# THE CULTURE OF TIME AND SPACE 1880–1918

WITH A NEW PREFACE

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# CONTENTS

# INTRODUCTION

From around 1880 to the outbreak of World War I a series of sweeping changes in technology and culture created distinctive new modes of thinking about and experiencing time and space. Technological innovations including the telephone, wireless telegraph, x-ray, cinema, bicycle, automobile, and airplane established the material foundation for this reorientation; independent cultural developments such as the stream-of-consciousness novel, psychoanalysis, Cubism, and the theory of relativity shaped consciousness directly. The result was a trans-

formation of the dimensions of life and thought. This book is about the way Europeans and Americans came to conceive of and experience time and space in those years.

The idea for this kind of interpretation came to me from reading the works of phenomenologically oriented psychiatrists, who viewed their patients' mental lives in these terms. They used a categorical frame of reference to reconstruct their patients' experience of time, space, causality, materiality, and other essential categories. The work of the French psychiatrist Eugène Minkowski, elaborated in a collection of case studies published as *Le Temps vécu* in 1933, was especially useful. While Minkowski explored other categories, the focus of his attention was on time, especially on how his patients experienced past, present, and future. He applied the phenomenological method to understand patients who had acute psychotic disorders and could not reconstruct their lives genetically or historically as the psychoanalytic method required. His method is particularly suited for psychotics, because it is often not feasible to link their prior personality with their current pathological personality, which is generally too fragmented and disorganized. I adapt that aspect of the phenomenological method informally, for it is possible to identify many origins or "causes" of changing ideas about time and space, such as the scheduling requirements of railroads that directly necessitated the institution of World Standard Time, or the telephone that immediately and directly changed the sense of space. For all its diversity, the culture of an age hangs together more coherently than does the mind of a psychotic. My primary object, however, is to survey significant changes in the experience of time and space, including some for which I am able to identify no specific "cause." Hence I do not explain why the telephone was invented or why the stream-of-consciousness novel began to appear.

As basic philosophical categories, time and space are particularly suitable as a framework for a general cultural history, because they are comprehensive, universal and essential.

Since all experience takes place in time and space, the two categories provide a comprehensive framework that can include such wide-ranging cultural developments as Cubism, simultaneous poetry, and ragtime music along with the steamship, skyscraper, and machine gun. To avoid the crazy-quilt effect that such an assemblage of sources might create, I select only material that conforms to the essential nature of each of the subtopics that make up the first nine chapters—The Nature of Time, The Past, The Present, The Future,



Speed, The Nature of Space, Form, Distance, and Direction—and emphasize those developments that differ significantly from earlier periods.

I followed two lines of thinking to arrive at these subtopics. The three modes of time—past, present, and future—came from philosophy and were part of Minkowski's conceptual framework. Even Henri Bergson (who insisted that the division of the flux of time into three discrete parts distorted its essentially fluid nature) used the terms repeatedly in his analyses. These modes of time seemed to be natural, compelling, and comprehensive subdivisions for all possible human experiences of time. Subtopics for space were more difficult to determine. In a discussion with Alan Henrikson, I learned that map makers identify four aspects of space that plane maps can show—shape, area, distance, and direction. These categories suggested a framework that was as comprehensive as those for time that I had already decided on, so I combined "shape" and "area" into "form" and added an introductory chapter on the nature of space as I did on the nature of time. My categories thus encompass a wide range of human activities and are mutually exclusive—except for the material on speed. I treat speed in a separate chapter because it was widely discussed around the turn of the century as a topic in its own right, because the material on it would have been impossible to classify as either exclusively temporal or spatial, and because as a juncture of time and space it formed a natural transition between them.

To avoid repetition I have dispersed single corpora among these chapters. The work of Marcel Proust, for example, appears in chapters on the nature of time, the past, the nature of space, and distance. Prominent figures such as Proust have been interpreted with such uniformity that their contributions to the cultural landscape have tended to become as solid and fixed as a rock. By cracking into such routine interpretations, identifying different contributions from various parts of their corpus, and distributing my discussion of them among the subtopics of this study, I attempt to expose fresh surfaces and attribute those contributions to the precise modes of time or space that are appropriate.

To illustrate further the comprehensive range of these topics, in the two concluding chapters I survey how these changes shaped the diplomatic crisis and the actual fighting of World War I. Individuals behave in distinctive ways when they feel cut off from the flow of time, excessively attached to the past, isolated in the present, without a future, or rushing toward one. Nations also demonstrate distinctive

attitudes toward time. For example, the contrast between Austria-Hungary, convinced its time was running out, and Russia, which felt it had time to spare, is striking and is revealed repeatedly in diplomatic documents. The experience of space also varies considerably along national lines: some countries, like Germany, believed they needed more; Austria-Hungary thought that its space was excessively heterogeneous and distintegrating; Russia was universally viewed (and feared) as the country with boundless space. These final chapters illustrate how the changes in thinking about and experiencing these abstract philosophical categories were manifested in a concrete historical situation. The categories of time and space thus provide a comprehensive theoretical framework that allows not only the integration of many areas across the cultural spectrum but also integration along a theoretical vertical axis from "high culture" to popular culture and the material aspects of everyday life.

Not every society has kings, parliaments, labor unions, big cities, bourgeoisies, Christian churches, diplomats, or navies. I do not mean to question the significance of histories of such entities but only to point out that they are not universal. Time and space are. All people, everywhere, in all ages, have a distinctive experience of time and space and, however unconscious, some conception of it. It is possible to interpret how class structures, modes of production, patterns of diplomacy, or means of waging war were manifested historically in terms of changing experiences of time and space. Thus class conflict is viewed as a function of social distance, assembly lines are interpreted in conjunction with Taylorism and time management studies, the diplomatic crisis of July 1914 is seen to have a historically unique temporality, and World War I can be interpreted under a Cubist metaphor. The phonograph and cinema are evaluated in terms of the way they modified the sense of the past, the telephone and World Standard Time are seen restructuring the experience of the present, the steamship and the Schlieffen Plan reflect a desire to control the future, urbanism is viewed as a process of diminishing living space, the politics of imperialism is seen as a universal impulse to claim more space, wealth is conceived as the power to control time and space.

Such interpretations are reductionistic. But if one is to make generalizations about the culture of an age, one must be able to show how a wide variety of phenomena have certain common features in their essential nature or function, and one must also be able to interpret these features in a common language. The interpretation of phenomena such as class structure, diplomacy, and war tactics in terms of modes of time and space makes possible the demonstration of their essential similarity to explicit considerations of time and space in literature, philosophy, science, and art. Put together, they create the basis for generalizations about the essential cultural developments of the period. And by interpreting the culture as a function of time and space, it becomes possible to compare different ages and different cultures topic by topic with less confusion than would be involved in trying to compare historically and culturally specific interpretative categories such as parliaments, unions, families, or bourgeoisies. It should be possible, therefore, to compare the experience of time and space in the Renaissance or the Enlightenment with that of the *fin de siècle* to discover what essential changes occurred in the intervening years. This study provides a contribution to such a larger historical project.



By arguing that my topics are essential, I run the risk of implying that cultural histories with other foci are unessential. Researching the culture of an age, over a number of years, with two topics constantly in mind, one inevitably begins to see everything in that context, even the work of others who have classified and interpreted sources differently. General cultural histories of the period, including some that focus on single nations or cities, have been inspirational and suggestive in drawing my attention to sources and offering a variety of interpretations of them. While I am mindful of the natural bias that comes to any researcher, I must nevertheless venture the claim that my focal topics are more essential from a strictly philosophical point of view. The topics of Roger Shattuck, H. Stuart Hughes, and Carl E. Schorske are framed according to conventional academic disciplines and artistic genres. While I used those frames for subdivisions within my chapters, my basic categories derive from two essential philosophical categories—essential in that they are, as Kant argues, the necessary foundation of all experience. Shattuck focused on four themes in French culture of the period: childhood, humor, dream, and ambiguity as they were expressed in four genres of art, music, drama, and poetry. Schorske interpreted the politics of literature, architecture, city planning, psychiatry, art, and music in Vienna; and Hughes examined a specific discovery in social thought, which can be interpreted as one aspect of the new sense of space—perspectivism.[1] The more limited focus of these studies enabled their authors to go into greater detail, but they did not attempt to analyze the essential foundations of experience, as I have tried to do.

I originally planned to organize the new thinking according to traditional artistic genres and academic disciplines, however much of it cut across those dividers. I finally decided to base the theoretical framework on philosophical concepts, because that allowed me to treat concepts such as simultaneity as a whole and not scatter them throughout various genre and discipline chapters; it forced me to break up large corpora, which sharpened my assessment of their various contributions; and it necessitated thinking through the historical significance of the culture of the period in fresh terms. This approach obliged me to decide upon a suitable subtopic to cover simultaneity—a concept that cut across traditional divisions—and that posed problems. Instantaneous electronic communication, which made simultaneity a reality, affected the sense of the present, speed, form, and distance. I concluded that its most distinctive effect was on the sense of the present.

Technological developments are temporally specific events that often affect great numbers of people, and as such they are a compelling source for historical explanation. To avoid a monocausal technological determinism in cultural history, it is essential to clarify precisely how technology and culture interact.

Some cultural developments were directly inspired by new technology. James Joyce was fascinated by the cinema, and in *Ulysses* he attempted to recreate in words the montage techniques used by early film makers. The Futurists worshipped modern technology and celebrated it in manifestos and art. Several poets wrote "simultaneous" poetry as a response to the simultaneity of experience made possible by electronic communication. Many conceptions of time and space, however, were altered independently of technology, in response to pressures within various genres and disciplines. Paul Cézanne revolutionized the treatment of space in art as he concentrated on the eternal form of *Mont Sainte-Victoire* and the arrangement of bottles and apples in his still lifes. Einstein's challenge to Newton was suggested by the results of an experiment made possible by a new machine—the inferometer—but relativity was largely a revision of theoretical problems that physics had been struggling with for years. The thematic similarity between developments inspired by technology and those independent of it suggests that a cultural revolution of the broadest scope was taking place, one that involved essential structures of human experience and basic forms of human expression.

Other technics provided metaphors and analogies for changing



structures of life and thought. The opening up of the interior anatomical terrain of the human body by x-ray was part of a general reappraisal of what is properly inside and what is outside in the body, the mind, physical objects, and nations. Thomas Mann's hero in *The Magic Mountain* remarked that he felt as though he were peering into the grave when he observed his cousin's insides by means of x-ray. Edmund Husserl challenged the Cartesian idea that perception takes place in the mind and argued instead that it is a relation between a perceiver and a thing perceived. The Cubists rendered both the interior and exterior of objects from a variety of perspectives on a single canvas, thereby transcending traditional spatial and temporal limits in art. The airplane altered the significance of national boundaries and traditional geographical barriers between peoples.

In the process of integrating such an array of sources, I use a working principle of *conceptual distance*. Thus, there is greater conceptual distance between the thinking of an architect and that of a philosopher on a given subject than there is between the thinking of two philosophers, and I assume that any generalization about the thinking of an age is the more persuasive the greater the conceptual distance between the sources on which it is based. However the distance must not be too great or the juxtaposition becomes forced. Mindful of that problem I have at times used metaphor and analogy to link material from especially "distant" sources to extend interpretations beyond the confines of strict academic disciplines and their exacting requirements for evidence and argumentation. And so, for example, a discussion of the discovery of the constituent function of negative space juxtaposes evidence all across Western culture including field theory in physics, architectural spaces, sculpted voids, Cubist positive negative space, the pauses and blanks in Mallarmé's poetry, and silence in literature and music. Such broad cross-discipline and cross-genre constructions involve a radical gerrymandering of traditional cultural areas.

This method of grouping thematically related developments without an apparent causal link occasionally led to the discovery of a link. The connection between Cubism and camouflage, for example, was suggested by Picasso's remark to Gertrude Stein, upon seeing the first camouflaged trucks parading in Paris in 1915, that the Cubists had invented camouflage. For a number of reasons the historical significance of these two phenomena was strikingly similar, but, as neither Picasso nor Gertrude Stein documented the connection, I at first assumed that he was just pointing out that significant simi-

larity, much as I have done with other cultural developments throughout this book. But further inquiry revealed that the man who invented camouflage was inspired by the Cubists and explicitly acknowledged that debt. This discovery tightened my interpretation of the major changes in the actual fighting of World War I within a Cubist metaphor. Some analogies, however, remain mere analogies, and although I did not discover any actual connection between their elements (as, for example, between field theory in physics and Futurist "force lines"), the similarity between the two was sufficiently strong to link them in the only way justified by my research—analogically—having a similar structure or function within their respective disciplines or genres and possibly related in fact by processes of communication that I was unable to discover. These analogies constitute the open end of my thinking, but they do not make up the bulk of my argument, which is based on developments of similar cultural function that were causally or, at least, consciously related at that time.

It is impossible to identify a single thesis that properly encompasses all changes in the experience of time and space that occurred in this period. Indeed, one major change was the affirmation of a plurality of times and spaces. Nevertheless, it is possible to indicate the most important development for each of the two major topics—the affirmation of the reality of private time and the leveling of traditional spatial hierarchies. Bergson's philosophy forms the theoretical core of the argument for private time, and Cubism graphically negates the traditional notion that the subject of a painting, for example, is more important than the background. This leveling of hierarchy in various areas of Western culture, it will be seen, parallels the leveling of aristocratic society, the rise of democracy, and the dissolution of the distinction between the sacred and profane space of religion. Although there is some evidence for direct, conscious connection between these parallel developments, such as Louis Sullivan's affirmation of a new "democratic" architecture, the connection remains largely one of analogy, based on compelling similarity.

While I do not mean to present the "relevance" of this study to current problems in a simplistic way, its very conception is associated with the energy crisis of recent years. Contemplating the disastrous consequences of a long-range depletion of energy sources, especially those that affect transportation, it struck me that in the period I wanted to analyze, new energy sources had revolutionized the



experiences of time and space. The age thus had an energy crisis of its own—a crisis of abundance. The tremendous development of railroads and steamships and the invention of the automobile and airplane greatly accelerated transportation and proliferated the places where people could travel at new high speeds. The petroleum industry began to supply combustible fuels on a large scale for the automobiles, and power stations distributed electricity to light up the night and drive electric motors. It was the reverse of the current energy crisis, since its alarmists were generally concerned about a surfeit of new energy sources and its possible nefarious consequences. There was little talk of running out. And unlike the current crisis that has caused panic, the crisis of the prewar period generally inspired hope.

Each chapter begins with the technological or institutional developments that shaped the mode of time and space that is its subject, and then surveys the cultural record, following traditional academic disciplines and artistic genres. Within each subsection I have reconstructed events in chronological order. The concluding date of this study is a natural historical marker; the beginning date is approximate. Some events, such as the publication of Jules Verne's *Around the World in Eighty Days* in 1873 or the invention of the telephone in 1876 precede it, but the bulk of the changes cluster in the turn-of-the-century period and constitute a generally coherent cultural unit.

# 1
# THE NATURE OF TIME

In the preface to a collection of essays on the history of ideas, the cultural historian Arthur O. Lovejoy complained that many studies overunified the views of an author in order to present his thinking "all-of-a-piece." In his own essays he sought to correct that weakness and present the "inner tensions—the fluctuations or hesitancies between opposing ideas or moods, or the simple and more or less unconscious embracing of both sides of an antithesis."[1] Lovejoy was referring to an individual's thinking, but the warning applies even



more to the thought of an age. The great variety of views in any particular age do not all line up on one side of the issues. I present the critical concepts dramaturgically in accord with the theory that knowledge is essentially dialectical, that ideas are generated in opposition to other ideas and have a basic polemical nature. The development of a body of thought involves a selection from, and an occasional resolution of, contrasting views. The ideas of this period on the nature of time will be organized around three pairs of opposing views: whether time was homogeneous or heterogeneous, atomistic or a flux, reversible or irreversible.

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As every child quickly learns, there is only one time. It flows uniformly and may be divided into equal parts anywhere along the line. This is the time Isaac Newton defined in 1687: "Absolute, true, and mathematical time, of itself, and from its own nature, flows equally without relation to anything external." In *The Critique of Pure Reason* (1781) Immanuel Kant rejected the Newtonian theory of absolute, objective time (because it could not possibly be experienced) and maintained that time was a subjective form or foundation of all experience. But even though it was subjective, it was also universal—the same for everybody. No doubt Newton and Kant experienced different paces of private time, but before the late nineteenth century no one (with the possible exception of Laurence Sterne, who explored private time in *Tristram Shandy*) systematically questioned the homogeneity of time. The evidence for it was written on the faces of the millions of clocks and watches manufactured every year.

The most momentous development in the history of uniform, public time since the invention of the mechanical clock in the fourteenth century was the introduction of standard time at the end of the nineteenth century. A pioneer in promoting uniform time was the Canadian engineer Sanford Fleming, who in 1886 outlined some reasons for its adoption. The use of the telegraph "subjects the whole surface of the globe to the observation of civilized communities and leaves no interval of time between widely separated places proportionate to their distances apart." This system mixes up day and night as "noon, midnight, sunrise, sunset, are all observed at the same moment," and "Sunday actually commences in the middle of

Saturday and lasts until the middle of Monday."[2] A single event may take place in two different months or even in two different years. It was important to be able to determine local times and to know precisely when laws go into effect and insurance policies begin. The present system, he concluded, would lead to countless political, economic, scientific, and legal problems that only the adoption of a coordinated world network could prevent.

The most famous supporter of standard time, Count Helmuth von Moltke, in 1891 appealed to the German Parliament for its adoption. He pointed out that Germany had five different time zones, which would impede the coordination of military planning; in addition there were other time zones, he protested, that "we dread to meet at the French and Russian boundaries."[3] When Fleming sent Moltke's speech to the editor of *The Empire* for publication, he did not dream that in 1914 the world would go to war according to mobilization timetables facilitated by standard time, which he thought would rather engender cooperation and peace.

Despite all the good scientific and military arguments for world time, it was the railroad companies and not the governments that were the first to institute it. Around 1870, if a traveler from Washington to San Francisco set his watch in every town he passed through, he would set it over two hundred times. The railroads attempted to deal with this problem by using a separate time for each region. Thus cities along the Pennsylvania Railroad were put on Philadelphia time, which ran five minutes behind New York time. However, in 1870 there were still about 80 different railroad times in the United States alone.[4] The day the railroads imposed a uniform time, November 18, 1883, was called "the day of two noons," because at mid-day clocks had to be set back in the eastern part of each zone—one last necessary disruption to enable the railroads to end the confusion that had so complicated their functioning and cut into their profits. In 1884 representatives of twenty-five countries that convened at the Prime Meridian Conference in Washington proposed to establish Greenwich as the zero meridian, determined the exact length of the day, divided the earth into twenty-four time zones one hour apart, and fixed a precise beginning of the universal day. But the world was slow to adopt the system, for all its obvious practicality.

Japan coordinated railroads and telegraphic services nine hours ahead of Greenwich in 1888. Belgium and Holland followed in 1892; Germany, Austria-Hungary, and Italy in 1893; but in 1899, when



John Milne surveyed how countries throughout the world determined their time and its relation to Greenwich, there was still a great deal of confusion. Telegraph companies in China used a time that was approximately the same as in Shanghai; foreigners in coastal ports used their own local time taken from solar readings; and all other Chinese used sundials. In Russia there were odd local times such as that of St. Petersburg—two hours, one minute, and 18.7 seconds ahead of Greenwich. In India hundreds of local times were announced in towns by gongs, guns, and bells.[5]

Among the countries in Western Europe, France had the most chaotic situation, with some regions having four different times, none of which had a simple conversion to Greenwich time. Each city had a local time taken from solar readings. About four minutes behind each local time was astronomical time taken from fixed stars. The railroads used Paris time, which was nine minutes and twenty-one seconds ahead of Greenwich. A law of 1891 made it the legal time of France, but the railroads actually ran five minutes behind it in order to give passengers extra time to board: thus the clocks inside railway stations were five minutes ahead of those on the tracks.[6] In 1913 a French journalist, L. Houllevigue, explained this "retrograde practice" as a function of a national pride, expressed in the wording of a law of 1911 promoting the system that other countries of Europe had adopted twenty years earlier. The French law declared that "the legal time in France and Algeria is the mean Paris time slowed nine minutes and twenty-one seconds." Houllevigue pointed out the Anglophobic intent of the wording: "By a pardonable reticence, the law abstained from saying that the time so defined is that of Greenwich, and our self-respect can pretend that we have adopted the time of Argentan, which happens to lie almost exactly on the same meridian as the English observatory."[7] In spite of their previous isolation the French finally took the lead in the movement for unified world time based on the guidelines of 1884. If the zero meridian was to be on English soil, at least the institution of world time would take place in France. So President Raymond Poincaré had Paris host the International Conference on Time in 1912, which provided for a uniform method of determining and maintaining accurate time signals and transmitting them around the world.

The wireless telegraph made it all possible. As early as 1905 the United States Navy had sent time signals by wireless from Washington. The Eiffel Tower transmitted Paris time in 1910 even before it was legally declared the time of France. By 1912 the system was ex-

panded with installations in Nancy, Charleville, and Langres so that the entire country could receive the same signals simultaneously. Houllevigue boasted that Paris, "supplanted by Greenwich as the origin of the meridians, was proclaimed the initial time center, the watch of the universe."[8] The observatory at Paris would take astronomical readings and send them to the Eiffel Tower, which would relay them to eight stations spaced over the globe. At 10 o'clock on the morning of July 1, 1913, the Eiffel Tower sent the first time signal transmitted around the world. The independence of local times began to collapse once the framework of a global electronic network was established. Whatever charm local time might have once had, the world was fated to wake up with buzzers and bells triggered by impulses that traveled around the world with the speed of light.

Around the time of the International Conference on Time various proposals for calendar reform were made. Nothing concrete came of them, but they reveal a parallel effort to rationalize public time. In 1912 an American reformer noted that while the year, month, and day have a basis in nature, the week and the hour are entirely artificial. The "stupid" arrangement of the calendar, he argued, should be simplified by dividing the year into four equal seasons of 91 days each and leaving out New Year's day and one day every four years.[9] In an introduction to a proposal of 1913 by Paul Delaporte for calendar reform, the French scientific writer Camille Flammarion applauded the achievements of the International Conference on Time, observed that the unequal divisions of the year should be modified, and endorsed Delaporte's proposal to shorten every month to twenty-eight days, with an intercalary period added in the middle of the year so that workers could be paid every four weeks and rent would be due and interest computed for the same length of time every month. The year would always begin on the same day, thus obviating the reprinting of calendars.[10] In 1914 an Englishman emphasized difficulties in scheduling for business and government and recommended a calendar in which each quarter would be composed of two thirty-day months and one thirty-one day month, with leap year not counted at all.[11] A German reformer proposed a "hundred-hour day" composed of units approximately equivalent to a quarter-hour. Just as the introduction of the decimal system in spatial measurements had enabled the German people to make rapid economic development, he contended, so might the introduction of a temporal decimal system liberate resources for other pursuits.[12]

A science-fiction novel of 1893 about life on Mars incorporated



some of the developments in standard time made in the previous decade. In Henry Olerich's *A Cityless and Countryless World*, every dwelling and working place was furnished with clocks that were astronomically regulated and electronically synchronized. The standard for money was time: "In business, when you say I want so many dollars, cents and mills for an article, we say I want so many days, hours, minutes and seconds for it."[13] Martian currency consisted of paper bills stamped with units of time. This time money was perhaps inspired by the introduction of time-recording machines for workers. The same year that Olerich's book was published, an article in *Scientific American* described a machine, in service since 1890, that stamped an employee's card with the time he entered and left.[14] Though he was paid in dollars, the time-stamped tape determined the amount. Olerich had only to make the slightest alteration to create a utopian world where time *is* money.

Punctuality and the recording of work time did not originate in this period, but never before had the temporal precision been as exact or as pervasive as in the age of electricity.[15] From the outset there were critics. Some pathological effects were noted in that catalog of medical alarmism, George Beard's *American Nervousness*. He blamed the perfection of clocks and the invention of watches for causing nervousness wherein "a delay of a few moments might destroy the hopes of a lifetime."[16] Every glance at the watch for these nervous types affects the pulse and puts a strain on the nerves. There were many other alarmists who reacted adversely to the introduction of standard time, but the modern age embraced universal time and punctuality because these served its larger needs. That prerevolutionary, pastoral image in Arthur Koestler's *Darkness at Noon*, of Russian peasants coming to the railroad station at dawn to wait for a train that might not arrive until the late afternoon, suggested a life style more frustrating and wasteful than it was idyllic.

The proponents of world time were few, and none of them (aside from Moltke) were well known beyond the narrow circle of fellow reformers. Nevertheless the concept of public time was widely accepted as a proper marker of duration and succession. There were no elaborate arguments on its behalf because there seemed to be no need. The passion in the debate about homogeneous versus heterogeneous time was generated rather by those novelists, psychologists, physicists, and sociologists who examined the way individuals create as many different times as there are life styles, reference systems, and social forms.

