

URBAN MODERNITY

CULTURAL INNOVATION IN THE SECOND INDUSTRIAL
REVOLUTION

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I DYNAMIC TRIAD: CITY, EXPOSITION, AND MUSEUM IN INDUSTRIAL SOCIETY

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At its simplest, modernity is a shorthand term for modern society or industrial civilization. Portrayed in more detail, it is associated with (1) a certain set of attitudes towards the world, the idea of the world as an open transformation by human intervention; (2) a complex of economic institutions, especially industrial production and a market economy; (3) a certain range of political institutions, including the nation-state and mass democracy. Largely as a result of these characteristics, modernity is vastly more dynamic than any previous type of social order. It is a society—more technically, a complex of institutions—which unlike any preceding cultures lives in the future rather than the past.

—Anthony Giddens, from *Conversations with Anthony Giddens: Making Sense of Modernity*

At the end of the nineteenth century, the Lumière brothers turned their new moving picture camera on the contemporary urban scene: Paris, London, Chicago, New York, and even the laggard Moscow, in all their modernist dynamism, were captured and projected onto the screen. Despite regional variations in dress and architectural style, the filmed sequences of the boulevards all show moving crowds and forward-plunging traffic enfolded in an orchestration of wide streets, stone curbs and gutters, sidewalks, streetlamps, telegraph wires, tram tracks, shops, theaters, and apartments. From time to time, there are automobiles. Occasionally, we see people at an exposition, or in front of a museum, exhibit, or public building.

This was the exterior: modernity essentialized into coordinated surface flow. Unseen are the sewers, gas lines, subways, and national and international communication networks that complement the instruments of modern urban life that channel all this human activity in the street above. Also missing from view are the city-based elites: businessmen, industrialists,

professionals, and government, administrative, and political leaders whose vision and policies brought this new urban existence into being.

This book is intended to bring these elites and their accomplishments into focus. More than any other historical force, urban elites active in an international exchange of ideas constructed a modern, industrial-based culture by establishing new institutions, programs, and projects related to science and technology. This new culture of change helped tame the social conflict and economic stress arising from industrialization, while creating a human-built continuum of time and space out of the very technologies and scientific ideas that fueled industrialization itself. This revolution took place roughly between 1850 and 1930, a period including what is known as the second industrial revolution. Paris, London, Chicago, Berlin, and Tokyo were key sites, and among the most important centers of action for those who made this revolution.

Urban Modernity examines the ideas and policies embodied in urban planning, international expositions, and museums in these five major urban centers. These cities were at the heart of this historic shift, negotiating between regional and international networks of production, consumption, and exchange. During this period, Paris, London, Chicago, Berlin, and Tokyo underwent similar patterns of industrialization, due to the shared international perspective of their planners, while also exhibiting differences arising from their varied political, social, and economic circumstances. Each participated in a redefinition of time, space, and human social and economic relationships during this period, as small groups of elites sought to shape the characters of their societies and manage industrial growth. All five cities were, in one way or another, marked directly by the coordinated efforts of these groups.

Cultures of science and technology were both grounded in and constitutive of their respective urban cultures. The chapters that follow explore the working hypothesis that rapid economic and technological changes in late-nineteenth-century societies led to conditions of social and political instability. These circumstances demanded new institutions created expressly to manage citizens and take advantage of possibilities for industrial growth. Specifically reacting to class conflict, fear of the unknown consequences of new discoveries, and the weakening of local institutions as nation-states expanded their powers, business and government leaders looked to cities as the loci for organizing new lifestyles, institutions, and professional groups

to design and steer the process of modernization. Urbanization marked a significant break with a traditional understanding of society as rooted in agriculture, and required the construction of an entirely new reality in which science and technology would be not only intellectual touchstones but reliable agents of growth. Reformed urban centers, universal expositions, and museums would give birth to this new understanding of existence, restructuring time into a continuous story of positive development, stretching into a relatively risk-free, human-constructed future.

This study examines institutions that characterized the culture of modernity being established in these five cities, along with the contexts and personal networks that explain them. We have chosen as the basis for comparison the following categories:

First, we examine contemporary efforts to build a modern technological urban environment, including both urban construction and development projects and the production of the cadres of professional experts who inaugurated and managed them. We look at discussions among elites concerning the introduction of new technologies into the infrastructures of major metropolises, and examine the founding and reform of the educational institutions, research institutes, government services, and nongovernmental organizations that trained and employed these experts.

