

# **Urban Developments in the Time of Cholera: Vienna 1830-1850**

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# Abstract

The role of cholera epidemics in the urban development of Vienna between 1830 and 1850 is the main topic of this thesis. Especially the relationship between medical theory, development of urban infrastructure and the organization of scientific organizations is analyzed. I argue that the importance of medical theory was to a significant extent associated with economic interests, from the perspective of state and municipal authorities. Whereas in the 1830's sanitary cordons were raised all over Europe, on a very large scale, to thwart the spread of cholera and thereby protect the economic category 'population', by 1850 this trend was changing. Sanitary cordons were erected in much smaller 'pathological spaces', particularly in urban environments. The concomitant urban developments resulting from especially miasmatic theories on disease fostered particular urban public policy projects, such as canalization, the increase of fresh-water supply and the realization that overcrowded residential areas were both a social *and* a medical problem. Medicine became a social science, a development that for example materialized in the construction of cholera-hospitals. Cholera functioned as a catalyst in the foundation of the Viennese Doctors' Society, which was to play an important role in influencing urban policies on issues of public health, during the second half of the nineteenth century.

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## Introduction

Cholera is not exactly the first thing that comes to mind when one thinks about Vienna. The city of Freud, Klimt, the splendor of the *Ringstrasse*, the failed artist Hitler, *Secession*, *Wiener Werkstätte* and many more famous individuals is in a sense frozen in time, embodying predominantly the fin-de-siècle. With the possible exception of Paris, there is probably no other city in Europe which both suffers and profits so much from very strong and permanent city branding. Even before the tourist industry reached its current height, Vienna was already well-known all over Europe for a number of stereotypical depictions of the city. Behind this facade of imagined Vienna, a whole array of forgotten historical events and developments are awaiting (re)discovery for the public at large. One of these almost completely neglected chapters in the history of Vienna is the numerous cholera epidemics which haunted the city during the nineteenth century. Between 1817 and 1892 cholera epidemics were a worldwide scourge that also left their imprint on the European continent, which was undergoing a rapid urbanization process during this time. The first epidemic reached Vienna in the summer of 1831-1832. The last significant outbreak occurred in 1873.<sup>1</sup> What happened in between those first destructive outbreaks of cholera and its eventual demise as an urban phenomenon in Vienna is an interesting question.

The contemporary understanding of cholera differs greatly from that of early nineteenth century specialists'. The current definition of cholera goes as follows: "Cholera is an acute intestinal infection caused by ingestion of food or water contaminated with the bacterium *Vibrio cholerae*. It has a short incubation period, from less than one day to five days, and produces an

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<sup>1</sup> Othmar Birkner, *Die Bedrohte Stadt: Cholera in Wien* (Vienna: Franz Deuticke, 2002), 6.

enterotoxin that causes a copious, painless, watery diarrhea that can quickly lead to severe dehydration and death if treatment is not promptly given. Vomiting also occurs in most patients.”<sup>2</sup> It is important to notice the *specific* causal effect of bacteria which is present in the contemporary definition of cholera, since specificity of disease was not proven, let alone widely accepted before breakthroughs in bacteriological research made during the last three decades of the nineteenth century, proved beyond doubt that specific micro-organisms could lead to specific diseases.

The period after 1857, the so called post-*Ringstrasse* era, has received quite a bit of attention of historians studying Vienna. The first half of the nineteenth century, however, is compared with the fin-de-siècle a terra incognita, especially in the context of medical history in the urban setting. Although this study does not shed much light on the general medical history of Vienna in the nineteenth century, perhaps it does draw attention to hitherto largely neglected aspects of this history. By describing the actors involved in the decision making process which led to the construction of medical institutions, such as cholera-hospitals, and the institutionalization of medical knowledge in Vienna, the relationship between knowledge, space and power becomes more apparent.

Diseases have been the subject of historical inquiry since as early as the 1950's. Starting with one of the founding fathers of the discipline of medical history, the late Erwin H. Ackerknecht, numerous books have been published on the historical events called epidemics.<sup>3</sup> This early period in its historiography was characterized by a rather straightforward positivist approach, in which a narrative of victorious science and its heroes was unfolded. From the

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<sup>2</sup> World Health Organization, “Health Topics: Cholera,” World Health Organization, <http://www.who.int/topics/cholera/en/> (accessed March 3, 2011).

<sup>3</sup> See for an overview: Frank Huisman and John Harley Warner, *Locating Medical History: The Stories and Their Meanings* (London: Johns Hopkins University Press, 2006).

1960's onwards, mental diseases increasingly caught the attention of an ever growing corpus of researchers. In relation to this growth of interest in the history of diseases, Michel Foucault's approach turned out to be a highly influential one.<sup>4</sup> His works on topics such as hysteria, the rise of the institution of the insane asylum and the popular metaphor of the medical 'gaze' have set in motion a machinery of research into the links between science and (political) power. His constructivist approach was heavily influenced by the work of the French philosopher Georges Canguilhem.<sup>5</sup>

What most of these social-constructivist studies shared was that they perceived diseases through the gaze of the social impact they had on the locality where they broke out and subsequent countermeasures were taken. The underlying assumption buttressing these studies was that epidemics posed serious challenges to the legitimacy of the political status quo. Reactions to epidemics in the nineteenth century could thus be seen as competing political discourses: contagionism was associated with absolutism and miasmatic etiological explanations were more in line with liberalism. Accepting that a disease was contagious, implied that all borders ought to be closed down, trade minimized and the survival of the political structure of the state was the primary goal. Miasmatic explanations of disease on the other hand did not necessitate the closing of any borders and gave prevalence to the continuation of trade and economy, serving private interests, rather than the states'.<sup>6</sup> What was taken into account to a much lesser extent in these constructivist approaches was the way scientific discourses on disease were framed and how this knowledge spread throughout a given locality.

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<sup>4</sup> Michel Foucault, *The Birth of the Clinic* (London: Routledge Classics, 2003).

<sup>5</sup> Georges Canguilhem, *On the Normal and the Pathological* (Dordrecht: D. Reidel Publications, 1978)

<sup>6</sup> Charles E. Rosenberg, *The Cholera Years: The United States in 1832, 1849 and 1866* (Chicago: Chicago University Press, 1987), Richard E. Evans, *Death in Hamburg: society and politics in the cholera years, 1830-1910* (London: Penguin Books, 1990).