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Of all the assaults on the authority of uniform public time that appeared in the imaginative literature of this period, the most direct was the one assigned to the Russian anarchist in Joseph Conrad's *The Secret Agent* (1907). His task as an *agent provocateur* in England was to blow up the Greenwich Observatory. Conrad could not have picked a more appropriate anarchist objective, a more graphic symbol of centralized political authority.

The heterogeneity of private time and its conflict with public time was explored in a number of literary works. In 1890 Oscar Wilde imagined a sinister discordance between body time and public time for his Dorian Gray, whose portrait aged in his place while he stayed young. When Dorian stabs the portrait, the magic ends and the two times race back to their proper positions: the portrait changes back to innocent youth, and Dorian's face registers the corruption that the portrait had concealed.

Marcel Proust's *Remembrance of Things Past* takes place in a clearly identifiable public time from the Dreyfus affair to World War I. But the private time of its narrator, Marcel, moves at an irregular pace that is repeatedly out of phase with that of the other characters and defies reckoning by any standard system. Marcel reflected that his body kept its own time while he slept, "not on a dial superficially marked but by the steadily growing weight of all my replenished forces which, like a powerful clockwork, it had allowed, notch by notch, to descend from my brain into the rest of my body."[17] In the search for lost time, mechanical timepieces will be utterly useless as Proust learns to listen for the faint stirrings of memories implanted in his body long ago and destined to recur to him in unpredictable and enchanting ways.

The dials that superficially mark time for Proust are virtual enemies in the troubled lives of Franz Kafka's heroes. When Gregor Samsa awakens in *The Metamorphosis* and discovers himself to be a great insect, his distress is intensified by the discovery that he is going to miss his train. This first break with the routine of public time is symbolic of the complete breakdown of his relationship with the world. In *The Trial* (1914–15) Josef K. tells his employer about the summons to his first hearing: "I have been rung up and asked to go somewhere, but they forgot to tell me when." He assumes he should arrive at nine but oversleeps and arrives over an hour late. A few minutes later the Examining Magistrate reproaches him: "You should have been here an hour and five minutes ago."[18] The next



week when he returns he is on time but no one shows up. This confusion mirrors his larger problems with the world. He eventually loses the ability to differentiate inner and outer sources of guilt just as he was unable to determine who was responsible for his missed appointments. In a diary entry of 1922 Kafka commented on the maddening discordance between public and private time. "It's impossible to sleep, impossible to wake, impossible to bear life or, more precisely, the successiveness of life. The clocks don't agree. The inner one rushes along in a devilish or demonic—in any case, inhuman—way while the outer one goes, falteringly, its accustomed pace."[19] His heroes feel absurd when they arrive too early and guilty when late.

The public time that Proust found superficial and Kafka terrifying, Joyce found to be arbitrary and ill-suited to order the diverse temporal experiences of life. In *Ulysses* he modified traditional treatment of time by compressing Odysseus's twenty years of travel into sixteen hours in the life of Leopold Bloom as he meandered about the shops and pubs of downtown Dublin. During that day we are given a microscopic account of everything Bloom does, thinks, and feels, but within the limited duration of the story Joyce widens the temporal range with interior monologues and authorial comments about Bloom's unique experience of time and its relation to the infinite expanses of cosmic time.

The heterogeneity of time is presented formally by means of the specific rhythm of the prose of each chapter.[20] In the "Aeolus" episode the rhythm varies like the unpredictable winds which blew Odysseus off course and which in *Ulysses* blow like the windbag newspapermen whose views are chopped up into newspaper-length articles. In "Lestrygonians" Bloom goes for lunch and the rhythm is the peristaltic motion of digestion. Bloom looks into the river and reflects on the way everything flows: food through the alimentary canal, the foetus through the birth canal, the traffic of Dublin, his bowels, thought, language, history, and time itself. The prose in "Oxen of the Sun" approximates the long cadences of a woman in labor. In "Ithaca" Joyce describes the journey home of Stephen and Bloom as a catechism in which their thoughts, like their footsteps, alternate in a series of questions and answers. And in the final episode the rhythm is that of the flow of Molly's stream of consciousness.

In the midst of telling how Bloom flopped over the back fence to get into his home, Joyce suddenly breaks into the narrative with a list

of possible ways of describing when Bloom last weighed himself. It was "the twelfth day of May of the bissextile year one thousand nine hundred and four of the christian era (jewish era five thousand six hundred and sixty-four, mohammedan era one thousand three hundred and twenty-two), golden number 5, epact 13, solar cycle 9, dominical letters C B, Roman indication 2, Julian period 6617, MXMIV."[21] We are told that Bloom walked around Dublin precisely on June 16, 1904, only Joyce leaves us wondering exactly when that is.

Joyce's reminder that time is relative to the system by which it is measured also points to Einstein's theory that all temporal coordinates are relative to a specific reference system. In a textbook of 1883 Ernst Mach raised some questions about classical physics that anticipated one of the greatest scientific revolutions ever. Mach rejected Newton's views of absolute space and absolute motion and dismissed his absolute time as an "idle metaphysical conception."[22] This passing shot at classical mechanics triggered a series of modifications that eventually culminated in the bold dismantling of it by Einstein. The next blow to absolute time came from an experiment intended to show the existence of a luminiferous ether through which light was propagated. According to classical mechanics the speed of light perpendicular to the ether flow generated by the passage of the earth through it ought to have been faster than the speed of light in line with it, but the famous experiment of Michelson and Morley of 1888 showed no detectable difference. This troublesome result led to several hypotheses about a slowing down of time from its movement through ether.

In 1895 Hendrick Lorentz speculated that perhaps time was dilated by motion through the ether just enough to account for the observed equality of the two speeds of light.[23] This position was midway between classical physics and relativity theory. It looked forward to relativity by suggesting that time measurements are modified by motion, that there is a plurality of "local times," each dependent on the relative motion of the clock and observer. But it adhered to the traditional concept of absolute time by insisting that the change actually took place *in the object* as a result of motion through the ether, similar to the way other elastic bodies contract in the direction of their motion through a gas or fluid. Lorentz believed that the dilation of time was real, and he thus retained the concept of absolute time. Einstein would argue that the dilation of time was only a perspectival effect created by relative motion between an observer and the thing observed. It was not some concrete change



inherent in an object but merely a consequence of the act of measuring. Such an interpretation rejected absolute time, because time only existed when a measurement was being made, and those measurements varied according to the relative motion of the two objects involved.

With the special theory of relativity of 1905 Einstein calculated how time in one reference system moving away at a constant velocity appears to slow down when viewed from another system at rest relative to it, and in his general theory of relativity of 1916 he extended the theory to that of the time change of accelerated bodies. Since every bit of matter in the universe generates a gravitational force and since gravity is equivalent to acceleration, he concluded that "every reference body has its own particular time."[24] In a subsequent popularization of his theory he contrasted the older mechanics, which used only one clock, with his theory which requires that we imagine "as many clocks as we like."[25] The general theory of relativity had the effect, figuratively, of placing a clock in every gravitational field in the universe, each moving at a rate determined by both the intensity of the gravitational field at that point and the relative motion of the object observed. Einstein, who could not afford to have a clock on the wall of his room when he was working in the patent office in Berne, had filled the universe with clocks each telling a different correct time.

Although several investigations of the social origin of time were made in the late nineteenth century,[26] the prodigious work of Emile Durkheim constitutes the first one of major significance. The sociology and anthropology of that age was full of information about primitive societies with their celebration of the periodic processes of life and the movement of heavenly bodies, their vital dependence on seasonal change and the rhythmic activity of plants and animals, their exotic commemorations of ancestral experience, and their cyclic and apocalyptic visions of history. It is no wonder that Durkheim came to believe in the social relativity of time.

In *Primitive Classification* (1903) Durkheim mentioned in passing that time is closely connected with social organization, and in *The Elementary Forms of the Religious Life* (1912) he explored the subject in detail. There he distinguished between private time and "time in general," which has a social origin: "the foundation of the category of time is the rhythm of social life." More concretely, "the divisions into days, weeks, months, and years, etc., correspond to the periodical recurrence of rites, feasts, and public ceremonies." Societies organize their lives in time and establish rhythms that then come to be

uniformly imposed as a framework for all temporal activities. Thus "a calendar expresses the rhythm of the collective activities, while at the same time its function is to assure their regularity."[27]

Arguments for a relativity of time were also made by psychiatrists and philosophers. Karl Jaspers's work in phenomenological psychiatry outlined different modes of perceiving time and space that can occur in mental illness.[28] In a history of the idea of memory and time Pierre Janet recounted the contributions of "a whole generation" of experimental psychologists and clinicians in the late nineteenth century who investigated subjective time. Citing his own account of a distorted sense of time among the mentally ill in *Névroses et idées fixes* (1898), he then characterized Jean Guyau's essay of 1890 as opening "a new era in the psychology of time."[29] Janet also discussed Charles Blondel's *La Conscience morbide* of 1914, which examined the diverse temporal worlds of the mentally ill. One patient lived "from day to day, like an animal, in a kind of retreat from the past and the future," with time appearing interminable. A few days in the past seemed like years, and all events in time were mixed in nightmarish confusion. For another patient, "Gabrielle," time contracted and dreaded future events were transposed into the past and generated anxiety as if they had already occurred and would remain forever present. It was as if her mind constantly surveyed the entire temporal range to collect and condense all morbid thoughts into a present and inescapable experience of anxiety.[30]

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The argument on behalf of the atomistic nature of time had a variety of sources. Perhaps most influential was Newton's calculus, which conceived of time as a sum of infinitesimally small but discrete units. Clocks produced audible reminders of the atomistic nature of time with each tick and visible representations of it with their calibrations. The modern electric clock with the sweeping fluid movement of its second hand was invented in 1916. Until then clocks could offer no model for time as a flux.[31] Experimental psychologists attempted to determine the precise intervals of human responses and the shortest duration one can detect. In the laboratories of Gustav Fechner and Wilhelm Wundt metronomes and watches were used to study human life as a construction of measurable bits of time.



In the late 1870s two pioneers of the cinema studied atomized movement by means of a series of still photographs. Eadweard Muybridge recorded the motion of a galloping horse by setting up some cameras in line along the course with a thin wire strung across the track that triggered the shutter as the horse ran by. He went on to make sequential photographic studies of human and animal movements. In 1882 the French physician E. J. Marey began to study movement with a technique he called chronophotography—literally, the photography of time: "a method which analyzes motions by means of a series of instantaneous photographs taken at very short and equal intervals of time."[32] Marey was particularly interested in the aerodynamics of flight and developed an apparatus for photographing birds simultaneously from three different points of view. He believed that the best way to understand motion was to break it up into parts and then reassemble them into a composite picture or plastic model.

When the cinema was improved to permit the first public showing in 1896, it also broke up motion into discrete parts. The Futurist photographer Anton Bragaglia proposed a technique he called photodynamism, which involved leaving the shutter open long enough to record the blurred image of an object in motion.[33] This, he believed, offered the only true art of motion in contrast to both chronophotography and cinematography, which broke up the action and missed its "*intermovemental* fractions." Bragaglia's photographs look more like the errors of a beginner than an artistic solution of the problem of motion, and they offer a vivid, if somewhat ludicrous, illustration of the difficulty that all the visual arts had in capturing the fluid nature of movement or time.

The difficulty painters have rendering the movement of an object in time has always been a frustrating limitation of the genre. That limitation, formalized in the eighteenth century with Gotthold Lessing's division of the arts as temporal and spatial, came to haunt painters of the late nineteenth century.[34] Artists had often attempted to imply a past and future by painting a moment that pointed beyond the present. The Impressionists attempted to render time more directly with a sequence of paintings of the same motif at different times of the day, seasons, and climatic conditions, as in Claude Monet's haystacks and his series depicting the Rouen Cathedral. Monet himself explained, "One does not paint a landscape, a seascape, a figure. One paints an impression of an hour of the day."[35] The Impressionists also tried to portray their impression of motion,

but no matter how well they suggested the luminous shifting caused by a passing cloud or the ripple of the wind on water, everything was fixed in a single moment.

The Cubists attempted to go beyond the instant with multiple perspectives, at least so a group of early commentators argued. In 1910 Leon Werth wrote that Picasso's Cubist forms show "the sensations and reflections which we experience with the passage of time." In the same year the Cubist painter Jean Metzinger suggested that in Braque's paintings "the total image radiates in time." In 1911 Metzinger explained how he thought the multiple perspective of the Cubists added the temporal dimension. "They have allowed themselves to move round the object, in order to give a concrete representation of it, made up of several successive aspects. Formerly a picture took possession of space, now it reigns also in time." In 1910 Roger Allard noted that a Metzinger painting was a "synthesis situated in the passage of time."[36] These arguments are all overstated. The multiple and successive perspective that the Cubists did integrate into a single painting does not justify the conclusion that they radiate *in* time. No matter how many successive views of an object are combined, the canvas is experienced in a single instant (aside from the time necessary for the eye to scan the surface). The Cubists toyed with the limitations of their genre, perhaps even with some intended mockery. Their inventions presented time in art in a new way, but that did not constitute the experience of time as it passes.

In 1899 the Dutch critic Ernst Te Peerdt observed in *The Problem of the Representation of Instants of Time in Painting and Drawing* that our visual field is not composed of a series of timeless unities. Each instant of perception synthesizes a sequence of numerous perceptions. "It is precisely those moments that are put together as a simultaneity, a *Nebeneinander*, which constitute a sequence, a *Nacheinander*, in the seeing of an object."[37] Unlike a still photograph the eye is able to integrate a succession of observations. The task of the painter is to integrate temporal sequence with forms in space. Despite Te Peerdt's argument that good visual art can suggest a sequence, it nevertheless cannot portray the movement of an object or the passage of time.

No motif gives as graphic a reminder of the atomized nature of time as a clock, and there are few clocks in the art of this period. Around 1870 Paul Cézanne painted a still life dominated by a massive black clock without hands—symbol of the timelessness he sought to create in his painting. I have not been able to find clocks again in any major work of Western art until 1912 with *The Watch* by



Juan Gris. Here time is out of joint in several respects. The watch is rotated ninety degrees, making a first quick reading of it difficult. It is broken into four quadrants, only two of which are visible. The other two are obscured and the minute hand is missing, making an exact reading impossible even after some contemplation. On this Cubist watch, time is fragmented, discontinuous, and ambiguous, but fixed forever by the hand that points to XI on the visible quarter-face. In 1913 Albert Gleizes put a clock in a Cubist portrait and effaced half the numbers.[38] The time is precisely 2:35, but the clock is useless for readings on the effaced portion. Gleizes broke up time as easily as he fragmented objects and space.

In *Enigma of the Hour* of 1912 Giorgio de Chirico painted a clock with plainly visible time towering over a small figure that looks up at its imposing grandeur. De Chirico included prominent clocks looming like Van Gogh's suns in a number of paintings: *The Delights of the Poet* (1913), *The Soothsayer's Recompense* (1913), *The Philosopher's Conquest* (1914), and *Gare Montparnasse* (*The Melancholy of Departure*) (1914). In all but the first of these a railroad train chugs by, which suggests that he may have deliberately connected the railroads and the standard time that began to be imposed on a global scale precisely in 1912. Although the titles of the paintings suggest transcendence in space and time, the clocks fix the action in a single and immutable moment. There is a rigid, static quality to them that no train journey or soothsayer's vision could undo. Unlike Cézanne, Gris, and Gleizes, de Chirico chose to concede that the plastic arts are condemned to a single moment, and he celebrated the dominating power of clock time by making its universal symbol so prominent.

As if that concession to round and wholly visible clocks were too much to endure, some years later Salvador Dali painted three melting watches in *The Persistence of Memory* (1931). One is hanging from a tree in a reminder that the duration of an event may be stretched in memory. Another with a fly on it suggests that the object of memory is some kind of carrion that decays as well as melts. The third deformed watch curls over a hybrid embryonic form—symbol of the way life distorts the geometrical shape and mathematical exactness of mechanical time. The one unmelted watch is covered with ants that seem to be devouring it as it devours the time of our lives.

Aside from de Chirico, who placed readable clocks clearly in view, all the other painters deformed, obscured, or defaced these reminders that their genre is incapable of representing time. Lessing's

iron law was challenged but never surmounted. The argument on behalf of the flux of time would be carried through more effectively by the philosophers and novelists who could give it an extended formulation.

The theory that time is a flux and not a sum of discrete units is linked with the theory that human consciousness is a stream and not a conglomeration of separate faculties or ideas. The first reference to the mind as a "stream of thought" appears in an essay by William James in 1884, which criticized David Hume's view of the mind as an "agglutination in various shapes of separate entities called ideas" and Johann Herbart's representation of it as the result of "mutual repugnancies of separate entities called *Vorstellungen*."[39] His descriptions of this "vicious mode of mangling thought's stream," this "illegitimate" and "pernicious" treatment of atoms of feeling, anticipate Bergson's characterizations of the spatial representation of time as a "vice." James distinguishes between the separate "substantive parts" and the fluid "transitive parts" which have been neglected by sensationist psychologists. Utilizing his favorite metaphor for the activity of the mind, James ridicules associationist psychology as saying that the river is composed of "pailfuls" of water. Rather "every image in the mind is steeped and dyed in the free water that surrounds it." Each mental event is linked with those before and after, near and remote, which act like a surrounding "halo" or "fringe." There is no single pace for our mental life, which, "like a bird's life, seems to be made of an alternation of flights and perchings." The whole of it surges and slows, and different parts move along at different rates, touching upon one another like the eddies of a turbulent current.

In 1890 James repeated these arguments in a popular textbook of psychology and added a formulation that subsequently became famous. "Consciousness does not appear to itself chopped up in bits. Such words as 'chain' or 'train' do not describe it fitly . . . It is nothing jointed; it flows. A 'river' or a 'stream' are the metaphors by which it is most naturally described. In talking of it hereafter, let us call it the stream of thought, of consciousness."[40] Although James and Bergson tended to use somewhat different metaphors to characterize thought, they agreed that it was not composed of discrete parts, that any moment of consciousness was a synthesis of an ever changing past and future, and that it flowed.

In *An Introduction to Metaphysics* (1903) Henri Bergson approached



the subject of the fluid nature of time by distinguishing two ways of knowing: relative and absolute. The former, impoverished kind is achieved by moving around an object or by coming to know it through symbols or words that fail to render its true nature. Absolute knowledge is achieved by experiencing something as it is from within. This absolute knowledge can only be given by intuition, which he defined as "the kind of intellectual sympathy by which one places oneself within an object in order to coincide with what is unique in it and consequently inexpressible." Here we encounter a major difficulty. If absolute knowledge, the goal of his philosophy, is inexpressible, how can we write about it usefully? Bergson strives to communicate this kind of knowing, and the existence that comes from it, by a series of analogies and metaphors, all of which, he is quick to admit, can never fully express it, but the metaphors succeed in part because we all share one experience of intuition: "our own personality in its flowing through time—our self which endures." When he contemplated his inner self he found "a continuous flux, a succession of states, each of which announces that which follows and contains that which precedes it." This inner life is like the unfolding of a coil or a continual rolling of a thread on a ball. But as soon as he suggested these similes he conceded that they were misleading, because they referred to something spatial, whereas mental life is precisely that which is not extended in space but in time. In a final effort to provide an approximate analogy Bergson directed the reader to imagine "an infinitely elastic body [which cannot be imagined], contracted, if it were possible [which it is not] to a mathematical point." Imagine a line drawn out of that point, and then focus not on the line but on the action by which it is traced. Then "let us free ourselves from the space which underlies the movement in order to consider only the movement itself, the act of tension or extension, in short pure mobility. We shall have this time a more faithful image of the development of our self in duration."[41] Bergson thus asks us to imagine something which is unimaginable, conceive of an action of that unimaginable image which is inconceivable, and then effect a limitation of our attention to an aspect of that action which is impossible. The effect of this trying analogy is to underline the difficulty of expressing in words the true nature of our existence in time, which he called "duration" (*durée*).

Bergson became incensed at the way contemporary thought, especially science, tended to distort the real experience of *durée* and

represent it spatially, as on a clock. A quarter of an hour *becomes* the 90-degree arc of the circle that is traversed by the minute hand. In another argument against the translation of time into space he refuted Zeno's "proofs" that motion or change is impossible. Zeno concluded that if an arrow in flight passes through the various points on its trajectory, it must be at rest when at them and therefore can never move at all. Bergson countered that the mistake was in assuming that the arrow can be *at* a point. "The arrow never is in any point of its course. The most we can say is that it might be there, that it passes there and might stop there."[42] Movement, like time, is an indivisible flux. Zeno founders on the assumption that such a division is possible and that "what is true of the line which traces the path followed is true of the movement." The line may be divided but the movement may not. And so with time: we cannot consider movement as a sum of stoppages nor time as a sum of temporal atoms without distorting their essentially fluid nature.

Bergson's theory of duration generated a broad and varied cultural response ranging from passionate support to frantic condemnation. In the 1890s Georges Sorel developed a blueprint for socialist revolution that was intended to create an "intuition" of socialism for the workers by having them participate in a general strike. In Bergsonian language Sorel argued that the scientific analysis of revolutionary socialism is static and misses the essential nature of historical change, which must be intuited in its durational flux. He found the European working class stopped in its revolutionary course like Zeno's arrow was stopped in flight—artificially frozen by analyses that obscured the essential indivisibility of change and movement.[43] Charles Péguy used Bergson's philosophy to attack the Cartesian tradition that he believed locked French thought in unproductive rigidity.[44] Péguy explained the spiritual death of modern Christianity by its mindless repetition of fixed ideas: layers of habit stifle the dynamic energies of true faith.

In the concluding paragraph of *Creative Evolution* Bergson outlined the proper aim of the philosopher who dispenses with all fixed symbols. "He will see the material world melt back into a single flux, a continuity of flowing, a becoming." This vision horrified some of Bergson's critics. Perhaps the most colorful of his detractors, and certainly the most hysterical, was the English artist Wyndham Lewis, who in 1927 concluded that Bergson's romance with flux was the start of a most unfortunate development in the modern world which cooked up all the articulate distinctions of clear analysis into a murky durational stew. Lewis accused Bergson of putting the hyphen between space and time, and he registered his passionate disapproval:



> As much as he enjoys the sight of things 'penetrating' and 'merging' do we enjoy the opposite picture of them standing apart—the wind blowing between them, and the air circulating freely in and out of them: much as he enjoys the 'indistinct,' the 'qualitative,' the misty, sensational and ecstatic, very much more do we value the distinct, the geometric, the universal, non-qualitied—the clear light, the unsensational. To the trance of music, with its obsession of *Time*, with its emotional urgency and visceral agitation, we prefer what Bergson calls 'obsession of Space.'

Lewis viewed Bergson's philosophy and Einstein's physics as well as a good deal of literature of the period as "one vast orthodoxy" that conspired to remove clean lines from art and separate faculties from human perception. He found another example of Bergsonian fluidity in the "softness, flabbiness, and vagueness" of James Joyce's *Ulysses*.[45]

Joyce's treatment of the stream of consciousness is the culmination of a literary development first explored by Sterne and revived in 1888 by Edouard Dujardin in a novel in which the protagonist's thoughts about past and future are presented along with his current perceptions. This technique has been identified as the direct interior monologue, because the inner workings of the mind are given directly without authorial clarifications such as "he thought" or explanations of what is happening.[46] Many writers before Dujardin had attempted to *analyze* the thoughts of a character, and occasionally they had narrated as if through a character's consciousness, but none had made prespeech levels of consciousness the subject of an entire novel. Although the technique is intended to recreate the entirety of consciousness, it is especially well suited to deal with its temporal fluidity, as the following passage reveals:

> The hour is striking, six, the hour I waited for. Here is the house I have to enter, where I shall meet someone; the house; the hall; let's go in. Evening has come; good the air is new; something cheerful in the air. The stairs; the first steps. Supposing he has left early; he sometimes does; but I have got to tell him the story of my day. The first landing; wide, bright staircase; windows. He's a fine fellow, friend of mine; I have told him all about my love affair. Another pleasant evening coming on. Anyway he can't make fun of me after this. I'm going to have a splendid time.[47]

Although the narrative time of the segment lasts only a few seconds, the private time extends over a large duration and shifts erratically in it. Dujardin's direct interior monologue expressed the inner workings of the mind with its brief span of attention, its mixture of thought and perception, and its unpredictable jumps in space and time.

The term "stream of consciousness" came into literary use after 1890, following William James's famous definition. Although *Ulysses* was no mere application of either Dujardin's direct interior monologue or James's stream of consciousness, it provides a superb embodiment of a generation of developments in literature and philosophy on the nature of human consciousness and its life in time. Sections of direct interior monologue are scattered throughout the novel, with a final uninterrupted flow of it as Molly Bloom fades into sleep at the end. The different verb tenses in one passage reveal her widely ranging leaps about the temporal spectrum.

