

INTRODUCTION

ENVIRONMENTAL HISTORY AND KRAKOW

Adam Izdebski and Rafał Szmytka

ENVIRONMENTAL HISTORY SWEEPED INTO TOWN OUT OF THE BLUE, RIDING the wave of the 1960s ecological revolution. In contrast to many other academic fields, it did not arise to answer questions posed by researchers, but in response to burning social needs. Although studies on humanity's relationship with nature already had quite a long tradition, especially in Europe, environmental history introduced a significant novelty. As with other new research directions such as oral history or the history of women, it undertook to introduce new heroes to mainstream history. These were heroes who in the sources traditionally used by historians are usually silent, who do not have a voice of their own, and yet who participated in creating human history in a way that was at times utterly decisive. Environmental historians aimed not only to expand our knowledge of the past, but above all to make contemporary societies aware of the sources of current ecological problems.

Even the birth of the term *environmental history* is telling. It was not coined as the name of a new journal or to represent a research program. It was not even the title of a book. *Environmental history* first appeared, in 1970, as the name of classes being taught by the US historian Roderick Nash at the University of California in Santa Barbara. It was intended to signal to students that a different perspective on human history was possible—one that would allow us to connect the past to the most pressing challenges of the present. In other

words, adding the adjective *environmental* was designed to “green” history in the eyes and minds of students—to draw attention to the nature-bound dimension of social change. Only after a few years of teaching experience did research programs and the first books appear. At the root of this research field, therefore, lies a strong desire to do history in a way that will help people of today face the challenges of life amid a nature completely dominated by humans—life in a new era called *the Anthropocene*.

THE ANTHROPOCENE is a new geological epoch whose characteristic feature is that the main force shaping animate and inanimate nature on Earth is humanity. Whether the Anthropocene has already arrived and, if so, when it started are debatable. A subcommission of the International Commission on Stratigraphy, led by geologists, points to 1950, on account of nuclear bomb tests, the post–World War II surge in energy consumption from fossil fuels, and the emergence of plastics; the effects of all these phenomena are already visible in sediment layers. Some historians and archaeologists, meanwhile, claim that the Anthropocene dates from antiquity, the Neolithic revolution (the beginnings of cities and agriculture), or even from earlier breakthroughs deep in the history of humanity that resulted in people transforming nature on a new scale. The debate continues, and regardless of how it ends, one fact is important: humanity’s influence on nature is so powerful that it is no longer possible to separate the natural world from the cultural world.

This book grew out of a similar desire. As the first publication in Poland to be entirely devoted to environmental history,¹ we chose to write about Krakow because we wanted to be of service to Krakow and Cracovians and because Krakow boasts a wonderful, centuries-long history that has been well-documented and thoroughly researched. Even the city’s geographical location is special. The exceptional natural conditions—its location in a deep, narrow, marshy river valley, with mountains to the south and with a particular microclimate—have presented every era with its own challenge in maintaining such a significant urban center in this specific place.²

But do Krakow’s modern ecological problems really have a centuries-old lineage? Looking back to the past, we want to facilitate an understanding of the current situation both for Krakow’s inhabitants and for the city authorities

assessing the scale of the problem. Our research indicates that this quite special problem also requires exceptional and courageous actions to help finally meet the challenges that previous generations were unable to handle. Has life in Krakow always involved being exposed to high levels of pollution in the air, water, and soil? What were the relationships between Krakow and the surrounding region's environment—did it exist in isolation or was it part of some greater whole? Were there periods when Cracovians had easier access to “clean” nature than today? How long has smog been an integral part of Krakow winters? Does it still have to be? Are the ecological problems here lost causes from time immemorial?

The roots of environmental history are undoubtedly American, but it has branched out considerably.³ Historians from other European countries—Austria, Denmark, Germany, and Great Britain—have taken the research techniques developed for American environmental history to the European context, yielding works that present a new understanding of the key processes of socioeconomic change in Europe during the past two millennia.⁴ This brings us to the Polish experience of making geographical and environmental phenomena the focus of historical research. At first glance, this type of interest should arrive in Poland through Polish historians' strong connections with the *Annales* school; nevertheless, these contacts related instead to other key subjects in the field of history, such as economic history, historical demography, and the history of mentality (see, for instance, the works of Andrzej Wyczański, Karol Modzelewski, Krzysztof Zamorski, and Henryk Samsonowicz).⁵ Meanwhile, interest in the environmental dimension of Polish history was already being demonstrated by historians of the interwar period, led by the founder of the Lviv school of economic history Franciszek Bujak. One might even call him the first Polish environmental historian, since during his studies at the Jagiellonian University he was already drawing attention to the fact that other disciplines, including environmental sciences, are also historical sciences. Bujak wrote, “All these are essentially historical sciences [geology, physical geography, botany and zoology, biology and embryology], as they not only examine the state of the earth's crust, its surface and organic life, describe, analyze, classify, and search for patterns and interdependences, but they also try to learn the exact ways in which events occurred, from the earliest times to the present.”⁶ He was an advocate of interdisciplinary research using various research methods and wrote his doctoral thesis on geographical developments in Poland in the Middle Ages. In 1908 he published the book *Galicja* (the name of the Austrian province, today's Southeast Poland), which

gave prominence to environmental topics, including the location and physical conditions of the land, natural resources, soils, agricultural production, live-stock farming, horticulture, land development, dairy farming, forestry, and so on. In this book, Bujak described the situation of his own times, but was eager to avail himself of historical data; at the same time he had a fierce ecological drive—he noticed the great desolation that the overexploitative forest economy of the late Austrian Empire was causing—and these ideas were very similar to those that guided the American pioneers of environmental history.