Second, we examine the process by which the past was reformulated “scientifically,” in conformity with contemporary concerns. Here we look at museums founded during this period, which were created to show that the past confirms the existence of linear progress. We also look at heritage sites that were identified as significant for similar purposes.

Third, each essay considers contemporary conceptions of the future. In the projects studied, the future is generally portrayed as the linear result of scientific and technical progress—safe, increasingly prosperous, congenial, and controllable. In the five cities under discussion, we examine representations of the future human-constructed environment, focusing on the exhibits at universal expositions or world’s fairs. These events, in which all of the nations under discussion participated, promoted progress and involved massive coordination centered on urban hubs. We also look at urban design—an important theme in exposition exhibits—as an indicator of what was hoped would lie ahead.

The book begins with an essay on Paris from the 1850s to 1914, focusing on its politicians, administrators, industrialists, social scientists,

architects, and engineers, who over the course of two different political systems created a vision of a scientifically administered future and sought to implement it through a congeries of commissions, institutions, agencies, and organizations concerned with urban planning, international expositions, and museums. There are very good reasons for starting with Paris in the 1850s, some of which contemporaries themselves acknowledged. Over the next fifty years Paris emerged as the capital of Western civilization, seemingly poised to exert a strong influence on cities throughout the world in the coming century. This identity was, in part, the product of anxious self-promotion, a reflexive response to competition with and real threats from France's neighbors. In order to modernize, the city undertook large-scale urban development, five international expositions, and the founding of a number of museums. After the revolution of 1848, the city's international status rose dramatically during the 1850s and 1860s. Spurred by a desire to best the English and to control urban unrest, Napoleon III and his prefect Baron Haussmann marshaled authoritarian control over financial and political power to begin to turn Paris into a model of an industrial capitalist city.

When the Franco-Prussian War and the civil war that followed left parts of the city in ruins and the divided population stunned, leaders of the Third Republic renewed their commitment to Enlightenment ideals and liberal democracy, redirecting the cultural agenda of industrial capitalism away from that espoused during the Second Empire. Science and technology provided France's new leaders the means to create a new set of democratized social and economic relations committed to orderly growth. National in scope, but international in its implications, their vision was centered on Paris, and their plans to transform the city focused on secular solutions to the social, economic, and infrastructural problems the city posed. As a result of several factors (advances in science and technology that brought electricity, the airplane, and high-rise construction, as well as the advent of international empire building and shifts in political agendas), by the early 1900s a younger generation faced the challenge of reinventing this culture of change to accommodate a new phase of industrialization.

Meanwhile, from 1870 onward, London had become one of the largest and richest cities in the world, as well as the capital of a vast empire. Concerns with containing and sustaining the urban masses continued to animate the efforts of the city's elites and government in a period characterized by

moves toward increasing state centralization and intervention. As London's built area continued to expand rapidly, new transport and communication networks—underground trains, electric trams, and an efficient postal service—were created.¹

London was the metropolitan center of the largest Western empire, the major locus of its scientific spectacles and knowledge with its museums, exhibitions, schools, colleges, and government institutions. London's parks inspired Napoleon III's plan for Paris, and the first international exposition was held on the city's outskirts in 1851. Yet, unlike Paris, late-nineteenth-century London was itself highly decentralized administratively and allowed much room to individual entrepreneurs. The scientific elites so clearly recognizable in mid-Victorian Britain—the members of the X Club, for example—became more diffuse, separated as they were into numerous specialist associations. Educational institutions and events such as international exhibitions brought together scientific and technological experts in various specialties, in particular electrical engineers such as William Preece, who were involved in creating the modern technological infrastructure of the city.

Even as the city modernized, museum and exhibition culture tended to move out of the central areas of the city to the peripheral suburbs. There, from 1870, the South Kensington complex of science and art institutions, located in a former suburb, provided a contrast to the development of large commercial exhibition venues nearby.

The London chapter of this book focuses first on the physical development of the urban environment, and how cultures of science and technology were both rooted in and constitutive of urban culture. Then, through a look at the city's museums and exhibitions and its educational institutions, it examines shifts in scientific culture from “useful” notions of moral improvement to a broader range of values. Visions of the future were constructed and the historic role of science invoked as the key to a story of progressive improvement, despite some resistance to change, in particular how such changes might interact with the imperial dimension.