> . . . my belly is a bit too big Ill have to knock off the stout at dinner or am I getting too fond of it the last they sent from ORourkes was as flat as a pancake he makes his money easy Larry they call him the old mangy parcel he sent at Xmas a cottage cake and a bottle of hogwash he tried to palm off as claret that he couldnt get anyone to drink God spare his spit for fear hed die of the drouth or I must do a few breathing exercises I wonder is that antifat any good might overdo it thin ones are not so much the fashion now garters that much I have the violet pair I wore today thats all he bought me out of the cheque he got on the first . . .[48]

The metaphor of "stream" is not entirely appropriate to describe this mental activity, because it suggests a steady flow in a fixed course, while Molly's mind revolves about her universe in defiance of conventional calculations of its pace or direction. In this final episode Joyce achieves the fullest expansion of the time of Molly's world as it is experienced in her consciousness. It is the only episode to which Joyce assigned no particular hour of the day and its symbol is that of eternity and infinity—"∞."[49] The rigid dimensions of conventional time with its sharp dividers are useless to plot the action of her mind. It is as irrelevant to ask when Molly is having these thoughts as it is silly to ask where. They are an endless rewriting of the story of her life that change with every passing reflection and every flickering of sexuality. Her memory is not a faculty for bringing fixed ideas out of the past; it is one that enables her to transform them repeatedly in the endless creativity of her present consciousness where all is fluid without separate thoughts or isolated moments of time.



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The structure of history, the uninterrupted forward movement of clocks, the procession of days, seasons, and years, and simple common sense tell us that time is irreversible and moves forward at a steady rate. Yet these features of traditional time were also challenged as artists and intellectuals envisioned times that reversed themselves, moved at irregular rhythms, and even came to a dead stop. In the *fin de siècle*, time's arrow did not always fly straight and true.

This challenge had a basis in two technological developments: the electric light and the cinema. The first commerically practical incandescent lamp was invented by Thomas Alva Edison in 1879, and three years later he opened the first public electric supply system at the Pearl Street district of New York that made possible the widespread use of the electric light. The eminent historian of architecture Rayner Banham has called electrification "the greatest environmental revolution in human history since the domestication of fire." One of the many consequences of this versatile, cheap, and reliable form of illumination was a blurring of the division of day and night. Of course candles and gas lamps could light the darkness, but they had not been able to achieve the enormous power of the incandescent light bulb and suggest that the routine alternation of day and night was subject to modification. One of many such observations occurs in a novel of 1898, where a Broadway street scene at dusk is illuminated by a flood of "radiant electricity" which gave the effect of an "immortal transformation" of night into day.[50]

From another perspective, the cinema portrayed a variety of temporal phenomena that played with the uniformity and the irreversibility of time. A pioneer of the cinema in France, Georges Méliès, recalled an incident that inspired a series of tricks of motion picture photography. One day in 1896 he was filming a street scene at the Place de l'Opéra and his camera jammed. After a few moments he got it going and continued filming, and when he projected the entire sequence it created the illusion that an omnibus had suddenly changed into a hearse.[51] This suggested to Méliès several other ef-

fects he could achieve by stopping the camera and changing the scene. He used this technique in *The Vanishing Lady* (1896) where a skeleton suddenly becomes a living woman, implying both a jump in time and its reversal.

Méliès stopped the camera to effect these tricks. The American film maker Edwin S. Porter discovered that time could be compressed, expanded, or reversed in a more versatile way by editing the film. Intervals of time could be literally cut out of a sequence and temporal order could be modified at will. He applied those techniques in *The Life of an American Fireman* (1902), where we see first someone setting off a fire alarm and then the sleeping firemen just before the alarm sounds. David Griffith developed the technique of parallel editing to expand time by showing simultaneous action in response to a single event. In *A Corner on Wheat* (1909) Griffith first used the freeze-frame technique by having his actors hold still to create the illusion of stopping time.[52] In 1916 Hugo Münsterberg noted that several contemporary playwrights attempted to imitate the cinema and use time reversals on stage as in Charlotte Chorpenning's *Between the Lines*, where "the second, third, and fourth acts lead up to the three different homes from which the letters came and the action in the three places not only precedes the writing of the letters, but goes on *at the same time*."[53]

An even more striking representation of time reversal was produced by running film backwards through the projector, first tried by Louis Lumière in *Charcuterie mécanique* (1895). One cinema critic described these amazing effects: boys fly out of water feet first and land on the diving board, firemen carry their victims back into a burning building, and eggs unscramble themselves. His account of a mass of broken glass ascending through space and reforming on a table into the perfect original suggests a Cubist decomposition in reverse.[54]

Several prominent novelists commented on the problems they faced in presenting the passage of time; some found solutions unmistakably parallel to, if not directly inspired by, the innovative temporal manipulations of the cinema. Conrad's method was to isolate a particular moment and hold it up for extended scrutiny as if suspended in time.[55] Ford Madox Ford summarized a view that he and Conrad shared.

> It became very early evident to us that what was the matter with the Novel, and the British Novel in particular, was that it went straight forward, whereas in your gradual making acquaintanceship with your fellows you never do go straight forward . . . To get . . . a man in function you could not begin at his beginning and work his life chronologically to the end. You must first get him with a strong impression, and then work backwards and forwards over his past.
>
> Life does not say to you: in 1914 my next door neighbor, Mr. Slack, erected a greenhouse and painted it with Cox's green aluminum paint . . . If you think about the matter you will remember in various unordered pictures, how one day Mr. Slack appeared in his garden and contemplated the wall to his house.[56]



In *Ulysses* Joyce created a dramatic interruption in the forward movement of narrative time. As Bloom approaches a brothel he steps back to avoid a street cleaner and resumes his course forty pages and a few seconds later. In those few seconds of his time the reader is led through a long digression that involves dozens of characters and covers a period of time far exceeding the few seconds that elapsed public time would have allowed. Virginia Woolf believed that it was the writer's obligation to go beyond "the formal railway line of a sentence." "This appalling narrative business of the realist: getting on from lunch to dinner, it is false, unreal, merely conventional." She also recorded Thomas Hardy's observation about the new way of rendering time in literature: "They've changed everything now. We used to think there was a beginning and a middle and an end. We believed in the Aristotelian theory."[57]

Psychologists and sociologists observed modifications of the continuity and irreversibility of time in dreams and psychoses and in religion and magic. In a letter of 1897 Freud commented on the temporal distortions he observed in dreams and fantasies. There occurs a distortion of memory that comes from "a process of fragmentation in which chronological relations in particular are neglected."[58] In *The Interpretation of Dreams* Freud surveyed how the sequence of experiences in the course of our conscious life is rearranged to suit the needs of the dreaming mind. The psychic forum of our instinctual life, primary process, entirely disregards the demands of logic and space as well as time. In 1920 he summarized his theory that unconscious mental processes are "timeless," for the passage of time does not change them in any way and "the idea of time cannot be applied to them."[59]

"Summary Study of the Representation of Time in Religion and

Magic" (1909), by Henri Hubert and Marcel Mauss, argued that time in religion and magic serves a social function and provides a framework for the qualitative rather than the quantitative experience of succession. They viewed time as heterogeneous, discontinuous, expandable, and partially reversible. With Durkheim they contended that the social origin of time insures its heterogeneity. In contrast to most views of the calendar as quantitative, they proposed that it is qualitative, composed of special days and seasons. Sacred time is also discontinuous, for such events as the appearance of a deity interrupt ordinary continuity. Periods separated in chronology can be linked in their sacred function to give time a "spasmodic character." Some special moments may "contaminate" the entire interval that follows, and instants may be united if they have the same religious significance. Time can also be expanded, as "heroes can live years of magical life in an hour of ordinary human existence." Their observation that rites of entry and exit may be united over time implies a partial reversibility as end is joined with beginning.

Following Bergson, Hubert and Mauss believed that time is dynamic, and they endorsed his substitution for time-images of position and succession the concept of time as an *"active tension* by which consciousness realizes the harmony of independent durations and different rhythms." But they differed from Bergson in the extent to which they were willing to allow public time to be part of the inner consciousness of time. They maintained that public time is one pole of the "scale of tensions of consciousness." "The play of notions, which distinguishes the psychological reality of successive images, consists in the adjustment of two series of representations. The one is constant and periodic: it is the calendar . . . The other constructs itself perpetually by the action of generating new representations. The mind works constantly to associate in a single tension certain elements of these two series." The time of magic and religion is a compromise among interpsychic tensions set up by our private experience of a uniform and homogeneous time. The celebration of an anniversary, especially one associated with magical and sacred happenings, is an integration of our own unique rhythm of living with the uniform rhythm observed by a social community.[60]

Their argument that the divisions of time "brutally interrupt the matter that they frame" parallels a revolutionary theory of Einstein's about the interaction of time and matter that further challenged the classical theory of the irreversibility of time. Newton believed that no occurrence in the material world could affect the flow of time, but



Einstein argued that the relative motion between an observer and an object makes the passage of time of the object appear to go more slowly than if it were observed from a point at rest with respect to it. Therefore it is possible for event A to be observed from one point and seen as occurring before event B, and after it when observed from another point, if relative motion is involved. However, the succession of events that occur at the same place and the succession of causally related events are not reversible from any conceivable conditions of observation, and thus remain absolute in relativity theory.[61]

We all learn to tell time with ease, but to tell what it is remains as baffling as it was to Saint Augustine over fifteen hundred years ago. "What, then, is time?" he asked. "If no one asks me, I know what it is. If I wish to explain it to him who asks me, I do not know." In the period we are looking at, the question was taken up repeatedly and with a determination to break through the impasse that had stopped Augustine. There was a sharp rise in the quantity of literature about time and contemporary observers thought that this was of historical significance. Already in 1890 the British philosopher Samuel Alexander hailed Bergson as the "first philosopher to take time seriously." A French critic saw Proust as the first to discover "that our body knows how to measure time," and Wyndham Lewis bemoaned the preoccupation with time by so many of that generation.[62]

Contrasting views about the number, texture, and direction of time were complicated by the fact that generally two kinds of time were being considered: public and private. The traditional view of a uniform public time as the one and only was not challenged, but many thinkers argued for a plurality of private times, and some, like Bergson, came to question whether the fixed and spatially represented public time was really time at all or some metaphysical interloper from the realm of space. The introduction of World Standard Time created greater uniformity of shared public time and in so doing triggered theorizing about a multiplicity of private times that may vary from moment to moment in the individual, from one individual to another according to personality, and among different groups as a function of social organization. Similarly, thinkers about the texture of time were divided between those who focused on its public or its private manifestations. The popular idea that time is made up of discrete parts as sharply separated as the boxed days on

a calendar continued to dominate popular thinking about public time, whereas the most innovative speculation was that private time was the real time and that its texture was fluid. The argument about time going in one direction also separated along the lines of public and private time. Only Einstein challenged the irreversibility of public time, and even then for a special kind of event series that occurs in different sequences when viewed from different moving reference systems. All others left public time to flow irreversibly forward but insisted that the direction of private time was as capricious as a dreamer's fancy. The temporal reversals of novelists, psychiatrists, and sociologists further undermined the traditional idea that private time runs obediently alongside the forward path of public time.

The thrust of the age was to affirm the reality of private time against that of a single public time and to define its nature as heterogeneous, fluid, and reversible. That affirmation also reflected some major economic, social, and political changes of this period. As the economy in every country centralized, people clustered in cities, and political bureaucracies and governmental power grew, the wireless, telephone, and railroad timetables necessitated a universal time system to coordinate life in the modern world. And as the railroads destroyed some of the quaintness and isolation of rural areas, so did the imposition of universal public time intrude upon the uniqueness of private experience in private time. It was a subtle intrusion, one that appears sharper in historical perspective than it did around the turn of the century. Conrad dramatized the tension between authoritarian world time and the freedom of the individual by having the anarchist leader ask Mr. Verloc to prove himself by "blowing up the meridian." Most spokesmen for private time, however, did not identify the connection between the new world time and urban clustering, monopoly, bureaucracy, or big government, though it seems likely that their statements were energized in part by a reaction to the intrusion of a variety of collectivizing forces in this period, including World Standard Time.

The technology of communication and transportation and the expansion of literacy made it possible for more people to read about new distant places in the newspaper, see them in movies, and travel more widely. As human consciousness expanded across space people could not help noticing that in different places there were vastly different customs, even different ways of keeping time. Durkheim's insistence on the social relativity of time challenged the temporal ethnocentrism of Western Europe, in the same way as the literary explorations of private time challenged the authoritarian and overbearing tendencies of world time.



All across the cultural record we have identified polarities: three divisions about the nature of time—its number, texture, and direction—as well as a basic polarity about the reality of private as opposed to public time. The sense of time throughout this period emerged from tensions and debates in physical science, social science, art, philosophy, novels, plays, and concrete technological change. In tracing its various modes of past, present, and future we will see other polarities over different issues, structuring the culture through conflict.

# 2

# THE PAST

The experience of the past varies considerably among individuals. For some it stretches far back and memories in it are coherently ordered. Some lose track of events almost as soon as they have occurred and confuse the sequences of the little that remains. Others cannot forget and dwell on the past at the expense of the present and future.[1] Every age also has a distinctive sense of the past. This generation looked to it for stability in the face of rapid technological, cultural, and social change. Its thinkers developed a keen sense of the historical past as a



source of identity in an increasingly secular world and investigated the personal past with a variety of purposes. For Bergson it was a source of freedom, for Freud a promise of mental health, for Proust a key to paradise. Others viewed the past as a source of remorse, an excuse for resignation and inaction, a burden of guilt. Thinking about the past centered on four major issues: the age of the earth, the impact of the past on the present, the value of that impact, and the most effective way to recapture a past that has been forgotten.

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The first line of the Old Testament had always been able to anchor the inquiring mind and keep it from spinning out of control when contemplating the infinite expanse of the past. Even if the exact moment was not known, one could, with a little bit of faith, find comfort in the thought that there had been a beginning. But the comfort of revealed truth comes in part from its imprecision; in 1654, when Bishop Ussher calculated the year of creation as 4004 B.C., he invited scientific challenge. In the 1770s the Comte de Buffon determined that the earth was at least 168,000 years old, and by 1830 Charles Lyell estimated it as "limitless," time enough for the geological formations to be created by gradual processes still in action. Lyell formulated his uniformitarian theory by substituting time for catastrophic upheavals, and in 1859 Darwin, working on the assumption that he had time to burn, stretched out his theory of ever so slight variations and estimated the age of one area that he studied at over 300 million years. This steady appropriation of time by geological theory came to a sudden halt in 1862, when the eminent English physicist Lord Kelvin argued from calculations based on the rate at which the earth had cooled that it probably was not more than a hundred million years old and was possibly not more than twenty million.[2] With such a vastly reduced time scale geologists and biologists were forced to make theoretical modifications by postulating catastrophic surges of great force that accelerated the evolution of geological and living forms. Darwin made a concession to catastrophism and speculated that evolution must have occurred more rapidly in earlier periods, and for over forty years the debate about the age of the earth continued to center on the validity of Kelvin's calculations. In 1895 the British geologist Archibald Geikie complained about the reduc-

tion of the time scale: "the physicists have been insatiable and inexorable. As remorseless as Lear's daughters, they have cut down their grant of years by successive slices, until some of them have brought the number to something less than ten millions."[3] On the other side, in 1897 the American geologist Thomas Chamberlain praised Kelvin for "restraining the reckless drafts on the bank of time" by earlier geologists.[4] The argument was settled in favor of an expanded time scale when another scientific discovery provided generous funding for the time bank. In March of 1903 Pierre Curie and Albert Laborde announced that radium salts constantly release heat, and geologists were quick to apply this finding to extend the age of the earth. They reasoned that the release of heat must have slowed the rate at which the earth cooled. Already in October of 1903 John Joly wrote that "the hundred million years which the doctrine of uniformity requires may, in fact, yet be gladly accepted by the physicists."[5] In just over a century the age of the earth had oscillated from the cramped temporal estimates of biblical chronology to the almost unlimited time scale of Lyell, down to Kelvin's meager twenty million years, and then back up to hundreds of millions of years. While geologists and biologists tried to work out patterns of development through those vast stretches of time, the history of man came to appear increasingly as a parenthesis of infinitesimal brevity.

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If the past of the geologists seemed to rush away from the present, the past of human experience seemed to rush toward it, and a second focus of discussion emerged about the force of its impact.

Two inventions brought the past into the present more than ever before, changing the way people experienced their personal past and the collective past of history. The phonograph, invented by Edison in 1877, could register a voice as faithfully as the camera could a form. The two provided direct access to the past and made it possible to exercise greater control over what would become the historical past. An article of 1900 explained that the phonograph had already been used to record the voices of singers and orators and facilitate the study of psychology, language, and folklore.[6] In the same year the Anthropology Society of Paris founded a Musée glossophonographique and the Vienna Academy of Science created a phonographic archive. In 1906 the American critic G. S. Lee wrote a rapturous eulogy of technology, *The Voice of the Machines*. He took his title from the phonograph which enabled man to speak "forward" in time to the unborn and listen "backwards" to the dead.[7] In *Ulysses* James Joyce reflected on a similar use of the phonograph. While observing a funeral Bloom fantasizes about a way to continue to hear someone long after he has died: "Have a gramophone in every grave or keep it in the house. After dinner on a Sunday. Put on poor old greatgrandfather Kraahraark! Hellohellohello amawfullyglad kraark awfully gladaseeragain hellohello amarawf kopthsth. Remind you of the voice like the photograph reminds you of the face."[8]



The cinema was also used to record events and even to shape the course of history. Hugo Münsterberg commented on the unique ability of the cinema to create a direct vision of the past. While in the theater we must recall past events to give present action its full force, in the motion picture we can be shown the past. With the cinema we experience an "objectivation of our memory function."[9] Both still and motion picture photography preserved the past with all the clutter of detail that painting and the theater leave out. The early movie houses with their one-reel slices of recent history were an important institution that increased the detail and accuracy of memories for the millions of customers who watched.

Although the still camera was not unique to this period, the formation of photographic record societies was. In *The Camera as Historian* (1916) H. D. Gower surveyed the history of these societies, which began in 1890 with the Scottish Photographic Survey. The English followed in 1897 with the National Photographic Record Association, which was to collect photographic records of scenes of interest and deposit them in the British Museum. The United States, Belgium, and Germany soon developed similar societies. Analogous to these were institutions formed to preserve or restore architectural structures of historical interest that were threatened with destruction from reckless urban growth. In 1895 the English established the National Trust to look after places of historic interest or natural beauty, and an Act of Parliament of 1907 gave it legal power to protect sites and hold them in trust for the nation. The French passed a law in 1905 that protected national monuments for posterity. In 1903 Ferdinand Avenarius founded the Dürerbund in Germany, and a year later the Heimatschutz was created to protect historical monuments as well as natural areas.[10]

Marcel Proust's vignette of an old church and Georg Simmel's sociological essay on "The Ruin" reveal the sensitivity of high culture

to the function of architecture in preserving the past in solid form. Proust described the village church as an embodiment of the passion and faith of his ancestors. The angles of its ancient porch were smoothed and hollowed "as though the gentle brushing of generations of countrywomen entering and dipping their fingers had, through the centuries, acquired a power of destruction and had carved in the long suffering flint furrows like those made by wagons on a milestone against which they daily bump."[11] This church, the church of Combray in *Swann's Way*, evoked precious memories of the narrator's childhood and the drama of history: the thickness of its walls hid the "rugged barbarities of the eleventh century," its gravestones were "softened and sweetened" by time, the stained glass windows sparkled "with the dust of centuries." These features made it "a building which occupied, so to speak, four dimensions of space—the name of the fourth being Time—which had sailed the centuries with that old nave, where bay after bay, chapel after chapel, seemed to stretch across and hold down and conquer not merely a few yards of soil, but each successive epoch from which the whole building emerged triumphant."[12] What Proust saw in a church Simmel found in a ruin, which intensifies and fulfills the past in the present. The peace we experience in the presence of a ruin comes from the resolution of the tension between two moments in time: "the past with its destinies and transformations has been gathered into this instant of an aesthetically perceptible present."[13] All the uncertainties of change in time and the tragedy of loss associated with the past find in the ruin a coherent and unified expression.

The phonographic cylinders, the motion pictures, and the preservation societies constituted silent arguments for the persistence of the past and its impact on the present. Contemporary psychologists and philosophers followed a path parallel to Proust and Simmel in making explicit what these cultural artifacts implied. Some of them thought memories were locked in living tissue as a cumulative residue of voluntary movements and bodily processes. Henry Maudsley introduced the concept of organic memory in 1867 with his observation that memory exists in every part of the body, even in "the nervous cells which lie scattered in the heart and in the intestinal walls."[14] This was reformulated in 1870 in a classic essay by the German psychologist Ewald Hering, who concluded that every living cell contains the memory of the experience of the entire series of its parent cells and even those of former generations.[15] Samuel Butler argued essentially the same in *Life and Habit* (1878) as did Bergson in



*Matter and Memory* (1896), although Bergson left out inherited memories. For Bergson every movement leaves traces that continue to affect all subsequent physical or mental processes. The past collects in the fibers of the body as it does in the mind and determines the way we walk and dance as well as the way we think. A ghoulish elaboration of the idea of an organic persistence of the past was Bram Stoker's *Dracula* (1897). The blood of several centuries of victims flowed in the veins of the four-hundred-year-old hero along with the blood of his ancestors—more ancient, the Count boasted, than the Hapsburgs or the Romanovs.

In 1881 the psychological concept of memory was revised in three countries. In Vienna Joseph Breuer's hysterical patient, Anna O., had a variety of symptoms including paralytic contractures, anaesthesias, tremors, and disturbances of speech, hearing, and vision. In the course of treatment he discovered that the symptoms disappeared after she gave verbal descriptions of the particular episode in her past that had precipitated them. Thus her fear of drinking water disappeared after she vented her suppressed anger and described having seen a dog drinking out of a glass. From such successes Breuer generalized a technique that rested on a recognition of the chronic pathogenic effect of past traumatic experiences.[16] At approximately the same time, the French psychiatrist Théodule Ribot was working out the laws according to which events come to be forgotten. He concluded that memories disappear according to a law of regression—"from the more recent to the older, from the complex to the simple, from the voluntary to the automatic, from the less to the more organized."[17] This regression works in reverse when memory is restored: memories of childhood are the most securely fixed, the last to disappear in amnesia. And in Germany the psychologist Wilhelm Preyer published the first systematic child psychology, which led to further work on how childhood experiences determine adult professional choices, love relations, artistic work, mental illness, and dreams.[18]

Many of these findings on memory, forgetting, and the role of childhood were incorporated in the great retrospective system of the period—psychoanalysis. Like an archaeologist excavating for lost structures in the earth's crust, Freud dug through layers of defensive structure to uncover the sources of his patients' neuroses. In his first theory of neurosis of 1892 he speculated that the foundation for later pathology was established before the "age of understanding." That limit soon receded to the second dentition (eight to ten years), to the

age of the Oedipus complex (five to six years), and finally to the age of three. On several occasions he dramatically retold the story of the gradual edging back to childhood: "In my search for the pathogenic situations in which the repressions of sexuality had set in and in which the symptoms had their origin, I was carried further and further back into the patient's life and ended by reaching the first years of his childhood. What poets and students of human nature had always asserted turned out to be true: the impressions of that early period of life, though they were for the most part buried in amnesia, left ineradicable traces."[19]

Freud made five distinctive contributions to thinking about the impact of the past. He argued that the most distant past, that of our early childhood, is the most important; that the crucial experiences are sexual in nature; that the most important memories are repressed and not just forgotten; that all dreams and neuroses have their origin in childhood; and that all experiences leave some lasting memory trace. He repeatedly emphasized the universality of the childhood factor; in a letter of 1898 he wrote that "dream life seems to me to proceed directly from the residue of the prehistoric stage of life (one to three years), which is the source of the unconscious and alone contains the aetiology of all the psychoneuroses."[20] Perhaps most provocative was his idea that all memories are somehow retained: "all impressions are preserved, not only in the same form in which they were first received, but also in all the forms which they have adopted in their further developments . . . Theoretically every earlier state of mnemic content could thus be restored to memory again, even if its elements have long ago exchanged all their original connections for more recent ones."[21] As Darwin assumed that remnants of the past are indelibly inscribed in organic matter and triggered miraculously in the proper order to allow embryos to recapitulate what has gone before, so Freud maintained that every experience, however insignificant, leaves some trace that continues to shape psychic repetitions and revisions throughout life. In 1920, in a final concession to the relentless action of the past, Freud concluded that there is an instinct to repeat in every organism, and he introduced the "repetition compulsion" as a principle governing all behavior.

In *The Critique of Pure Reason* Kant had argued that even the simplest act of perception has a temporal structure, which is a synthesis of the immediate presentation and memory.[22] So this notion was not entirely new, but the philosophers of time in the turn-of-the-century period elaborated it as though it was of historical signficance. Bergson was the most explicit when he announced in 1896: "The moment has come to reinstate memory in perception." Although William James credited others before him with an understanding of the way the past persists, he presented the argument as if it were pathbreaking. Husserl maintained that his phenomenological method provided a new scientific basis for all philosophical inquiry, including the subject of memory. They all assumed that any moment must involve consciousness of what has gone before, otherwise it would be impossible to hear a melody, maintain personal identity, or think. The melody would appear as a series of discrete sounds unrelated to what had gone before, understanding of ourselves would be chopped into unconnected fragments, and it would be impossible to learn a language or follow an argument. The philosophical problem was to explain how it was possible in a single moment to be aware of events that have occurred at different times.



