality of modernity. For him, there is an intrinsic connection between the increased pace of life in the city and the peculiarity of money. Indeed, he draws a direct parallel between the effects of the mathematical character of money and the general use of pocket watches: "like the determination of abstract value by money, the determination of abstract time by clocks provides a system for the most detailed and definite arrangements and measurements that imparts an otherwise unattainable transparency and calculability to the contents of life, at least as regards their practical management."[34]

Money only fulfills its function through its circulation, and thus it speeds up every activity connected with money, making them continuous. Production, transportation, sales, or consumption all have to be constantly on the move, and this revolutionizes the time-space coordinates of social relations. The totally dynamic impetus of the money economy, throwing everything into the circulation process, shatters stable and constant relations and creates a transitory constellation of relations in which everything is in flux, with no secure resting points.

The perfect institutional embodiment of the "teleology" of money, as an "end in itself," is the stock and commodity exchange, where time is radically compressed, and "values," in Simmel's words, are "rushed through the greatest number of hands in the shortest possible time." The human activity of the exchange is emblematic of the larger social trend, namely "an extreme acceleration in the pace of life, a feverish commotion and compression of its fluctuations, in which the specific influence of money upon the course of psychological life becomes most clearly discernible."[35]

What is particularly fascinating is Simmel's description of the modern personality types that this social turbulence generates. The classic metropolitan type, the blasé individual, suffers from the "*intensification of nervous stimulation* which results from the swift and uninterrupted change of outer and inner stimuli."[36] The cornucopia of possibilities and distractions available within the capitalist metropolitan milieu make it the locale in which "stimulations, interests, fillings in of time, and consciousness" are offered in profusion. In stark contrast to the slow rhythm of rural life, each crossing of the city street creates "the rapid crowding of changing images, the sharp discontinuity in the grasp of a single glance, and the unexpectedness of onrushing impressions." While too much ner-

vous stimulation can cause the blasé character to become obsessive and even pathological, for Simmel, these same processes are also responsible for "the finest and highest elements of our culture." Indeed, his critical perspective did not prevent him from fully appreciating the myriad stimulations of the vibrant urban scene and the enlarged social horizons, freed from tradition, it proffered.

The cultural value we attach to having a busy lifestyle, one rich in manifold activities and events, echoes this sentiment and it is a recurring theme in this book. As one of the leading time-use scholars, Manfred Garhammer, argues, the "*ambivalent* consequences of modernity distinguished by Simmel are crucial for the understanding of the time-crunch-life-enjoyment-paradox: life may become richer in terms of the number of events, and at the same time it may become poorer."[37]

Simmel was acutely aware of the inherent ambiguity of modern city life, that it promotes individualization and standardization at the same time. For example, in his exploration of fashion and style, we find the dialectical interplay of individual imitation and differentiation, the desire to be like others and the desire for difference. Fashion requires continuous reproduction to accelerate the turnover time of new commodities, making its newness its simultaneous death. As such, it exemplifies the modern cultural fixation with the "eternal present," with immediacy, the transitory, perpetual motion. Simmel was thus highly attuned to the emergent time consciousness of the modern individual: "the dominion of presentism—erasure of the past, effacement of inherited connections, domination by the immediately invisible sublime—is an integral part of modernity."[38] The point I will return to is that this condition of immediacy is taken today as being wholly a consequence of digital technologies.

Strikingly absent from Simmel's prescient analysis, however, is how the experience of the metropolis is highly stratified by social class, status, gender, and ethnicity, in other words, power relations. The realization of simultaneity as a phenomenon of the perception of time, the awareness of everything happening in the moment, was reserved for the privileged few. The acceleration of the pace of life was not then, and is not now, a uniform condition of existence.

Speed and mobility remain differentially distributed, accessed and interpreted by different groups depending on their circumstances. If we

return to the subject of the automobile, we will see that this technology itself shifts from being a sociomaterial practice of the rich to becoming, literally, a vehicle of democracy in the era of mass consumption. Once again, the speed it offers has unanticipated consequences.