Convinced of the important role natural disasters played in the course of history—which he termed “elemental disasters” (crop failures, famines, and epidemics but also the devastation of war)—Bujak mobilized a large group of students to systematically collect information about such events in the history of Poland. The program to collect and analyze data on elemental disasters was complemented with records of price changes for various goods, which served as the basis for investigating the interactions between the forces of nature and human economy. Bujak planned to use the collected source material primarily to answer questions about why economic duality emerged in Europe, but it also allowed him to hypothesize that natural factors contributed to the ultimate failure of the Polish–Lithuanian Commonwealth in the face of powerful neighbors in the eighteenth century, the great trauma of Poland’s history (i.e., the so-called Partitions of Poland, that is the complete dissolution of the Commonwealth in 1795 and the annexation of its lands by its neighbors, Russia, Prussia, and Austria; Poland and Lithuania were only to reemerge as independent states several generations later, in 1918).⁷

Apart from Bujak and his students, since prewar times a strong current of historical geography in Poland had been inspired by a German conception of the tasks involved in this discipline. It was precisely this awareness of the spatial dimension of human history that directed Polish historians’ attention to phenomena related to the friction points between societal living and the natural world, such as deforestation and hunting.⁸ In addition, in the postwar period, a substantial amount of research into the history of technology has been inspired by the *Annales* school’s focus on everyday life and in particular the Marxist focus on the history of material culture (for which field the Academy of Sciences in Warsaw created a separate institute). Historians active at this institute studied the technologies used for the exploitation of natural resources in the past and the history of urban infrastructure. In the context of Krakow, this has led to minute and often groundbreaking studies on the city’s water-provisioning system, which serves as the basis for several chapters in this book.⁹

Nature–City–Man

The city is an environment that, like a lens, brings into focus all the social and natural processes that fascinate environmental historians. That is why we are convinced that looking at Krakow—a city with a unique history and a particularly difficult ecological situation—will allow us to show how much an environmental perspective can bring to the understanding of our country's history and the challenges presented by our heritage of the past.

The first works on the environmental aspect of the history of cities, both in Europe and America, emphasized the problem of pollution that accumulates in the city and that the city produces, or, more broadly, the impact of industrialization on city residents' living conditions and surroundings. As with most of the themes taken up by environmental history, historians' interest in this subject resulted from the needs of the moment. In the 1970s and 1980s, postwar programs to reverse the disastrous effects of twentieth-century industry on the environment were just beginning to bear fruit. The issues of how these problems had been dealt with in the past and when pollution had begun to be perceived as a problem became increasingly pressing.

Urban environmental historical research had a pattern of development that paralleled environmental history in general. Research was being conducted on both sides of the Atlantic, but from the very beginning American scholars saw the issue of cities as one of many topics within the broader enterprise of writing history in a new way that incorporated the environmental aspect. Meanwhile, in Europe, such issues were initially addressed in a different context, as an aspect of the history of cities—a research subject that on our continent (and in our country) has its own rich traditions. The first works of American historians were also conceived of more narrowly, focusing on the inception of sanitary infrastructure in the cities of North America at the turn of the twentieth century. Attempts were made to reconstruct the process of building sewerage and waste disposal systems and to learn the reasons that such investments were then being decided on. This way of framing an issue is obviously characteristic of environmental history: changes visible on the outside and the transformation of the environment and natural infrastructure are the starting point for studying the associated social structure, beliefs, and legal regulations related to the natural world. At the same time, American works show how the introduction of specific technical solutions determined successive treatments that were actually designed merely to offset the effects of earlier activities. The result was a phenomenon that could be called the creation of a “secondary nature”: cities created a new cycle of matter and

energy in nature, both within the cities and farther afield. Whereas premodern cities had often been “black holes” devouring natural resources from the immediate or more distant environment (and literally devouring human lives, since mortality was much higher in cities than in villages), industrial cities quickly forced relations between society and the environment to change in a completely new way, or at least on an unprecedented scale. Geosystems and ecosystems were created without which the long-term existence of these cities would have been impossible.¹⁰

Historians from Europe, meanwhile, approached the issue of pollution and waste in a more holistic way that focused on studying the sources and scale of the problem in major European industrial centers.¹¹ In the study of the history of air pollution, British historians are the supreme leaders. The classic theme is of course London fog and smog, which plagued the inhabitants of this European metropolis throughout the nineteenth century and much of the twentieth.¹² However, numerous works have also been written on another great industrial city of nineteenth-century England, Manchester, a large center of the textile industry. There, air pollution was perhaps an even greater problem than in London. British historians have treated the subject of pollution very seriously, further developing their research to address air pollution as a cultural phenomenon on the scale of the entire country.¹³ Of course, Europeans have focused on more than just air pollution. The transformation of the natural environment of entire regions for the needs of industry and communication has also been comprehensively studied—in the Thames valley in the south of England, in the Ruhr basin in Germany, or in the region of Île-de-France surrounding Paris.¹⁴