Like Paris in the wake of the Commune, Chicago after its devastating fire of 1871 presented a geographic *tabula rasa* for wealthy urban elites wishing to expand industrial wealth and heal social wounds through urban rebuilding. Before the fire, and especially afterward, Chicago was rapidly built into “nature's metropolis.”² Between 1880 and the 1890s its

population doubled, to over a million souls, making it the second largest U.S. city. This growth was made possible by technical change: railway engineers made Chicago one of the nation's great transport hubs; civil and sanitary engineers built roads, reversed river flows, and erected tall buildings; while inventors and entrepreneurs provided the employment that drove migration from the countryside. With this phenomenal demographic and technical change came class conflict. Chicago was a locus classicus of the growth pangs of industrial capitalism. Not only was civil strife an urgent problem, but popular resistance to new technologies surfaced.

These concerns spawned new civic associations with interlocking directorates, such as the Commercial Club, founded in December 1877. The Commercial Club's avowed purpose was "advancing by social intercourse ... the prosperity and growth of the city of Chicago."³ Over the next three decades, members of this extraordinarily influential club would establish, fund, and often lead scientific, cultural, and educational institutions to ensure the successful propagation of the civic ideal they embodied.

The Chicago portion of this book focuses upon three significant examples of the civic ideal made real, showing how powerful urban leaders forged consensus and promoted what historian Robert Wiebe would call a "revolution in values" regarding scientific and technical change.⁴ The three projects discussed are the World's Columbian Exposition of 1893 and Daniel Burnham's Chicago Plan of 1909 that grew out of the exposition; the Armour Institute of Technology, which opened formally in 1893 and soon became the premier producer of the "techno-structure" of Chicago; and the Field Columbian Museum, opened in 1894, which displayed "the progress, the skill and the genius of our race"—a fitting "outcome and the monument" to the exposition.⁵

In contrast to the other two European cities examined in this book, Berlin did not start evolving into a modern industrial and scientific city until the founding of the German *Kaiserreich* in 1871. From then on, Berlin began to lay aside its rather provincial image, and by World War I it had developed into a modern city of science, industry, and culture. It had also become a symbol of the modern metropolis and an international city, a transformation that went hand in hand with the city's evolution as the political center of the powerful new German state.

Berlin is therefore particularly suitable for the investigation of the roots of the modern industrial way of life. The city's population increased

dramatically, growing from 800,000 in 1870 to over four million by 1920. Science and science-based industries played key roles in Berlin's development as a metropolis. After the founding of the Reich, Berlin became a center of scientific research. In response to the requirements of industry, urban elites established the *Physikalisch-Technische Reichsanstalt* (Imperial Institute for Physics and Technology, 1887) and the *Kaiser-Wilhelm-Gesellschaft* (1911), both of which were closely connected with industry. The Technical University and the Prussian Academy of Sciences were founded, along with numerous museums and libraries, technical colleges, and military training institutes. Moreover, in the last quarter of the nineteenth century, the economic and social structures of the city were substantially changed by the establishment of mechanical engineering, electrical, and chemical firms, such as AEG, Siemens, and Schering.

Science, in this period, was closely linked to its urban context and figured prominently in the public domain. A movement arose to popularize science, starting with the founding of the *Urania* education center by Wilhelm Foerster and Wilhelm Meyer in 1888. Three *Volkshochschulen*—adult education institutes—were opened between 1878 and 1902, and a zoological garden and a botanical garden were created. This penetration of science into the public domain, including such developments as a sewer system and the introduction of standard time clocks, also represented a contribution to the dominance of bourgeois culture and power.

Driven by urban elites, Berlin's evolution into a modern metropolis was characterized by conflicts between the Kaiser and the administrators of new scientific and cultural institutions, such as the natural history museum. Although no international exposition was held in the city, the establishment of industry, the founding of scientific institutes, and the popularization of science paved the way for the introduction of a modern industrial lifestyle that integrated a vision of the traditional past with visions of the industrial present and of future national progress.

The growth of Edo (Tokyo) held some parallels with that of Paris in the seventeenth and eighteenth centuries. Edo was the seat of power for the feudal government under the Tokugawa family. With the Meiji Restoration of 1867–1868, the emperor of Japan was returned to a more central—albeit symbolic—role in leading the nation. Japan embarked on an ambitious program of rapid modernization that involved the large-scale introduction of Western science and technology. More than ever before,

Tokyo became the center of economic and cultural activity in Japan. In examining Tokyo's transformation in the years from 1868 to the period of reconstruction immediately after the Great Earthquake of 1923, this section outlines how Western organizational models were introduced during the Meiji era (1868–1912) and beyond.

