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Eine west-östliche Lebensgeschichte

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On the 200th Anniversary of Jacob E. Polak's Birth

Overview

This in-depth study of the life and work of the physician, natural historian, and ethnographer Jacob Eduard Polak (1818–1891) seeks to further illuminate his role in facilitating the reciprocal transfer of knowledge between Habsburg Austria and Qajar Persia. Based on extensive research and analysis of archival source material from Austria, Israel, the Czech Republic, Hungary, Iran, and Germany, Afsaneh Gächter critically analyses Polak's function as cross-cultural mediator in the context of epistemological, institutional, and economic history. The author also explores the broader social dynamics associated with Polak's transmission of contemporary discoveries in medicine, epidemiology, geography, and anthropology, as well as the adaptation of this knowledge by the receiving culture. By means of the documents presented here, it is possible for the first time to add new biographical details to what we know about Polak's familial background, education, appointment to Persia, and his diverse scientific and professional networks.

Childhood Cultural Background

Polak was born in 1818 in Groß Morzin (Mořina), a small village in central Bohemia, where he was raised in the traditions of his Jewish heritage. He belonged to the first generation of academically educated Jews in the Habsburg monarchy. His childhood, schooling, and university training took place during a time marked by newfound social mobility. The trajectory of Polak's life demonstrates that Jewish emancipation in the first half of the nineteenth century was above all a cultural phenomenon, and that

access to basic and higher levels of education became crucial cultural capital as well as a prime catalyst for social elevation, making the advancement of Bohemian Jews possible. Until 1859, however, the integration and acculturation of Jewish citizens in the Austrian Empire was limited by an array of legal restrictions. During Polak's years of study, arbitrary bureaucratic obstacles such as residence permits hindered the accessibility of universities to Jews. Furthermore, Jews were rarely allowed to practice medicine after receiving a degree; finding a position in a state-run institution such as a hospital or university was practically impossible. Against this historical backdrop, it becomes clear that Polak's opportunity to travel to Persia in an official capacity was a decisive event in his extraordinary career.

Educational and Early Influences

Specifics concerning Polak's primary education remain unknown. In 1833 he began attending the k. k. Akademische Gymnasium in Prague, a secondary school run by the Jesuit Order. In the winter semester of 1838–39, he matriculated at Charles-Ferdinand University, studying medicine and surgery; he also enrolled in a two-year introductory philosophy programme. Polak's student cohort included Moritz Hartmann and Alfred Meissner, two prominent representatives of the 'Young Bohemians', a liberal movement of the Vormärz period inspired by German educational ideals and Late Romanticism. In their struggle against the 'Restoration' of the Metternich era, they sought to change the political status quo in the Habsburg Empire. Polak's identity seems to have been decisively shaped in his student years through his contacts with this Bohemian literary circle, and he remained in contact with the liberal-minded writers and poets associated with Hartmann his entire life.

After completing his fourth year at Carl-Ferdinand University, Polak transferred from Prague to Vienna and continued his education under a group of eminent professors at the University of Vienna's School of Medicine. Polak's career path was not only affected by contemporary social changes and the opening up of new possibilities for advancement to the Jewish population: In the Habsburg Empire and throughout Europe, a new epoch of intellectual thought was dawning in the academic sciences that would fundamentally transform the doctrinal basis and study of medicine. The technological advances made by the 'Vienna Doctors' of this time period were also products of Humboldtian educational ideals and the common sentiment that society was entering a new age of promise.

Polak studied medicine during what can best be described as a transitional phase in the history of the discipline, where humoral medicine and its natural-philosophical frame of reference coexisted during a conceptual reorientation founded on the empiri-

cal principles of natural science. He was taught both of these systems and his academic training should therefore be seen as bridging the gap between traditional medical concepts and newly developing paradigms. His student years coincided with several innovations resulting from the work of the Second Vienna School of Medicine, which would later prove to be a significant factor in his active role as a mediator of knowledge in Persia.

Reflective of the era of the absolutist state in which they lived, the medical faculties in Prague and Vienna continued to use antiquated methods of teaching. Professors employed teacher-centred rote learning to convey theoretical concepts. Exams were primarily concerned with the memorisation of Latin technical terms and the pedagogical emphasis was on the writing of prescriptions. Students were expected to submit to the authority of their teachers. Physicians at the Vienna General Hospital (Allgemeine Krankenhaus) instigated one of the first departures from this traditional system by linking pathological anatomy to practical medicine. Doctors increasingly correlated post-mortem findings with the symptomologies and disease patterns of their patients, thereby distinguishing between regular functioning of the human organism and pathological changes. This further led to new understandings of disease and disease processes, a revolution in the healing arts effected primarily by three path-breaking figures of the Vienna Medical School: Carl von Rokitansky, Joseph Škoda, and Ferdinand von Hebra. Their achievements led to the gradual displacement of humoral pathology in favour of science-based medicine.

In 1844, the pathologist Carl von Rokitansky played a prominent role in making pathological anatomy a required subject of study at the University of Vienna's School of Medicine. After Polak's transfer from Prague to Vienna, he attended Rokitansky's lectures at the department of medicine. During this same period, the anatomist and internist Joseph Škoda perfected the innovative techniques of percussion and auscultation in Vienna. In 1841, the dermatologist Ferdinand von Hebra joined the Department of Pulmonary Diseases led by Škoda. Von Hebra brought with him insights gained in dermatology that were grounded in experimental and pathological anatomy and which helped replace the older concept of humoral pathology, where illnesses in general, and particularly skin diseases, were interpreted as resulting from so-called dyscrasias, or imbalances, of the blood.