Bergson wrote: "Either you must suppose that this universe dies and is born again miraculously at each moment of duration, or you must make of its past a reality which endures and is prolonged into its present."[23] He opted for continuity and concluded that the past survives as motor mechanism and as recollection. The body is "an ever advancing boundary between the future and the past"; it integrates past action and points ahead. The past can also be manifested in mental images, which he described with a variety of metaphors to suggest its impact on the present. In 1889 he wrote of a self whose former states "permeate," "melt," or "dissolve" into one another as do notes in a tune. Another metaphor has the conscious states of our inner self effecting a "mutual penetration, an interconnection."[24] In 1896 he described that action as a mingling, an interlacing, a "process of osmosis," and another aggressive metaphor described the present as the "invisible progress of the past gnawing into the future."[25] Years later he repeated that predatory image of duration as "the continuous progress of the past which gnaws into the future and which swells as it advances." He pushed the metaphor even further by elaborating on the masticatory action of the past on the present: "Real duration gnaws on things and leaves on them the mark of its tooth."[26] Human consciousness is not the tranquil passage of discrete ideas imagined by the associationist psychologists; rather, it is a thunderous action of memories that interlace, permeate, melt into, drag down, and gnaw on present experience.

William James saw the persistence of the past as a function of the fluid nature of human consciousness and, like Bergson, believed that

the past remained in a dynamic relation with the present—with one essential difference. James saw a sharp distinction between recent memories that are part of the present and distant memories that are recollected as something separate; Bergson emphasized the constant interconnection of all past experiences with the present regardless of how far back they may have occurred. He would not allow any differentiation between two kinds of memories, especially if they were characterized, as they were by James, in spatial terms as near and distant. Nothing is "far away" in Bergson's *durée*.

Edmund Husserl, like Bergson and James, began by considering how we can know in one moment something that occurred before. With them he reasoned that in listening to a melody, if the past sound were entirely to disappear, one would hear only unconnected notes and not be able to make out the melody. But in order for the past to integrate with the present, it must diminish in intensity from its original form; otherwise the crescendo of sounds in a melody would soon become a hopeless jumble. The past must remain in consciousness but in a changed form.

Husserl shared with James the idea that there are two kinds of past experience—a recent one called "retention" and a more distant one called "recollection." As a perception fades away from the present it becomes one and then the other. We first experience a "now-point," which then becomes a fresh retention that remains attached to the next now-point. In time the retention fades away entirely and ceases to be part of the present as immediately given. To be experienced again, it must be reconstituted as a recollection. Retentions and recollections have a different vividness, a different relation to the present, and a different nature as parts of the past. A recollection may change the order or the rate of the original events, whereas the order and rate of a rentention is always fixed in experience. When I originally experience A and then B, I have no knowledge of B when I first experience A. In recollection I experience the whole interval "A and then B" at once, or "B follows A"; in either case my experience of A is mixed with that of B. In recollection the pace of events is also more malleable, because in it we can "accommodate larger and smaller parts of the presentified event with its modes of running-off and consequently run through it more quickly or more slowly."[27] Husserl believed that the simplest perception, even one of a single note of a melody, has a temporal structure and is "constituted" in consciousness in a manner that depends upon the retention or recollection of a receding trail of memories.

The three philosophers shared a conviction that the past had an



enormous impact on the present. Bergson's past gnawed into the present, James's streamed into it, and Husserl's clung to it. They differed, however, in the value they attached to that impact. Husserl's phenomenological method formally eschewed any such evaluations, while James suggested that the full life was elaborated with the fringes and halos of memory. Bergson's metaphysics of time addressed itself most explicitly to the question of value.

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The debate about the value of the impact of the past on the present ranged between those who argued that the past had a positive effect as a source of meaning, freedom, identity, or beauty and those who viewed it critically as an excuse for inaction, a deadening force of habit and tradition. The work of Wilhelm Dilthey and Bergson provided the philosophical foundation for a number of the positive views that followed.

For Dilthey the past is a source of knowledge and meaning. All understanding is historical because man is a historical being. The individual life, like that of a society, develops in time and can only be understood by us because we are able to experience directly our own temporal nature. "Autobiography," he wrote, "is the highest and most instructive form in which understanding of life confronts us." "The only complete, self-contained and clearly defined happening encountered everywhere in history and in every concept that occurs in the human studies, is the course of a life." The language in which we think and the concepts we employ all originate in time. "Thus to impenetrable depths within myself," he wrote, "I am a historical being."[28] Dilthey then considered how we experience the temporal structure of our lives. Memory enables us to integrate experience in a series of ongoing syntheses which become understandable as we interpret the past and future in a changing present, in the same way as we understand a sentence whose meaning comes from words grasped sequentially in time. In an age of spectacular achievements in the natural sciences, his insistence on the historical nature of all knowledge provided some badly needed philosophical support for all the sciences of man.

Bergson based his theory of knowledge on the way we know ourselves in time. In his dissertation of 1889, he characterized the representation of time in terms of space as a "bastard concept" and dis-

missed such metaphysical extravagance as a "vice." This is strong language for such an abstract subject, but Bergson was passionately convinced that time is the heart of life: his metaphysics implies an epistemology and an ethic. It is not enough that we properly understand time—we must learn to live it; on it everything else turns. The absolute knowledge acquired by intuition is not merely a better way of knowing reality; it is essential to living the good life in it, and our ability to integrate the past in the present is one source of our freedom.[29]

To clarify the virtues of a life fully open to duration Bergson commented on the meager lives of those cut off from it. To live only in the present and respond only to immediate stimuli is suitable for the lower animals; for men it constitutes a life of impulse. On the other extreme, the man who lives only in the past is a visionary. Between these poles lies the life of good sense, at all times poised effectively in the present with easy access to past and future. Bergson cast certain human characteristics in time-related terms. Sorrow is a "facing towards the past"; grace is a "mastering of the flow of time," possible only when the future flows immediately from present attitudes. Jerky movements result when the future is cut off from the present, so that movements are "self-sufficient" and "do not announce those to follow."[30]

The heart of Bergson's evaluation of the past is his notion that duration is a source of freedom, which we must seek in the dynamics of experience. "It is into pure duration that we plunge back, a duration in which the past, always moving on, is swelling unceasingly with a present that is absolutely new . . . We must, by a strong recoil of our personality on itself, gather up our past which is slipping away, in order to thrust it, compact and undivided, into a present which it will create by entering."[31] The freest individual has an integrated past and is capable of utilizing the greatest number of memories to respond to the challenges of the present. As the dancer is free to move because he can integrate a complex network of past motor experiences, so is the effective individual free to coordinate a vast stream of past experiences in a present action or thought that reaches out towards an ever fuller future.

One passage of Bergson's dissertation reads like an invitation for Proust's novel:

> If some bold novelist, tearing aside the cleverly woven curtain of our conventional ego, shows us under this juxtaposition of simple states an infinite permeation of a thousand different impressions which have already ceased to exist the instant they are named, we commend him for having shown us better than we knew ourselves. The very fact that he spreads out our feeling in a homogeneous time and expresses its elements by words shows that he is only offering us its shadow: but he has arranged this shadow in such a way as to make us suspect the extraordinary and illogical nature of the object which projects it.[32]



The bold novelist took up the challenge twenty years later. In the hour when Proust discovered his life's vocation as a novelist, he responded with a metaphysics and an aesthetics that approximated the views of Bergson and shared his intrigue with the power of the past to produce beauty and joy.

On a snowy January evening in 1909 Marcel Proust had a cup of tea with dry toast that overwhelmed him with a sensation of "extraordinary radiance and happiness." As he concentrated on the feeling, the shaken screens of memory suddenly gave way and he recalled the happy years of his childhood in a country house at Auteuil and remembered the nibbles of rusk soaked in tea that his grandmother used to give him in those long lost summer days. In his first account of this episode Proust observed: "the taste of a rusk soaked in tea was one of the shelters where the dead hours—dead as far as the intellect knew—hid themselves away."[33] What no effort of the intellect could recapture, the organic memory of the tea and biscuit could. This episode was transposed into his great novel, *Remembrance of Things Past,* which he began to write in July of that year.

In the opening pages Marcel relates an episode from his childhood that marked the beginning of his loss of the past. One night he contrived to have his mother kiss him goodnight and unexpectedly got her to spend the entire night with him. That night he realized that his recent loneliness and suffering were part of life, not an accidental misfortune; it was the beginning of the relentless erosion of childhood happiness, which is the content of time lost. The process of recovery may be delayed for many years, until it is set in motion by an experience like the taste of tea and rusk that had so shaken the author when it first occurred in real life. In the fictional version Marcel's mother served him tea with some madeleines. The taste sent a shudder of pleasure through him and he ceased to feel mediocre or mortal. Another sip enabled him to recall that the taste was that of a madeleine soaked in lime-flowered tea, which his aunt Léonie used

to give him when he was a child. The elegant simplicity of this episode contrasts with the massive complexity of the story that unfolds out of it like Japanese paper flowers in water. Marcel informs us that at the time he did not know why the memory made him so happy and that he must "long postpone" his discovery of why it did. The reader must share the search for the time that he began to lose the night of his mother's kiss and to recapture many years later in her cup of tea.

Marcel interrupts his story to relate one that took place before he was born, when his neighbor, Swann, courted Odette. Marcel had his first *moment bienheureux* while sipping tea; Swann's opening into the past was triggered by a musical passage. During his courtship Swann heard it played, and years later when jealousy had obliterated the earlier tender feelings, the passage set off a flood of painful memories. A striking contrast to Marcel's pleasure at recapturing his past is provided by Swann's shattering discovery that Odette had a homosexual encounter on the evening that he had believed to be the supreme moment of their love. The news cracked the time of his life in two, and the memory of that evening became the nucleus of a pain "which radiated vaguely round about it, overflowing into all the preceding and following days."[34] For both men the truth about the past became known years later when the confusion of the present had disappeared. But Swann's discovery of the past led to misery, to thoughts of death, and to an immersion in time that was endlessly revealed to him as the obsessive repetition of this trauma, while Marcel's past eventually became a source of happiness and a deliverance from the relentless course of time.

In a later volume we learn that the moment when Swann searched for Odette in fear that she was with another man continued to dominate his love for all subsequent women. "Between Swann and her whom he loved this anguish piled up an unyielding mass of already existing suspicions . . . allowing this now aging lover to know his mistress of the moment only in the traditional and collective phantasm of the 'woman who made him jealous,' in which he had arbitrarily incarnated his new love."[35] His past experience with Odette created this iron law of love that compelled him forever to repeat his first dismal experience. Swann strives to divest himself of the past while Marcel searches for its meaning, as contrapuntally they make their respective ways into and out of oblivion.

In the last volume, when Marcel moves toward the final spectacular revelations, we know that much time has passed. His love for Albertine had disappeared from his conscious mind, but in his limbs there lingered an "involuntary memory" that still reached out for her in the old way. In a recapitulation of the opening pages of the novel when the child awakens in bed and reaches out for the world, the older Marcel, lying in bed lost in a dreamy nebula of memories, responds physically to the ghostlike presence of his dead mistress. His legs and arms were full of "torpid memories" of her body. A memory in his arm made him fumble for the bell as he had formerly done with her at his side. They are portents of the powerful recollective energies of bodily sensation that will reveal to Marcel by means of several involuntary memories the secret of time lost.



When Marcel returns to Paris after the war, he attends a party at the Princess de Guermantes; there, upon his arrival, he experiences five involuntary memories which finally make clear to him their mysterious sources of power and joy. The first, triggered by the feeling of an uneven paving stone underfoot and recalling a similar sensation he had had years earlier in the baptistry at St. Mark's in Venice, removes all anxiety about the future and reminds him of the happiness he had felt when he tasted the madeleine soaked in tea. The involuntary memories that follow reveal to him their tremendous potency: they give him back *le temps perdu*. The simplest act is associated with colors, scents, and temperatures that words cannot recreate, but when an involuntary memory recalls the past in the sensuous fullness of those associations we experience the intense pleasure of the *moments bienheureux*. The present is too confusing to allow us to discern the essentials of reality, and the intellect is useless to grasp it. Only through the perspective of time passed and time regained can we come to understand the past and enjoy its retrieval: "The only true paradises are the paradises that we have lost."[36]

Like metaphors, these moments of recollection unite what is separate to illuminate and give pleasure. In them Marcel experienced the present "in the context of a distant moment, so that the past was made to encroach upon the present."[37] They revealed the essence of things "outside time," and being freed from the rigid order of time he became momentarily indifferent to the idea of death. Previously there had been an urgency about capturing these moments, which slipped away so quickly and dissolved under close scrutiny, but this time he discovered a way to sustain them by making them the subject of a novel.

Proust resolved to write the story of his life, not in the traditional

"two-dimensional psychology" but in a different sort of "three-dimensional psychology" that would reconstruct the movement of life in time. In a letter of 1912 he explained: "There is a plane geometry and a geometry of space. And so for me the novel is not only plane psychology but psychology in space and time. That invisible substance, time, I try to isolate."[38] Most novels take place in time, but they fail to capture the experience of time passing, the emptiness of time lost, and—the only real pleasure in life—time regained. The final sentence and statement of purpose of the novel underlines the priority of the temporal dimension of life: to "describe men first and foremost as occupying a place, a very considerable place compared with the restricted one which is allotted to them in space . . . in the dimension of Time."

If there is a single illusion that Proust most wanted to dispel it is that life takes place primarily in space. The spaces in which we live close about us and disappear like the waters of the sea after a ship passes through. To look for the essence of life in space is like trying to look for the path of the ship in the water: it only exists as a memory of the flow of its uninterrupted movement in time. The places where we happen to be are ephemeral and fortuitious settings for our life in time, and to try to recapture them is impossible. But in our bodies time is preserved in memories of tea and cake that give us back the days of our childhood and the vast stream of events that have since overlaid them and make up our life.

The fact that Bergson, Proust, and Freud, all of Jewish heritage, insisted that the past was an essential source of the full life—of freedom, beauty, and mental health—suggests a possible connection between their lives and their theories about time. There are some striking similarities between the temporal experience of the Jews and these works. Both Judaism and Christianity share a reverence for the past and argue their validity partly from tradition. The implicit ethic is that old is good. Judaism is the older of the two, and in the search for identity its longer history would set it above Christianity on the time scale. It is possible that the insistence of these men that the past alone is real, that only the recapture of the past can inspire art or cure neurosis, is linked to this feature of the Jewish experience.

A second similarity that might be attributed to the Jewish experience derives from their respective arguments that life in time is more important than life in space. Bergson became angry when he contemplated the spatialization of time, Freud strove to reconstruct his patients' lives out of the past, and Proust created his characters' lives



in the dimension of time that occupied "a very considerable place compared with the restricted one which is allotted to them in space." This shared feature of their work parallels the experience of the Jews, who did not have a space of their own except the cramped enclaves of the ghettoes. Their spatial existence was always a tenuous and painful reminder of their isolation from the surrounding world and was far less important to them than their existence in time. Thus the Wandering Jew is at home only in time. The Jewish religion also eschewed all spatial representations of the deity whose reality and goodness became known through his action in history. In modern Europe the history of the Jews had no surviving physical landmarks. They had to internalize their landmarks and preserve them in memory in written and oral form, whereas in the Christian world the past was tangibly preserved in monuments and could easily be seen and reconstructed in the imagination.[39] This experience of the Jews may have shaped the three thinkers' evaluations of the primacy of our existence in time.

There was also a special interest in the way the past can shape modes of thinking, social forms, and organic structures. The beginnings of this historicization of thought go back to Locke's idea that all knowledge comes from sensation. The Enlightenment philosophers worked this principle hard to reject innate ideas and an *a priori* human nature and to prove that man is entirely shaped by history and society. In the nineteenth century Comte, Hegel, Darwin, Spencer, and Marx shared the idea that philosophies, nations, social systems, or living forms become what they are as a result of progressive transformations in time, that any present form contains vestiges of all that has gone before. With the decline of the religious conception of man in the late nineteenth century, many drew from these systems to give meaning to life in a world without God. If man could no longer believe he had a place in eternity, he could perhaps find one in the movement of history.

While the great historicist systems of the nineteenth century as well as the work of Dilthey, Bergson, Proust, and Freud celebrated the historical or genetic approach, many of their contemporaries rejected it with passion and condemned the way the past can overwhelm the present. This view of the past as a burden was forcefully presented by a German philosopher, a Norwegian dramatist, an Irish novelist, an Austrian architect, and a group of Italian writers. It was not unambiguous, as they all had a profound sense of the past and

some appreciation of its positive value, but their most distinctive work was a strong negative evaluation of the paralyzing and destructive action of memories, habits, and traditions.

In an essay of 1874, *The Use and Abuse of History*, Friedrich Nietzsche reacted sharply to the domination of historicism. As the title implies, his treatment is at least partly balanced, and he concedes that "every man and nation needs a certain knowledge of the past," but the central message warns about excessive pondering over what has gone before. For the acutely miserable, dwelling on history is a deliverance, a "cloak under which their hatred of the present power and greatness masquerades as an extreme admiration of the past." The conservatives find comfort in the past—the old house, the portrait gallery provides meaning and stability in a changing world. This "antiquarian history" hinders the impulses for action and "greedily devours all the scraps that fall from the bibliographical table." It inclines an individual to capitulate to circumstance and renounce his inner resources. It teaches that the present is the old age of mankind, that people are "late survivals," born with grey hair. It creates cynicism about the possibility of changing anything and paralyzes the energies of art. The entire age was suffering from a "malignant historical fever," and Nietzsche was particularly incensed by those who are chained to precedent and bowed under the weight of an ever heavier accumulation of memory and tradition. "One who wished to feel everything historically would be like a beast who had to live by chewing a continual cud." This chronic rumination, this hypertrophy of the historical sense "finally destroys the living thing, be it man or a people or a system of culture."[40]

Ten years later Nietzsche wrote a critical analysis of the effect of an overbearing sense of the personal past on the individual will. In *Thus Spoke Zarathustra* (1883-1885) Nietzsche introduced his notion of the will to power, which is thwarted in most people by a load of memories, regrets, and guilt. In the chapter "On Redemption" he insisted that the only true redemption was the victory of the will to power over time and the obstacles that the past puts in its way. "Powerless against what has been done, [the will] is an angry spectator to all that is past. The will cannot will backwards; and that he cannot break time and time's covetousness, that is the will's loneliest melancholy." The will strives to liberate an individual from the residue of the past, but " 'that which was' is the name of the stone he cannot move . . . This, indeed this alone, is what *revenge* is: the will's ill will against time and its 'it was'." The frustration created by the



indelible nature and dead weight of the past causes resentment and guilt and the destructive responses of punishment and revenge. To free itself the will must "recreate all 'it was' into 'thus I willed it'."[41] Then the past becomes an appropriation of the will, which can function properly as a creative force, a liberator, a joy-bringer, and a bridge to the future.

The destructive effect of the past that Nietzsche analyzed, Henrik Ibsen dramatized in a series of plays in which inheritance, a sudden disclosure about their past, or a persistent memory works upon his characters and leaves them crippled or dead.[42] The characters of the early plays might overcome their past through special effort, but with *A Doll's House* in 1879 he grew pessimistic. In the concluding scene Nora tells her husband that it will take "a miracle of miracles" for their marriage to work, but her final gesture as she walks out on him seems to slam the door on that possibility as well. With *Ghosts* (1881) the past is unequivocally triumphant, and thereafter his characters struggle in vain against its power as evoked by hereditary diseases, haunting memories, and spirits of the dead.[43] This is powerfully summed up in Mrs. Alving's exclamation: "I almost think we are all ghosts—all of us . . . It isn't just what we have inherited from our father and mother that walks in us. It is all kinds of dead ideas and all sorts of old and obsolete beliefs . . . and we can never rid ourselves of them."[44]

In two other plays a sudden disclosure provides the dramatic focus. The contented family life of Hjalmar Ekdal in *The Wild Duck* (1884) is destroyed when he learns that years before his wife had an affair with a man who fathered her daughter, Hedvig, arranged for Hjalmar to meet his wife to be, and then set him up in business. In the anguish of these revelations Hjalmar condemns his wife for spinning a web of deceit and disowns Hedvig, who then kills herself in a desperate effort to regain his love. As they all contemplate the senselessness of Hedvig's sacrifice, a drunken character explains that most people need a "life lie" to sustain them and that nothing is more dangerous than to strip it away and reveal the naked truth about the past. The parents of *Little Eyolf* (1894) try to suppress the guilty memory reminding them that the boy was crippled when he fell off a table while they were making love. This comes out after Eyolf drowns. Their bereavement, the father realizes, is the "gnawing of conscience," and they resolve to devote themselves to helping other children, a lifelong project of forgetting what they never can and remembering what they think they must.

In other plays by Ibsen the past torments as a persistent memory. The heroine of *The Lady from the Sea* (1888) is so fixated on the memory of a dashing sailor who charmed her long ago that she will never be able to escape from the "horrible, unfathomable power" he has over her, as she tells her landlubber suitor Arnhold in rejecting his proposal. In *When We Dead Awaken* (1899) a sculptor meets his former model, who tells him that she left him years ago because when she undressed to pose and offered herself to him naked he remained unmoved and merely thanked her for a "very happy episode." The meeting years later allows them to awaken only to discover that they are dead, and in the final scene as they climb a mountain to a supposed undoing of that event, they are swept off by an avalanche—symbol of the cumulative weight and overpowering force of the past. And for the hero of *Rosmersholm* (1886) the dead live on at his estate, symbolized by the white horses that stand on its grounds, memorialized by the portrait gallery that lines the walls, and sustained by memories of treachery.[45]

In *Hedda Gabler* (1890) Ibsen indicted the historical profession, represented by the heroine's husband, Tesman, who was so preoccupied with completing a study of domestic industry in Brabant during the Middle Ages that he took his research along on their honeymoon. At one climactic moment Hedda bemoans the fact that she is condemned "To hear nothing but the history of civilization, morning, noon, and night!" Her frustrations—social, sexual, and existential—are accented by her husband's routine fulfillment from doting on the past. His neglect of her, compounded with other disappointments, finally drives her to suicide.

The thoughts that haunt Ibsen's characters provide the theme for James Joyce's story "The Dead."[46] Gabriel gives an after-dinner speech in which he evokes the memory of the dead and "thoughts of the past, of youth, of changes, of absent faces that we miss here tonight." As the party ends he sees his wife listening intently to a song and feels a special attraction for her, but for his wife the song triggered memories of a youth who sang it years before. While Gabriel had been reminiscing about their moments together, she had been thinking about her life apart, and as she slept that night he agonized over the years she had secretly savoured the image of her lover. The revival of the past transforms the meaning of the party, makes a mockery out of the sentimental gush of his speech, reveals the emptiness of their life together, and leaves Gabriel alone and ashamed at the side of his wife.



In *Ulysses* Joyce's views on memory range from an appreciation of the potency of recollection to a condemnation of the deathly paralysis of a life wholly immersed in the past. In an unmistakably Proustian perception he noted that some memories "are hidden away by man in the darkest places of the heart but they abide there and wait until a chance word will call them forth suddenly and they will rise up to confront one in the most varied circumstances." The kinds of chance circumstances he mentions could also have come from Proust: "a shaven space of a lawn one soft May evening" or "the well remembered grove of lilacs." However, Joyce's general view of memory focused on its limitations and dangers: its potential to paralyze the artist, its power to sustain guilt, and its abuse by pedants.

Stephen Dedalus recognizes that memory preserves identity: "I, entelechy, form of forms, am I by memory because under everchanging forms." Memory holds him together but he is desperate to break the hold it has on his free expression as an artist. His uniqueness is swamped; his self is too much part of everything as if attached by an enormous umbilical cord that stretches back to Eve: "The cords of all link back, strandentwining cable of all flesh." His identity flows into the world about him and with the past that it conjures up. The remains of a shipwreck he sees at the shore take him back to the days of the Spanish galleys that ran to beach there, to the Danevikings and ancient whalers. "Their blood is in me," he thinks, "their lusts my waves." He feels caught up in the teeming life about him, entangled with everybody in the relentless passing of time. Most painful is the persistent recollection of his mother's death and his refusal to attend her funeral. Joyce refers to this nagging guilt with the phrase "Agenbite of inwit" that echoes in Stephen's mind with each recollection and fires his contempt for history.

Stephen's famous outburst that history is "a nightmare from which I am trying to awake" is the culmination of his frustration with the cheap anti-Semitism of a pedantic colleague whose history is a "dead treasure," but it refers more directly to his own struggle to break the hold that history has on himself. When a student of his fails to answer a question about the battle of Pyrrhus, Stephen reflects on the panorama of disaster that all history has recorded: "I hear the ruin of all space, shattered glass and toppling masonry, and time one livid final flame. What's left then?" Man has been fighting senselessly from the battle of Pyrrhus to World War I. The imagery undoubtedly refers to the effect of an artillery shell exploding on a building, but beyond the ruinous action of the war and the prospect

of Europe going up in flames, Stephen is troubled by history itself—the illusion of reality that it offers and its distortion of the living present. What is left for man after the disaster of World War I, and what is left of truth if history is always "fabled by the daughters of memory?"