This topic is also clearly present in our book: one might ultimately conclude that living in a polluted environment is the single most characteristic feature of experiencing life in a city. Two chapters deal with this topic head-on. The text by Ewelina Szpak shows how the relatively late and forced industrialization of Krakow and the surrounding area during the Stalinist period made pollution one of the most burning (sometimes literally!) of the many ecological problems that Cracovians faced. Rafał Szmytka takes up the same issues, but delves further into the past. He looks at the issue of pollution in early modern times, during Krakow’s glory days when it was the capital of the largest European political entity, the Polish–Lithuanian Commonwealth. It turns out that the city’s inhabitants of the time were already experiencing very high levels of pollution, often somewhat unwittingly. Finally, some of the findings of Szpak and Szmytka are further investigated in the chapter devoted to the famous Krakow smog (by Adam Izdebski and Konrad Wnęk), which focuses on the

(paleo)climatic context and scattered evidence of the smog and its perception in the early modern and nineteenth-century city.

Looking back over how urban waste has been disposed of over the past few centuries has gradually inspired a broader perspective on how the city is connected to its natural surroundings. Researchers began to see the city as the hub of a vast network of flows of plants, animals, organic matter, minerals, and, ultimately, various forms of energy (flowing water, wood, charcoal, coal, and the like). The metaphor that best represents this problem is the idea of urban metabolism: together with its region, a city is seen as a living organism that constantly absorbs and expels matter. And what the city excretes, the region again absorbs and processes further; in other words, we have recycling, which developed significantly in the nineteenth century. This issue has been very well investigated in the case of Paris; Sabine Barles has shown in numerous works why trading and processing waste—in industry and agriculture—was an important part of the economy and life of the city throughout the nineteenth century. The situation only changed around the mid-twentieth century, when the scale of waste production, technological changes in industry, and the Paris agglomeration's size combined to obstruct and reduce the attractiveness of the old recycling channels.¹⁵

Fundamental differences in the historical development of cities in America and Europe have caused American historians to address this issue differently. Above all, Americans focus on the phenomenon of urban sprawl, that is, cities spreading into suburbs and more widely into entire regions. As a result, the typical urban landscape penetrates rural areas (themselves obviously equally a product of man). Nature ceases to be productive, and its visual and cultural attractiveness is now what matters. Anyone who has been to the United States understands the fascination of local environmental historians with the phenomenon of the expansion of the perfectly tended lawn across huge tracts of North America (which has huge ecological and financial costs). Of course, change in the way the landscape is used and shaped in areas around cities (which go from rural to suburban) brings with it deep social conflicts between the new and old inhabitants of particular places.¹⁶

Another important way of perceiving the city's relations with nature in the American tradition is in terms of the rapidity of industrialization and the growth of capitalism on that side of the Atlantic. This helped American historians to grasp the essence of these processes, because they occurred at a rate that exacerbated their defining features. A groundbreaking work by William Cronon concerns nineteenth-century Chicago. *Nature's Metropolis* shows that in a few short decades new means of communication (the telegraph and the

railroad) and the new markets afforded by fast-growing cities transformed—or rather united—landscapes across huge areas of America’s Midwest. Cronon focuses on the commodification of nature: grain and wood, but also the very forests and fields themselves, become commodities subject to decisions made in some remote city—decisions now dissociated from the needs of people living in the countryside. Integration into market mechanisms strips these people of their personal connection with their own natural environment: they become cogs in the great, para-industrial machine. Modern capitalism brings the countryside and the city together into one organic whole.¹⁷

The chapter by Piotr Miodunka is likewise devoted to Krakow’s connections with its region. Analyzing the areas that supply key raw materials and food to the city, the author shows that since its infancy as a city Krakow has been dependent on areas even dozens of kilometers away. Moreover, the chapter shows how much Krakow was part of a region without which it simply could not have existed. This connection, which changed over successive centuries, was obviously not without its repercussions on the region itself: deforestation, erosion, and the introduction of new plants all resulted from the surrounding areas’ responses to the needs of Krakow. The chapter on climate history written by Konrad Wnęk, Adam Izdebski, and Leszek Kowanetz also shows the extent to which Krakow cannot be understood in isolation from its regional context. The city not only experienced the same climate changes but also suffered the effects of elemental disasters in the Lesser Poland region. Finally, another theme in Krakow’s relations with its region—intentional and accidental migrations of plants—is taken up by Aldona Mueller-Bieniek in a chapter on the vegetation of medieval Krakow.

The issue of the presence of diverse groups of plants in the city leads us to another important topic but probably the one least recognized by historians—the character of the city’s natural environment. Previously, questions on this topic had been asked mostly in the context of analyzing the specific geographical determinants of the city’s organizational and regulatory makeup. This issue is most clearly discernible (and best studied) in the case of Venice, but one might point to numerous less obvious examples (which almost any city could furnish).¹⁸ In our book, this topic is discussed briefly at the end of this introduction and is treated as an absolutely fundamental issue—the starting point for our deliberations. A much more interesting subject, to which we devote much attention in this book, is the creation of a kind of “urban nature,” both intentional (parks, gardens) and incidental (thickets near walls and watercourses; streams and canals; but also unique urban ecosystems like castles and citadels—in our case, the royal castle of Wawel).¹⁹ We ask what

has been special about city dwellers' experience of nature—starting from medieval times. This is inseparably connected with the issue of environmental justice in the city (with regard to access to natural resources as well as to the pleasure and health derived from communing with nature), which appeared in the context of pollution.²⁰

This topic takes up three chapters in our book. First is the text by Aldona Mueller-Bieniek, who describes the diverse ecosystems and plant communities present in Krakow in the Middle Ages. In turn, Małgorzata Praczyk's text addresses the notion of Krakow's nature, which was shaped in the nineteenth and twentieth centuries and influences how the city is perceived even today as an almost mythical "green Krakow." The special ecosystem or, more broadly, the natural environment in the city is dealt with by Andrzej Chwalba and Konrad Wnęk, whose chapter is devoted to the agency of the rivers, in particular of the largest Polish river, the Vistula, and its culture-creating power in the history of Krakow.