Polak learned his surgical skills from three prominent surgeons of the Vienna School: Joseph Wattmann, Franz Schuh, and Johann von Dumreicher. Franz Schuh worked extensively with Rokitansky and Škoda at the university medical clinic, where he contributed to the foundation of experimental surgery by adapting several new techniques, such as the applied method of percussion, for his patient consultations. In 1847 Schuh was the first surgeon at the university clinic to use ether as a general anaesthetic for surgical operations. The emergence of medical specialisation and the intro-

duction of new diagnostic methods fundamentally changed the practice of surgery and created a new level of expertise that coincided with the formalisation and systematic organisation of the medical profession. As part of this process, the academically educated class of practitioners to which Polak belonged endeavoured to clearly distinguish themselves from the so-called barber surgeons and other similar groups. This rank of university doctors asserted themselves and raised their public standing by establishing physicians' associations (such as the Imperial-Royal Society of Physicians in Vienna founded in 1837) with strict membership qualifications.

Polak was awarded doctorates in medicine and surgery in 1846 and 1847 respectively. Many of his professors were important figures in the Vormärz cultural movement. They advocated for 'freedom in teaching and learning' at institutions of higher education and their agitation ultimately contributed to the March Revolution of 1848, which was defeated later in the same year. There are some indications that after Polak was awarded his degrees, he attempted to obtain a position as a doctor in Constantinople. This could explain the dedication of his doctoral dissertation to the then ambassador of the Ottoman Empire in Vienna, Mehemt Nefy Efendi, which acknowledged the Ottoman government's efforts to integrate the principles of modern science into medicine and education.

Appointment by the Persian Royal Court

Polak chose not to go Constantinople, however, because another option became available. In 1851 he was commissioned by the Persian Qajar Court to teach modern medicine, anatomy, and surgery at the Dar al-Fonun Institute, a newly founded academy for higher learning in Tehran. No comparable opportunity would have been available to him in Vienna due to legal restrictions on Jewish citizens. His ambitious effort to relay medical knowledge from the Vienna School to Persia can be seen as an attempt to compensate for this social deficit. Against the backdrop of the neo-absolutist state in his homeland (1851–1860), the significance of Polak's journey to the Orient and his summons to Persia becomes evident: it is a crucial stepping stone in the success of his later career as a doctor, natural researcher, and ethnographer in Habsburg Austria.

Polak's invitation by the Qajar court was fostered by timely factors such as political stability in Persia, educational reform, the political neutrality of the Habsburgs vis-à-vis Persia, as well as a multiplicity of pre-existing networks between the two empires. In the first half of the nineteenth century, the massive expansion of European colonial power threatened Persia's sovereignty. After the Qajar dynasty's (1779–1925) assumption of rule, they effected a concerted strategy to maintain their political autonomy and protect their state territory. While Russia attempted to expand in the Caucasus region,

Great Britain aspired to secure a southern overland route to their Indian possessions. Beginning in the 1840s, the Qajar rulers were able to prevent both further territorial losses and the step-by-step commercial penetration of their lands by colonial interests.

This continual threat to the integrity of Persia's borders by European powers possessing modern weapons and the latest armament technologies induced the ruling Persian elites to institute a series of reforms according to the Western model. The Prime Minister Mirza Taqi Khan Amir Kabir advocated for a thorough restructuring of the country's educational system that had existed in more or less the same form for millennia. In 1850 as part of an overall modernisation plan, Amir Kabir ordered the construction of Tehran's first modern school, the Dar al-Fonun Institute. Along with military training, students would receive a basic education in modern medicine and the natural sciences. Amir Kabir sought out qualified experts from the Austrian Empire to teach at the school with the intention of bringing in Western learning and technological advances. The first interpreter sent to Vienna to arrange the contracts by the foreign ministry in Persia, Mirza Dawud Khan, was not an accidental choice. His familial relationship to the then departmental head of the Austrian finance ministry, Franz X. Schlechta von Wschehrd, as well as his acquaintance with Heinrich Barb, a graduate of Vienna's Oriental Academy, were essential personal connections that played a role in the selection of the first Western teachers for the Dar al-Fonun Institute.

Dawud Khan and Barb, representing their respective governments, concluded work contracts of four to six years for six persons, among these four military officers, a mining and metallurgy specialist, and a physician. Polak was recommended to teach medicine by Johann Dumreicher and Joseph Dietl, two leading doctors of Viennese medicine. It is interesting to note that although the Austrian government negotiated these contracts, they officially classified Polak's recruitment by the Persian government as a private arrangement in order to avoid the appearance of pursuing trade and political contacts in Persia that could cause conflicts with the colonial powers of Russia and Great Britain. As we shall see, later on in his life Polak will retrospectively publicly portray the recruitment of himself and other experts as a civilising expedition undertaken personally on behalf of the West to a region outside of Europe.