The interrelationship between spatiality and science is an interesting, yet another under researched field in general. This is somewhat surprising, since several studies have shown how fruitful the incorporation of spatiality as an explanatory factor can be in the framework of the history of science.<sup>7</sup> The 'spatial turn' of the 1980's introduced a new method of inquiry for many historians and social scientists. Especially when elements of this spatial turn were integrated into the sociology of knowledge framework, a surprisingly rich and thick historical analysis could be the result of this combination.<sup>8</sup>

To a certain extent this connected to the work of Foucault. The relation between power, knowledge and space were almost unavoidable categories of analysis when writing on disease in a spatial context. Several preliminary remarks are important to take into account here. First of all, the focus of this study is not so much on cholera as such, but on a more general change in the understanding of disease etiology in the first half of the nineteenth century. Cholera is used in this study as the paradigmatic epidemic disease of the nineteenth century and responses to it revealed newly conceptualized explanatory models of disease in general. Secondly, I do not intend to imply that this new understanding of disease was caused by cholera alone. The disease served as an example, yet one which had an extraordinarily strong impact on nineteenth century societies, due to its quick onset and the horrific pathological effect it had on the physique of patients.

What effects did a changed understanding of disease etiology have on the urban development of Vienna? Development in this sense should be understood in two different ways.

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<sup>7</sup> Donald Reid, *Paris Sewers and Sewermen: Realities and Representations* (Cambridge: Harvard University Press, 1990).

<sup>8</sup> Dora Weiner and Michael Sauter, "The City of Paris and the Rise of Clinical Medicine," *Osiris* 18 (2003), 23-42.

First of all there was the ordering of space. Vienna grew rapidly during the nineteenth century.<sup>9</sup> In 1800 20% of the city was employed in the textile industry, effectively making a part of Vienna a proto-industrial city, besides being the imperial capital. This ambiguous position, being an administrative capital of an Empire and hub of industrial growth, made it into a space where old and wealthy families were contrasted with new and at times very poor migrants.

Sizeable masses of unemployed, low or non-educated people were attracted to the city by the combined promise of work and food. This development fostered a changing balance in the city's social structure. Increasingly, the number of people belonging to the lower classes grew, while the aristocratic, political and bureaucratic elite relatively shrunk by comparison. The growing presence of the desolate, less wealthy members of society in Vienna obviously had a social impact as well. Their separation from the social top classes has been exemplified by the construction of the *Ringstrasse*, which commenced in 1857. Carl E. Schorske famously propagated the idea that this project was first and foremost a way for the newly sprawling middle-classes to materialize their political aspirations in the form of historicist marvel and pomp. It was the rise of non-aristocratic elite, who rose to prominence through trade and capitalism.<sup>10</sup> Not disputing this thesis, Wolfgang Maderthaner has pointed out how this circular street increasingly became a social exclusionary device, intended to exemplify the splendor of one part of the population, while decreasing the accessibility to this pomp for another part of the urban populace.<sup>11</sup> But this segregation of classes was already part of the social fabric before 1850. In fact, it played an interesting role in the frantic context of cholera epidemics. What role

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<sup>9</sup> M.J. Dauntton, *Housing the Workers, 1850-1914: A Comparative Perspective* (London: Leicester University Press, 1990), 107-149.

<sup>10</sup> Carl E. Schorske, *Fin-de-Siecle Vienna: Politics and Culture* (New York: Vintage Books, 1981), 25-27.

<sup>11</sup> Wolfgang Maderthaner, Lutz Musner, *Die Anarchie der Vorstadt: Das Andere Wien um 1900* (Frankfurt: Campus Verlag, 2000), 51.

did social background and spatial arrangements play in explanatory discourses on the cause and spread of cholera and did this role change between 1830 and 1850?

Besides the role of space in medical discourses, the institutionalization of science in the city is to a large degree also the subject of this study. Especially in the history of medicine the city holds a special position in the nineteenth century. At the start of the century the cities' medical faculty had a good reputation throughout Europe, partially thanks to the legacy of Anton de Haen (1704-1776). This Dutch physician worked for over twenty years in Vienna, developing a new reanimation method and popularizing the use of thermometers and post-mortem autopsy to diagnose patients. Under his influence the so called 'first school of Viennese medicine' came into being, but around the turn of the century Vienna was no longer the prime center of medical research in Europe. It shifted to Paris, which was the most important and prestigious center of medical knowledge during the first three decades of the nineteenth century.<sup>12</sup> Between 1830 and 1860 Vienna reclaimed its former leading position. The city thus changed during the nineteenth century from a not unimportant, but most certainly not a prime center of medical knowledge production, into one of the most innovative centers of medical science. The literature on this metamorphosis is surprisingly scarce.

Erna Lesky was for decades the greatest specialist on the topic in- and outside of Austria. In the 1960's and 1970's she wrote several standard works on the medical history of Vienna in the nineteenth century.<sup>13</sup> These books offered a wealth of information, but certainly did not include either a critical analysis of the social impact of medicine, nor did they thoroughly describe particular case studies. Rather, the work of Lesky offered a broad overview on a chapter

<sup>12</sup> Dora Weiner and Michael Sauter, "The City of Paris and the Rise of Clinical Medicine," *Osiris* 18 (2003): 23-42.

<sup>13</sup> Erna Lesky, *Die Wiener medizinische Schule im 19. Jahrhundert* (Cologne: Hermann Böhlhaus Verlag, 1965), Erna Lesky, *Meilensteine der Wiener Medizin: Grosse Ärzte Österreichs in drei Jahrhunderten* (Vienna: Maudrich Verlag, 1981).

of Viennese medical history hitherto largely neglected by historians of science. Although the straight forward approach of Lesky still offers useful information, its scope and approach are too descriptive and not analytical enough. Nonetheless, the works of Lesky still are among the very few general works on the medical history of Vienna in the nineteenth century. Lesky was practically the first scholar who specialized in the history of medicine in Vienna in the nineteenth century the story is far from completed. Two relatively recent examples of a fruitful integration of the history of science and urban history support this claim.