Stephen's long struggle to realize himself as an artist reaches a climax towards the end of the novel as he strikes out against history, time, and guilt by smashing a chandelier in a brothel just as his dead mother appeared "green with grave mold" and, choking in the agony of her death rattle, begged the Lord to have mercy on him. Finally he had had enough. "Time's livid final flame leaps and in the following darkness, ruin of all space, shattered glass and toppling masonry." He smashes the light to obscure the image of his mother and put out the fire of his guilt. Stephen has stopped time in order to become an artist. The present is the only reality, especially for the artist, and Joyce has Stephen articulate his credo: "Hold to the now, the here, through which all future plunges to the past."[47] An effort must be made to hold the present because it is always slipping away, always threatening to have its uniqueness swamped by the old patterns of the past.

No group of artists was more acutely aware of the dead weight of the past than the architects, who quite literally could see it lining the streets of European cities. One of the most palpable monuments to traditional architecture was the Ringstrasse in Vienna—a ring of public buildings around the Austrian capital that was constructed from the 1860s to the 1890s, each designed in a historical style that was considered to be appropriate to its function. Thus the Parliament building had a classical Greek architecture, the City Hall was Gothic, the University was Renaissance, and the Burgtheater, Baroque. In 1893 Otto Wagner won a competition for a plan to expand urban development beyond the Ringstrasse. Although he had built a number of apartments in the Ringstrasse area and had contributed to some of its public buildings, his writings and architecture from the 1890s sharply repudiated the historicism of the Ringstrasse and of much nineteenth-century architecture generally. His urban development proposal focused on transportation and the needs of a modern industrial city rather than on the blocks of buildings that had been constructed to beautify the city and memorialize the past. In a textbook of 1895, *Modern Architecture*, Wagner speculated about what had produced such deadly eclecticism and slavish devotion to the past and concluded that while most ages had been able to adapt artistic forms to changing techniques and needs, in the latter half of the nineteenth century social and technological change had proceeded too rapidly for artists to keep pace, and the architecture fell back on earlier styles. Wagner assailed this capitulation before the forms of the past that had brought artistic innovation to a halt, and in a specific recommendation for the training of architects, he condemned the Italian journey that had traditionally been the culmination of a classic *beaux arts* education.[48]



The nagging effect of the past that so angered Nietzsche, overwhelmed Ibsen, and threatened Joyce drove the Italian Futurists into a frenzy. They voiced the most passionate repudiations of the past in manifestos that recommended burning the Louvre and filling the canals of Venice. Their most energetic spokesman was Filippo Marinetti, whose manifesto of February 1909 contained the essentials of their *antipasséiste* project to destroy the museums and the academies and to free the land from "its smelly gangrene of old professors, archaeologists, ciceroni, and antiquarians." In April 1909 he vowed "to mock everything consecrated by time." In *Against Past-Loving Venice* he envisioned the city turned into a modern commercial port. He ridiculed the English as victims of traditionalism who carefully preserve every remnant of the past and attacked the Symbolists, who "swam the river of time with their heads always turned back toward the far blue spring of the past" and who had a contemptible passion for the eternal. In contrast, his fellow Futurists celebrated the here and now and created an art that was perishable and ephemeral. In 1914 he announced the funeral of all *passéiste* beauty including its nefarious ingredients of memory, legends, and ruins.[49]

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Although there was considerable division about the value of the past, there was general agreement that it could not be entirely forgotten, that the complete artist, the wise statesman, the healthy individual must come to terms with it somehow. The thinkers who wanted to retrieve the past differed over the best means to do so. Proust's search emphasized the passive approach and contrasted with the active methods of Bergson, Freud, and Henry James.

In *Swann's Way* Proust argued that the past cannot be recaptured by any conscious effort. "The past is hidden somewhere . . . beyond

the reach of the intellect, in some material object (in the sensation which that material object will give us) which we do not suspect," and we must wait until we chance upon that object to be able to recapture what it holds.[50] Marcel stumbles onto the first clue with the tea and madeleines but is unable to sustain or understand the pleasure it gave him. In a weak moment some time later he attempts to recapture the lost happiness of a childhood love by returning to the spot in the Bois de Boulogne where it had occurred, but, like all efforts of conscious intention, it fails and only intensifies his longing. Years later Marcel finally discovers the signficance of his involuntary memories and how the lost past can be recaptured. The involuntary memory is entirely passive; however, once it has occurred, one can work to make it last by embodying it in art. Even though that is active work, Proust's distinctive contribution is his emphasis on the passive, involuntary memory that springs up out of experience by chance.

In contrast to Bergson, who believed that we experience a continuous gnawing of the past into the present, Proust valued the shock and pleasure of being suddenly immersed in time which has been experienced *dis*continuously. The ecstasy and the feeling of immortality that Proust's character Marcel has "outside time" comes from a sudden reentry into time and a deliverance from its relentless movement. For Proust duration is a series of isolated moments that produce such pleasure upon retrieval precisely because they are so remote from each other, while Bergsonian duration is at every moment a composite of each successive moment and therefore continuous. If Bergson's duration is like a stream, Proust's is like a series of steep cataracts where the mind recaptures intermittent surges of memory out of oblivion. Their views on the process of recollection also differ. Although Bergson believed that the recapture of the past was a difficult undertaking that required a "vigorous effort," he thought that one could make that effort at any time. In contrast Proust argued that the first step must occur fortuitiously. He commented on this difference in a letter of 1912, denying that his novels were Bergsonian because they were "dominated by a distinction which not only doesn't figure in the philosophy of Bergson but which is even contradicted by it."[51] The crucial distinction was between voluntary and involuntary memory: Proust insisted that Bergson's involved the intellect, while his could not be summoned up by any volitional activity. Although Bergson did speak of the spontaneous activity of memory, Proust's distinction between the two is valid if for no other reason than his greater emphasis on chance.



There is an even sharper contrast in the methods of recollection of Proust and Freud. In the first place Proust insists on the solitary nature of recollection. "As for the inner book of unknown symbols . . . if I tried to read them no one could help with any rules, for to read them was an act of creation in which no one can do our work for us or even collaborate with us."[52] In the search for *le temps perdu* psychiatrists are as distracting as lovers or friends. Second, for Proust the crucial phase is passive: waiting for an involuntary memory. Once it has occurred the active search for its meaning may begin, as in the prodigious work he put into embodying it in a novel. In Freud's psychotherapy a systematic procedure predominates. It is hard to imagine a more active search for the past than arranging punctual sessions for its exploration in which the therapist's experience with former patients serves as a model. Psychoanalysis also has an arsenal of theories about unconscious processes, stages of development, and potential points of fixation to help decipher the disguises that might retard the discovery of a patient's history. This search for the past is as active as a fox hunt, and the repressed memories are the object of a continuous hounding that may go on for years.[53]

Another kind of active search takes place in Henry James's novel of 1917, *The Sense of the Past*. An American gentleman, Ralph Pendrel, is failing in the here and now with his courtship of Aurora Coyne, when he learns of the imminent death of an English relative and begins to fantasize that he will be left something "ancient and alien." The bitterness of Aurora's rejection is partially softened by her dubious compliment about his "natural passion for everything old." He had written *An Essay in Aid of Reading History*, which had prompted her remark and inspired the relative to will to Ralph a house built in 1710. Ralph travels to England to take possession in the hope that there he will be able to "remount the stream of time" and "bathe in its upper and more natural waters." Once he gets settled, the house becomes an enclave in time that separates him from the present as much as its isolation cuts him off from the surrounding world. The objects in it were, like the walls of Proust's church of Combray, "smoothed with service and charged with accumulated messages." The house embodied the entire line of Ralph's ancestors, and "as the house was his house, so the time, as it sank into him, was his time."[54] This identification with the past turns into a hallucination when he sees his own face on a portrait in the house and comes to believe that he and his ancestor had exchanged personalities. His sense of the past, which first appeared as a scholarly inclination, finally took over

his personality and became his identity. Though cast in fiction, the story is nevertheless one of the complete appropriation of a man's ancestral past by direct, though psychologically unbalanced, means.

Proust's emphasis on the passive recovery of the past is alone among the numerous active projects. Some stretching must be done to weave Bergson's philosophy, Freud's therapy, and Henry James's imagination into a single cultural statement, but these works cluster unmistakably on the opposite side of this issue. The comparison with James is a bit forced because Proust was not concerned with ancestral past, but he nevertheless would have found Ralph's journey, his possession of the old house, and his conscious effort to go back in time to be a futile effort of the intellect and doomed to failure.

Of the four debates about the length, force, value, and method of retrieval of the past the one on the age of the earth had the most limited cultural impact. The difference between Kelvin's stingy estimate of twenty million years and the several hundred million allowed following the discovery of radioactivity interested primarily a small circle of geologists. Nevertheless the eons opened up to popular consciousness since Darwin's time continued to influence writers such as Joyce, who portrayed the petty punctuality of Leopold Bloom against the vast ages of the universe. This vertiginous extension of the time scale dealt yet another blow to the egocentrism of man, whose tenure on earth seemed to shrink to minuscule proportions.

The cultural record lined up consistently behind the idea that the past has a powerful influence on the present. The phonograph and motion picture camera provided a historically unique technology for the preservation of the past, and photographic archives and preservation societies provided new institutional support for it. After almost two millennia of Christianity that belittled the significance of human history by holding that the ultimate meaning or purpose of life was realized in the timeless and unchanging gaze of God, nineteenth-century thinkers sought to find meaning and justification for life in human history. Historians found new sources, dug up buried civilizations, raised standards for accuracy and documentation, and generally professionalized the discipline. Evolutionary theory overwhelmed the biological sciences; historicist systems such as those of Hegel and Marx revolutionized philosophy and social sciences; liberal and socialist faith in history dominated political thinking. Toward the end of the century Dilthey claimed a historical



foundation for all knowledge and insisted on the primacy of historical method for all social sciences. As Stephen Toulmin and June Goodfield observed: "Whether we consider geology, zoology, political philosophy or the study of ancient civilizations, the nineteenth century was in every case the Century of History—a period marked by the growth of a new, dynamic world-picture."[55]

The great historicist systems had perhaps made their case too well. They showed how individuals or social forms had evolved out of their antecedents and were destined to recapitulate what had gone before. The present thus seemed predetermined and smothered by the past. As we have seen, many artists and intellectuals were sharply critical of this overbearing historicism and shared a fear that the dominion of the past would impoverish response to the present and dry up resources for the future. In this context the outbursts of the Futurists are not so absurd, for Italy was especially mired in the past, haunted by relics and monuments of the glory of a dead civilization. Hayden White has surveyed the negative response to the "burden of history" that began with Nietzsche's polemics in the 1870s and was continuously elaborated through a number of literary characters: Mr. Casaubon in George Eliot's *Middlemarch* (1871–72), Tesman in *Hedda Gabler,* Hanno in Thomas Mann's *Buddenbrooks* (1901), and Michel in Gide's *The Immoralist* (1902). Critical reaction to a "feverish rummaging of the past" intensified in the decade before the First World War, when, as White concluded, "hostility towards the historical consciousness and the historian gained wide currency among intellectuals in every country of Western Europe."[56]

Although there were exceptions to this generalization (Marxists and liberals continued to believe in history and progress), it was true for a number of thinkers and artists who rebelled against the sweeping, and at times blind, faith that the nineteenth century had had in the value of the historical approach to all living processes, especially human. And precisely as the historical past began to lose its authority as *the* theoretical framework, the personal past began to attract a variety of prominent thinkers who scrutinized it with unprecedented care and insisted that an understanding of it was essential to a healthy and authentic life. New theories about memory and forgetting and new studies in child and developmental psychology appeared and were synthesized in psychoanalysis, which popularized as never before the notion that the individual past remains active and continues to shape adult behavior.[57] Freud insisted that access to that past was essential for mental health. Bergson analyzed how the pres-

ent is constantly being reformed by extrusions from the immediate past, and he insisted that only a life fully open to the fluid movement of *durée* had access to an essential source of individual freedom. For Proust the past surfaced in flashes of involuntary memory, which is the only true source of joy, beauty, and artistic inspiration. And while he made history a nightmare for Stephen Dedalus, Joyce exploited the possibilities of the new literary technique of direct interior monologue to reconstruct from a variety of perspectives the personal past of all his main characters.

Ibsen and Nietzsche also found more value in the individual's appropriation of a personal rather than an historical past. Nietzsche's essay of 1874 was far more critical of the potential paralysis from too much history than he was in his analysis of the personal past in *Thus Spoke Zarathustra*. There he acknowledged that the personal past is a necessary component of consciousness. One does not *choose* to look to the personal past as a model for action as one might do with the historical past, because the "it was" is inherent in the structure of consciousness. And since Zarathustra announces an essentially hopeful, positive philosophy—the way to the overman—he insists on the possibility and the necessity of the will's transformation of the "it was" into a "thus I willed it" or even "thus shall I will it." Nietzsche valued the essentially constructive, if challenging, function of the personal past. In *The Genealogy of Morals* he warned of the self-loathing that comes from a cumulative inheritance of generations of guilt—that poisonous residue of the historical past. "It was" is the will's loneliest melancholy, but the personal past constitutes a necessary obstacle in human consciousness that forces the will to make something of itself in the face of all the pernicious influences of habit and tradition.

Ibsen also considered both pasts and gave a far more positive and dramatically penetrating account of the force of the personal past. In *Hedda Gabler* Tesman is portrayed as a cartoon character, as flat as the history he is writing. His history is a museum of the dead and drains the energy out of his life and marriage. But in other Ibsen plays that we have surveyed the personal past is revealed with great effectiveness and gives depth to the characters' lives that is conspicuously absent in Tesman. Clearly Ibsen was far more interested in the personal than the historical past, which is collective and impersonal. By having a personal past erupt into the lives of his characters Ibsen realizes greater dramatic impact than he could have done with the introduction of anything out of the historical past. His plays achieve



in the theater what Freud achieved in the clinic—a reconstruction of the life in time that breaks through and then breaks down self-mystifications and defenses. In *The Wild Duck* Ibsen deferred to the need for self-deception by defending the "life lie," but his main purpose was to suggest that one must come to terms with one's own past or go under. The past was an essential part of the structure of his drama, as it was for Nietzsche an essential part of the structure of consciousness.

This shift in attention from the historical past to the personal past was part of a broad effort to shake off the burden of history. By focusing on the immediate past of individuals these thinkers and artists sharpened the analyses of their philosophical studies, increased the effectiveness of their psychiatric interventions, and intensified the dramatic impact of their literary works. The historical past was the source of social forces over which they had little control; it created institutions that had lasted for centuries; and it limited their sense of autonomy. The overbearing deterministic formal systems of nineteenth-century historicism produced broad, general laws of history, whereas these thinkers wanted to understand the unique responses of individuals to particular circumstances. Freud was an exception, because he tried to work out laws of mental life; however, they were not laws of collective historical processes but of individuals, and they encompassed only their personal past. With the Ringstrasse looming as a monument of artistic capitulation to the historical past, modern artists affirmed the independence of their work. They did not want to imitate the art of the past, and they did not want their lives to be regulated by social conventions that were conceived in the distant past and over which they had no control. Above all they wanted freedom. They focused their attention on the personal past, because they believed it to be a richer source of subject matter than the remote and impersonal historical record. The personal past was something over which they might gain some control. One is not responsible for history in the way one is responsible for one's past, even one's childhood. And if one is more responsible for the personal past, then one can hope to understand it, perhaps even refashion it, as indeed Nietzsche, Ibsen, Freud, Bergson, Gide, Proust, Joyce, and the Futurists, each in different ways, insisted that we must.[58]

The philosophers of the Enlightenment looked to antiquity for values they lost in their struggle with Christianity, and they found in the ancients spiritual sustenance and models for action. The Roman-

tics longed for the historical past of the preindustrial world as a retreat from a vulgar present. In the mid-nineteenth century the mystique of the historical past began to lose some of its attraction as the Realists sought subject matter in the contemporary world for their formal studies, science, and art. While they eschewed romanticization of the past, they embraced historicism as the foundation of formal thinking. But around the turn of the century, artists and intellectuals turned from the glorification of the historical past and from the method of historicism and began to consider the personal past, thereby generating an unprecedented concentration of interest in the way the personal past works on the present. These thinkers did not discover this past, but they broadened and deepened understanding of the ways it persists in germ cells and muscle tissue, dreams and neuroses, retentions and involuntary memories, guilt and ghosts.

This focus on the personal past over the historical past also lines up with the shift of focus from the homogeneous public time to the varieties of private time that we observed in the first chapter. For the personal past is private, and it varies from one individual to the next, while the historical past is collective and tends to be more homogeneous, although individuals are free to interpret it in different ways. Thus the most distinctive general development about the nature of time—elaborated as heterogeneous, fluid, and reversible—accords with these arguments on behalf of the personal past. To the massive, collective force of uniform public time we may add the sweeping force of history—making a composite temporal structure against which, or perhaps we should say out of which, the leading thinkers of this generation affirmed the reality of private time and sought to root themselves in a unique personal past.

# 3
# THE PRESENT

On the night of April 14, 1912, the largest moving structure ever built, the *Titanic*, steamed at a recklessly high speed into an ice field in the North Atlantic. The first officer recalled that the sea was especially calm and so that night there were no "ice blinks"—flashes of light given off when waves splash against icebergs and illuminate their crystallized surfaces. Visibility was further reduced by fog. At 11:40 P.M. a lookout suddenly spotted an iceberg dead ahead. The ship turned sharply and, as it scraped by, was opened up like a tin can

with a gash below the water line three hundred feet long. The captain determined that they were going to sink fast and at 12:15 A.M. ordered his wireless operator to send the distress call. Within a few minutes the airwaves were rippling with signals as over a dozen ships became aware of the disaster. This was simultaneous drama on the high seas, driven by steam power and choreographed by the magic of wireless telegraphy.

Ten ships heard the call from over a hundred miles away and remained in contact but were too distant to help, as were also the *Hellig Olav* at 90 miles and the *Niagara* at 75 miles. The *Mount Temple* was 50 miles away but had to move slowly through ice fields. The *Carpathia* at 58 miles was the first to arrive, but not until almost two hours after the *Titanic* went down with 1,522 passengers. Another ship, close enough to have saved all the passengers, was not in wireless contact. The *Californian* was approximately 19 miles away, but its wireless operator had hung up his earphones for the night about ten minutes before the *Titanic* sent out its first CQD. Two watchmen on the deck of the *Californian* saw the rockets that the *Titanic* fired but could not figure out what they meant or convince their captain to pull anchor and find out. What the eyes and ears of man could not perceive the wireless could receive over vast distances and through darkness and fog.

The operator on the *Carpathia* got the call for help when he put on his earphones to verify a "time rush" (an exchange of time signals with a neighboring ship to see if their clocks agree). At 1:06 A.M. he heard the *Titanic* tell another ship coming to help, "Get your boats ready; going down fast on the head." The world began to get news of the disaster at 1:20 A.M., when a wireless station in Newfoundland picked up the message that the *Titanic* was sinking and was putting women off in boats. Shortly after that hundreds of wireless instruments along the Atlantic coast began to transmit and the airways became jumbled in confusion. The *Titanic*'s wireless had a range of only 1,500 miles, so signals to Europe had to go first to New York and then across the ocean by cable; still, by early morning the entire world was privy to news of the disaster.[1]

To one of the survivors in a life boat it seemed as if the stars above saw the ship in distress and "had awakened to flash messages across the black dome of the sky to each other."[2] The communication that he imagined between stars was accomplished on a lesser scale between the ships at sea by wireless. On April 21, the *New York Times* commented on its magical power.



> Night and day all the year round the millions upon the earth and the thousands upon the sea now reach out and grasp the thin air and use it as a thing more potent for human aid than any strand of wire or cable that was ever spun or woven. Last week 745 [*sic*] human lives were saved from perishing by the wireless. But for the almost magic use of the air the *Titanic* tragedy would have been shrouded in the secrecy that not so long ago was the power of the sea . . . Few New Yorkers realize that all through the roar of the big city there are constantly speeding messages between people separated by vast distances, and that over housetops and even through the walls of buildings and in the very air one breathes are words written by electricity.

An editorial in the *London Times* of April 16 noted the expanded range of experience made possible by the wireless. "The wounded monster's distress sounded through the latitudes and longitudes of the Atlantic, and from all sides her sisters great and small hastened to her succor . . . We recognize with a sense near to awe that we have been almost witness of a great ship in her death agonies." An officer of the American Telephone and Telegraph Company praised the communication that made it possible to follow the rescue. The telephone and wireless, he wrote, "enabled the peoples of many lands to stand together in sympathetic union, to share a common grief." William Alden Smith, the Michigan senator who chaired an exhaustive inquiry into the sinking, as part of his summary of those hearings before the United States Senate on May 18, 1912, referred to the new sense of world unity that required worldwide safety regulations. "When the world weeps together over a common loss," he said, "when nature moves in the same directions in all spheres, why should not the nations clear the sea of its conflicting idioms and wisely regulate this new servant of humanity?"[3] Although the wireless had been used before to save lives at sea, this rescue effort was particularly highlighted because so many were aware of the tragedy: the survivors watching from life boats, the wireless operators in distant places, and the frustrated seamen in the rescue ships.

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The ability to experience many distant events at the same time, made possible by the wireless and dramatized by the sinking of the *Titanic*,

was part of a major change in the experience of the present. Thinking on the subject was divided over two basic issues: whether the present is a sequence of single local events or a simultaneity of multiple distant events, and whether the present is an infinitesimal slice of time between past and future or of more extended duration. The latter debate was limited largely to philosophers, but the issue of sequence versus simultaneity was expressed by numerous artists, poets, and novelists and was concretely manifested in some new technology in addition to the wireless—the telephone, the high-speed rotary press, and the cinema.

Already in 1889 Lord Salisbury commented on the simultaneity of experience made possible by the telegraph, which had "combined together almost at one moment . . . the opinions of the whole intelligent world with respect to everything that is passing at that time upon the face of the globe."[4] The telegraph had been in operation since the 1830s, but its use was limited to trained operators and confined to transmitting stations. The wireless proliferated source points of electronic communication, and the telephone brought it to the masses.

The history of wireless telegraphy begins with a paper by James Clerk Maxwell in 1864, which argued that electromagnetic waves must exist and should be able to be propagated through space. In 1887 Heinrich Hertz produced those waves in a laboratory, and in 1894 Guglielmo Marconi devised an apparatus to transmit and receive them. In 1897 Marconi went to England and established the first coast station on the Isle of Wight for communication with ships at sea. In 1901 a message was sent across the Atlantic from a special high-power transmitter in England, and two years later King Edward VII and President Theodore Roosevelt exchanged messages over it. As wireless instruments proliferated, an International Congress on Wireless Telegraphy was held at Berlin in 1903 to regulate their use. The Marconi Company established the first wireless news service in 1904 with nightly transmissions from Cornwall and Cape Cod. The first distress signal from a ship at sea was sent in 1899, and in 1909, following a collision between two ships, a wireless call saved 1700 lives. The technology got some sensational publicity in 1910 when a wireless message led to the arrest of an American physician in London, who murdered and buried his wife and attempted to escape aboard a ship with his secretary dressed as a boy. The captain became suspicious of the two, wired Scotland Yard, and arranged to have a detective arrest the couple at sea before they arrived in port.