Automobiles: Wheels in Motion

The automobile is a preeminent feature of the urban environment. The modern city is premised on car travel, and it was the mass production of the motorcar that greatly influenced its shape. Wide access to the experience of automobile speed was, in turn, enabled by the acceleration of car production.

Henry Ford did not invent the motorcar. Nor was his Model T a particularly good motorcar. Ford was not even the first to use a moving assembly line. But he was the first to "mass produce" a car, a phrase that he was also the first to use. As a result, the time taken to assemble a Ford chassis fell from just under 12.5 hours in the spring of 1913 to 93 minutes a year later. Greater efficiency led to big falls in price: the Model T cost $950 in 1909 and $360 in 1916, a fall in real terms of more than two-thirds.

Ford realized his aim of building a car "so low in price that no man making a good salary will be unable to own one." Between 1908 and 1927, Ford sold a total of 15 million Model Ts. Other car manufacturers followed suit, so that between 1908 and 1923 the average price of a car fell from $2,126 to $317 (in 1908 dollars). At the same time, annual sales rose from just 64,000 to 3.6 million. For its period, this rate of diffusion was extraordinary. Indeed, economic historians Tim Leunig and Hans-Joachim Voth argue that mechanizing the production process of the car (as with cotton spinning) was as valuable in terms of consumer welfare as inventing the Internet, and much more valuable than inventing the mobile phone.[39]

Weighing up the costs and benefits of the motor vehicle is not easy. Its significance and the lived experience of driving are full of complexity, ambiguity, and contradiction. Undoubtedly, in the early twentieth century, the car represented freedom for many and, arguably, had a greater impact on women than on men. Notably, the automobile appeared at the same time that women were striving for freedom in the home and in politics. At first, women were almost exclusively passengers. It was the electric automobile that gave upper-middle-class women the free-

dom to leave home and break free of the control of their husbands. In her book on women and the car, Virginia Scharff traces the critical role of the automobile in facilitating the suffragettes' mobilization, allowing the regional and cross-country campaigns that led to women winning the right to vote in the 1920s.[40] However, women had no place then in the actual manufacture of cars, while from early on the racial division of labor was built into the Ford factory.

The liberation and autonomy promoted by the private car also played an important role in the civil rights struggle, as Paul Gilroy describes. Initially, automobiles had been exclusively presented to white consumers and some companies expressly stipulated that their machines not be sold to blacks. However, when they could afford to buy them, African Americans bought cars at least as readily as their economic circumstances permitted. At one level, they were an absolute necessity for finding and maintaining employment. But the car also acquired additional significance in that "for African American populations seeking ways out of the lingering shadows of slavery, owning and using automobiles supplied one significant means to measure the distance traveled towards political freedom and public respect."[41] No wonder that feelings of rapture and kinesthetic pleasure, of being in control of so much power and speed, would feature so strongly in black music and culture. That the car was frequently linked to the female body and driving to sex is another aspect of its gendered politics.

The popular promise of automobile speed was to be short lived as more and more cars hit the road. One billion cars were manufactured over the course of the twentieth century, and there are currently over seven hundred million cars moving around the world's roads.[42] The automobile and its infrastructure dominate most North American cities in the literal sense that vast tracts of land are required to accommodate it. Not only for the roads, but also for bridges, service stations, and parking spaces—at home, work, the supermarket, and everywhere that people congregate. Small wonder that in American cities, close to half of all urban space is dedicated to the automobile; in Los Angeles, the figure reaches two-thirds.