In 2003 *Osiris*, an academic journal on the history of science devoted an entire issue to science and the city.<sup>14</sup> In twelve essays, the influence of spatial locations on the development of science in a given locality was shown by a broad range of authors.<sup>15</sup> Furthermore, the historian Susan Craddock published in 2000 *City of Plagues: Disease, Poverty, and Deviance in San Francisco*.<sup>16</sup> Her work offers an analysis of public health policies, disease theory and urban development in San Francisco, between 1860 and 1930. By analyzing several diseases, the relation between space, knowledge and power was brought to the fore in a persuasive narrative. Her approach, heavily leaning on the social-constructivist approach, did not take diseases and discourses of science for granted. Rather, Craddock convincingly showed how space and knowledge can reinforce one another in ascribing meaning onto particular events or individuals. Although Craddock did not work on the Viennese context, nor did she focus on the history of cholera, my study shares some important presuppositions with her work. For example, the assumption that both space and knowledge are constructed in a process pregnant with tension

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<sup>14</sup> "Science and the City," *Osiris* 18 (2003).

<sup>15</sup> Dora Weiner and Michael Sauter, "The City of Paris and the Rise of Clinical Medicine," *Osiris* 18 (2003): 23-42, Antoine Picon, "Urban Cartography and the Scientific Ideal: The Case of Paris," *Osiris* 18 (2003): 135-149, Sven Dierig, "Engines for Experiment: Laboratory Revolution and Industrial Labor in the Nineteenth Century City," *Osiris* 18 (2003) 116-134.

<sup>16</sup> Susan Craddock, *City of Plagues: Disease, Poverty, and Deviance in San Francisco* (Minneapolis: University of Minnesota Press, 2000).

and shifting interests of several actors. The potential power of scientific knowledge and its influence on other spheres of life, such as the spatial development of neighborhoods or cities, is thus a key presupposition of this study. Especially through the formation of scientific societies, or organizations, scientists were able to increase their political influence on the urban level, by making stronger claims of possessing indispensable knowledge necessary for a healthy urban space.<sup>17</sup> The research question I am addressing in this thesis is: what was the relationship between cholera and urban developments in Vienna between 1830 and 1850? By analyzing pamphlets, journal articles, medical books and the archives of the Sanitary Commission of Lower Austria an answer shall be formulated in response to the research question. The way economic theory and interests of the state authorities related to the position and importance of medical theory and specialists in Vienna, is a recurrent theme throughout the thesis, following Charles E. Rosenberg's concept of cholera as a tool for social and economic analysis.<sup>18</sup>

In the first chapter theoretical considerations will be clarified. The chapter introduces numerous relevant concepts which were used to analyze primary source material. Among these concepts are 'knowledge production', the 'centers' in which this took place and the 'framing of disease'. The two main approaches used are thus social-constructivism, combined with elements of the actor-network theory of the philosopher of science Bruno Latour.<sup>19</sup>

The second chapter provides contextual background of political economical concepts, such as 'population' and the *Wohlfahrtsstaat* [welfare-state]<sup>20</sup>, that were challenged by the outbreak of cholera in the Empire. It explains why the interest of administrators went far beyond

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<sup>17</sup> Charles E. Rosenberg, *Explaining Epidemics and Other Studies in the History of Medicine* (Cambridge: Cambridge University Press, 1992), 215-242.

<sup>18</sup> Ibid, 109-121.

<sup>19</sup> Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge: Harvard University Press, 1987), Bruno Latour, *The Pasteurization of France* (Cambridge: Harvard University Press, 1993).

<sup>20</sup> All translations in this thesis are my own, unless stated otherwise.

the mere humane suffering of their inhabitants, but also endangered what was perceived to be strength of the state in an international perspective.

Chapter three has a stronger focus on actual medical theory and the role of space in it. The content of books and pamphlets on cholera in the period around 1850 is compared to that of publications from the early 1830's. Possible changes concerning the origin of the disease, the question how it spread and the prescribed healing methods are taken into account. It will become clear that the history of disease is no neat story of cumulative successful science, but rather that contagious and non-contagious discourses could and very often did overlap.

Lastly, in the final chapter the impact of medical thought on Viennese scientific development is taken into account. Although these chapters will not result in a completely new outlook on Vienna, they will shed light on an often neglected part of its history: the fact that the complicated relationship between science and the city had a peculiar indirect impact on the eventual development of urban space and the construction of elements now all too often disregarded as basic objects in the cityscape, such as canals, sewers and plentiful fresh water in each house.

## Chapter One: Creating Norms and Normality, Creating Health and Pathology

Why would one research a series of epidemics that took place approximately 180 year ago? This is a legitimate question which requires an answer. This chapter attempts to sufficiently answer this question, from a theoretical point of view. One important reason why I argue that the cholera epidemics of 1830-1850 deserve our attention is the particular time frame in which they occurred. It was during this period in the nineteenth century that understandings of the origins of disease, the so called etiology of disease, were part of a lively debate, one that would continue into the early twentieth century. In the decades before the laboratory became the *a priori* scientific method and space of biological knowledge production, different methods of inquiry were used to resolve naturalists' problems, for instance the unraveling of the mechanism of the human body's machinery. For example, the world was thought to consist out of animate and inanimate matter, the origin of disease could be located in the body through comparative autopsies and the predisposition of an individual towards particular diseases' was decisive in case an 'epidemic constitution' would dominate the atmosphere at a particular area.

In this period explanatory concepts of disease and health were starting to be debated and changed. These concepts were for a long time taken for granted. The French philosopher of science, Georges Canguilhem (1904-1995), redefined the thinking on disease and medicine in the twentieth century. He was an important source of inspiration for historians applying the constructivist approach in the history of medicine, such as Michel Foucault. Some of his insights are also applicable to the way I interpret concepts such as *health* and *disease* in this study.

Canguilhem scrutinized everyday terms used while talking about health and disease and thereby drew attention to their constructed origins: “The concept of norm is an original concept which, in physiology more than elsewhere, cannot be reduced to an objective concept determinable by scientific methods. Strictly speaking then, there is no biological science of the normal. There is a science of biological situations and conditions *called* normal. That science is physiology.”<sup>21</sup> Without the pathological there thus cannot be a normative standard to which all that differs from the norm can be differentiated. Especially when an epidemic occurred, it was highly desirable for medical specialists to quickly demarcate healthy and sick people, in order to create effective sanitary cordons. A swift diagnosis based on demeanor, posture or character of patients was one of the methods used by medical practitioners in the first half of the nineteenth century. It was assumed that the swiftness, by which a diagnosis was made, would raise the level of trust patients had in the skillful eye of the doctor. During the middle decades of the nineteenth century, diagnostic practices shifted from the external impression left behind by the patient, to the interior of the body, through the usage of microscopes and pathological comparative anatomy, comparing organs and localizing pathology inside the body.<sup>22</sup>

Canguilhem was one of the first to critically observe that the term 'normal' in medicine has a special ambiguous quality. It does not only refer to the habitual state of the organs, but also ascribes a *normative* quality onto this state by elevating it to an ideal state of the body.<sup>23</sup> Taking this mechanism currently controlled by the pharmaceutical industry into account, it is important to ask the question *who* actually determined in 1830-1850 what was perceived to be the habitual state of the organs and can thus diagnose bodies as being subject to pathological processes.