In recent years in the United States there evolved a yet another way of writing about the history of cities in the context of nature, an approach that is virtually absent in Europe. These are ecobiographies of cities, which on the one hand capture the history of cities (which are often very short from a European perspective—and this makes looking at Krakow with its more than a thousand years of documented history so much different) in terms of natural environment and geographical location, and on the other hand, they try to identify the unique natural phenomena a given city has produced or lived with over the past century or two. After the first innovative attempts, many popular or specialized works were created over the past decade, created by a single author depicting a vision of the city's history (e.g., Seattle, Los Angeles, or New Orleans) or by a team of authors from various fields (e.g., Philadelphia, Saint Louis).²¹

Our book is also an ecobiography, but a European one: we propose a different history of Krakow and seek to find Krakow's centuries-long, evolving—and in our opinion unique—relationship with the world of nature. We want to capture the environmental history of Krakow in a holistic way, for the first time transferring the American idea to European soil, and also undertaking this in an interdisciplinary way, combining the approaches of historians, archaeologists, and environmental scientists. Krakow's rich, long history deserves to be told from an environmental perspective. By telling the story of Krakow's ecobiography, we hope to have something important to share with the city's inhabitants, but also with environmental historians—on both sides of the Atlantic.

Krakow and Polish History

To help readers appreciate the dynamic and complex relationship that Krakow developed with its natural environment, it is necessary to explain briefly the city's changing role in the history of the entire country. Krakow was the capital of the country for half a millennium, that is even longer than the current capital, Warsaw—from the mid-eleventh century until 1596, when the new Sweden-born king of Poland, Sigismund III Vasa, moved the royal court to Warsaw, closer to the Baltic Sea (even then, until the very dissolution of the Polish–Lithuanian Commonwealth in 1795, almost all royal coronations took place in the Krakow cathedral). All the economic consequences of these changes notwithstanding, this meant that Krakow was the capital of Poland under the powerful Jagiellonian dynasty (1385–1572), during the mythical Golden Age when the Commonwealth stretched from the Carpathians to what is now the Baltic states, and from the far outskirts of Berlin to Kiev—and when the Commonwealth experienced its Renaissance flourishing, which provided the foundations for Polish culture during the centuries to come. As a result, Krakow has become the treasury of national heritage, the home to monuments that recall the glory days of the country, and as Poland was under foreign rule during the nineteenth century, the city became central to the newly forged modern national identity and to the country's historical imagination. This cultural allure continues today—it suffices to mention that both Polish Nobel prize winners in poetry, Wisława Szymborska and Czesław Miłosz, had a special connection with Krakow and lived in this city. Pope John Paul II, a unique figure of modern Polish identity, is believed by many in Poland to be the divine-inspired prophet who freed the country from communist rule. That he was the archbishop of Krakow before he moved to Rome further strengthened the city's special place in the minds of the Polish people. Thus, writing about Krakow is not like writing about any other large city in Poland. Readers should bear in mind all these special meanings attached to Krakow in Polish culture, which we will briefly explain as necessary.

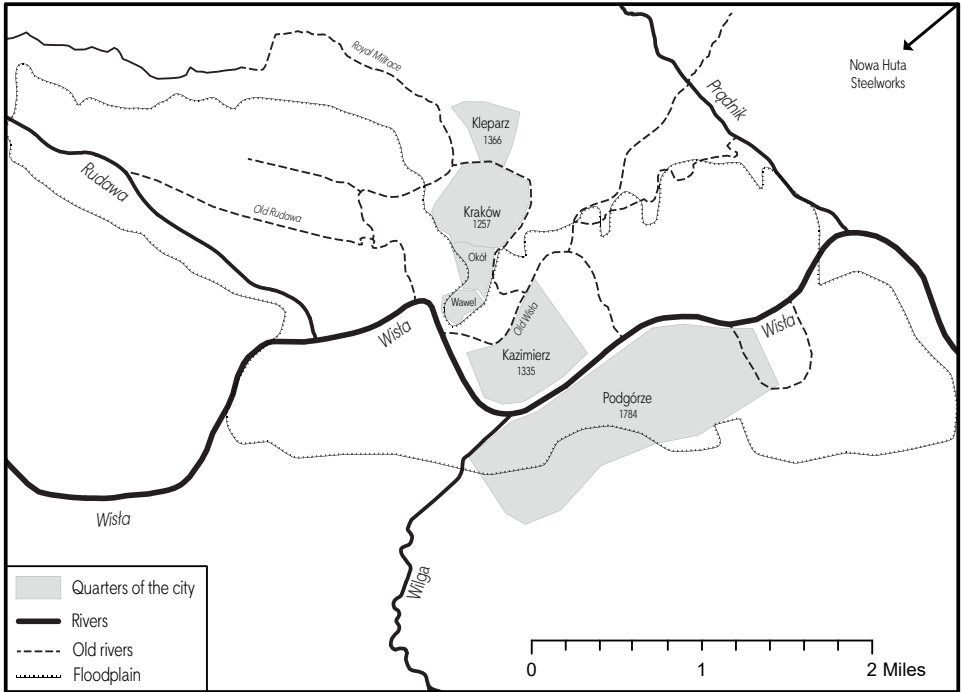
Probably because of the rocky hill of Wawel, the later cathedral, and castle hill, located on the banks of the Vistula River, which controlled a crucial crossroads of north–south and east–west trade routes, ensured shelter (caves), and abundant food sources (wetlands), there has been human settlement in Krakow since time immemorial. The Wawel hill was already a well-protected stronghold by the end of the first millennium AD, as the central place for the tribal polity of the Vistulans. From 1000 AD it became one of the few bishoprics of the newly founded Polish state, ruled by the Piast dynasty, and