For the individual, the mobility and convenience that the private car bestows are unparalleled by any other means of transportation. However, what appears to be an ideal solution to individual needs is increasingly

illusory as more and more people choose, or are forced to make, similar decisions. In terms of individual mobility, the utility of the motor vehicle is diminishing as the number of cars on the road escalates. The prosperous 1950s and early 1960s were characterized by booming car ownership and, at least in the United States, the car was expected to be the future of urban transport. The land use/transport planning procedures of that period pioneered the building of elaborate highway and freeway systems. But freeways themselves spawned more and more traffic, until very soon after their completion they were already badly congested. The obvious response to traffic congestion was to build more roads, leading to a vicious cycle of congestion, road building, sprawl, congestion, and more road building. The drive to save time proved somewhat counterproductive.

The net result is that London rush-hour traffic averages about ten miles per hour; in Tokyo, cars average twelve miles, and in Paris, seventeen. Indeed, riding a Victorian technology in central London—the bicycle—during peak hours is faster than traveling by car.[43] By comparison, the average daily travel speed of thirty-three miles per hour in Southern California, where there are probably more miles of freeway than anywhere else in the world, may seem impressive. However, as a result of a much lower population density than European cities, the advantage of speed is offset by the much longer distances required to travel to work.

The irony is that a horse and buggy could cross downtown Los Angeles or London almost as fast in 1900 as an automobile can make this trip at 5 p.m. today. Similarly, the speed of air transport has a wavering history. Whereas by 1958 travelers were going five hundred and fifty miles per hour in a Boeing 707, today we go no faster than in 1958 but rather slower due to the need to conserve fuel.[44]

I noted above how destructive car speed is in terms of road deaths worldwide. It is also a major cause of environmental pollution and international conflict in the imperial pursuit of fossil fuel. What is less remarked on are the ways in which the dominance of automobiles can lead to slow-down. The incongruity of the private car is that the accelerated mobility achieved in the "conditioned atmosphere and internal music of this windowed shell" is predicated on the sedentary human body.[45] Rather like the experience of surfing the Internet at a computer screen, the driver is both stationary and mobile at the same time.

In affluent societies where the automobile dominates, the car is deeply

entrenched in the ways in which we inhabit the physical world. In redefining movement, the car contains contradictions, as Virilio warns us, speed, gridlock, and a sedentary lifestyle. Indeed, the car is profoundly implicated in the recent finding that much of the world's population is physically inactive. According to the medical journal *Lancet*, this increases the risk of many adverse health conditions, such as cancer and diabetes, and is therefore a major public health issue.[46] Worldwide, it is estimated that physical inactivity causes 9 percent of premature mortality, or more than 5.3 million of the 57 million deaths that occurred worldwide.

There are many other dimensions to the unequal access to speed and movement. The postcolonial metropolis is host to a massive discrepancy in material conditions and life chances, and for most of the world's population, their only experience of speed is on a bicycle. In fact, nowadays many more bicycles than cars are being made, largely due to the massive expansion in Chinese production. The migration of millions from the countryside in places like China is a major source of global population movement and it is a far cry from the pleasures of the urban explorer evoked by the iconic modernist figure of the *flâneur*.

Conclusion

I would like to end this chapter with some reflections on the upsurge of academic interest in the significance of flows, movement and mobility in social life. John Urry, for example, has called for a new sociology of mobility, that sociology should focus on movement, travel, and mobility as opposed to settled bounded institutions.[47] He argues that fundamental global transformations are making the concept of society less analytically useful. We are better off analyzing the social in terms of flows and networks, as mobility is now the determining feature that frames social relations, not structures or positions. This emphasis on mobility is also a key feature of Zygmunt Bauman's writings about liquid modernity.[48] There is much talk of the ubiquity of various forms of travel, that the paradigmatic modern experience is that of rapid mobility over long distances, while migration is often represented as the central global phenomenon.

However, this model of contemporary life is, in fact, strictly applicable only to a relatively small number of highly privileged people. As David

Morley notes, "Despite all the talk of global flows, fluidity, hybridity and mobility, it is worth observing that, in the UK at least, there is evidence that points to continued geographical sedentarism on the part of the majority of the population."[49] Over half of British adults live within five miles of where they were born. Even in the more geographically mobile United States, two out of three people do not have a passport.