<sup>21</sup> Georges Canguilhem, *From the Normal to the Pathological* (Dordrecht: D. Reidel, 1978), 138.

<sup>22</sup> Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900* (New York: Cambridge University Press, 2000), 22-23.

<sup>23</sup> Georges Canguilhem, *From the Normal to the Pathological* (Dordrecht: D. Reidel, 1978), 69.



In order to clarify the diagnostic practice of medical practitioners in the first half of the nineteenth century, some considerations concerning the process by which diagnosis was established, are necessary. Only after this is done it will become clearer why diagnosis during the proto-clinical age of medicine, until the early nineteenth century, was of such an extremely individual nature. In the pre-specificity of disease era it was by way of statistics nearly impossible to determine whether or not an individual is in a normal, healthy condition or not. The individual relativity of biological norm makes it an extremely difficult and risky affair to diagnose more than one person at once.<sup>24</sup> In an age where every body was conceived as being an unique machinery, not only was each diagnosis and disease particular to that individual, prescribed therapies and medicine were as well. Or, to translate this abstract theory to 1830's practice of *Diätetik* [dietetics]: what made up an unhealthy diet for one person might be restoring health for the other. Even though in theory anyone could make a diagnosis based on observation of symptoms if a disease was well known, such as the Black Death, this was not the case with a truly hitherto unknown disease, such as cholera. Diseases were diagnosed and classified according to the symptoms they caused in patients' bodies: that is why numerous types of cholera could exist simultaneously. Diseases were imagined to be of a transitory nature, where one level of cholera could develop into another, milder or more deadly variant, a diagnosis made according to the predominantly perceivable symptoms.

Cholera entered the historical stage at a critical moment, during the decades in which state run medical educational institutions were founded, expanded and professionalized. It was a period in which the war against quacks and the standardization of medical practitioners, pharmacies and physicians was underway towards a tightening of the diagnostic gaze: the medical practitioner became in a sense a professional with the advent of the hospital, clinic and a

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<sup>24</sup> Ibid, 105.

broadening of medical specializations.<sup>25</sup> Pamphlets, small handbooks, newspaper-articles and leaflets on cholera are excellent sources to research in this context. Exactly because they were intended for a large audience, they can be seen as the cradles of facts. They constituted and continuously reconfirmed new facts on cholera and disease, exactly by not pointing out that new information was presented in the texts' body. Or, as the philosopher of science Ludwig Fleck put it: "Certainty, simplicity, vividness originate in popular knowledge. That is where the expert obtains his faith in this triad as the ideal of knowledge."<sup>26</sup>

In contemporary theory on health and disease a separation can be made between lay models of health and scientific models of health. In the first half of the nineteenth century these two conceptual approaches were much more intertwined. During a time when doctors' sat at the patients' bedside in his or her home, carefully and patiently listening to their clients' observations, the influence of the patient on the eventual diagnosis was considerable. This relationship between patient and doctor changed during the nineteenth century, when medical knowledge became increasingly specialized and inaccessible for laymen.<sup>27</sup> Symptom-based classification and diagnosis of disease was more dominant in the theories on disease, than was a clear cut description of specific etiology. The challenge for newly burgeoning medical specialists was to uncover the mechanisms of disease, thereby slowly removing themselves from humoral explanatory schemes which attributed the cause of disease to imbalance of the bodies' four humors.<sup>28</sup> Even though through pathological anatomy the cause of disease was traced to particular parts of the body, the overall image of the relationship of health and disease was much

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<sup>25</sup> Andrew Cunningham, "Transforming Plague: The Laboratory and the Identity of Infectious Disease," in *The Laboratory Revolution in Medicine*, ed. Andrew Cunningham and Perry Williams (Cambridge: Cambridge University Press, 1992), 220-221.

<sup>26</sup> Ludwig Fleck, *Genesis and Development of a Scientific Fact*, ed. Thaddeus J. Trenn and Robert K. Merton (Chicago: University of Chicago Press, 1979), 115.

<sup>27</sup> Charles E. Rosenberg, *Explaining Epidemics and Other Studies in the History of Medicine* (Cambridge: Cambridge University Press, 1992), 310-315.

<sup>28</sup> Michael Bury, *Health and Illness* (Cambridge: Polity Press, 2005), 2-3.

more holistic. Slowly diseases were detached from the body and became entities by themselves. With this move however, through a more precise diagnosis of the causal agents or vectors of disease, also the responsibility of individual members of the state or city to remain healthy grew. After all, they could know what kind of behavior would make them sick and the old faculty of predisposition towards particular diseases could no longer be addressed and made responsible to explain why particular individuals became ill and others not. This tension between causal factors leading to the onset of a pathological process for which an individual could be held responsible, and factors that were out of control of the individual, such as atmospheric conditions or the contagious nature of particular diseases, are still present in the writing on disease and can potentially have a great impact on policymakers.<sup>29</sup>

Concluding the topic of what health and disease comprise, it is important to point out the different goals medicinal books can work to: the return to the *normal* state of the body, or to a perceived *healthy* body.<sup>30</sup> The difference being, the first category is used to establish disease and the second is an idealized perceived category to strive to. “To be in good health means being able to fall sick and recover, it is a biological luxury.”<sup>31</sup> The difference between the two categories is subtle, but important. From the perspective of state-rulers, it was desirable to have as many healthy members of society as possible, since they could possibly work, were eligible to conscription into the army or expand the population by reproducing.

Cholera made a devastating impact in the early 1830's, forcing fundamental claims on the origin of disease to be revealed to the public at large, for example in the form of pamphlets issued by the municipal authorities of Vienna on how to execute preventive measures concerning the epidemic. A key assumption of this thesis is thus that cholera in a sense was helping to

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<sup>29</sup> Ibid, 12.

<sup>30</sup> Georges Canguilhem, *From the Normal to the Pathological* (Dordrecht: D. Reidel, 1978), 107-108.