Polak's Impact on Medicine in Persia

The history of institutional medicine in Persia reaches back to the pre-Islamic era. Until the beginning of the nineteenth century, the humoral doctrine of disease rooted in natural philosophy was shared by both Persian and European medical traditions. This common conceptual heritage existed because of programmatic translations of Hippocratic and Galenic manuscripts into Arabic as part of the flowering of Islamic

culture during the Abbasid period (750–1258). As in all intercultural processes of knowledge transfer, the original elements of Greek medicine underwent a unique transformation in the course of their textual transcription and subsequent praxis resulting from social, linguistic, cultural, and environmental factors present in the new location. Persian doctors and polymaths such as Rhazes and Avicenna played an essential role in the development of Galenic-Islamic medicine. In their treatises they expanded traditional wisdom via experimental practice. Whereas parts of Avicenna's *Medical Canon* were translated at the famous school in Toledo, Spain in the thirteenth century and incorporated as a fundamental text in the study of medicine at European universities up until the eighteenth century, in Persia the so-called golden age of Islamic medicine that stretched from the tenth to the fourteenth century came to an earlier end as a consequence of the Mongolian invasions and resulting decentralisation of power.

Before Polak's arrival in Tehran in 1851, Persian doctors (*hakims*) studied physiology, anatomy, pathology, and pharmacology as essential components of their constitutional theory of illness, but they were more concerned with maintaining traditional natural-philosophical medical models than exploring new scientific understandings. Medical education in Persia up until the founding of the Dar al-Fonun Institute was limited to memorising texts mainly in Arabic, and the granting of a license to practice medicine as a rule required the formulaic assimilation of the fundamental principles found in these texts—an educational training in many ways parallel to the pre-nineteenth-century study of medicine in Vienna. In the Persian system, however, there was an especially marked dichotomy between theory and praxis due to the strict segregation of anatomy and surgery—Persian doctors did not carry out cadaver dissections for religious reasons and therefore refrained from surgical interventions because of a lack of empirical facts about specific anatomical details. The medical culture in Persia would undergo a decisive shift in this area by means of new knowledge and techniques disseminated by Polak.

Today in Iran, Jacob Eduard Polak is considered the founding father of modern medicine. He stayed in Persia for a total of nine years, documenting his activities in diary-like fashion by way of letters and reports regularly sent by mail to Vienna. These were published in the *Wiener Medizinischen Wochenschrift* and in the *Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien* (a journal published by the Imperial-Royal Society of Physicians) under the title *Briefe aus Persien* (Letters from Persia). Considered as a whole they represent an important source for the reconstruction and contextual analysis of his work and achievements. The letters reveal his efforts to set up an educational programme at Dar al-Fonun according to the model of the Vienna Medical School, and to thereby define himself as a representative of the Vienna school in Tehran. Polak introduced pathological anatomy, practical medicine, and surgery to the study of medi-

cine in Persia, and in doing so laid the foundation for the country's institutionalisation of modern medical teaching. Polak's remarkable importance as a mediator of the latest discoveries in his field was above all attributable to his ability to link theory to practice for his students by applying the insights gleaned from pathological anatomy to surgical operations. He prepared himself well in this regard by bringing with him medical textbooks, anatomical specimens, a human skeleton, surgical instruments, and a selection of medicines.

He founded a polyclinic at Dar al-Fonun as an integral part of the medical school in Tehran in order to give his students the opportunity to test their theoretical understandings and put them into practice. His students also accompanied him at his private surgery in the city and on house visits to learn the methods and applications of physical diagnosis. They stood at Polak's side as assistants during numerous operations carried out under anaesthetics such as ether and chloroform. While at Dar al-Fonun, Polak performed the first modern medical autopsy in Persia. In order to help some of his students acquire an academic medical degree, he sent the most talented to Paris so that they could return after finishing their studies and thereby firmly anchor and expand their profession in Persia.

Another area of Polak's pioneering work was the introduction to Persia of modern lithotomy and lithotripsy. Between 1852 and 1860 he performed a number of bladder stone operations under anaesthesia. Every operation—on men, women, and children—was contemporaneously documented; later, Polak wrote a detailed overview of bladder stone diseases in Persia. From a medical-historical perspective, Polak's report is presumably the only written evidence of the introduction in the second half of the nineteenth century of modern urology to Persia.

Polak also had a major influence on the linguistic aspect of medicine in Iran. He began learning the Persian language soon after his arrival, and within a short period, as he himself reported, he was able to teach without a translator. He went on to create a modern medical terminology in Persian derived from Latin, French, and Persian vocabulary, and to author an extensive corpus of written works in Persian, including two medical textbooks (*The Anatomy of the Human Body* and *Surgery, With a Treatise on Ophthalmology*) written with the help of his student translator, as well as a number of lithographed treatises on cholera, poisons and antidotes, the treatment of malaria and diarrhoea, a guide to clinical practice, and the fundamentals of medicine, aetiology, and pathology. Polak's publications decisively changed the language used by teachers and practitioners of medicine, and were part of a larger trend in the country of translating European technical literature into Persian, which caused a shift away from the prevailing use of Arabic.

These contributions were essential to the institutionalisation of modern medical education in Persia. Furthermore, the introduction of the scientific method ushered in

the reciprocal transfer of medical erudition between both cultures and firmly fixed Persia's access to the latest medical advances in the West. In recognition of his role as a mediator in this process and of his services in the field of medicine, Polak received several awards in Tehran and Vienna. In 1854 he received the Order of the Sun and Lion from Naser al-Din Shah Qajar. He was also granted membership in the Vienna Society of Physicians in 1857. According to the society's statutes, its chosen members were those who worked 'to strengthen our intellectual bonds with other societies and organisations'.