We should therefore not exaggerate the role of long-distance travel in people's lives. Despite globalization, local life occupies the majority of our time and space, and vast realms of people remain static, whether through choice or force of circumstance. Some groups are more mobile than others and have more control over both their own mobility and that of others. The mobility available to the affluent middle classes is quite different from the mobility of the international refugee or migrant, domestic worker.

Speed for the few is contingent on others remaining stationary. As Tim Cresswell remarks, "Being able to get somewhere quickly is increasingly associated with exclusivity."[50] Even in air travel—where all classes of passenger travel at the same speed—those in first class pass smoothly through the airport to the car that has been parked in a special slot close to the terminal. London's City Airport offers business travelers to New York the option of flying via Dublin for immigration clearance in order to be in the fast lane on landing. Meanwhile, the majority of foreign arrivals are left waiting in the slow lanes. "Speed and slowness are often logically and operationally related in this way."

Theorists of mobility flatten out such differences because they mistake their own partial experience for a universal condition. The same can be said of much of the literature on social acceleration. The effect is to legitimate, Bev Skeggs argues, "the habitus of the middle-class that does not want to name itself."[51] Voluntary mobility, like speed, is seen as a social good, while fixity becomes associated with failure, with being left behind. Moreover, the notion of mobility is itself gendered in various ways such that women occupy a fixed place in the male narratives of travel, adventure, and discovery. Just as the literature on modernity, describing the fleeting, anonymous, ephemeral encounters of the life in the metropolis mainly accounts for the experience of men, so these arguments ignore the lingering separation of public and private spheres.[52] By equating the modern with the public, they fail to describe women's experience of im-

mobility. As with time, mobility is a resource to which not everyone has an equal relationship.

Summing up, the idea that the pace of life is accelerating is not new. The vast technological and social transformations that took place in the early twentieth century were also accompanied by the experience of time-space compression. These sociomaterial changes in the fabric of everyday life were to be consolidated in the modern city. Life lived at a high speed became identified with progress. Our valorization of a busy lifestyle, as well as our profound ambivalence toward it, can be traced back to this period.

Technology played a key role then as now. The introduction of the automobile in particular symbolized machine speed in the twentieth century and, like the telegraph and telephone, it reduced barriers of distance and made the world more interconnected. However, its promise of pure speed proved somewhat hollow. In any event, constant movement as a shared aspiration of the good life hides many realities. Speed and mobility are far from a universal condition of existence.

Nevertheless, the experience of immediacy as a phenomenon of the perception of time, the awareness of everything happening in the moment, has become widespread. Whereas a hundred years ago it was the preserve of the privileged, almost everyone has become implicated, at least potentially. Worldwide simultaneity is now the taken-for-granted condition of our lives and is what the Internet lays claim to.[53] The social shaping of technology and time is constantly evolving, and we need to specify how these processes coalesce in order to gain a more balanced understanding of our current digital times.

My intention here has been to show that an awareness of what our social, economic, and technological arrangements owe to the past makes the acceleration society thesis more intelligible. Connecting with these earlier debates brings the realization that the questions we face today are not in themselves new. This does not detract from their urgency. But in order to develop a critical perspective on the discourses of acceleration that surround us, we need to put them in a fuller historical perspective than that which is generally acknowledged.

Throughout this chapter I have argued that the discourse of acceleration tends to skim over and conceal the extent to which the pace of modern life depends on one's resources and the choices they make possible.

In reality, both control over time and access to mobility reflect and reinforce power. Skeggs is rightly critical of the universalizing treatise of the mobile, cosmopolitan individual postulated by social theorists, such as Ulrich Beck and Anthony Giddens, and she notes the ever-widening gap between those who theorize and those who engage in empirical research.[54] It is only by examining the facts on the ground that we can understand how speed and time are being lived. So this is exactly what we will do in the remaining chapters of this book.