<sup>31</sup> Ibid, 116.

intensify a modest scientific revolution in the field of medicine and posed a challenge to the authority of the credibility of state run centers of medical knowledge, such as the medical university. I thus interpret cholera as an enforcer of an already ongoing debate on the necessity to organize medical science and question the origin of disease, a hyperactive actor in the network of changing disease concepts, and not only as an actor threatening political stability.<sup>32</sup>

A second impetus to reconsider the early cholera epidemics could apply to any disease present in the pre-laboratory era. With the advent of bacteriology and the laboratory, diseases are before and after this historical development no longer the same. Even though the earliest known identification of tiny living entities as vectors of disease causation were published in the late seventeenth century, these were rather exceptional, than customary explanatory models at the time of publication.<sup>33</sup> The identity of disease has changed dramatically due to different diagnostic practices. After the laboratory era, only the bacteriologist with the help of his or her instruments could definitely identify the causal agent of disease, since this is not observable with the pre-laboratory tools, the eye without an instrument of precision.<sup>34</sup> Even more so, the notion of disease specificity was not yet developed. We are thus dealing with a *different* historical actor when talking about cholera in 1830, as opposed to cholera in 1900.<sup>35</sup>

Thus it is very important not too engage in a teleological description of the historical development of research into cholera and the etiology of disease in general. Therefore, one key methodological claim I share with David Bloor, and most historians of science in general, is the

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<sup>32</sup> For another opinion, set though in American context: Charles E. Rosenberg, *The Cholera Years: The United States in 1832, 1849 and 1866* (Chicago: Chicago University Press, 1987).

<sup>33</sup> W. D. Foster, *A History of Medical Bacteriology and Immunology* (London: William Heinemann Medical Books, 1970), 2-8.

<sup>34</sup> Andrew Cunningham, "Transforming Plague: The Laboratory and the Identity of Infectious Disease," *The Laboratory Revolution in Medicine*, ed. Andrew Cunningham and Perry Williams (Cambridge: Cambridge University Press, 1992), 238-243.

<sup>35</sup> Taking into account the proof of the cholera bacteria's causal relation with the state of illness of patients', published in 1883 by Robert Koch (1843-1910).

so called symmetry postulate.<sup>36</sup> This has a couple of important consequences. First of all, I am not interested in evaluating, judging or setting apart epistemologically invalid and, by now, negated theories of disease, from historical theories that in contemporary eyes are ‘correct’. In other words, the actual development of science should not be taken for granted, but rather, the relationship between disputing visions on a topic such as disease causation should be looked upon in from a distanced perspective, taking both ‘science’ and ‘pseudoscience’ seriously.

Within the field of constructivism, in which my approach is mostly embedded, I do not fully adhere to the actor-network theory or to the side of the propagators of the strong-program, who persistently emphasized the predominantly social origins of scientific knowledge.<sup>37</sup> There is a middle way between emphasizing a macro-social context and a micro-social context, such as the laboratory, in which one can analyze science in history. In the micro-setting Latour's claim that nonhuman actors have an equal share of agency in the outcome of fact-creating processes is difficult to accept, radical as the consequences of this stance inevitably are.<sup>38</sup> For example, if I were to ascribe agency to cholera-bacteria in 1831, I would re-re-tell the story of bacteriologists from the late nineteenth, early twentieth century. Epistemological flaws are thus unavoidable: the cholera bacteria did *not* have any agency in the process by which several explanatory discourses on cholera came about in 1830-1850, simply because the cholera *bacteria* as a scientific fact was not yet born.

Besides questioning the necessity to research early cholera epidemics, one can also wonder why Vienna is chosen as locality, since cholera epidemics occurred all over Europe in

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<sup>36</sup> Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Cambridge: Cambridge University Press, 1992), 7-8.

<sup>37</sup> The differences between the two camps are described in a succinct manner in: Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Cambridge: Cambridge University Press, 1992), 10-12.

<sup>38</sup> Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science*, (Cambridge: Cambridge University Press, 1992) 42.

the nineteenth century. There are several good reasons to focus on Vienna as an historical location of inquiry: some of these reasons are theoretical in nature and others are practical. The urban setting of scientific research provides the historian multiple potentially fruitful approaches. For one, science was, especially since the nineteenth century, to a large extent conducted *in* cities, but also applied *to* cities. Therefore, a particular relationship between the city as context and science as conduct arose, whereby both location and scientific practice had an often lasting impact on one another.<sup>39</sup>

A striking example of this relationship between scientists and the city was the British sanitary movement. It was of great influence on urban policy and development during the nineteenth century and rose to prominence as an influential political force roughly between 1820 and 1840. In this thesis I shall describe how a similar relation between medical specialists and urban space came into existence at a slightly later period in Vienna, between 1840 and 1860. One theoretical assumption these early urban reformers supported, was the concept of the natural system of the body. This was the idea that the causation of diseases can be physically located in the body, for example in a particular organ, an idea which greatly enforced the drive to exercise pathological anatomy on a large scale.<sup>40</sup> The British sanitary movement eventually ascribed the concept of the bodies' natural system to cities as well: dirty streets were like greased veins in the body, if they are clogged, the patient becomes ill and disease fosters.<sup>41</sup> This transfer of ideas on the human body and health to descriptions of the city's development has been researched both in

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<sup>39</sup> Sven Dierig, Jens Lachmund and Andrew J. Mendelsohn, "Introduction: Toward an Urban History of Science," *Osiris* 18 (2003), 4-8.

<sup>40</sup> The idea that disease resides as it were inside a particular organ or part of the body is a concept from the Italian physician Giovanni Battista Morgagni (1682-1771). Dora Weiner and Michael Sauter, "The City of Paris and the Rise of Clinical Medicine," *Osiris* 18 (2003), 26.

<sup>41</sup> Graeme Davison, "The City as Natural System: Theories of Urban Society in Early Nineteenth-Century Britain," in *The Pursuit of Urban History*, ed. Derek Fraser and Anthony Sutcliffe (London: Edward Arnold Publishers Ltd, 1983), 355-361.

the case of London and Paris.<sup>42</sup> Streets needed to be wide and open, so that traffic could pass easily and barricades would be more problematic to erect. The relation between medical theories and urban space is not only interesting, but also a central element in the story of cholera in Vienna, since it had a direct impact on the infrastructure and the development of scientific institutions in the city.