By 1912 the wireless was an essential part of international communication linking land stations and ships at sea in an instantaneous, worldwide network.[5]

The telephone had an even broader impact and made it possible, in a sense, to be in two places at the same time. It allowed people to talk to one another across great distances, to think about what others were feeling and to respond at once without the time to reflect afforded by written communication. Business and personal exchanges suddenly became instantaneous instead of protracted and sequential. Party lines created another kind of simultaneous experience, because in the early systems bells rang along the entire line and everyone who was interested could listen in. One imaginative journalist envisioned the simultaneity of telephone communication as a fabric made from the fibers of telephone lines, switchboard cables, and speech: "Before the great switchboard the girls seem like weavers at some gigantic loom, the numerous cords crossing and recrossing as if in the execution of some wondrous fabric. Indeed, a wondrous fabric of speech is here woven into the record of each day."[6]

Within a few years of its invention in 1876 the telephone was used for public "broadcasts." In 1879 sermons were broadcast over telephone lines in the United States, and in 1880 a concert in Zurich was sent over telephone lines fifty miles to Basel. The following year an opera in Berlin and a string quartet in Manchester were transmitted to neighboring cities. The Belgians began such transmissions in 1884: the telephone company of Charleroi gave a concert which could be heard by all of the subscribers, an opera in Monnaie was heard 250 kilometers away at the royal palace at Ostend, and the North Railroad Station in Brussels piped in music from the Vaux-Hall in what was perhaps the first experiment with muzak.[7]

Jules Verne envisioned "telephonic journalism" in a science-fiction story of 1888.[8] Five years later it became a reality when a Hungarian engineer started such a news service in Budapest and expanded it into a comprehensive entertainment service with outlets in the homes of its 6000 subscribers, each of whom had a timetable of programs including concerts, lectures, dramatic readings, newspaper reviews, stock market reports, and direct transmissions of speeches by members of Parliament. It focused the attention of the inhabitants of an entire city on a single experience, regulated their lives according to the program schedules, and invaded their privacy with an emergency signal that enabled the station to ring every subscriber when special news broke. An English journalist imagined that this

service, if introduced in England, would "democratize" many luxuries of the rich as the "humblest cottage would be in immediate contact with the city, and the 'private wire' would make all classes kin."[9] At the same time it would diminish the isolation of individuals in cities and make it possible for one voice to be heard simultaneously by the six million people of London. In the United States in 1896, telephones were used to report presidential election returns, and, according to a contemporary report, "thousands sat with their ear glued to the receiver the whole night long, hypnotized by the possibilities unfolded to them for the first time."[10]

There was diverse critical response to the simultaneity of experience created by modern journalism. Already in 1892 the indefatigable alarmist Max Nordau complained that the simplest village inhabitant has a wider geographical horizon than the prime minister of a century ago. If the villager reads a paper he "interests himself simultaneously in the issue of a revolution in Chile, a bush-war in East Africa, a massacre in North China, a famine in Russia."[11] Nordau anticipated that it would take a century for people to be able "to read a dozen square yards of newspapers daily, to be constantly called to the telephone, to be thinking simultaneously of the five continents of the world" without injury to the nerves. Paul Claudel reacted more positively in 1904 when he wrote that the morning newspaper gives us a sense of "the present in its totality,"[12] and an editorial in *Paris-Midi* of February 23, 1914, characterized the headlines of one daily paper as "simultaneous poetry."

The discovery of the cinema between 1893 and 1896 portended its international scope and the simultaneous experience that it was able to suggest. Within a few years Edison in the United States, Robert W. Paul in England, Max and Emil Sklandowski in Germany, and Louis and Auguste Lumière in France invented instruments to project a continuous picture through moving rolls of celluloid film onto a screen. By 1910 there were 10,000 nickelodeons in the United States alone, creating the need for about two hundred one-reel films a week. From the outset the film industry was international, with a mass appeal. Film expanded the sense of the present either by filling it with several noncontiguous events or showing one event from a variety of perspectives. Three techniques were used: double exposure, the montage balloon, and parallel editing.

Photographic montage had been used by still photographers for decades when Méliès introduced it in one of his science-fiction fantasies of 1898 to create phantoms on the screen by actual multiple



exposures. But that cluttered the picture. In *The Life of an American Fireman* Porter used the montage balloon. He showed a fireman sitting at his desk and, in a bubble in the upper right corner, his wife putting their infant to bed. This dramatized the fireman's later heroics in saving another child from a burning building. These two techniques were cumbersome, and directors soon discovered a more versatile way to suggest simultaneity—contrast editing or intercutting.

Porter first used contrast editing in *The Ex-Convict* (1905). A wealthy manufacturer refuses to hire an ex-convict, and to dramatize the encounter between them separate scenes show the luxury and squalor of their respective homes. In *The Lonely Villa* (1909) Griffith intercut to show a man racing home to save his wife and children who are being attacked by robbers. The suspense is intensified by showing the robbers, the man, and his family in progressively shorter sequences that build to a climax when they all come together. Griffith used it more effectively in *The Birth of a Nation* (1914), where the camera cuts ever more rapidly among simultaneous scenes of converging action: some men under attack in a cabin, gunmen closing in on them, and the Ku Klux Klan galloping to the rescue. His most ambitious effort to keep several lines of action going at the same time was in *Intolerance* (1916), which intercut four stories from different periods dealing with intolerance: the invasion of Babylon by the Persians, the conflict between Jesus and the Pharisees, the St. Bartholomew's Day Massacre, and a modern story of a man convicted of a murder he did not commit. The stories are portrayed in alternating sequences, and the film concludes with a last-minute rescue of the contemporary man as he is about to be executed. Thus was Griffith able to splice open a moment and insert a number of simultaneous activities.[13]

While many early cinema viewers complained that the stories were technically "jerky," they soon adapted their visual response and learned to sustain the continuity between lapsed sequences and integrate them in a powerful climax as all converged in a single dramatic moment. Hugo Münsterberg noted that the cinema could appear to take the viewer from one place to another instantly and achieve the effect of his being "simultaneously here and there." In films "we see the man speaking into the telephone in New York and at the same time the woman who received his message in Washington."[14] In 1916 the Futurists hailed the ability of the cinema to "give the intelligence a prodigious sense of simultaneity and omnipres-

ence." They found the sequence in books oppressive and preferred motion pictures because they offered a "fleeting synthesis of life in the world."[15] For artists in love with machines, it was a romance made in heaven.

Henri-Martin Barzun, Blaise Cendrars, and Guillaume Apollinaire wrote several kinds of simultaneous poetry and even became involved in a public argument over who originated the new art form.[16] Most insistent about his priority was Barzun, who, in 1912, founded a journal to present his theory of simultaneity and publish works that conformed to it. One of his poems was about the unification of the world by wireless: "I radiate, invisible, from the summit of the Tower / Fluid carrying the hope of ships in distress / Enveloping the earth with my waves / Proclaiming the Word, the Time of the world."[17] Barzun also proclaimed an aesthetic. Aviation has transformed distance; the whole of humanity is involved with catastrophes around the globe; international alliances have increased the "federative" nature of the world. It is an age of democracy—of crowds and public assemblies—and only a simultaneous poetry can capture it. Song must give up its monodic character and become polyphonic; a "multiple lyricism must render the multiplicity of modern life."[18] In *Voix, rythmes et chants simultanés* (1913), he noted that past poets expressed the voices of a successive universe; the contemporary poet ought to express them all at once as they are perceived by the senses and magnified by technology. City life provides "proof of the existence of simultaneous realities" that can only be expressed by the chant of simultaneous voices. Poets must adopt an orchestrated verbalism of simultaneity, of which Barzun supplied numerous examples, consisting of parallel lines to be read at the same time by different voices and recorded on phonographs.[19]

In 1912 Cendrars began to frequent the home of Robert Delaunay where he met Sonia Delaunay, who had used her husband's technique of simultaneous art in paintings and book bindings. In February 1913 Cendrars published *La Prose du Transsibérien et de la petite Jehanne de France*, which was announced as the "First Simultaneous Book" (Figure 1). Printed on a sheet two meters long, it was meant to be seen all at once so that the spatial limitations of one page after another would not chop up its wholeness. It was illustrated down the left side with Sonia Delaunay's *couleurs simultanées*. The poem describes Cendrars's journey from Moscow to Harbin on the Trans-Siberian railway in 1904, and above the text he reproduced a map to show the route at a glance. Thus the reader saw "simultaneous"

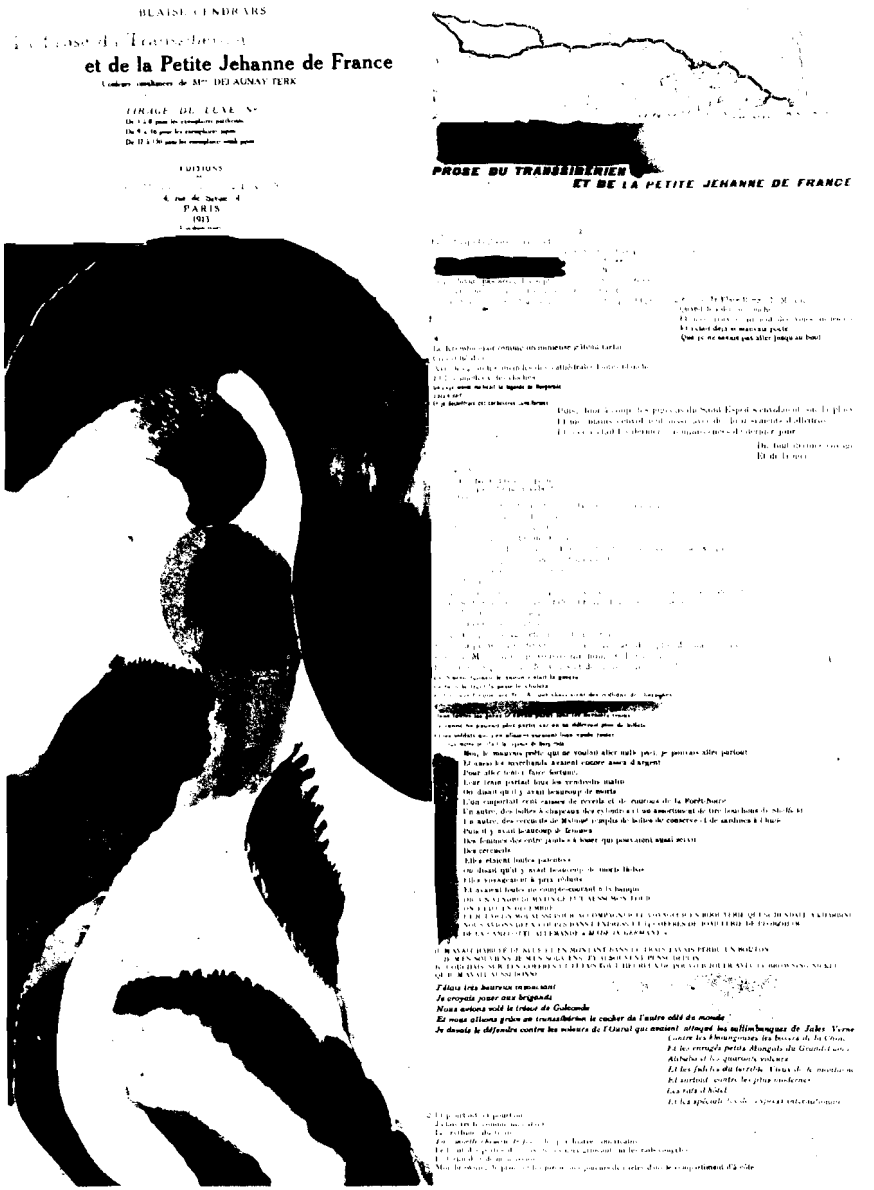


Fig. 1. Blaise Cendrars, *La Prose du Transsibérien et de la petite Jehanne de France*, 1913 (the top quarter of the poem).

colors, a map of the trip, and a poem about it at the same time. The poem was also intended to recreate an impression of the journey as a whole, the way it came to Cendrars when he began to write. Its metaphors span distance and time to suggest the sense he had of being able to experience every moment of the journey and the world beyond it simultaneously. The poem toys with chronology by uniting remote ages: "I spent my childhood in the hanging gardens of Babylon / . . . The prehistoric ancestor will be afraid of my motor." It unites the diverse timepieces of the world: "The big clapper of Notre Dame / The shrill ringing of the Louvre announcing Saint Bartholomew / The rusted bells of Bruges-la-morte / The electric bells of the New York Public Library / The city bells of Venice / and the bells of Moscow." While the trains run forward according to these, "the world, like the clock in the Jewish quarter in Prague, turns desperately counterclockwise." Time is compressed and reversed to break down the divisiveness of sequence, and space is ignored to undo the divisiveness of distance and bring together separate places in a single vision of his train racing across Russia as his mind raced around the world. Verbal montages unite what is distant as if they were quick-cut camera directions: "Now I've made all the trains run after me / Basel-Timbuktu / I've also played the horses at Auteuil and at Longchamps / Paris-New York / Now I've made all the trains run alongside my life / Madrid-Stockholm." The poet explores the new dimensions of a world shaped by railroad and wireless (indeed one critic called him *le Sans Fil*[20]). Even speed is useless in this world that "stretches lengthens and retracts like an accordion / tormented by a sadistic player." One image includes both temporal and spatial simultaneity: "All the days and all the women in the cafes and all the glasses / I should have liked to drink and break them."[21] This voraciousness echoes that of another *simultanéiste,* Arthur Craven, who, also in 1913, updated the Faustian spirit: "I would like to be at Vienna and at Calcutta / To take all trains and all ships / to fornicate with all women / and gourmandize all dishes."[22] Electronic communication and rapid transportation filled the present with diverse sensations and quickened the appetite of Cendrars and Cravens, who sought to embrace all the experiences as technology embraced places and times.

Apollinaire also indulged in fantasies of sexual ubiquity. For his story *Le Roi-Lune* he invented a belt that made its wearer able to make love to all the women of all centuries. A specially adapted piano could produce the sounds of different countries. Apollinaire also concocted the Baron d'Ormesan, whose *toucher à distance* enabled him



to appear simultaneously in diverse places around the world. The Baron was a film director, and this ability of his embodied the montage techniques that directors used to suggest ubiquity and simultaneity. He died in 820 places simultaneously after having created *l'amphionie*—a tourism adapted to the speed of modern times, which provided a "complete" tour of Paris in thirty minutes.[23]

Apollinaire's poetry included several aspects of simultaneity. *Zone* (1912) sought to knit remote places and times into a single fabric of present experience—a zone between past and future, between near and remote. In *Ondes* (1913) he described the Eiffel Tower, whose electronic waves carried time signals that made it possible to determine the simultaneous occurrence of distant events. *Liens* surveyed various ties between distant places. In addition to radio waves there were the sounds of clocks ringing across Europe, rails that bound nations, cables that united continents, and rays of light that linked the earth with distant stars. The desire to give his reader everything at once led Apollinaire to create *calligrammes* with words arranged to depict a poem's content. One poem about time was arranged in the form of a pocket watch. For a collection published in *Les soirées de Paris* in July 1914, he placed at the top of the page a drawing of a telegraph pole crossed by wires like a musical time signature for the poems printed below.

The model for simultaneous art and poetry was music. In counterpoint different melodies worked simultaneously, and in opera two or more voices might sing different words at the same time. Wagner explained that he intentionally had Tristan and Isolde say important things at the same time to intensify the urgency of their encounter. But the modern composers went beyond these forms and improvised more challenging simultaneities involving music in different tonalities and rhythms. Richard Strauss combined two keys at the same time in *Also Sprach Zarathustra* (1896) as did Debussy in parts of *Pelléas et Mélisande* (1902). In the first of *Fourteen Bagatelles* of 1908, Bela Bartók produced what one historian has called the "earliest thorough-going example of two simultaneously sounding melodic parts written in different keys."[24] Prokofiev had such bitonal passages in *Sarcasmes* (1911), and Stravinsky made extensive use of tritone harmonies in *Le Sacre du printemps* (1913). While there were also precedents to polyrhythm and polymeter in counterpoint and classical symphonic music, there was a striking concentration of them in the twentieth century beginning with Charles Ives's combination of two marches in different tempi in *Three Places in New England* (1904).

In literature a famous early example of simultaneous action

occurs in *Madame Bovary* (1857), where Rodolphe's tiresome romancing of Emma is interspersed with the announcement of prizes at an agricultural fair that takes place in the background of their meeting. The juxtaposition of Rodolphe's avowal that he will never stop loving Emma with the announcement that Monsieur Bizet won a prize for the best manures accents the vulgarity and insincerity of Rodolphe's love and the banality of rural life. Frank Norris cut between paragraphs in *The Octopus* (1901) to contrast the fate of a destitute farmer's wife and child wandering the streets of San Francisco and the lavish dinner of some railroad moguls in a mansion nearby. The paragraphs become ever shorter and climax in "cinematic shots" of the woman dying as the meal is completed. In *The Death of a Nobody* (1908) Jules Romains used the technique to dramatize his philosophy of *unanimisme*—that everybody is linked by bonds of fellowship of which they might not be entirely aware. The death of a lonely railway worker brings together a number of people and taps forces of mutual affection, a common spiritual bond they discover in the course of preparing for his funeral. Simultaneous action is going on at four places: the corpse decaying on the fourth floor of an apartment in Paris, some neighbors on the second floor trying to buy a wreath for the funeral, the dead man's father journeying to Paris, and the building's concierge moving about the apartment. Andrey Biely used quick cuts in *St. Petersburg* (1913) with great dramatic effect. The story traces the lives of a conservative Russian official and his son, who becomes involved with a radical political group and is charged with setting off the explosion that killed his father. The ticking of the time bomb marks simultaneity as time runs out in ever more rapid cuts between the two. The Futurists wrote several plays in which simultaneous action takes place on a divided stage. In a manifesto of March 1914, Marinetti proclaimed the birth of a new beauty characterized by "the simultaneity that derives from tourism, business, and journalism."[25] The following year he published *Simultaneità*, in which two different places and their inhabitants interact: a cocotte penetrates a bourgeois family as her dressing table occupies part of the space of their living room. In *The Communicating Vases* (1916) Marinetti undertook three simultaneous actions. In the end the characters break down the two partitions on stage and enter one another's world in a climax of simultaneous activity and interpenetration.

The highpoint of simultaneous literature was *Ulysses*. Joyce was deeply impressed with cinematic montage, and in 1909 he was instrumental in introducing the first motion picture theater in Dublin.[26] In *Ulysses* he improvised montage techniques to show the simultaneous activity of Dublin as a whole, not a history of the city but a slice of it out of time, spatially extended and embodying its entire past in a vast expanded present.[27] In this respect he was realizing Bergson's view that the knowledge we have by intuition is analogous to that we gain by walking around a city and living in it. Joyce hoped his readers would go back to the book many times, continually building up the network of cross-references scattered throughout until Dublin came to life.



A vivid example of Joyce's technique is the "Wandering Rocks" episode, a montage of nineteen sections, each of which shows a different aspect of Dublin. Joyce used five devices to recreate the unity of the city and its simultaneous activity: multiple accounts of a character from different perspectives; repetition of action in at least one other episode; a narration that begins over again and again; multiple appearance of an object (a handbill seen three times as it floats down the Liffey, uniting Dublin spatially and providing a symbol of the passage of time); and a final recapitulation with a cavalcade that travels about the city and links the characters and places it passes. The journey of the handbill and the movement of the cavalcade are linear, but they suggest the spatial interrelatedness of the city and provide points of juncture for all that was happening. Although the cavalcade moves sequentially, the glimpses that some of the characters had of it in earlier sections anticipate the final summation of the simultaneity of its movements.

As "Wandering Rocks" was inspired by the cinema, so "Sirens" was inspired by music and constructed with counterpoint and polyphony. By identifying characters and themes with short verbal passages and then "sounding" them on the page in quick succession Joyce sought to overcome the necessarily sequential time of literature and achieve an effect similar to the simultaneous sounding of different notes in musical harmony. He truncated and augmented words and phrases, had them interrupt one another, and reversed their direction contrapuntally to suggest the overlapping of musical subjects in a fugue. Consider the opening lines:

> Bronze by gold heard the hoofirons, steelyrining imperthnthn thnthnthn.
> Chips, picking chips off rocky thumbnail, chips. Horrid!
> And gold flushed more.
> A husky fifenote blew.
> Blew. Blue bloom is on the

Gold pinnacled hair.
A jumping rose on satiny breasts of satin, rose of Castille.
Trilling, trilling: Idolores.
Peep! Who's in the . . . peepofgold?
Tink cried to bronze in pity.
And a call, pure, long and throbbing. Longindying call.
Decoy. Soft word. But look! The bright stars fade. O rose!
Notes chirruping answer. Castille. The morn is breaking.
Jingle jingle jaunted jingling.

Several readings of the whole chapter and some scholarly investigation were needed to identify the characters and themes represented by these phrases.[28] "Bronze" and "gold" are the two waitresses in the bar where the action takes place, and "imperthnthn thnthnthn" is the stuttering of someone trying to say "impertinent." The "hoof-irons" they hear are those of the cavalcade outside. "Blue bloom is on the", "rose of Castille", and "Idolores" are bits of popular songs, and the variations on "blew" and "bloom" sound the approach of Bloom like a distant horn. The "longindying call" is a tuning fork, but also Bloom's loneliness and his lament for the death of his passion for Molly. "The light stars fade" and "the morn is breaking" are from the song that sounds throughout the chapter and signifies its musical technique. "Jingle" announces Blazes Boylan, who is traveling in a jingly car to the bar before his assignation with Molly in her jingly bed. Just as the novel was intended to be reread until the cross-references revealed the artfulness of the whole, so must this chapter be reread until the opening lines can be appreciated as the verbal equivalent of the statement of themes in a fugue. The harmonies of this chapter approximate music when past readings have made the phrases intelligible for integration into the rapid mix of sequential, verbal harmonies.

In "Nausicaa" there is an interweaving of simultaneous action at three places: Gerty MacDowell on the rocks at the shore with two girlfriends watching over twin boys and an infant, Bloom on a rock nearby, and some distance away in a church the men's temperance retreat performing a benediction and praying to the Virgin Mary. Joyce unites them with concrete action, language, interior monologues, and ironic juxtaposition.

The opening paragraph pictures the last rays of sun that touch the sea, the rocks on the strand, and the church, uniting the scenes of action that will take place. It concludes with another image of ubiquity as, the sun having set, a bat begins to fly—"Here. There. Here." The



episode begins on the rocks and deliberately moves to the other locales: one of the twins kicks a ball that rolls to Bloom, Gerty hears the prayers that enable her to imagine the scene in the church, and Cissy Caffrey walks over to Bloom to ask the time. (Bloom has been oblivious to public time since 4:30 when his watch stopped.) The traditional dividers of sequence and distance collapse into a unified whole which the reader must envision after several readings, like a circling bat surveying it all from a darkened sky.

Joyce also unites action at separate places by stringing it together in run-ons, as descriptions of Gerty and her friends, the men in church, and Bloom flow into one another with nothing separating them but simple conjunctions.

> . . . then Father Conroy handed the thurible to Canon O'Hanlon and he put in the incense and censed the Blessed Sacrament and Cissy Caffrey caught the two twins and she was itching to give them a ringing good clip on the ear but she didn't because she thought he [Bloom] might be watching but she never made a bigger mistake in all her life because Gerty could see without looking that he never took his eyes off her and then Canon O'Hanlon handed the thurible back to Father Conroy and knelt down looking up at the Blessed Sacrament and the choir began to sing *Tantum ergo* and she just swung her foot in and out in time as the music rose and fell . . .

The first part of the chapter is structured around Gerty's thoughts as she grows increasingly aware of Bloom, who becomes ever more interested in watching her. She realizes that he is masturbating and raises her skirt to help him along. The second part is from Bloom's perspective, and interior monologues reveal his itinerant thoughts during and after climax. As "Sirens" mixed simultaneous activity with sound, "Nausicaa" linked them visually. The bodily organ of the chapter is the eye, and there is an emphasis on its unifying function—Gerty and Bloom gazing at each other, everybody else watching the fireworks, the clergymen eyeing the host, and, negatively, the bat that cannot see.

Actions in different places are also juxtaposed with images that suggest their similarity. There is the parallel between the swinging thurible and Gerty's foot. Father Conroy knelt down and looked up at the blessed sacrament as Bloom sat down and looked up Gerty's skirt. For good measure Joyce explains that Bloom was "literally worshipping at her shrine." Everybody on the strand exclaimed

when they saw the fireworks go off as Bloom exclaimed when his went off. The infant puked on his bib and Gerty said "that that was the benediction because just then the bell rang out from the steeple over the quiet seashore because Canon O'Hanlon was up on the altar with the veil that Father Conroy put round him round his shoulders giving the benediction with the blessed Sacrament in his hands."[29] The chapter concludes with an elaborate image of simultaneity.

> A bat flew. Here. There. Here. Far in the grey a bell chimed. Mr Bloom with open mouth, his left boot sanded sideways, leaned, breathed. Just for a few.
>
> *Cuckoo*
> *Cuckoo*
> *Cuckoo*
>
> The clock on the mantelpiece in the priest's house cooed where Cannon O'Hanlon and Father Conroy and the reverend John Hughes S.J. were taking tea and sodabread and butter and fried mutton chops with catsup and talking about
>
> *Cuckoo*
> *Cuckoo*
> *Cuckoo*
>
> Because it was a little canarybird bird that came out of its little house to tell the time that Gerty MacDowell noticed the time she was there because she was as quick as anything about a thing like that, was Gerty MacDowell, and she noticed at once that that foreign gentleman that was sitting on the rocks looking was
>
> *Cuckoo*
> *Cuckoo*
> *Cuckoo*

The flitting of the bat and the call of the cuckoo bird signify visual and auditory ubiquity and unite the characters and settings. The mechanical bird's nine o'clock chime is also a comment on them all. Gerty acted crazily, the clergymen talked nonsense, and Bloom appeared to Gerty to be cuckoo. Public time reappears to remind us of Bloom's cuckoldry just as his watch had stopped and public time disappeared precisely at 4:30, when Molly was being unfaithful to him.

The dialectic of thought takes unexpected pathways. At the same time that so many artists were celebrating simultaneity as a distinctive experience of the age, Einstein was arguing that there could be no such thing in a universe with moving parts.



The great symbol of simultaneity was the Eiffel Tower, which Robert Delaunay painted,[30] the poets eulogized, and the Futurists worshipped. It was used for sending out time signals that were thought by most people to travel instantaneously and make possible the calculation of simultaneous events. Actually their velocity was finite, as Olaf Römer had discovered in 1675, and so was the velocity of light, which experiments in the nineteenth century calculated to be around 186,000 miles per second. To artists and critics this incredibly high speed seemed to insure simultaneity—but not to the physicists. Ever since Mach began poking at absolute space and time, the absolute simultaneity of distant events became problematical, and with Einstein it became untenable for events observed from moving reference frames.