Scientific experts have been important as shapers of urban space, not least because of concerns regarding public health. One of the most important figures in the transformation of Tokyo was the physician, colonial bureaucrat, and one-time mayor of Tokyo Gotō Shinpei (1857–1929). The chapter examines Gotō's ambitious vision for Tokyo, and the way in which he built up his expertise via contact with Charles A. Beard, a former director of the New York Bureau of Municipal Research, who was invited to Tokyo to help establish the Tokyo Institute for Municipal Research in 1922, just prior to the earthquake in 1923.

For Tokyo's elites, modernization was not only a matter of introducing Western institutions and values; it also involved presentation. Exhibiting the modern through expositions and museums in Tokyo helped to educate and enlighten the Japanese public and helped to shape the city as the capital of the nation. Beginning in the mid-1870s, expositions were held in major cities throughout Japan. Japan's participation in the 1873 world's fair in Vienna gave the Japanese useful experience, which they applied in mounting the First National Industrial Exhibition, held in 1877. The Ministry of Education Museum was launched in 1872, followed by the Museum of Education in 1877. In a way, museums were expositions made permanent. These cultural institutions, along with the cityscape itself, played important symbolic roles in the creation of Japan's modern identity, as well as its sense of its past, present, and future as a nation and an international power.

It should help readers if we explain here the meaning we give some key terms used in this book to describe the period we cover. They have taken on a life of their own, becoming something like scholarly buzzwords with vague associations. We have worked to re-moor them to the people, institutions, and events we examine here.

We consider "modernity" as a condition of existence whose major feature is acceptance of historical change as a given. As sociologist Anthony Giddens proposes, this condition exists at the institutional as well as the

individual level: “It is a society—more technically, a complex of institutions—which unlike any preceding cultures lives in the future rather than the past.”⁶

During the period covered by this book, we suggest that this sense of living in the future became rooted in people’s lives through the rebuilding of cities, the mounting of expositions, and the forming of museums and the institutions that enable them. These activities were generated in a particularly urban context, in the public and private institutions, agencies, and organizations where elites were trained or engaged in setting standards, designing, building, and administering.

And just who were these elites? What were their objectives, and what means did these urban actors use to inaugurate and realize change? More broadly, how do we define the nature of the social relationships among these urban elites, which came to sustain a new international industrial culture?

We use the term “elites” to refer to the individuals who created and coordinated this culture. In a period of remarkable opportunity and profound social disarray, this new class of men had the power to demolish and rebuild cities, fund and organize vast expositions, and found and organize museums. Thus, they reframed the existence of vast numbers of people during the period of the second industrial revolution. Depending on their political and economic circumstances, these elites could be kings, emperors, elected officials, bureaucrats, industrialists, scientists and engineers, architects and planners, amateurs and professionals. Nevertheless, this galaxy of personages in Paris, London, Chicago, Berlin, and Tokyo shared a common desire to reestablish their societies in accordance with a set of modern premises on which they generally agreed. And they all focused attention on the urban setting as the space in which to begin this reframing.

Because even within particular urban contexts these elites were not necessarily linked by close friendships, political affiliations, or memberships in the same offices or businesses, we have chosen to use the term “nebula” to describe the historically novel character of their relationships.⁷ From an international perspective, concurrences and convergences in their points of view derived in part from simple awareness of what was happening elsewhere, as well as the desire to emulate, compete, and solve similar problems: Napoleon III carried back to France his impressions of London’s Hyde Park and the Great Exposition; the Chicago Commercial Club sought to best

Paris. Municipal and national governments sent official delegations and professional organizations traveled to investigate the sewers and metro systems of other world cities, and to visit their technical schools, expositions, and museums. Especially after 1880, some of these elites helped form new international professional associations that brought some of the second generation into a network of specialists working in urban planning, industrial education, scientific or technological research, and social hygiene institutions. The international expositions hosted congresses where these international umbrella organizations helped organize the efforts of many separate groups and individual elites.

In each city, this nebula had luminous patches of elites. Sometimes they congregated around a club, such as the Commercial Club in Chicago; in other cases they collaborated with one another across organizational boundaries for specific projects, as was the case with members of the Japanese commissions and those in charge of the international expositions. While some groups included representatives of the state or municipality, or otherwise could depend on relationships with those in power, in many instances the modernizing elites were seemingly isolated from the public sector, as were the impresarios who mounted the commercial expositions in London. Individuals acting on their own, or of different political persuasions, also came together solely to found new administrative arrangements, new institutions, and organizations to bring about progress in the urban realm.