It was exactly in the period around 1850 that Vienna quickly became the center *par excellence* in the field of pathological anatomy. In this era it was common practice all over Europe to draw parallels between the human body and the largest congested spaces in which large groups of humans lived their lives: cities. In the nineteenth and a large part of the twentieth century a persistent stream of thought on urban growth was dominant. Through urban ecological discourses the relations between different social groups within the city and their spatial allocation were in fact *naturalized* and consequently represented as the inevitable and *normal* pattern of urban growth.<sup>43</sup> For instance, it was thought to be normal that migrants in Vienna were mostly falling ill to cholera epidemics, since they were prone to the disease, disregarding the fact that they lived in overcrowded and damp living quarters, suburbs with lower quality houses. Since the 1980's especially neo-Marxist social geographers have strongly criticized the assumed inevitability and teleological driven explanatory models arguing for a natural growth pattern of cities, making extensive use of organicist metaphors.

For example, through the creation of so-called cholera hospitals, urban reform in the form of sewage and drainage systems and the reconstitution of Vienna in *Bezirke* [districts], I argue that medical science and urban development were to a certain extent mutually constitutive.<sup>44</sup> A

<sup>42</sup> Dora Weiner and Michael Sauter, "The City of Paris and the Rise of Clinical Medicine," *Osiris* 18 (2003).

<sup>43</sup> Mark Gottdiener, *The Social Production of Urban Space*, 2<sup>nd</sup> ed. (Austin: University of Texas Press, 1997), 25-27.

<sup>44</sup> Sven Dierig, Jens Lachmund and J. Andrew Mendelsohn, "Introduction: Toward an Urban History of Science," *Osiris* 18 (2003), 5-6.

common assertion in gender and neo-Marxist approaches to urban history is that this relationship between medical science and urban space was reconfirming and stabilizing existing social-economic relations between different classes in a given society, to such an extent that this was the actual motivation behind many sanitary improvements or changes in the cityscape.<sup>45</sup> Although I think this claim is too radical and difficult to prove, I do agree with the underlying assumption that no space is neutral: it is simply not-contingent, but ordered by particular power-relations.<sup>46</sup> In the next chapter the relation between the research category population and epidemics will be described. On the macro-level of state interests', I will show why the cholera epidemic of 1831-1832 posed a challenge to the perceived strength of the state. On this broad level, I thus follow Michel Foucault's argumentation. In the third chapter the more localized context of Vienna will be central to the analysis and the way space was used in medical discourses will be described.

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<sup>45</sup> Susan Craddock, *City of Plagues: Disease, Poverty, and Deviance in San Francisco*, (London: University of Minneapolis, 2000), 12.

<sup>46</sup> Ibid, 8.



## Chapter Two: The Birth of Population in the *Kammer*

The main topic of this chapter is the development of health as a mostly individual or family based concern into an important category in public policy. The increased interest of the Habsburg state with the health of its inhabitants was no coincidence. In order to understand why the first cholera epidemics were a source of great concern for the Austrian government, it is necessary to look beyond a merely humanitarian concern regarding the health of individuals. Nonetheless, I agree with Erwin H. Ackerknecht that cholera epidemics were in a sense testing the social stability of societies with their disruptive, panic-inducing effects.<sup>47</sup> But I also argue and emphasize that the political economical thought of a couple of theorists of cameralism was essential to the conceptualization of a powerful state, which was equated to a healthy population. The early cholera epidemics seen from this perspective were testing the states' capacity to achieve a much desired goal, namely a healthy and long-living population. This category of measurement and policy became increasingly important in Europe of the late eighteenth, early nineteenth century and the Habsburg Empire was no exception to this rule. The measurement of numerous variables at a population level, were thought to reveal strengths, weaknesses and above all regularities of the social body.<sup>48</sup>

One of the interests expressed in eighteenth and early nineteenth political economical Austrian texts, was the desire to have a healthy population. To have a healthy population that was sizeable and growing implied having a powerful state. In this context it makes sense to mention Michel Foucault's juxtaposition of on the one hand the age old concept of 'the people'

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<sup>47</sup> Erwin H. Ackerknecht, "Anti-contagionism between 1821 and 1867," *Bulletin of the History of Medicine* 22 (1948), 562–93.

<sup>48</sup> Dorothy Porter, *Health, Civilization and the State* (London: Routledge, 2005), 49-51.

and on the other hand ‘the population’. According to Foucault in the shift from mercantilism with its strong emphasis on the low wages of peasants and basically low prices of all commodities in the realm, to physiocracy, a parallel shift from people, to emphasizing the importance of ‘the population’ as a concept of government took place. Whereas ‘the people’ were to be regulated and prevented from rebelling, ‘the population’ were those inhabitants comprising economic active actors in the realm, filling through their industriousness the *Kammer* [treasury] with gold, while accepting the increased regulation of their behavior and lives.<sup>49</sup> However, from the eighteenth century on there is a general understanding among cameralists that mere expansion of the population will not do the trick. The population needs to be in constant balance with the allotted territory they are employed on; therefore, the spatial allocation of the inhabitants of a political realm in connection with the available natural resources and subsequent commercial activity, were of central importance to *Staatswissenschaft* [sciences of state] in the eighteenth and early nineteenth century.<sup>50</sup>

One key element in the increased regulation of urban space was to establish norms, based on information gained from statistical surveys. Especially to prevent epidemics from spreading through cities, it was deemed important to register the amount of casualties during an epidemic in each district, region or province. Distilled through the interpretative gaze of administrators, this resulted in establishing an average, or normal, number from which norms could be derived.<sup>51</sup> This average then could be made normative by making it a norm, from which diversion was considered to be undesirable or even unhealthy. The creation of norms also resulted in groups or territories which differed from the norm, usually the poorer, consequently construed as peripheral areas in the realm. A very important motivation and support of statistical

<sup>49</sup> Michel Foucault, *Security, Territory, Population* (New York: Palgrave MacMillan, 2007), 34-44.

<sup>50</sup> Ibid, 323-324.

<sup>51</sup> Ibid, 63.

research was economic in origin. Exchange and spread of commodities through trade posed a major challenge to states and their bureaucracies. The challenge of creating an ideal of commodities and fixation of peoples and their behavior lead to the sudden awareness of the existence of an imperfect trade balances. If competitors, such as other states outdid the rulers' administration, this implied the risk of less international power for the monarch and states.<sup>52</sup> Unruly masses, epidemics and other disturbances of imagined stable spaces disrupted an idealized mental construct of the smoothly functioning cameralist state. Therefore, the art, discipline of policing comprised after its institutionalization at universities in German states and Austria in 1749, the following: the number of able-bodied men, a suitable provision of necessary food-commodities, 'healthy' spatial arrangements, proper activity of the population (high productivity) and lastly, the regulation of professions and consequently the kinds of commodities circulating through the states' territory.<sup>53</sup>

To what extent did states' actually succeed in realizing such an idealized regulated state? Until recently it was assumed, following Marc Raeff's *The Well-Ordered Police State*, that the intentions uttered by several theoreticians of *Policywissenschaften*<sup>54</sup> were more or less exactly executed to the letter.<sup>55</sup> However, this view is increasingly challenged and accordingly so should the idea of an ever increasing policing and regulating state, a pattern dear to many of Foucaults' disciples. Connected with this, the traditional juxtaposition between liberal concepts of public health versus medical police is also increasingly questioned.<sup>56</sup>

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<sup>52</sup> Ibid, 64-66.