It is important to note that Polak's introduction of modern medicine to Persia did, however, meet some resistance. Handwritten documents indicate that conservative opposition formed, especially in military institutions, which responded to the transformation wrought by Polak by trying to obstruct any changes in the medical treatment of soldiers and officers. The individuals involved seem to have been primarily motivated by the fear that reforms would threaten their positions.

Royal Personal Physician to the Shah

In 1855, the *Jahrbuch für Israeliten* (Yearbook for Israelites) in Vienna announced with great fanfare that Polak had been promoted by the Persian court to the official positions of *Hakimbashi* (personal royal physician) and private medical counsel, as well as given the military rank of second general. His ascendance from a teacher of medicine at Dar al-Fonun to Shah Naser al-Din's personal physician cemented his role as a vital intermediary in the transfer of knowledge between the two cultures, a role he would perform for the rest of his life. After his promotion he continued for several months as director of the medical school, and although he was no longer involved in routine teaching duties, he still found time to see patients and write classroom textbooks. Polak was obliged in his new position to appear daily at court and accompany the king on his quite frequent travels within the country. The intensive doctor-patient relationship between the two men created a bond of trust that would prove useful for Polak after his return to Vienna as the scientific and commercial activity between the Habsburg monarchy and Persia began to increase. Late in Polak's life, this bond would pave the way for one of Naser al-Din Shah's wives, Amina Aqdas, to travel in the spring of 1890 to Austria for medical treatment, a first in modern Persian history. As archival sources record, the Shah directly contacted Polak, who made the necessary arrangements for her cataract surgery. The operation was performed by the director of the Vienna Eye Clinic Ernst Fuchs, and shortly thereafter she returned to Tehran.

Polak's appointment was part of a larger reorganisation and expansion of administrative structures within the Qajar court, where European doctors began to be em-

ployed alongside Persian *hakims*. The integration of these foreign doctors into the state apparatus, providing them with income and an official title, was essential to Persia's adoption and integration of modern medicine. The royal court itself became an 'intellectual' meeting space and locus of dialogue, where two cultural spheres of knowledge could discursively interact. As a result, leading and influential *hakims* gradually embraced and advanced reforms of the medical system they represented. The introduction of European doctors to the Persian court led to a 'top-down' establishment of the medical profession—in contrast to the situation in Europe where the process took place by means of professional societies organised by the members themselves to promote and raise their status.

Before the introduction of bacteriology in 1882, the outbreak and rapid spread of pandemics constituted one of the greatest challenges for Persian doctors of the nineteenth century. A series of events, including the entry of European doctors, their effective introduction of vaccinations against measles, and the translation of European texts into the Persian language, began to shift the mindset of the *hakims* regarding disease. In their own publications the *hakims* increasingly engaged with western theories, even if they continued to employ humoral concepts in their analyses. Their written theoretical arguments at this time period bear witness to an incremental transformation in the medical discourse that eventually led to the predominance of scientifically oriented medicine. Although the *hakims* remained sceptical about modern medicine for several decades, their writings on epidemics show them to be important agents in the adoption of new medical practices throughout Persian society.

Polak's success as an intermediary of Viennese medicine would not have been possible without the support of state institutions, his integration into the Persian court, and his disputations with the *hakims*. Polak's appointment as the Shah's personal doctor effected a new self-stylisation. From this time onward, he used his honorific title of '*königlich-persischen Leibarzt des Schah*' (Persian Royal Personal Physician to the Shah) on all written documents until his death; he even had it memorialised on his gravestone. His position as court doctor, along with his organisational talents and dedicated engagement in the field of medicine, created a reserve of social and cultural capital from which he often drew after his return from Persia.

Return to Vienna

In 1860 Polak ended his contract with the Persian court and returned to Vienna. He came home decorated with honours, a famous doctor with nine years of experience. He also brought back extensive collections of botanical, geological, and ethnographic materials. In March 1862, after two sojourns in France and Egypt, he married Therese

Blumberg, daughter of the manufacturer Joachim Blumberg, in the Teplitz Synagogue. As the sole beneficiary of Polak's estate, she would later play an important role for many years after the death of her husband as the manager of his scientific legacy and she maintained written correspondence with leading figures in science and politics.

Polak's return to Vienna coincided with the initial flowering of progressive liberalism. The political and intellectual arenas of the 1860s underwent a marked transformation from neo-absolutism to constitutionalism. The ideals of liberalism and a belief in positive progress successfully transformed the thinking and commitments of a humanist oriented citizenry. The liberal-minded and well-educated middle class of this era saw their challenge as expanding literacy and implementing the boons of science for the benefit of all. Polak understood not only the potential of this new scientific openness but also how to use it to enhance his authoritative position regarding all things connected to Persia and to validate his unique expertise in the advancement of his career.

An awareness of this socio-cultural backdrop is important to fully appreciate Polak's magnum opus *Persien: Das Land und seine Bewohner. Ethnographische Schilderungen* (Persia: The Land and Its Inhabitants. Ethnographic Descriptions), published in 1865 in Leipzig. His book was also the perfect medium for presenting what he had learned in Persia to an interested readership in German-speaking areas. His observations and discoveries in the new scientific fields of geography and ethnography further raised his status among his peers. His book quickly attracted attention in geographic, anthropologic, and literary circles and was discussed in their respective publications circulating in the Habsburg Empire and throughout Europe. Polak thereby secured his reputation as a scholarly expert on Persia not only in medicine, but also in a variety of disciplines.