Map I.1. Krakow's location within the borders of the different political organisms to which it belonged. Source: Konrad Wnęk.

soon became a self-standing kingdom, recognized by the German Holy Roman Empire. Initially, the Piast polity had its center of gravity in the area of Poznań and Gniezno, halfway between Warsaw and Berlin (i.e., some 400–500 kilometers northwest of Krakow), and this is where the archbishop of the country took his seat in 1000 AD. However, soon after the political expansion of the Gniezno-based Piast polity culminated in the 1020s, their monarchy almost entirely collapsed. It suffered a Czech invasion and a popular rebellion against the oppressive rulers and the new religion of Christianity, which underpinned the Piast ideology. As a result, the Gniezno-Poznań area was so devastated that the new Piast ruler Kazimierz, who returned from exile in Germany and rebuilt the monarchy in the 1040s, had to look for a new power base. His choice was Krakow, which was not as devastated as Gniezno and Poznań and not viewed by Czechs as their lands, as was the case for another major urban center in Poland, Wrocław in Silesia. Krakow was also much closer to the great powers of Hungary and Kievan Rus' (see map I.1).²²

Despite its new role as the seat of the royal court and proto-urban growth,



Map I.2. The medieval “pentapolis” of Krakow and the dynamic river system of the Krakow floodplain. Source: Konrad Wnęk.

for another two hundred years Krakow remained a constellation of several interdependent settlements (as shown in map I.2), many of them with their own churches, spread between numerous wetlands and small watercourses on the alluvial plain and elevated platforms surrounding the Wawel hill. The year 1257 was a major watershed in the city’s history, with the foundation of the new legal urban entity, the commune of Krakow, which was given its statutes “according to the German law” (i.e., modeled after the city of Magdeburg) by Prince Bolesław the Chaste. This meant not only that the new community of burghers gained autonomy vis-à-vis the princely or royal power but also that a new medieval city was planned and built on the lands north of the Wawel hill. With one of the largest market squares in this part of Europe, it remains a landmark in the cityscape to this day and a testament to the city’s commercial strength.

In the fourteenth century, two more urban communes were founded in Krakow (Kleparz to the north and Kazimierz to the south of the main “1253 town”), which together with two larger autonomous suburbs (Garbary and Stradom) created the late medieval “pentapolis” of Krakow, located around

the Wawel hill on the northern banks of the Vistula River. Unless we specify one of these communes by name, whenever we discuss pre-1800 Krakow, we mean the entire agglomeration of these five interdependent urban organisms.²³

After the thirteenth-century reordering of the city and the granting of autonomy, Krakow flourished economically, and when the Polish princedoms of the local Piast rulers became reunited into a single kingdom in the fourteenth century under the Piast king Władysław, the city's political significance grew even further, making it one of the key royal capitals in Europe. In 1364, the last king of the Piast dynasty, Kazimierz the Great, founded a university (second only to Charles University in Prague, the oldest university in Central Europe, founded just a few years earlier). Thanks to this royal initiative and a large bequest of one of Kazimierz's successors to the Polish throne, Jadwiga, Krakow became a major intellectual center of late medieval Europe and the cultural hub of the renewed Polish Kingdom. In the meantime, Poland started the long-term process of creating a state union with Lithuania, which began in 1385 with an invitation to the Polish throne the Lithuanian grand prince Władysław of the Jagiellonian dynasty (almost two centuries later, in 1569, this process ended with a complete union of the two monarchies and the creation of the dual Polish–Lithuanian state—the Commonwealth, *res publica*, effectively ruled by a parliament and the king, both elected by the country's noblemen). As a result, Krakow became the center of power for the largest territorial state of early modern Europe before the rise of Russia in the eighteenth century.²⁴

However, the city experienced a major reversal of its fate in 1596, as the first king of the new Swedish dynasty of the Waza that had followed the Jagiellons moved his court to Warsaw (for the fluctuations in Krakow's population numbers against the background of the city's history, see figure I.1). In fact, Krakow's location had never been favorable for ruling the vast land mass of Central-Eastern Europe: it was actually located at the very southwest edge of the Commonwealth, and thus the decision to relocate the center of power to the better-connected city of Warsaw was indeed a reasonable one. For Krakow, however, this marked the beginning of a slow process of decline, as the city no longer enjoyed the same royal and aristocratic spending and no longer offered career opportunities at the royal court. Warsaw was on the rise and it easily outgrew Krakow in the eighteenth century, reaching population numbers that Krakow had never achieved. The decline of Krakow was also precipitated by other factors. The court's relocation was followed two generations later by a series of major wars that devastated the entire country and led to general economic and demographic decline. From then on, Krakow became a medium-size Polish city, yet it was distinguished by its possession of two unique resources:

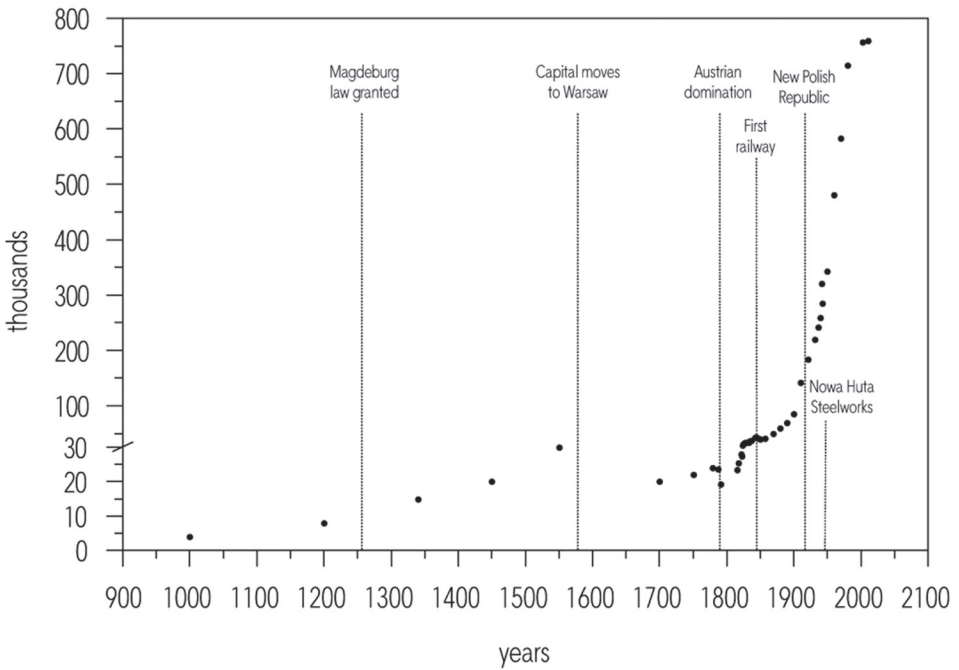


Figure I.1. Population dynamics (in thousands) of Krakow (including the communes of Kazimierz and Kleparz). Source: Konrad Wnęk, based on P. Miodunka and K. Wnęk, “Demografia Krakowa,” in *Ekobiografia Krakowa*, ed. A. Izdebski and R. Szmytka (Krakow, 2018), 37–44.

the university and the material heritage of the Golden Age. It was only in the communist era, after World War II, that Krakow experienced demographic growth that again made it one of the biggest cities in the country.

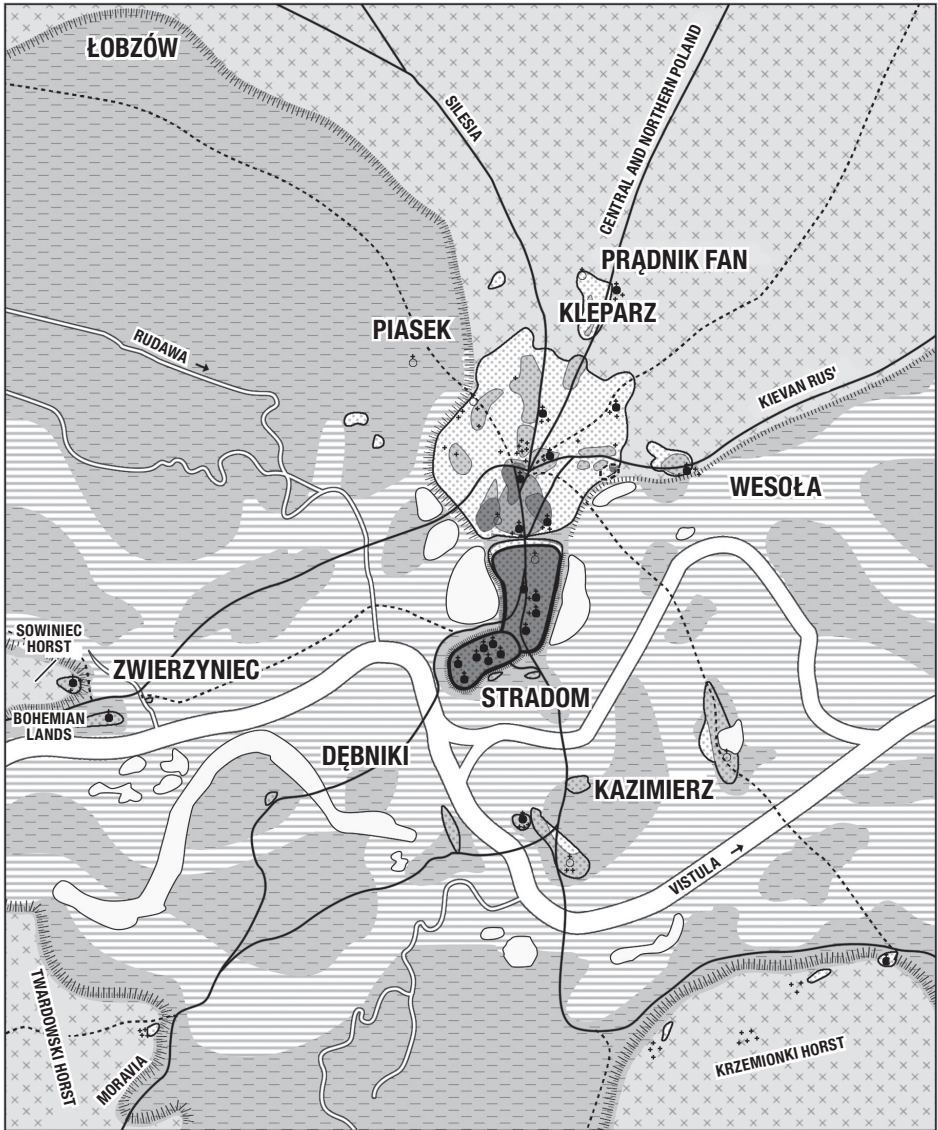
In fact, the city’s significance decreased even further after the Partitions of Poland (the dissolution of the Commonwealth and the annexation of its lands by the neighbors), when the city came under Austrian domination. The capital of the Austrian province encompassing the former Commonwealth’s lands, that is the Austrian dominion north of the Carpathians, called Galicja, was located not in Krakow but farther to the east, in Lviv (Lemberg/Lwów). This made Krakow a provincial backwater and later, a frontier garrison city, remodeled into a large fortress tasked with protecting the Austro-Hungarian Empire against the Russians. Because of this precarious military location as well as the old bourgeoisie’s active dislike of the new technologies and factories, there was little industry in the city during the nineteenth century, even though the railway arrived relatively early, already in 1847.²⁵