<sup>53</sup> Ibid, 325-326.

<sup>54</sup> I decided not to translate this term in the text, since its meaning is ambiguous. *Policy/Polizey*, since both spellings were used in texts, refers to a form of governance based on the regulation of the populations' behavior and demeanor. I thus chose not to translate this term since it has several meaning can cause confusion when translated to English. It referred not to policing per se, but rather to a set of policy regulations and plans on how to regulate/police the health and well-being of the population of the state

<sup>55</sup> Marc Raeff, *The Well-Ordered Police State* (London: Yale University Press, 1983).

<sup>56</sup> Patrick E. Carroll, "Medical Police and the History of Public Health," *Medical History* 46, no. 4 (2002): 461-494.

The connection between the concept of population and the construed problem of internal stability and external safety of the state was one which crossed boundaries of several European states and in fact was a common denominator of the eighteenth and first half of the nineteenth century. In order to achieve a level of control over the inhabitants of the state, several styles of exerting power were used throughout Europe. Stereotypes of a strongly centralizing, semi-authoritarian tendency in policy exclusively present in the German states and the Habsburg Empire does no longer hold. According to this view, the British liberal public health concept ought to be juxtaposed to Austria's *medizinische Policey*, assuming British policy was much less coercive. However, similar to the moniker public health, *medizinische Policey* was more a set of ideas than necessarily a strictly executed practice, developed by cameralists such as the Germans Joseph von Sonnenfels (1732-1817) and Johann Peter Frank (1745-1821).<sup>57</sup>

Frank specifically pointed out the danger of large groups of people residing in small spaces. He envisioned the city to be an organism, which in a mechanist manner could be explored, mapped and ultimately completely known and controlled.<sup>58</sup> The historian of medicine Patrick E. Carroll mentioned seven different topics and fields covered by Frank's writings. These seven areas were: 1) the community, with a special focus on women and workers and specifically the poor and prostitutes, 2) nuisances which would destabilize the mood and general social atmosphere and thus possibly caused diseases, 3) regulating of the physical environment in the form of streets and for example the dimensions of newly constructed buildings, 4) food and drinks, especially fresh products, 5) possibly hazardous materials such as explosives and poisonous products, 6) occupational hazards for example mining and lastly 7) the checking of medical practitioners themselves, especially in the decades before medical degrees of the

<sup>57</sup> The term *medizinische Policey* was first used in 1764 by another German cameralist, Wolfgang Thomas Rau (1721-1772). George Rosen, *A History of Public Health* (Baltimore: Johns Hopkins University Press, 1993), 137.

<sup>58</sup> Peter Payer, *Der Gestank von Wien* (Vienna: Döcker Verlag, 1997), 28.

universities were required of physicians.<sup>59</sup> Frank's six books of listed regulations were a practical expression of the idea that states' are responsible for the health of their citizens and have the right and duty to, when necessary, intervene in even the most intimate parts of their lives. Frank was one of the first authors to point out that the systematic and regular collecting of information on the housing, lifestyle, clothing and food-patterns of communities can be used to increase the longevity of the population.<sup>60</sup>

### **The birth of *Policeywissenschaft* in Vienna**

As stated earlier, the importance of Sonnenfels for the Austrian context cannot be underestimated. Central to his work was the concept of the *Wohlfahrtstaat* [welfare-state], the idea that the state was responsible for the health of its population. Attention was increasingly devoted to the living conditions, the environment in which individuals reside, but for which they cannot necessarily be held responsible.<sup>61</sup> The state was able to regulate this living environment more easily, than it was able to control the behavior of individuals. A system of so called *medizinische Policey* is the result of this logic, which Johann Peter Frank summarized as:

An art of defense, a teaching in order to protect humans and their pack animals from the negative consequences of living together on a large scale. Especially the physical well-being will be strengthened and as a consequence, they shall head towards their inevitable fates to which they are subjected, without suffering too many physical ills.<sup>62</sup>

<sup>59</sup> Patrick E. Carroll, "Medical Police and the History of Public Health," *Medical History* 46, no. 4 (2002): 465.

<sup>60</sup> George Rosen, *A History of Public Health* (Baltimore: Johns Hopkins University Press, 1993), 138-142.

<sup>61</sup> Peter Payer, *Der Gestank von Wien* (Vienna: Döcker Verlag, 1997), 23.

<sup>62</sup> "Eine Vertheidigungskunst, eine Lehre, die Menschen und ihre thierischen Gehülffen wider die nachtheiligen Folgen grösser Beysammenwohnungen zu schützen, besonders aber deren körperliches Wohl auf eine Art zu befördern, nach welcher solche, ohne zuvielen physischen Uebeln unterworfen zu seyn, am spätesten dem endlichen Schicksale, welchem sie untergeordnet sind, unterliegen mögen." Johann Peter Frank, *System einer vollständigen Policey* (Mannheim: 178) quoted in: Peter Payer, *Der Gestank von Wien* (Vienna: Döcker Verlag, 1997), 24.