Viewed from the perspective of interculturality as lived experience, Polak's correspondence with the 'Vienna doctors' while he was in Persia most clearly reveals how he adapted his knowledge to the new culture and importantly, how the knowledge he acquired there was transmitted back—the process is not merely unidirectional but also reciprocally flows from East to West. Before his journey, Polak's writings on various topics allowed him to participate in a network of shared medical knowledge that he was able to access during and after his return. His published medical articles and correspondence can be divided into three distinct and chronological categories: articles published before he was summoned to Persia, letters sent from Persia to Vienna, and finally, writings printed after his return to Vienna.

The evaluation and contextualisation of Polak's written works on medical subjects reveals the following aspects: a) Polak made important contributions to the medical geography of Persia, a methodology used to carry out comparative studies of local outbreaks of illnesses; b) while in Persia, Polak entered into a medical dialogue on 'dis-

eases of the Orient' by means of written correspondence with doctors in Vienna; c) this correspondence also allowed him to stay in contact with leading representatives of the Vienna School of Medicine, among these the dermatologist Ferdinand von Hebra and the epidemiologist Romeo Seligmann; d) as a representative of the Vienna School himself, Polak rapidly transmitted back to Vienna newly acquired insights on various pathologies and epidemics; e) because of his significant contributions to the field of medicine, Polak acquired a prominent position in the medical profession in his home country; f) Polak's regular reports from Persia secured his reputation as an expert on Oriental diseases and epidemics; g) his expertise opened up a new role for him in the field of public health; h)Polak had a decisive influence on governmental policy decisions in Persia as well as Vienna related to cholera, above all in the areas of public health and sanitation.

Polak's written contributions to the field of medicine after his return to Vienna can be thematically categorised as follows: reports stemming from his clinical practice, especially those describing skin diseases such as 'Bouton d'Alep' (leishmaniosis) and leprosy; reports on surgical operations he performed such as bladder stone and eye operations; reports on epidemics and plagues; reports on the usage of stimulants and anaesthetics; and reports on so-called 'spring cures' or detox regimens.

Contributions to Medical Geography and Public Health

In his analyses and descriptions of diseases in Persia, Polak consciously employed medical geography, a common nineteenth-century methodology used by doctors for the comparative geographic study of illness to gain insight into disease from a broader interregional perspective. Accordingly, Polak relayed extensive data that can be divided into three main categories: geographic and topographic distributions of various diseases in Persia, as well as their respective aetiologies and symptomologies; treatment methods used by local *hakims*; and popular uses of traditional herbal medicines. Today, Polak's publications are important documentation of the shared history of exchange between the Habsburg Empire and Persia in the field of medicine.

With the expansion of the study of geography instigated by Alexander von Humboldt's explorations and widely circulated observations, and the concurrent increase in European awareness of 'foreign diseases', the significance of geographic factors in aetiology became increasingly relevant to medical and scientific research. Medical geography placed prime importance on the statistical analysis of quantitatively formulated findings, which in turn depended on the collection of measurable data by careful research conducted over an extended period. The goal of medical geography was to explain how climate and environmental factors impact the human organism. In the nine-

teenth century, medical geography included such scientific disciplines as geography, medicine, meteorology, cartography, and geology—namely, the very fields in which Polak as a physician and naturalist was actively involved.

During the time of the cholera epidemics that first struck Europe in the 1830s and raged in recurring outbreaks over several decades, the collection of data as part of medical geographical analysis was increasingly a focus of European colonial politics, a goal especially reflected in the organisation of international sanitation conferences. Sometimes stretching over many months, these conferences focussed not only on medical issues, but also on politics and diplomacy. Their primary task was the imposition of measures to prevent epidemics arising in the East from reaching Europe. At the same time, directives were formulated to safeguard not only the lives of European soldiers and administrators residing in European colonial states, but also of 'native' labour forces. Because India was determined to be the origin of the cholera pandemics, two regions stood in the centre of discussion due to their geographic position as a corridor between India and Europe: Persia and the Ottoman Empire. In 1866, the third International Sanitary Conference was held in Constantinople at the urging of European powers. As an expert on Persian diseases, the conference offered Polak a welcome opportunity to share his insights on epidemics and preventative measures. As soon as the conference was announced, Polak published a report directly addressed to the organisers in which he laid out his knowledge of cholera and suggestions for combatting its spread. Shortly thereafter the Foreign Ministry in Vienna named Polak to be one of the Austrian delegates to Constantinople. After he returned to Vienna he was awarded with the Order of Franz Joseph in recognition of his participation.

Before the discovery of the pathogenic agent of cholera (*Vibrio cholerae*) in 1884, the predominant causative models emphasised social or environmental determinants. Whereas 'contagionists' debated about the transmissibility of plagues from person to person, and therefore proposed social control measures in the form of mobility restrictions and quarantines, followers of the miasma theory traced the beginnings of epidemics to infectious substances emanating from the soil and advocated for extensive sanitary measures in the private and public sphere.