The situation improved after the city became part of the new Republic of Poland created in November 1918—like many other new post–World War I states in Central Europe—after the collapse of the three Partition Empires (Prussia, Russia, and Austria). The city became one of the key administrative centers in the south of the country, and its intellectual role grew further with the founding of a new technical university (the Academy of Mining and Metallurgy). Its task was to train engineers for the Polish industry in the nearby Silesia region, and the location in Krakow was chosen because of its relative security compared to the hotly contested mining region (between Poland and Germany) of Upper Silesia around Katowice. In 1939, after the coordinated invasion of Poland by Nazi Germany and the Soviet Union, Krakow again became a capital, this time of the German occupation administration. This was a humiliation to Warsaw—which defended itself against the Germans for longer than almost any other part of the country.²⁶ Nevertheless, the final major change for the city came with the introduction of communism, the construction of the Nowa Huta steelworks, and the accompanying socialist model town just east of the old Krakow. A conscious decision to counterbalance the cultural influence of the bourgeois and intellectual city with a large workers' community, the foundation of Nowa Huta not only led to huge pollution problems and environmental degradation but also completely reshaped the urban topography of Krakow and provided the single most important boost in the city's demographic history.²⁷ As a result, in the 2000s, Krakow finally became the second largest city in Poland after Warsaw, a development that was not foreseeable before 1945.²⁸

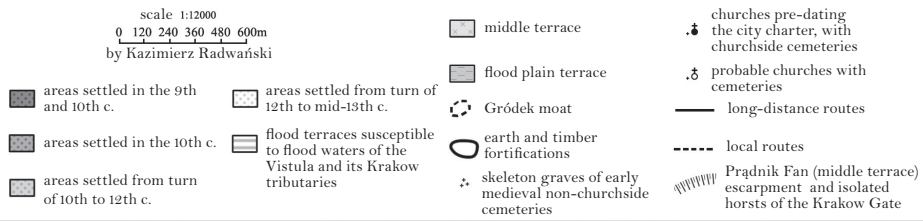
The Natural Conditions of Krakow's Growth

No word better describes the topography and geological structure of the area where Krakow is situated than *diverse*. The city owes this to its location at the intersection of several geographical regions: the Sandomierz Basin, the Western Beskidian Foothills, the Oświęcim Basin, the Krakow-Częstochowa Upland, and the Krakow Gate (to be distinguished from the Florian Gate and the other gates of the city—this is the name for the Vistula valley in the vicinities of Krakow). The different characteristics of each region ensured a multitude of landforms and a wealth of natural resources.²⁹

The areas around today's Krakow have good soils. To the northeast, the so-called Proszowice Plateau, with its loesses and rich, humic chernozems, extends up to the city. Since the Middle Ages, its westernmost part has been conducive to cultivation; the horticultural villages of Łobzów, Nowa Wieś, and Czarna Wieś were established in the area. The name of the latter, literally



Settlement complexes in the Krakow region from the 9th to mid-13th centuries



black village, derives from its fertile soils. To the west of the Proszowice Plateau stretches the Miechów Upland with its characteristic depressions covered with brown soils that are perfect for growing wheat.³⁰

The Carpathian Foothills, built mainly of dolomites and marl, would not have afforded such good conditions for cultivation as the left-bank areas, but their elevations had significant defensive value and were also used for grazing cattle. This trait is reflected in the present-day names of former service-providing villages, such as Skotniki (*skotnik* being an old name for a cattle herder) or Rżąka (originally meaning “extensive pastures”). Agricultural and pastureland areas stretched around the villages of Kurdwanów, Piaski, Łagiewniki, Jugowice, and Wola Duchacka.³¹

Mines on the southward sloping Olkusz Upland provided the city with lead and silver, and from the south of the Wieliczka Foothills and the southeast of the Bochnia Foothills came precious salt obtained initially from salt springs and then by mining.