However dispersed or clubby these elites, we consider science and technology as the means they used to thread their projects together and to resolve the historical difficulties they faced. They saw knowledge as a fundamental resource in rebuilding cities, running expositions, and founding museums, and ultimately in the creation of a new industrial order. Thus, by examining the role these leaders assigned to science and technology in the urban setting, it is possible to understand to a large degree what it means to say that this modern culture was based on science and technology.

Both terms were multivalent. Science in the era of Comtean positivism most commonly meant the systematic gathering and classification of evidence according to certain principles in order to put it to useful ends. For example, during this period, discoveries in thermodynamics and Darwin's theory of biological evolution painted nature as a dynamic system, always in the process of changing. Technology, understood by elites as applied science, was the means of actually using scientific knowledge to transform

the material environment of the city into an entirely new ecology. This was also an era of dramatic technological breakthroughs in communications, transportation, construction, industrial production, mass consumption, and public health, which were integrated in a wholly invented urban fabric.

To see how theories of natural progress framed elites' projects, we will look at their plans for cities, expositions, and museums, as well as their interest in founding schools, research institutions, and facilities in the city to educate professionals to continue these pursuits. Moreover, in this era when sociology and anthropology emerged as academic disciplines, urban elites saw the value of putting that knowledge to work in museums and expositions to explain the past and shape the future.

Modernity also entailed a new awareness of time and space. Certainly, contemporaries thought of the decades after 1850 to 1870 as a historical watershed. In the past lay an agricultural society, primarily dependent on human, animal, and natural power, dispersed geographically and economically. What we today think of as "modern" individual technological inventions may have been abundant previously, but the railroads, the factories, and steamship lines had yet to be integrated into systems. The revolutions of 1848 in Europe and the civil war in Japan, the wars that created modern Germany, the Paris Commune, and the labor unrest in London and Chicago destroyed the old systems and put these societies on the verge of anarchy. By the 1870s the old societies were artifacts, the present incoherent. In contrast, science and technology measured out progressive time as the orderly path to a better future realized in the spaces of cities. Time was, in a sense, manufactured along with the geographic locations that were rebuilt. In the refreshed, modernized city, it was possible to believe that progress had materialized. The city was tailored to change, for it was capable of continuously integrating inventions, individuals, and institutions over extensive geographic areas into coordinated systems. Over time, this sense extended beyond the city, to the nation and internationally.

Why and how did this commonality come into being, and who was responsible for it? A great deal of important historical work has been done on this period in the form of biographies of major figures or studies of individual cities, expositions, and museums. Yet these studies have failed to note the unifying function of science and technology in defining and steering the development of these widely dispersed social spaces. We believe we are breaking new ground in two ways: first, by exploring how these

geographically distant industrialized centers are similar, interconnected, and different; second, by employing a research model that introduces the comparative mode and the collaborative work of five scholars. While significant studies have identified a variety of economic and social factors leading to the changes we discuss, the role played by urban elites' new ideology of progress in establishing, shaping, and integrating the institutions of change in these centers has yet to be considered fully. The following chapters, each devoted to a different city, together take up this challenge.

NOTES

1. In 1871 the population was already over 3.26 million, rising to 4.39 million by 1931. If the suburbs of Greater London are included, the population rise was even sharper, doubling from 3.8 million in 1871 to over 8 million by 1931.
2. William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: Norton, 1991), 263–309.
3. John Glessner, *The Commercial Club of Chicago: Its Beginning and Something of Its Work* (Chicago: privately printed, 1910), 13–14, 46, 131–136.
4. Robert Wiebe, *The Search for Order 1877–1920* (New York: Hill and Wang, 1967), 129.
5. Donald Collier, “Chicago Comes of Age: The World’s Columbian Exposition and the Birth of the Field Museum,” *Bulletin of the Field Museum of Natural History* 40 (1960): 2–7, 4.
6. Anthony Giddens, in Giddens and Christopher Pierson, *Conversations with Anthony Giddens: Making Sense of Modernity* (Stanford: Stanford University Press: 1998), 94.
7. Christian Topalov, “Les ‘réformateurs’ et leurs réseaux: Enjeux d’un objet de recherche,” *Laboratoires du nouveau siècle, La nébuleuse réformatrice et ses réseaux en France, 1880–1914*, 1999, n.p. (no longer online) <http://www.ehess.fr/Editions/ouvrages/9914-Introduction.html#entete>.