Polak's contributions to epidemiology are further attested by the assistance he provided to the city of Vienna after the conference. In 1866 Vienna was confronted with yet another cholera outbreak. Because the city's previous policies were obviously not sufficient, local doctors and natural scientists were again tasked with developing an appropriate response. Polak's participation at the Constantinople conference made him well known in the sector of public health and he was consulted for advice. Relying on the leading theories of contagion and miasma, Polak devised strategies for fighting the cholera epidemic and improving the health situation in Vienna, including proposing the slogan 'Common Health is Common Wealth' for the public awareness cam-

paign. It is noteworthy that as an 'Orient expert' his policy proposals to the city, including restoring the Vienna river and improving sewer canals and air circulation in both private and public spaces, were also informed by his knowledge of sanitary conditions in Persia, the Ottoman Empire, and India. Polak's formulation of hygiene recommendations as the necessary cornerstone of any system of common health maintenance strongly correlated with the progressive idealism championed by Austria's enlightened bourgeoisie.

Because the general consensus held that epidemics travelled over pilgrimage routes from India to Europe via Persia and the Ottoman Empire, Polak familiarised himself with the travel routes of Muslim pilgrims. In light of the cholera outbreak, he analysed the hygienic and sanitary conditions in Islamic countries along the routes to the holy cities of Mecca and Medina and made recommendations for mobility restrictions. He advocated for the establishment of quarantines at strategic locations on the borders of European countries. In 1874, Polak participated in the fourth International Sanitary Conference, but there was one significant difference—on this occasion he attended as a delegate from Persia.

The 1873 World Exposition in Vienna, an enormous spectacle whose theme of 'Culture and Education' reflected the values of a liberal and progressive citizenry, had been overshadowed by a stock market crash and another cholera outbreak. A year after the fair, the Viennese epidemiologist Anton Drasche called for another international sanitary conference, this time to be held in the capital of the Danube monarchy. The Persian court was aware of Polak's rising profile as an international health expert and officially appointed him to represent the country at the conference. During the entire session Polak maintained correspondence with relevant officials and doctors in Tehran regarding novel measures the Persian government had enacted to fight the further spread of cholera and he reported what he learned to the conference participants. Some time later the Russian Tsar Alexander II awarded Polak for his service as a Persian delegate to the conference with the Order of Saint Stanislaus Third Class, although what precisely motivated the Tsar to do so remains an open question.

Today, these international sanitary conferences are seen as precursors to the permanent establishment of the World Health Organisation in 1948 in Geneva.

Geographical Expeditions and Contributions to the Natural Sciences

Polak represents a generation that linked the positivism of the age of scientific exploration with a belief in uninterrupted progress in all areas of knowledge. He undertook several multi-disciplinary explorations of Persia that exemplify the rigorous notions of scientific duty and ethics held by most scholars of his time. After he returned to

Vienna, Polak joined the Imperial-Royal Geographical Society (1861) and the Imperial-Royal Zoological-Botanical Society (1866). In the following years he contacted the geology and botanical museums at the University of Vienna and networked with members of the Imperial Academy of Sciences. Soon thereafter Polak organised the first of a number of botanical and geological expeditions to Persia, receiving special permission from the Persian court. He subsequently became a prominent sponsor and intermediary for Austrian and European natural scientists who wished to explore Persia. An array of documents from his estate published for the first time in this book, including letters of appreciation from government ministries, high functionaries, and educational institutions, bear historical witness to Polak's significant role in the scientific exploration of Persia in the second half of the nineteenth century. They also reveal, together with Polak's articles appearing in diverse disciplinary journals, his work as a dedicated collector of natural scientific objects and specimens.

Immediately after the publication of his seminal work *Persien*, Polak was visited in Vienna in 1865 by the botanist Carl Haussknecht who was planning trips to Persia to collect botanical specimens and later became famous as the founder of Oriental Botany in Germany. The written correspondence between the two researchers, housed today in the Herbarium Haussknecht Archive in Jena, documents Polak's helpful advice to the botanist on locating plants with the greatest importance for his collection. He also used his impeccable reputation at the Persian court to support Haussknecht by writing letters of recommendation to regional governors where Haussknecht stayed during his research. Polak's expert guidance helped Haussknecht acquire valuable botanical specimens on both trips to Persia in 1865 and 1866, and to complete his 'Flora Orientalis' (Pierre-Edmond Boissier). This professional and personal exchange with Polak was maintained for many years; in 1873 Haussknecht had Polak evaluate for accuracy the maps of his travel routes in the Orient. In 1882 Heinrich Kiepert published this 'Haussknecht Map', which soon became highly regarded by travellers to the Orient.

A substantial part of Polak's scientific activity between 1882 and 1890 involved the organisation of several botanical-geological collecting expeditions to Persia, which he largely financed with his own private funds. These spurred further scientific interest and provided a framework for the natural scientific exploration of Persia and its different regions. The first expedition took place in 1882 in conjunction with the Imperial Academy of Sciences; thus after 22 intervening years, Polak again travelled to Persia. On this journey through the Alborz Mountains in the north to the Alvand Range in Hamadan province in the west, he was accompanied by the botanist Thomas Pichler and the geologist Franz Wähner. One of the main objectives of the expedition was to collect plants for acclimatisation in the Austrian Empire and to study their industrial and commercial potential. The expedition proved to be seminal in the history of the natural historical exploration of Persia. After his return to Vienna, Polak was the first

natural scientist to document two important routes in the northwest of the country, thereby blazing a trail for later botanical and geologic field studies in Persia. The seeds and plants he gathered were planted in the University of Vienna's botanical garden to determine which species would best adapt to the new climatic conditions. The Minister for Culture and Education Sigmund Conrad von Eybesfeld personally wrote to Polak to thank him for his unselfish devotion to scientific interests. The plants collected by Polak, more than 1,100 species, were analysed in Vienna with the assistance of Otto Stapf at the Botanical Institute. The results of their experiments were published in the *Denkschriften der Kaiserlichen Akademie der Wissenschaften*. The botanical specimens gathered by Polak are today part of the Herbarium at the University of Vienna. The geological finds from his expedition went to the University of Vienna's geological collection. Some of these later ended up in the mineralogy department of the Natural History Museum in Vienna.