Krakow also had excellent resources in terms of energy and construction materials. The closeness of the Niepołomice forest and the Carpathian forest, whose edges include the villages of Swoszowice, Wróblowice, and Kosocice, ensured a steady supply of the most important fuel and building material of medieval and early modern times (see map I.3). In the immediate vicinity of the city, outstanding loess silt-loam cement and limestones were obtained for use in finishing religious and public buildings. The city’s streets were also surfaced with them. Brickyards in the vicinity of Krakow were also supplying building material in the late Middle Ages and early modern era.³²

The decisive influence on the civilizational development of Krakow’s urban complex lay in the Vistula ice-marginal valley, and more precisely in the eastern part of the tectonic ditch, or graben, known as Krakow Gate. Several tributaries have been falling into the changing riverbed of the meandering Vistula over the centuries. Of particular significance to the development of the city’s settlement were two left-bank tributaries—the Rudawa and the Prądnik—which together with the right-bank Wilga had their confluence at Wawel within a stretch just three kilometers long.³³ The Rudawa’s water was used quite early to power mills, sawmills, and grinders; in the thirteenth century, an artificial northern arm called Młynówka (Millrace) was created. It also helped to defend the city, as the city’s moats were filled with its waters. The

◀ Map I.3. Geographical conditions for the development of Krakow: flood routes, trade routes, and settlement complexes from the ninth to the mid-thirteenth century. Map by Anna Pietrzyk.

Prądnik had similar economic significance with its banks sporting mills as well as bleachfields where canvas was whitened, giving the river its alternative name Białucha from the word for *white*.

Sands and gravel ejected by the Vistula, the Rudawa, and the fast currents of the Białucha were deposited as a fan whose height at the Barbican was 212 meters above sea level, and 204 meters at Wawel. Wawel Hill rising to a height of 228 meters above sea level and marking the fan's southern peak, was a promontory of sorts, behind which the material carried by the rivers accumulated. As a result, three terraces formed on the Vistula ice-marginal valley: a flood terrace (0.5–3 meters), a middle terrace, the Prądnik Fan (3–6 meters), and a high terrace (8–25 meters). To this day, characteristic faults marking the borders of the fan run along the Planty from Collegium Novum and Collegium Witkowski to the Wiślna Street exit, in the gardens of the Archaeological Museum, from the Royal Arsenal at number 64 on Ulica Grodzka to Gródek; from there, they turn ninety degrees eastward and extend to the Botanical Garden. On the hump that this formed, the fort-side settlement of Okół was established, and it is this settlement that was granted the Magdeburg rights in 1257, replanned into a regular street grid. The fan was so high that it ensured the city's safety even during the most drastic floods that inundated the outlying settlements, including Kazimierz. At the same time, the area of the Prądnik Fan limited the development of the main city in the Middle Ages and the early modern era. On the one hand, if the inhabitants of the growing city moved away from the area of safe elevation, they would be exposed to the danger of regular floods; on the other hand, a large area within the walls was occupied by church grounds—especially in the Okół area and northwestern and southeastern suburbs. As a result, the main urban commune of early modern Krakow never grew larger than twenty thousand inhabitants, with the entire agglomeration reaching only thirty thousand, while early modern Gdańsk easily exceeded fifty thousand.

The Prądnik Fan was a natural bridge connecting north–south trade routes. In the direction of Greater Poland and Mazovia, a road ran from the Florian Gate through Prądnik Tyniecki (today's district of Prądnik Czerwony), Dziekanowice, Słomniki, and Miechów. An alternate route led through Witkowiec, Michałowice, and Miechów. The road to Silesia led from the Sławkowska Gate, through Kleparz, Krowodrza, Olkusz, Sławków, and Będzin, or through Zielonki, Skała, and Ogrodzieniec. Toward Bohemia and Moravia a route ran along the right bank of the Vistula from the Skawińska Gate in Kazimierz through Kobierzyn to Oświęcim, or a parallel northern route starting at the Vistulan Gate and leading through Kryspinów and Liszki.

For the east–west route, the most important role was played by the Vistula and routes leading to Ruthenia from the St. Nicholas Gate through Mogiła, Koszyce, Wiślica, and Sandomierz, and through Prusy, Luborzycza, and Proszowice. From the Wielicka and Bocheńska Gates in Kazimierz, routes led through Bochnia, Tarnów, and Rzeszów to Red Ruthenia and a road ran through Myślenice to Hungary.³⁴

Thanks to its location at the intersection of important trade routes and its access to needed natural resources, Krakow attracted people from farther afield than Lesser Poland, allowing the city relatively quickly to recover after cataclysms such as floods, fires, and epidemics. After the period of decline and stagnation that began in the mid-seventeenth century, the city made another leap in the nineteenth century. With terrain that was free of major topographical obstacles, Krowodrza to the north and Płaszów to the south on the other side of the Vistula favored industrial investment.