In the special theory Einstein concluded that spatial and temporal coordinates vary with relative motion, that no exact determination of the simultaneity of distant events is possible for an observer in motion with respect to those events, and that therefore one cannot attach any *absolute* status to the concept of simultaneity: "Two events which, viewed from a system of coordinates, are simultaneous, can no longer be looked upon as simultaneous when envisaged from a system which is in motion relatively to that system."[31] Of course almost nobody knew of, or could properly understand, these ideas, especially in the prewar years. The vast majority remained awed by electronic communication and believed that the wireless and telephone had "annihilated" space and time. Einstein's theory showed that no precise meaning could be given to the idea of absolute simultaneity; however, it applied to subatomic or cosmic events involving enormously high relative velocities and could not affect the everyday experience of anybody. So in spite of his isolated counterargument, the big news of the age was that the present moment could be filled with many distant events. As one historian concluded boldly, because of these changes, on the eve of the war "succession gave way to simultaneity."[32]

∞

While simultaneity extended the present spatially, other attempts were made to expand the traditional sharp-edged present temporally to include part of the immediate past and future. Experimental psy-

chologists tried to measure the present; studies of after-images that made the continuous movement of cinema possible showed that we experience the present visually as a quantum of time involving the immediate past. There was also evidence of a protracted present during moments of great emotion. A Swiss geologist commented on the dilation of the present during sudden falls in mountain climbing accidents; two French psychiatrists analyzed the compression of long sequences into short dream episodes and the dramatic expansion of the lived present among psychotics.[33] Artists tried to portray duration, and novelists used various techniques to fan out their sequential narratives into a "continuous" or "prolonged" present.

In the early 1880s Wilhelm Wundt conducted some experiments to determine the duration of the present—that interval of time that can be experienced as an uninterrupted whole. He concluded that its maximum limit was about 5 seconds, and one of his students set it at 12. Another student found that the shortest interval between separate clicks that the ear could discern was 1/500 of a second and that the eye could not distinguish sparks less than .044 seconds apart, because it retained an image of an object after it had disappeared.[34] Projecting pictures at 16 frames per second created the illusion of a continuous moving picture. All these experiments provided new information for several philosophers who debated about the nature and duration of what we experience as "now."

Since the ancient Greeks there had been a controversy about the structure of time. Some thinkers argued that it was composed of discrete parts—infinitesimal instants that constituted longer durations the way points made up a line. The most radical statement of that view was made by Hume, who said that time "consists of different parts" out of which longer durations are formed.[35] This interpretation was rejected by William James, Josiah Royce, and Husserl, who argued for a "thickened" present.

In an article of 1884 James observed that it is impossible to experience the present because it is past before we can properly comprehend it. "It is only by entering into the living and moving organization of a much wider tract of time that the strict present is apprehended at all." James credited Shadworth Hodgson and E. R. Clay with anticipating his philosophy. In 1878 Hodgson distinguished between the strict present—a divider between past and future too brief to be experienced—and the practical present that is extended to include several seconds or even minutes. Clay argued that the present we experience is part of the recent past as the path of



a meteor seems to be "contained in the present," and he defined this interval as the "specious present." James adopted the concept and illustrated it with one of his unforgettable images: "the practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in two directions into time." He also accepted the calculations of its length from Wundt's laboratory and concluded that the present has a "vaguely vanishing backward and forward fringe; but at its nucleus is probably the dozen seconds or less that have just elapsed."[36]

Royce also accepted the term "specious present" and agreed that its length varies among individuals. He invoked this variable extended present to argue by analogy that God's infinite range enables him to experience all at once and eternally the events that we experience as a series of surprises as we make our way into the future.[37] Although James and Royce had different emphases, they agreed that the present is far thicker than Hume and the associationist psychologists would allow and that the thickness varies in different circumstances. They even shared an uncertainty that this notion was valid by using the word "specious" to describe a present that clouded over the traditional instantaneous one.

Husserl did not like the term "specious present," but he incorporated many of its features to explain how we can experience at once events that occur at different times, as in listening to a melody. Do we apprehend discrete notes and *then* combine them by some mental operation, as the associationist psychologists believed, or do we take in an extended whole all at once? Husserl believed that duration is experienced directly as a whole and is "constituted" in perception as something inherently temporal. We have already noted his explanation that past notes fade but remain present as "retentions." The present has a nucleus of a "now-apprehension," a "comet's tail" of retentions that cling to it, and a horizon of the anticipated future. The enduring tone "is constituted in an act-continuum which in part is memory, in the smallest punctual part is perception, and in a more extensive part expectation." The future components are "protentions," which fulfill the intentional nature of consciousness. Moreover our experience of the past is future-oriented: "every act of memory contains intentions or expectations whose fulfillment leads to the present." A bird flies. In every position "the echo of earlier appearances clings to it," but those past positions also point to the present and future, otherwise we would at every moment expect

Fig. 2. Giacomo Balla, *Dynamism of a Dog on a Leash*, 1912.

it to fall out of the sky.[38] We do not experience the future directly, but since retentions, recollections, and now-apprehensions point ahead, the basic direction of all consciousness is toward the future. Thus the present is a continuous unrolling field of consciousness, thickened with retentions and protentions.

The Futurists painted some comets' tails of their own. Giacomo Balla pictured a temporally extended moment in two works of 1912. *Rhythms of a Bow* shows a player's hands in successive positions, violin strings swollen with vibrations, and the air around them quivering as if the sound waves had made it visible. In *Dynamism of a Dog on a Leash* (Figure 2) Balla depicted successive stages of a dog trotting alongside a pair of feet. The undulation of the leash is represented in four fixed positions as if stopped with a modern stroboscopic light, and the intervals between are continuous lines of light reflected off the swinging links of chain. Gino Severini insisted on the historical necessity of portraying successive memories: "In this epoch of dynamism and simultaneity, one cannot separate any event or object from the memories . . . which its expansive action calls up simultaneously



in us."[39] Luigi Russolo depicted *Memories of a Night* with past images scattered about the picture surface as they are in reality scattered achronologically about the mind.

These works conformed with Apollinaire's pronouncement that the painter must "contemplate his own divinity" and "encompass in one glance the past, the present, and the future."[40] Some novelists also tried to recreate moments when they felt divine, swollen with past and future. Proust's *moments bienheureux* and Virginia Woolf's "rings of light" compressed successive experiences into a single heightened moment. Joyce defined his "epiphanies" as sudden spiritual manifestations, "the most delicate and evanescent of moments."[41] Gertrude Stein developed two techniques for rendering a temporally expanded present: beginning again and the continuous present tense. In an essay of 1926 her maddeningly repetitive narration explained as well as illustrated her message:

> Beginning again and again is a natural thing even when there is a series.
>
> Beginning again and again and again explaining composition and time is a natural thing.

The technique is evident from the first pages of *Melanctha* (1909) where she tells us, in very nearly the same words, twice that Rose Johnson was a real black negress, three times that her baby died, and twice that she laughed when she was happy. The effect of this stuttering prose is to flatten out temporal distinctions and create an impression that all action occurred in a continuous present. To emphasize that present she stretched action with a verb form called the "continuous present." So we read that Melanctha was "always losing what she had," "always being left when she was not leaving others," and "always seeking quiet and rest." Melanctha was always the same, even though much happened to her; always beginning again and again, even though the story is full of sequential action; always living in the continuous present, although we learn of her full past. Since the author knows everything at the time of composition, she can tell it in any order whatever. For Stein it was only an artificial convention that the story begin at the beginning and end at the end; both are present in the author's mind at the moment of conception. The fact that it takes time to write the story or that an author makes discoveries about his subject in the course of writing does not contradict her theory. If I begin a story about a friend, I may not know

where it will go, but I do know what had transpired between us. The cumulative effect of that experience is what inspired me to begin. Stein sought to do justice to that original impulse by sustaining a continuous present to show the way it embodies from the outset the entire past and the intention to write the story.[42]

In his affirmation of the now, Joyce used various techniques to suggest the experience of simultaneity, and he also compressed memories and expectations into a temporally thickened present. In 1912 he formally praised William Blake, who "by minimizing space and time and denying the existence of memory and the senses . . . tried to paint his works on the void of the divine bosom."[43] That void is God's time—the ultimate expanded present wherein what appears to us as sequence is an unchanging whole. Art tries to approximate that. It is inspired in instants, has as its temporal locus only the now, but will endure only if it is universal and eternal. The tactical problem was how to follow Blake and minimize time while writing about people who live quite palpably in it. The solution was the expanded present of *Ulysses*, where characters' moments are thickened with direct interior monologues, and their lives and the history of the universe compressed into a single day. Thus did Joyce "hold to the now." While his rendering of simultaneity united distant events in a spatially expanded present, the direct interior monologue linked past and future in a temporally thickened one. Both techniques underlined his affirmation of the present as the only real location of experience.[44]

Joyce shared this repudiation of the past with several others, among whom Nietzsche stood out. His contempt for the "abuse" of history was matched by an equally intense admiration for those who love their lives and are able to respond joyously to the theory of eternal recurrence, which he developed in the early 1880s after learning about some cosmological speculations that the present configuration of forces in the universe must repeat itself again and again eternally. He was never entirely convinced that this doctrine was true, but reflecting on the possibility that it might be, he developed a concept central to his philosophy—one of the most emphatic affirmations of the present in the history of thought. In *The Gay Science* (1882) he introduced the idea of eternal recurrence as a thought experiment, a test for evaluating one's acceptance of the present.

> How, if some day or night, a demon were to sneak after you into your loneliness and say to you: "This life, as you now live it and have lived it, you will have to live once more and innumerable times more; and there will be nothing new in it, but every pain and every joy . . . must return to you—all in the same succession and sequence—even this spider and this moonlight between the trees, even this moment and I myself" . . . Would you not throw yourself down and gnash your teeth and curse the demon who spoke thus? Or have you once experienced a tremendous moment when you would have answered him: "you are a god and never did I hear anything more godlike!" . . . The question in each and everything, "do you want this once more and innumerable times more?" would weigh upon your actions as the greatest stress. Or how well disposed you would have to become to yourself and to life to *crave nothing more fervently* than this ultimate eternal confirmation. . .?[45]



Only the overman, by means of a terrifying transvaluation of all values, can utter the great "Yes" to his own existence and view the demon's message as godlike. He does not dote upon the past as a source of guilt or long for heavenly reward. He craves "nothing more fervently" than eternal recurrence, because he has made of his life something creative in defiance of the crushing burden of the past and the seductive hope for future paradise. He alone can accept Nietzsche's motto, *amor fati*.

As cinematic montage combines distant scenes to create a unified whole, so have I drawn together pieces of the cultural record using the principle of conceptual distance and an expository technique of juxtaposition. My method involves the presentation of diverse sources that are far enough apart to justify broad generalizations about the age without being too far apart to exceed the limits of plausibility. Thus, a parallel presentation of the response to two sinking ships would not tell us as much as an identification of the thematic similarity between the reaction to a sinking ship and the musings of a philosopher. It is a long way, conceptually, from the *Titanic* to Nietzsche, and that is precisely what makes the identification of a common denominator so fruitful. It would be outrageous to link the *Titanic* and Nietzsche directly, but by following the shorter, intermediate links we see a coherent matrix of thought emerging. The juxtapositions from the *Titanic* to the wireless and telephone, to simultaneity and the spatially expanded present, to the temporally thickened "specious present," and finally to the positive evaluation of the present in Nietzsche and others outline the distinctive experience of the present in this period. The individual "shots" come from

various sources relating to the two focal issues and conclude with a picture of Nietzsche's overman overjoyed at the prospect of eternal recurrence, happily affirming his fate in the here-and-now.

There was no actual confrontation over these two focal issues, because simultaneity and the thickened present attracted all of the innovative thinkers and artists. Simultaneity was the more directly influenced by technology, because electronic communication made it possible for the first time to be in a sense in two places at once, while temporal thickening derived from a theory of experience that could have been articulated in any age. Simultaneity also had the broader cultural impact. One response was a growing sense of unity among people formerly isolated by distance and lack of communication. This was not, however, unambiguous, because proximity also generated anxiety—apprehension that the neighbors were seen as getting a bit too close. Perhaps the most far-reaching impact of the new simultaneity was due to the cinema, which was able to bring together an unprecedented variety of visual images and arrange them coherently in a unified whole. German audiences moved visually between Munich and the wild American West; French audiences traveled to the North Pole and the moon. The cinema also thickened the present. Any moment could be pried open and expanded at will, giving the audience seemingly at once a vision of the motives for an action, its appearance from any number of perspectives, and a multitude of responses. A man is shot in an instant, but moviegoers saw the event prolonged and analyzed like a detailed case history. The present was thus thickened by directors who spliced time as they cut their film.

The new aesthetic and ethic joined in affirming the reality of a present that embraced the entire globe and included halos of the past and future which made it perceptible in the flux of time as atomic particles are made visible in their path through a cloud chamber. The new technology changed the dimensions of experience so rapidly that the future seemed to rush toward the present at a tempo as hurried and as irregular as Stravinsky's music. In the prewar years there was still a time to be born and a time to die, but the protracted sequence of events, each in its own time, was becoming ever more hurried and compressed. The world was racing into the future like the *Titanic* into the North Atlantic, and those who looked ahead foresaw both shipwreck and the wonders of time travel.

# 4

# THE FUTURE

Shortly after the armistice in 1918 Eugène Minkowski began a work entitled "How We Live the Future (and Not What We Know of It)." He never published it but applied the ideas in his clinical practice in the postwar years and then incorporated them in *Lived Time*, where he distinguished two modes of experiencing the immediate future—activity and expectation. The essential difference is the orientation of the subject in time: in the mode of activity the individual goes toward the future, driving into the surroundings in control of events;

in the mode of expectation the future comes toward the individual, who contracts against an overpowering environment. Every individual is a mixture of both modes, which makes it possible for him to act in the world and maintain an identity amidst a barrage of threatening external forces. The war sharpened the contrast between the two modes. The dominant one for the soldier was expectation, as the war limited his activity and sense of control over the future. Minkowski's description of expectation reads like a phenomenology of life in the trenches. "It englobes the whole living being, suspends his activity, and fixes him, anguished in expectation. It contains a factor of brutal arrest and renders the individual breathless. One might say that the whole of becoming, concentrated outside the individual, swoops down on him in a powerful and hostile mass, attempting to annihilate him." Another image conjured up the sinking of the *Titanic*. "It is like an iceberg surging abruptly in front of the prow of a ship, which in an instant will smash fatally against it. Expectation penetrates the individual to his core, fills him with terror before this unknown and unexpected mass, which will engulf him in an instant."[1] While expectation dominated the war experience, activity dominated the prewar period, and the two modes constitute basic polarities of this generation—how they lived the future (*and* what they knew about it).

The future, to be sure, is not experienced as vividly as the present and is dependent on the past for its content of images reassembled and projected ahead. Nevertheless it is an essential component of the personality, as the organization of those projections provides a sense of direction and makes novelty, purpose, and hope possible. Although the historical data on how people viewed the future are more limited than those on the past or present, it is possible to identify this generation's distinctive experience. The new technology provided a source of power over the environment and suggested ways to control the future. The Futurists identified their movement with the promise of that technology and the new world that it offered. There was a burst of science-fiction literature that sought to appropriate the future imaginatively. Philosophers argued that the possibility of freedom required that there be an unknown future, and one political tactician considered the importance of a myth of the future for revolutionary movements. These examples cluster on the side of an active future, that expansive and creative embodiment of the *élan vital* that Minkowski, following Bergson, believed essential to mental health. The war put a swift halt to this exuberance, but even in the



prewar period some thinkers envisioned the future in the mode of expectation. The entire discussion of degeneration pointed to a future in which mankind waited to be overpowered by the forces of nature and society, leading to a decline of cultures and an ultimate extinction of the species.

The effect of the telephone on the past and present was recognized at once—it eliminated the preservation of the past in letters and expanded the spatial range of the present. But there was little recognition of the impact of the telephone on the experience of the future. The historian Herbert Casson, writing in 1910, touched on the subject. He noted that "with the use of the telephone has come a new habit of mind. The slow and sluggish mood has been sloughed off . . . life has become more tense, alert, vivid. The brain has been relieved of the suspense of waiting for an answer . . . It receives its reply at once and is set free to consider other matters."[2] Actually it had a far more complex effect. In comparison with written communication or face-to-face visits the telephone increased the imminence and importance of the immediate future and accentuated both its active and expectant modes, depending whether one was placing or receiving a call. A call is not only more immediate than a letter but more unpredictable, for the telephone may ring at any time. It is a surprise and therefore more disruptive, demanding immediate attention. The active mode is heightened for the caller who can make things happen immediately without enduring the delay of written communication, while the intrusive effect of the ringing augments the expectant mode for the person called by compelling him to stop whatever he is doing and answer. He is thrust into a passive role because the caller can prepare for the conversation and control it at the outset.

Even though interpretation reveals an intensification of both modes, the general impact of the telephone was its ability to manipulate the immediate future, because the telephone was conceived largely through the experience of the caller. (Casson did not even consider the magnification of expectation for the person waiting for a call.) Evaluations of the telephone divided sharply between optimists and pessimists, and those who viewed it favorably usually had the caller in mind. The pessimists pictured the recipient of the call first suspended in waiting and then disturbed by the intrusion. Indeed, waiting for the telephone to ring became a symbol of loneliness and helplessness in the expectant mode. It is more tormenting than waiting for a letter, because the call may or may not come at any time,

while the letter either does or does not arrive in the daily mail. One may thus prepare for a letter in a way that it is impossible to prepare for a telephone call.

A similar division between active and passive modes was created by the introduction of the assembly line at Ford's Highland Park factory in Detroit in 1913. While products made individually involved the worker in the manufacturing process, the conveyor belt and continuous operation of the assembly line eliminated challenges and surprises as the product moved along with every step worked out beforehand. Once uncertainty about the future was eliminated by the assembly line it became possible to streamline the productive process further by observing every stage, determining the minimum movements necessary to complete all tasks, and then instructing the workers to make them. This was the achievement of Frederick Taylor's time and motion studies,[3] which accelerated production by increasing the predictability of workers' movements and depriving workers of the opportunity to select the sequence of actions to complete an operation. The assembly line and Taylorism diminished the factory worker's active control over the immediate future in the productive process and relegated him to an expectant mode, waiting for the future to come along the line, at the same time increasing the manufacturer's control. Although the impact of the new technology on the future fluctuated between these two roles, as was the case with the telephone, the larger and more decisive historical impact was a magnification of the active mode.

Another concrete manifestation of the active mode of the future was imperialism and the prospect of European ascendancy throughout the world in years to come. Annexation of the space of others, outward movement of people and goods, and the expansive ideology of imperialism were spatial expressions of the active appropriation of the future. In a famous address before the Colonial Institute in 1893, the Liberal-Imperialist Foreign Minister Lord Rosebery interpreted British motives for the colonization of Africa in terms of the future:

> It is said that our Empire is already large enough, and does not need extension. That would be true enough if the world were elastic, but unfortunately it is not elastic, and we are engaged at the present moment, in the language of mining, "in pegging out claims for the future." We have to consider not what we want now, but what we shall want in the future. We have to consider what countries must be developed either by ourselves or some other nation, and we have to remember that it is part of our responsibility and heritage to take care that the world, so far as it can be moulded by us, shall receive an English-speaking complexion, and not that of other nations . . . We have to look forward beyond the chatter of platforms and the passions of party to the future of the race of which we are at present the trustees.[4]



A personal reaction to the two modes of experiencing the future, so altered by new sources of energy and forms of technology, was recorded in Henry Adams' autobiography of 1907. The nineteenth century had measured its progress by carloads of coal produced. It was regulated by Newton's laws and accepted the law of contradiction as a basis for reasoning. But this coherence began to break up in the 1890s. Adams wrote that thinking was "caught and whirled in a vortex of infinite forces," men were flung about "as though [they] had hold of a live wire or a runaway automobile," and he was forced to learn to think in contradictions.

In 1892, when Adams was over fifty, he "solemnly and painfully learned to ride a bicycle." This was an active, if somewhat creaky, appropriation of the future, but the new technology also threatened to overwhelm him. At the Chicago Exhibition of 1893 he was awed by the mechanical forces of the dynamo, the creator of a new phase of history. By the Exhibition of 1900 his fascination had turned to devotion, and he saw the dynamo as a symbol as powerful in its way as the image of the Virgin. The achievement of science and the power of technology—radium and x-rays, "frozen air" and electric furnaces, automobiles and telephones—surrounded him as he looked up at the dynamo. All mocked the slow-paced, regular accounting that had shaped his historical thinking and shattered his neat categories of history. "Satisfied that the sequence of men led to nothing and that the sequence of their society could lead no further, while the mere sequence of time was artificial, and the sequence of thought was chaos, he turned at last to the sequence of force; and thus it happened that, after ten years' pursuit, he found himself lying in the Gallery of Machines at the Great Exhibition of 1900, his historical neck broken by the sudden irruption of forces totally new."[5] Henry Adams has left us with a dual image of his response to technology—a courageous man learning to ride a bicycle and an elderly scholar lying on the ground with his historical neck broken. Here are

the extremes of activity and expectation coming together in the life of a pioneer in the history of technology.

Although the world seemed to be rushing ahead at an ever faster clip, for some that was not fast enough. Science-fiction writers reached out for the future as if it were a piece of overripe fruit. Their stories came into vogue on a grand scale, indicating that the future was becoming as real to this generation as the past had been for readers of the Gothic novel and historical romance. There had been utopian writings before, but they generally meant to identify current problems rather than delineate a world to come and the processes by which it would evolve. From the 1860s on Jules Verne's *voyages extraordinaires* popularized the genre with projections of future developments from current science and technology, and in the 1890s H. G. Wells became even more fanciful with his "tales of space and time."

Wells interpreted this particular inclination of his generation in a lecture of 1902, "The Discovery of the Future."[6] In a manner remarkably similar to Minkowski's he distinguished two types of mind by their attitude toward time and "the relative amount of thought they give to the future of things." One type is retrospective, a "legal or submissive" mind that looks for precedents to decide how to deal with the future. The other is the "legislative, creative, organising or masterful type" that attacks the established order: "It is in the active mood of thought while the former is in the passive." Most people still cling to tradition: they travel on roads that are too narrow; they live in space-wasting houses out of a love of familiar shapes; their clothing, speech, politics, and religion all testify to the binding power of the past. But the modern age has turned away from a dogged adherence to tradition and has "discovered" the future as a source of values and a guide for action. While three hundred years ago people drew their rules of conduct "absolutely and unreservedly from the past," now they are more inclined to look ahead and consider the consequences of any action and modify the rules if the consequences merit it. Even modern wars are conceived and justified in terms of the future: "a comparison of the wars of the nineteenth century with the wars of the Middle Ages will show . . . in this field also there has been a discovery of the future, an increasing disposition to shift the reference and values from things accomplished to things to come." The spirit of modern science, the flood of technological discoveries, and geology, archaeology, and history have drawn attention to the flexibility of our life in time. As larger vistas of the past have been opened up and have shattered conventional



ideas about its duration and effect on the present, so a new knowledge of the future is becoming possible. Gravitational astronomy is able to predict stellar movements, medical science continually improves its ability to diagnose, meteorology predicts the weather, and chemists forecast elements before they are discovered, as Clerk Maxwell announced the existence of rays before Marconi put them to use.

Until 1902 Wells's vision of the future was full of catastrophes and degeneration; later he began to foresee progress. His lecture included both. It concluded with the hope that the creative energies of life will overcome the catastrophes, but the lasting impression was an expectation of disaster: some poison from industry or outer space, an uncontrollable killer disease or predator, evolutionary degeneration, war, collision with a heavenly body, and if nothing happens earlier, the certainty that the sun will cool and its planets rotate ever more sluggishly "until some day this earth of ours, tideless and slow moving, will be dead and frozen."

Wells explored this last dismal prospect in his classic of 1895, *The Time Machine*. Its hero, the Time Traveller, invents a machine in which he is able to slip like a vapor through the interstices of intervening substances and travel into the future. He stops in the year 802,701 and discovers the Eloi, a beautiful people living on fruit and playing all day long, seemingly without a care in the world. But they do fear the dark and the Morlock, a "bleached, obscene, noctural Thing" that lives underground and supports the Eloi only to harvest them for food in raids on moonless nights. The Time Traveller concludes that the opposition between capitalist and laborer had led to this radical differentiation between the Eloi and Morlocks, who had evolved physically into different species, occupied different living spaces, acquired different character traits, and lived in perpetual fear of one another though they were mutually interdependent for survival. It was, he reflects, a "working to a logical conclusion [of] the industrial system of today."