Polak had difficulty recovering from the exertions of the journey because of his age, so he subsequently commissioned younger scientists to carry out future expeditions and largely financed their travel and research. In 1884 he sent the botanist Armin Knapp to Persia. Knapp gathered plant specimens from Azerbaijan province and the north-western territories, which were then deposited at the botanical gardens of the University of Vienna. In the same year, the German geologist and palaeontologist Hans Pohlig led an exploration commissioned by Polak around Lake Urmia and reported on the discovery of mammal fossils. This news inspired Polak to commission the trader and collector Franz Theodor Strauss to carry out digs at the bone repositories of Maragheh. The Polak-Strauss Collection, with its numerous remains of Equidae and Rhinocerotidae, is now held at the Vienna Natural History Museum.

In 1885 Polak equipped another botanical-geological expedition. The finds of this journey are among the richest collections of plants and fossilised mammal remains ever obtained under Polak's sponsorship. It was organised for the botanist Otto Stapf, who had become familiar with Persian flora by analysing materials from Polak's 1882 trip. Stapf collected specimens from previously unknown and rare species on a new route he himself marked out in the southwest between Shiraz and Bushehr on the Persian Gulf. His collection of more than 1,300 species of Persian plants was held at the University of Vienna's Botanical Institute. The diverse materials from the expeditions of Polak, Pichler, Knapp, and Stapf later formed the foundation of the 'Flora Iranica' project conceptualised by the botanist Karl Heinz Rechinger and today maintained at the botanical department of Vienna's Natural History Museum.

Polak's support for the Austrian geologist and palaeontologist Alfred Rodler, an assistant to Eduard Suess, is especially representative of his immensely valuable contribution to the geological-paleontological exploration of Persia. In 1885 and 1888 Rodler was commissioned by Polak to undertake an expedition to Persia, where he collected a

rich variety of fossils of predators and mammals, among these a skull fragment that he named *Urmiatherium polaki* in honour of his patron. While Polak gifted part of his collection of mammalian fossils from Maragheh to museums in Vienna and Prague, he kept this 'sensational' skull fragment in his possession. The director of Vienna's Museum of Natural History, Franz von Hauer, sought to obtain the original from Polak's estate after his death. Therese Polak bequeathed this unique object to the museum in 1893, along with a portrait bust of her husband. The Polak Collection is of interest to researchers even today, as evidenced by mentions in the latest publications from the fields of zoology and palaeontology.

Polak's work with various geographical, botanical, and geological institutions led to his co-founding of the Anthropological Society in Vienna, where he was a long-time board member. Shortly after its inception in 1870, the society erected a library and museum in order to help popularise the emerging field of anthropology. Polak was appointed librarian from 1870 to 1877. The group had a political agenda from the moment of its creation: As the society's first president Carl von Rokitansky proclaimed in his opening speech, this new scientific field was born from the pedagogical aspirations of the Enlightenment and directed against all types of religious dogma. The majority of members were from the educated middle class, whose positivist outlook guided the society's a priori conviction that the accumulation of knowledge in the natural sciences would contribute to the betterment of society and therefore help to solve contemporary socio-political problems. Their scientific mission was divided into three areas of research that shared the same principles and methods: anatomical-physiological studies, comparative ethnography, and prehistoric studies. In each of these, the European conceptual category of the light-skinned, 'civilised' person was considered the research norm against which all other humans were measured.

As Polak's activities in the Anthropological Society demonstrate, there was no real separation between these three areas of research in the group's first decades. His work focussed foremost on the collection of data as well as ethnographic and prehistoric artefacts. In articles published in the society's journal, he described an extensive array of ethnographic material collected during and after his return from Persia, including a collection of ca. 200 votive and sacrificial objects mainly from the area surrounding Hamadan and made primarily of bronze. Additionally, Polak possessed several carved ivory cylinders used as seals and stamps. In his collection were also ancient and more recent coins made of gold, silver, copper, and copper alloys. Some of Polak's ethnographic artefacts are today held in the Weltmuseum Wien (Vienna World Museum), among them a lump of aes rude. Many of these objects, such as bronze arrowheads, were found in various burial tumuli in Persia. The exploration of European tumuli as a designated programme within the Anthropological Society indicates their universalist approach to research goals related to the prehistoric era. By excavating the mounds and

studying their geographic distribution, they hoped to shed light not only on the Great Migration Period but also the earliest origins and evolution of humankind. Polak's written observations indicate that the society's tumulus exploration was carried out far beyond the borders of the Habsburg Empire. Polak planned to systematically explore Persian tumuli and he composed a tumulus map for Persia with the help of the botanists and geologists who undertook collecting expeditions under his aegis.

In 1887 the exhibits and book collections of the Anthropological Society were transferred to the newly founded anthropological and ethnological department at the Natural History Museum. After the library was moved, Polak was named society treasurer, a function he performed without interruption until 1891. Because of his many years of work and research in Persia, he was one of the few members who actually had personal experience in non-European cultures. As evidenced in Polak's writings for the Anthropological Society, his work in this discipline rested on the same three research principals that became integral to ethnography after it became an independent discipline at the beginning of the twentieth century, namely the ethnographer's duty to personally participate in the cultures they are observing, to learn the language of the people being described, and to spend extensive time in the field.

The 1873 World Exposition in Vienna

The extent to which the insights of bourgeois humanism coincided with state economic interests in the second half of the nineteenth century is reflected in Polak's involvement with Persia's official invitation to the 1873 World Exposition in Vienna. The Austrian Ministry for Culture and Education endeavoured to showcase Vienna as a leading centre of education and science, enlisting the help of prominent Austrian doctors and researchers whose achievements exemplified the benefits of progressive development in science and society. Their participation in the international committees of the World Exposition was informed by the liberal educational ideal that linked technical innovation to material prosperity.

In the run up to the exposition, Polak convinced the directors to include Persia because of its importance as a market for Austrian industry. One year before the big event, a committee was formed in Vienna to prepare for Persia's participation in the world expo and they named Polak Imperial Commissioner to the Persian exhibition. In this role he advocated for the Habsburg Empire to install a permanent diplomatic presence in Tehran. This was especially pressing because a trade agreement previously concluded between both monarchies in Paris in 1857 had not yet been implemented owing to a lack of diplomatic representation. In consequence of Polak's efforts, the Austrian Imperial house officially appointed the first permanent ambassador to Persia, Count

Viktor Dubský von Třebomyslice, stepbrother of the author Marie von Ebner-Eschenbach and a pivotal figure in the diplomatic corps. When Count Dubský arrived at the Qajar court in 1872, he presented the Shah with an official invitation to the World Exposition and a brochure composed by Polak, which listed the advantages participation would bring to Persia. The booklet was translated and lithographed in Vienna by the director of the Oriental Academy Heinrich Barb. In addition, Polak wrote the *Special-Catalog der Ausstellung des persischen Reiches* (Special Catalogue for the Exhibition of the Persian Empire)—presumably the only extant in-depth description of Persia's presence at the 1873 Expo. The catalogue provided information to trade and industry on the geology and geography of Persia, their political system, modes of transportation, and agricultural and industrial products. Polak also listed all of the exhibitors, both Persian and European, in the Persian pavilion. Many of the products transported from Persia as examples of their artistic, cultural, and scientific heritage did not make it back after the fair ended. These items were mainly acquired by museums, one example being the antique rug found today in the collection of the Museum of Applied Arts in Vienna.

Polak's work to integrate Persia into the commercial apparatus of Habsburg foreign trade continued with the founding of the Oriental Museum in Vienna in 1874. In order to provide information about business conditions in Persia to trade associations and industry, he published several articles in a publication put out by the museum. He also gave talks as part of the museum's lecture programme. Polak's thoughts on his own role in spreading the advancements of European civilisation were best expressed in an article titled 'Österreichische Lehrer in Persien' (An Austrian Teacher in Persia) published in 1876. In it he retrospectively defined his function as a teacher of medicine in Tehran as inspired by western progressive idealism and arising from his own personal initiative to mediate culture and knowledge; he also emphasised Persia's mutual commitment to Austria in this interchange. His last cooperation with the Oriental Museum was in preparation for the first international carpet exhibition held in Vienna in 1891. The article he wrote for the exhibition catalogue is noteworthy for two reasons: first for its discussion of the development of Persian trade and politics as a result of their participation in the European market economy, and second for its ethnographic description of Persian carpet manufacture at the end of nineteenth century.

Contributions to Persian Lexicography During Polak's Last Years; the Destruction and Rediscovery of His Original Gravestone

Polak is an exemplary prototype of the intermediary in cultural transfer who promotes the flow and adaptation of knowledge in reciprocal, multidimensional ex-

changes. During his nine years in Persia he learned the Persian language in order to study local medical treatises, as well as to be able to read literature and poetry. In accordance with the positivistic expansion of learning during his lifetime, he dedicated the last years of his incredibly productive career to mastering New Persian language and literature, and to teaching Hafez and Saadi at the University of Vienna (besides German and Persian, Polak also spoke Yiddish, French, English, and Hebrew). The fruit of his intensive engagement with spoken Persian was the authorship of a *German–Persian Conversational Lexicon*, which was edited by the Orientalist Franz Sättler and posthumously published due to the efforts of Therese Polak. Polak's contribution to Iranian Studies in Vienna and his Persian lexicography had until now fallen into obscurity. For the first time, through the systematic exploration of his life and work as presented in this book, a more complete picture of Polak's accomplishments can be documented and analysed in their historical context.

The extent to which Polak's identity became connected to Persian language and literature is demonstrated by the words on his gravestone. Shortly before his death in October 1891, he chose a poem by the Persian poet-philosopher Saadi to inscribe the marker of his last resting place in the Jewish section of Vienna's Zentralfriedhof (Central Cemetery). This unique monument to the life of an extraordinary man disappeared during the Second World War and was presumed destroyed. By fortunate accident, the author discovered the remaining fragments of the original gravestone and presented them to the Weltmusem in Vienna. They are today accessible to the public in the permanent exhibition 'Der Orient vor der Haustüre' (The Orient At Your Doorstep).

Afsaneh Gächter (English translation by Lisa Lawrence)
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