For Wells the most disturbing thought about the future was that man is not the end of all things, and the most fascinating speculation was about what is to come after. He ventured an answer in a chapter called "The Further Vision." Fleeing an attack by the Morlocks, the hero traveled into the future and stopped at the edge of a sea. But there were no waves. The work of tidal drag was done and the earth had ceased to rotate. The sun hung motionless on the horizon, swollen and red because the earth had drawn closer. The only vegetation

was a "poisonous-looking" cover like forest moss that lived in perpetual twilight, and the only animals were enormous crabs smeared with algae. When one attacked him, the Traveller sped on to his last stop, thirty million years hence, where he was horrified by an eclipse of the sun as one of the inner planets passed near the earth. There was a slight rippling from the sea but beyond that an uncanny silence, and when the eclipse was complete, it grew cold and black. That desolate scene sated his curiosity and he returned to his own time.

The story is a compendium of nineteenth-century theory projected into the future. Marx's vision of the growing stratification of classes is magnified in the conflict between the Eloi and the Morlocks. Eugenics is represented by the breeding of the Eloi. The ideal of preventive medicine is achieved since all disease is eradicated; the erosion of the family that many feared in Wells's time is complete; and the sexes have grown to look alike. The *fin-de-siècle* preoccupation with the decadence of mankind, summarized in Max Nordau's *Degeneration* (English translation, 1895), is vividly represented by the helpless, effete, and self-indulgent Eloi and the physically degenerate and cannibalistic Morlocks. Charles Darwin's theory is there, but in reverse—a devolution of the species from human beings back to giant crabs and then to a creature so elementary that Wells did not bother with his usual detailed description—merely "a round thing" with tentacles trailing behind it. George Darwin's prediction of the cessation of the earth's rotation from tidal drag and Kelvin's prediction of a cooling of the sun have come to pass. Wells utilized current speculation about the fourth dimension for an explanation of the way the Time Traveller slipped through the interstices of matter, and the time machine itself is a symbol of the hope of all technology to accelerate the processes of change.

Wells looked ahead again and again. In *When the Sleeper Wakes* (1899) the hero emerges from a cataleptic trance of 203 years and discovers an amazing technology in the service of big government that tyrannizes its subjects. Collective life has swallowed up all privacy and cities have become prisons. The story laments the passage of the character traits and social institutions that Wells valued and saw on the decline in his own day—individuality and privacy, the rivalries and jealousies of the middle classes, and the "strong barbaric pride" of the lower classes. The hero's reflections point to a moral: "It seemed to him the most amazing thing of all that in his thirty years of life he had never tried to shape a picture of these coming times. 'We were making the future,' he said, 'and hardly any of us troubled to think what future we were making.' "[7] He who does not contemplate the future is destined to be overwhelmed by it.



In *Anticipations* (1901), an ambitious essay in prophecy, Wells promised to follow a scientific method of forecasting and speculate from the trend of present forces. The reader will be a "prospective shareholder" in this sketch of the future that begins with some probable developments in land locomotion. As the railroad dominated the nineteenth century, the "explosive engine" will dominate the twentieth. There will be paved roads and "conspicuous advertisements" by the roadside; there will be traffic jams as motor vehicles replace pedestrians in the towns. By the year 2000 London will extend to Wales, and in the United States there will be a continuous city from Washington to Albany. Improvements in telephone and postal service will make possible a diffusion of talents to the suburbs. "The businessman may sit at home in his library and bargain, discuss, promise, hint, threaten, tell such lies as he dare not write, and, in fact, do everything that once demanded a personal encounter." The future will alter the "method and proportions" of human undertakings and the "grouping and character" of society. Three new classes will emerge: unskilled workers displaced by machines, technically trained people who can work them, and shareholders who do nothing.

Some of his predictions about future wars were memorably in error, notably that the submarine would do little more than suffocate its crew and founder at sea, or that the airplane would not seriously modify transport or communication. Although he got the vehicle wrong, he was right on the strategic impact of aerial warfare, which he thought would be conducted from balloons. "Stalked eyes," equipped with telephonic nerves, would hang above the front lines, observe enemy troop movements, direct artillery fire, drop explosives, and demoralize the enemy. He predicted the future of land warfare as though he had journeyed in his time machine and witnessed the battle of the Somme. He forecast the rifle with cross-thread telescopic sights and a machine-gun breech that will enable it to fire a spray of "almost simultaneous bullets." Wells's most famous prediction was the tank, called a "land ironclad," that could move fire power through no-man's-land, protect men from machine gun bullets, and tear apart barbed wire. Machines will also be used to dig miles of trenches. There will no longer be a sharply focused battlefield or a "Great General" observing from the field. Instead

somewhere in the rear a "central organizer" will direct operations along a vast front from a telephone center. At times Wells wrote as though he could smell the battle and feel the percussion of exploding shells. "For eight miles on either side of the firing lines—whose fire will probably never altogether die away while the war lasts—men will live and eat and sleep under the imminence of unanticipated death."[8]

The impulse to look ahead is universal, but the quantity of science fiction in this period and its success in the market place suggest that this generation was especially eager to do it. In America, Edward Bellamy's *Looking Backward*, a vision of the future in spite of its misleading title, was an immediate success. It sold 213,000 copies within two years of its publication in 1888 and initiated what one historian has called an "outburst of literary utopianism."[9] Some authors saw the future as a nightmare—dystopias with destructive volcanos, killer diseases, and maniacal rulers who held people captive with fantastic new contraptions.[10] Others looked forward to happier utopias with less drudgery, cheaper goods, and clean, safe cities. Still others saw mixtures of progress and degeneration, islands of carefree pleasure and oppressive technocracies.

The Futurists were not troubled by any ambivalence. They created a kind of science fiction of their own out of the latest of everything in artistic works that squeaked from newness. Marinetti's "Founding Manifesto" of 1909 traced the birth of the movement. After a night of frenzied scribbling and brooding over their ennui, he and his friends were drawn outside by the sounds of the city rising. The creaking of the bones of "sickly palaces" was interrupted by the roar of automobiles, and they set off to shake the gates of life. Their rush into the unknown led first into a ditch. But some fishermen rigged a derrick to pull them out, and as their automobile revved up again Marinetti proclaimed their objective: "We intend to sing the love of danger, the habit of energy and fearlessness." Here is fixation on change. "We stand on the last promontory of the centuries! . . . Why should we look back, when what we want is to break down the mysterious doors of the Impossible? Time and Space died yesterday. We already live in the absolute, because we have created eternal, omnipresent speed."[11] They will surge into the future at full throttle—innovating, challenging, and occasionally going smash. In a manifesto of 1910 they linked the progress of science and their orientation toward the future. "Comrades, we tell you now that the triumphant progress of science makes profound changes in humanity



inevitable, changes which are hacking an abyss between those docile slaves of past tradition and us free moderns, who are confident in the radiant splendour of our future."[12]

The Futurists strained the limits of traditional genres to create new forms. Enrico Prampolini defined "a new state of perception" among human beings—chromophony—the colors of sounds. Carlo Carrà announced a new painting of sounds and smells. Luigi Russolo called for a "music of noises" composed from backfiring motors, squealing electric trams, and the howl of mechanical saws sounding to such diverse rhythms as tapping valves and the irregular noises of city life. Sculptors were to fabricate wild shapes and integrate empty space in compositions out of ever new materials. Futurist theater jumped out at the audience and drew it into the action. Futurist paintings showed the new dynamics and technology of daily life. Traditional activities—running, swimming, descending a staircase—are "futurized" by depicting moving objects and the currents of water and air streaming off them. In Boccioni's *Dynamism of a Cyclist* (1931) man, cycle, and air interpenetrate in a composition of abstract volumes and lines of force, pumping limbs, and swirling eddies of light and air. However, the technology in these works is the current model—no time machines and, in spite of their praise of war—no ray guns. Bragaglia's multiple-exposure photograph of *The Typist* (1912) is very much of this world, and the Futurist content in Boccioni's *Train in Motion* is not a supercharged monorail but his innovative technique of showing movement.

The most explicit picture of a future world was drawn by the Futurist architect Antonio Sant'Elia. His manifesto of 1914 began with an attack on contemporary architecture and its "hilarious salads" of Egyptian pilasters, Gothic arches, Renaissance cherubs, and rococo scrolls.[13] The new construction should use modern materials and be responsive to the needs of contemporary life and the aesthetics of modern technology. Instead of wood, stone, and brick, architecture will exploit steel, glass, cardboard, reinforced concrete, and textile fibers. The Futurist house must be like a gigantic machine, the city like a dynamic shipyard. Streets must no longer lie dormant at ground level but plunge into the earth to hold traffic and link up with moving pavements. Roofs and underground spaces must be utilized and walkways flung high above ground. Elevators must no longer be hidden like tapeworms in the bowels of buildings but be accessible and visible on the outside of façades. The purely decorative must be abolished. "Fussy moldings, finicky capitals, and flimsy doorways"

must give way to bold groupings of masses with bare or violently colored surfaces. The Futurists aim at an abandonment of the heavy and static for the light, practical, and swift. Whenever possible, emotive elliptical and oblique lines will replace rigid horizontals and perpendiculars; the "artificial" aesthetic of the mechanical world will replace the "natural" aesthetic of the past.

To identify the distinctive thought of any age, the cultural historian is on the lookout for ideas that are entirely new, like the one proposed in the final paragraph of Sant'Elia's manifesto. "From an architecture conceived in this way no formal or linear habit can grow, since the fundamental characteristics of Futurist architecture will be its impermanence and transience. Things will endure less than us. Every generation must build its own city." In earlier versions this was missing, and most likely it was added by Marinetti to bring Futurist architecture in line with the Futurists' commitment to a continually evolving, ephemeral art that would never become like the museum pieces they excoriated. According to Carrà, Sant'Elia disapproved of this statement but allowed it to remain in conformity with the larger Futurist program.[14] Imagine the pressure that would lead an architect to put his name to the first formal commitment to build buildings that would fall apart. Sant'Elia's compliance evinces the Futurist addiction to change, born in an age in which change had become routine and the future seemed more within the active control of mankind than ever before. The recommendation that every generation build its own city shows that someone thinks it can. Sant'Elia's drawings for his city provided a blueprint, but no buildings were ever built and he was killed in 1916. The Futurist architectural program that every generation would have to rebuild itself was more true of its thinkers than of anything they ever built.

The philosophy of the future of this period was an emphatic repudiation of a body of deterministic thought that had been building for a century from its foundation in the naturalistic determinism of Pierre Laplace. With a spectacular show of ambitiousness, at the beginning of a century that was spectacularly ambitious about the possibilities of reason and science, Laplace speculated that the future is determined in the present state of matter in the universe. "An intellect which at a given instant knew all the forces acting in nature, and the position of all things of which the world consists—supposing the said intellect were vast enough to subject these data to analysis—would embrace in the same formula the motions of the greatest



bodies in the universe and those of the slightest atoms; nothing would be uncertain for it and the future, like the past, would be present to its eyes."[15] Throughout the nineteenth century this was the goal, if not the achievement, of science. Bergson charged that it denied time and freedom by rolling up the future in the present the way the end of a film is already determined at the start of the reel. He conceded that the isolation of phenomena in closed systems for purposes of analysis is not entirely artificial, because matter has a tendency to constitute isolable units, such as the solar system, which, to a degree, conforms to regular laws. But it is only a tendency. Gravitational forces attract the solar system to the rest of the universe and draw it into a future of endlessly new orbits and configurations. And to whatever limited extent inorganic matter may be suited to such analytical reduction, organic matter is less so. Scientists think they can measure lived time and then compare measured intervals to derive laws of change. But they are wrong, like those people who believe that their life could be unfurled like a fan, open to view at a single glance. In reality it unfolds in time very differently, as Bergson put it in the opening pages of *Creative Evolution*. "If I want to prepare a glass of sugared water, try as I may, I must wait until the sugar melts. This little fact is of great significance." The time I have to wait through is not the same as the interval that can be measured mathematically, because that interval is completed before the measurement is made and therefore different from what I live through. Time as I live it "coincides with my impatience." That waiting constitutes its essence and ensures my freedom. Without it the future unfolds as something already known and we are locked in determinism. Science seeks to discover laws and predict the future, but human experience is an uncertain chain of events in time.

Bergson was joined in his insistence on the importance of that uncertainty by the eminent French physicist Emile Meyerson, who considered the problem in a famous chapter provocatively titled "The Elimination of Time."[16] Meyerson indicted the tendency of modern science to eliminate time by the identification of cause and effect symbolized in the equal sign of an equation. This operation is based on the principle of conservation of matter and energy—that in any phenomenon nothing is created, nothing lost—and the postulate of reversibility—that in any causal action "the integral effect may reproduce the entire cause or its equal." Natural phenomena such as aging or burning wood are irreversible. Chemical reactions are also irreversible, but "chemical equations are the expression of the ten-

dency to identify things in time; one can say 'to eliminate' time." If science succeeded in describing everything with an equation, in identifying antecedent and consequent, nothing would change, time would be refined out of science, and the future would become a necessary consequence instead of a promise of surprise. It would be "the confusion of past, present, and future—a universe eternally immutable." He conceded that this complete identification of everything in an equation is impossible, but it is a goal. Modern science has not entirely eliminated time but cannot stop trying.

The French philosopher Jean Guyau made another argument on behalf of an active sense of the future by deriving our sense of time itself from it. To make this argument Guyau reversed Kant's theory that our sense of time is an *a priori* form of perception that makes all experience possible. Instead, Guyau derived the sense of time out of activity and the future orientation of experience. In *The Genesis of the Idea of Time* (1890) Guyau held that our idea of time is a product of evolution and the psychological development of the individual. His theory is anchored in human physiology. The child experiences hunger and reaches out for the nurse—that is the germ in our idea of the future. Bodily needs generate desire, the memory of former satisfactions generates a conception of the possibility of future satisfaction, and the individual prepares to gratify the desire with intentional activity oriented ahead of itself in space and toward the future in time. Thus out of desire and activity the idea of the future and our whole sense of time originates. This is a philosophy of the future in the active mode: "The future does not come toward us, but it is that toward which we move."[17]

Guyau and Bergson have left vivid images of the active and passive modes of the future—reaching out for a nurse and waiting for the sugar to melt. However, both saw the future as a combination of the two. Guyau insisted on a "passive form of time," a substratum of continuity against which change can be observed. This is not just a passive orientation toward the future; it suggests that the entire experience of time is an integrant of passivity and activity, permanence and change. Bergson's impatience is waiting with an active edge, like a sprinter in a starting block. Bergson understood that the experience of the future is a mixture of the active and passive modes, but the emphasis is on the link between freedom and action: we become freer the more we feel "our whole personality concentrate itself in a point, or rather a sharp edge, pressed against the future and cutting into it unceasingly."[18] The two shared the central idea that an open



future is the source of human freedom and with Meyerson defended it against naturalistic determinism and the ubiquitous equal sign of modern science.

In spite of all their utopian tracts and projects for future change, social and political thinkers in the nineteenth century did not explore the social or historical basis of the experience of the future as such. The revolutionary movements of the nineteenth century had always held the promise of a better world as justification for the destruction of the present; the great problem was how to get people to act. For decades socialist leaders fought over tactics, while the rank-and-file members languished in chronic inaction. By the early twentieth century it was clear that analyses of the evils of capitalism, calculations of the benefits to accrue from socialism, and incantations of the rightness and inevitability of revolution would not budge them off the rock of the status quo. It took the starvation, killing, and general madness of World War I to get rid of the Romanovs, after all, and without such disruption to shake the stability of old regimes, revolutionary movements were stymied. Socialist revolutionaries shared the Marxian notion of the future as a triumph of socialism. They had a vision of the future but no concept of it, no explicit analysis of its motivating power independent of its content. Only one radical theoretician before the war made such an analysis. Faced with working class inaction, the French syndicalist Georges Sorel developed a tactic of action-for-action's-sake that relied on the creation of an inspiring vision of, and dynamic movement toward, the future.

A pioneer of social psychology, Sorel conceived of political action as theater and believed in the necessity of creating a sense of urgency, a movement toward climax, that would give the workers a profound and lasting impression of revolution. He drew from Bergson's theory that intuitive knowledge was superior to analytical knowledge and worked out a plan by which workers would intuit socialism as a whole, instantaneously, in the drama of a general strike. To get them to act leaders must create an anticipation of the future in the form of a myth embodying their hopes. Sorel theorized: "Without leaving the present, without reasoning about the future . . . we should be unable to act at all. Experience shows that the *framing of a future, in some indeterminate time,* may, when it is done in a certain way, be very effective."[19] The idea of framing a future for mass manipulation of workers ran counter to orthodox Marxism. For Marx workers embodied the future: action was to come from class consciousness generated out of struggle with the present. For Sorel it

was to come from a deception of workers with a myth about the future. Sorel's modification was a lone, but distinctive, voice on behalf of an active appropriation of the future in politics. Nothing was inevitable: everything was up for grabs, and effective political action required a vivid sense of the future, whatever the cost to the integrity of the movement.

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The new technology, the science fiction, Futurist art, and revolutionary politics looked at the future like a predator eyeing its prey. It was an age for planners and go-getters: for the great tomorrow of the Carnegies and the Rockefellers, anarchist terrorists and Bolshevik revolutionaries, the German Navy and the new Russian Army. But in contrast to all this active mobilization for the future some people voiced passivity and fatalism, focusing their thoughts on the concept of degeneration. Its spokesmen anticipated deterioration of the quality of urban living, breakdown of health, decline of Western civilization, extinction of life on the planet, and ultimately depletion of energy in the universe. Although the imminence of these catastrophes varied considerably, they tended to group in a single dreadful vision. Although they derived from the past, they were projected ahead into a threatening future.

The bad news in physics broke in 1852 with William Thomson Kelvin's essay "On a Universal Tendency in Nature to the Dissipation of Mechanical Energy," which predicted the death of the earth from heat loss as a result of the second law of thermodynamics—that the amount of energy available in the universe for useful work is always decreasing as entropy (randomness or disorder) increases. "Within a finite period of time past the earth must have been, and within a finite period of time to come the earth must again be, unfit for the habitation of man as at present constituted, unless operations have been, or are to be performed, which are impossible under the laws to which the known operations going on at present in the material world are subject."[20] The discovery of radioactivity in the 1890s forced Kelvin to revise his estimate of the age of the earth, but the implications of the second law of thermodynamics for the future were unchanged. Although the earth would not become unfit for human habitation until the far distant future, this prediction became the nucleus of a number of gloomy biological, social, and historical



theories of contemporary degeneration: the blood of the race was becoming progressively polluted by an accumulation of diabetes, tuberculosis, syphilis, and alcohol; the intimate organic communities of the good old days were deteriorating into mechanistic societies, impersonal big cities of crime, suicide, and insanity; and civilization was heading toward spiritual collapse. Brooks Adams envisaged degeneration from the coming domination of capital, which he predicted in *Law of Civilization and Decay* (1895), and Oswald Spengler chronicled the crisis of the soul of the modern era in *The Decline of the West* in 1918.

Spengler's work is a sprawling history of the life and death of cultures, each interpreted under a unifying principle or "destiny-idea." Thus the classical world was Euclidean—spatially extended, atemporal, centered in the polis, and visibly symbolized by monumental architecture. The modern era is characterized by the restless striving of the Faustian soul and is inherently temporal. It began with the discovery of the mechanical clock and eventually produced the pocket watch that accompanies the individual to remind him constantly of his temporal existence. The drama of Spengler's message is prepared by his emphasis on the importance of a sense of the future in the modern world. While the classical world bowed in "submission to the moment," the modern world has an "unsurpassably intense Will to the Future." Western culture glorifies hard work as "an affirmation of Time and the future," and with its meaning embodied in the future, it is particularly sensitive to the pessimistic vision that Spengler sketches.

The modern age is suffering from the consequences of the rule of money allied to political democracy, but this alliance will not hold against the coming of Caesarism. Western culture labors under the tyranny of reason and the cult of science but has not produced any genius since Gauss and Helmholtz. In physics it is experiencing "the *decrescendo* of brilliant gleaners who arrange, collect and finish off." After the impressionists Spengler can find no painters; after Wagner, no musicians. But the main cause for alarm comes from nature itself. The discovery of the law of entropy in the 1850s and of atomic disintegration in the 1890s has given the life-sustaining energy of our world a time limit. Inorganic matter has acquired a perishability previously reserved for living matter, and it is heading for a period of steady decline. "What the myth of *Götterdämmerung* signified of old, the irreligious form of it, the theory of Entropy, signifies today—*world's end as completion of an inwardly necessary evolution.*"[21]

The timing of the publication of this book in Germany in the af-

termath of military collapse accounts for a large measure of its impact. The war seemed to show that Western civilization was worn out, and the book captured the sense of powerlessness, of passivity, that many experienced at that time. The dynamics of thought and emotion cluster in opposites. In an age of energy, while many sensed the great promise of things to come, others dreaded it and felt helpless. For all who thought that the future was theirs to control, there were those like Spengler, who braced for catastrophe, and the characters of Thomas Mann's *The Magic Mountain*, who spent the years from 1907 to 1914 waiting to die.

In 1912 Mann visited his wife at a sanatorium in the Swiss Alps where she was being treated for tuberculosis. He developed a cold and was advised by the doctors to stay, but left and began writing a story about his experience that swelled into an immense novel completed only twelve years later. *The Magic Mountain* is about Hans Castorp, who visits his cousin Joachim in a tuberculosis sanatorium, intending to stay for three weeks, and winds up staying seven years. Mann draws us into this community as Hans was drawn into its seductive monotony. Against the austere backdrop of Alpine sky the patients pace about, their coughs cutting the silence of the thin air. We follow Hans through the corridors, eavesdropping on discussions about a myriad of subjects including the nature of time, the past, and the present. The novel thus recapitulates the ideas surveyed in the first three chapters of this book and offers a vision of the future in the passive mode for the patients who helplessly awaited the progress of their disease as they did the daily routine of measuring temperature and sipping soup.

Both *The Decline of the West* and *The Magic Mountain* were conceived before the war, worked on during it, and published after. They spanned the period and sought to identify what it signified. Spengler's characterization, mired in cultural pessimism, was of a twilight of the Faustian soul. Mann ingeniously reconstructed the diplomatic community of Europe in the fictional community of the Berghof: explosive, feverish, constantly taking its temperature, struggling from one crisis to the next, with patients separated along national lines at their dining tables. And, as we would expect in a retrospective view of an age leading up to war, they were portrayed waiting for it to happen. Difficult as it is for contemporary historians to keep in mind that the "prewar" period did not become prewar until after war broke out, it was impossible for Mann or Spengler to conceive of it in any other way in the immediate "postwar" period when they completed their works.



Although Mann's narrative moves ahead with surprises for the reader, the characters anticipate only more of the same, and the dominant mode of their future is passive expectation. The patients at the Berghof curled up in their lounge chairs and awaited the onslaught of disease as, a few years later, front line soldiers would curl up in their fox holes and await the burst of artillery shells. When Hans saw an x-ray of his own hand, he had a gloomy vision of a future of endless waiting. For the first time in his life he understood that he would die, and all that remained in the time ahead was to "measure, eat, lie down, wait, and drink tea."[22] The waiting, Mann explained, actually accelerates the passage of time: it consumes large chunks of it like a greedy man whose digestive tract processes great quantities of food without absorbing its nutritional value. Undigested food does not make him any stronger; time spent waiting makes him no wiser. The patients just waited and grew old. Some died and some recovered, but the end brought no resolution. The thunderclap of war shook Hans off the mountain, but he disappeared into the front lines, lost amid the shelling and killing as formerly he was lost amid the coughing and dying. Europe was finally choking to death after years of waiting.

The novel, like Spengler's history, contrasts with and sets off the active mode of the future that dominated the thinking of the age. But for all the age's hopeful action and aggressive, prospective thinking, there was also passivity and caution. The dialectic of thought and experience presented a mixture of contrasts. The telephone and assembly line accentuated both active and passive modes of the future. Henry Adams felt exhilarated by the dynamo, but it also broke his neck. Wells's Time Traveller sailed ahead assuredly with the aid of the new technology but found a world of stagnation and degeneration. Among these contrasts there are no simple syntheses, but we can identify the terms of discourse and get a sense of what people thought and why they acted. This generation had a strong, confident sense of the future, tempered by the concern that things were rushing much too fast. The *Titanic* symbolized both. It is appropriate that Hans was studying engineering before he came to the Berghof and spent his time reading a book called *Ocean Steamships* during his first months there. One of the patients, Settembrini, compared the lives of the patients with the voyage of an ocean liner, and, considering Mann's symbolic intention, the comment also applied to Europe before the war. The comfort, the luxury, the hubris of tempting fate and controlling the wild elements was a triumph of the human spirit, a "victory of civilization over chaos," but envious gods may take

swift revenge and wreck the luxury liner. And, he asked Hans, "are you not afraid of the hurricane which is the second circle of the Inferno" that whips and whirls those who sacrifice reason to desire? Settembrini concluded his argument with a suggestive image of Hans, like a small boat, "flapping about in the gale, head over heels"[23] (The *Titanic* went down in a calm sea, but her stern did flip straight up in the air before the final plunge.) The age had its doubts and hesitations, but it was essentially characterized by hubris that ignored the warning messages and pushed the throttle full speed ahead.