From 1763 onwards a new chair was founded at the University of Vienna, one bearing the title *Policey- und Kameralwissenschaften*. Joseph von Sonnenfels (1733-1817) was the first person who taught this set of ideas on public policy at the university and was thereby indirectly responsible for the creation of newly trained bureaucratic elite, educated to realize the new theoretical outlook on the relationship between state and inhabitants.<sup>63</sup> However, Sonnenfels had an important predecessor in the same field. The Prussian Johann Heinrich Gottlob Justi (1717-1771) was in the Austrian context arguably the most influential German cameralist and spend in 1750-1754 several years at the *Theresianum*, an imperial academy founded to prepare young man for civil service. He lectured there on cameralism as a practical science, with the goal to assure the good order, security and welfare of the commonwealth. This was a problematic endeavor in an Empire that was pregnant of different laws, economic regulations and legal codes. His teachings were also undermined by the fact that he was not allowed to asses the policy and decision making process regarding taxation. Economic data were so much valued, that no outsider was able to review them.<sup>64</sup>

This partially explains why *Kameralwissenschaften* [state and treasury sciences] first rose to prominence in much smaller, and in the aforementioned fields consequently more homogenous, principalities.<sup>65</sup> The difference between *Staats* - and *Kameralwissenschaften* was not always easy to define. The first chair of this kind had been founded in 1727 in Halle. The early, northern German conceptions of cameralism differed from that of Sonnenfels in 1763. In the earlier forms, the main concern of the cameralists was the constructability of monarchical power, one that was not supposed to be based upon opportunistic Machiavellian-like power

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<sup>63</sup> Grete Klingenstein, "Between Mercantilism and Physiocracy: Stages, Modes, and Functions of Economic Theory in the Habsburg Monarchy, 1748-63," in *State and Society in Early Modern Austria*, ed. Charles W. Ingrao (West Lafayette, Purdue University Press, 1994), 181.

<sup>64</sup> Ibid, 196.

<sup>65</sup> Ibid, 191-192.

politics, but one based on a definite relationship between rulers and ruled. In order to maintain this relationship, the ruler should make his subjects happy and wealthy. This would allow the ruler to increase the income of the state, which could then in turn wage war, grow and survive.<sup>66</sup> The state treasury, symbolized by the *Kammer* where the money was deposited, was in this model in a symbiotic relationship with the subjects and its prime concern was not so much with legitimizing the authority of the ruler, but much more securing the future existence of the state. Whereas Cameralism in northern Germany was mostly concerned with the maintenance of land and people, it had a certain preoccupation with trade and consequently with the question how relations with other states should be formulated.

*Policey* during Sonnenfels' time focused strongly on the creation and maintenance of inner order and 'happiness' of the population.<sup>67</sup> Policing in this sense was not so much aimed at questioning the legal status of already completed actions, but was more or less a governing set of regulations that would simplify the accomplishment of good governance, by creating order and regularity in behavior of people. The main purpose was to shrink the distance between future results and present expectations as much as possible, so that effective governance could be realized. The predictability of future income was the desired outcome of the endeavor. One way of doing this was to issue regulations on all elements that could have an impact on the productivity of citizens, ranging from the shape of houses to what kind of products were to be produced in a particular form. In order to systematize economic growth an ever expanding set of regulations was issued. Having a very reliable prediction of both the physical condition and size

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<sup>66</sup> Keith Tribe, *Strategies of Economic Order: German economic discourse, 1750-1950* (Cambridge, Cambridge University Press, 1995), 16-17.

<sup>67</sup> *Ibid*, 19-20.

of the population was obviously in the interest of monarchs, since with this information the likelihood of executing sound policy measures increased significantly.<sup>68</sup>

The fact that the control of the political body entailed control of the society is also relevant in this context, since the two concepts were not differentiated from one another at this point of time. Consequently an infinite project to administer, protect, order and restrict the individuals comprising and thus influencing the political body was theoretically developed. Since it was not clear when a moment of closure could be reached in this project, new tools had to be invented in order to curtail and if possible, minimize, the growth of *Policey* based ordeals. Sonnenfels' solution for this problem was to stress the importance of protecting the 'common good'. This had to be achieved through the installment of a secure moral order. This dominant morality had to penetrate the powerful social institutions of the *Stände* [estates] and family. Whereas the early eighteenth century manifestations of *medizinische Policey* in Prussia were mostly concerned with outlawing various forms of quackery and regulating pharmacies, the early nineteenth century Austrian cameralist theory was mostly interested in prophylactic policy measures.<sup>69</sup>

Good morals were supposed to be trickling down to the level of the individual through the institutions of science, religion and education. In this concerted attempt to influence the eventual behavior of new citizens through the creation of formative institutions such as schools, the goal was not so much the securing and maintaining of individual freedom, but rather the identification on behalf of the individual citizen with the states' interest: welfare, security and good health constituted the common good. Anything that would imperil the imagined state of equilibrium of human behavior and conduct was criminalized. This in turn would diminish the

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<sup>68</sup> Ibid, 21.

<sup>69</sup> Dorothy Porter, *Health, Civilization and the State* (London: Routledge, 2005), 53.



maximum revenue the state could gather from its subjects. Thus for example suicide, abortion and homicide were primarily a challenge to the states' maximum possible profit and power and only secondarily condemned on individual moral or ethical grounds.<sup>70</sup>

## **The secularization of medical knowledge and care**

Besides the influence of northern German cameralists, there was a second region which provided the Habsburgs with new, innovative theory on governance. These were the Italian possessions of the Empire, a region where censorship was less strict and new knowledge circulated from it to the Austrian lands. Although it is often thought that the reign of Joseph II (1780-1790) was much more characterized by toleration towards religious minorities than the reign of Maria Theresa (1740-1780), when due attention is paid to the prehistory of Josephinian toleration, it becomes clear that this toleration had different origins than the 'benevolent' personality of Joseph II. The influence of the prominent early Italian enlightenment thinker Ludvico Antonia Muratori (1672-1750) ought to be mentioned in this context.<sup>71</sup> Combined with the influences of Jansenism, the ideas of Muratori had a profound impact. He wanted to reorient Catholicism once more towards pastoral work. The search for a more genuine and inward-looking religious practice naturally included a stark diminishing of semi-superstitious rites and processions. Moreover, the size and importance of monasteries was to be curtailed as well.

It was especially the Jesuits who felt the direct impact of these new regulations. In the 1750's they lost their monopoly on censorship, a powerful tool which was now relegated under

<sup>70</sup> Keith Tribe, *Strategies of Economic Order: German economic discourse, 1750-1950* (Cambridge, Cambridge University Press, 1995), 23.

<sup>71</sup> H.M. Scott, *Enlightened Absolutism. Reform and Reformers in Later Eighteenth-Century Europe* (London: Macmillan, 1990), 160.

the banner of the state. The influence of the papacy was furthermore curtailed in the 1760's and the focus on local parish work increased. Even though the official state doctrine was supporting Catholic orthodoxy, in reality a significant shift of power to the benefit of the state was coming into being.<sup>72</sup> The universities were also subject to reform in the 1750's. From the 1730's onwards, the majority of nobility that wanted to become active in the states' expanding administrative body had to go far beyond the borders of the Habsburg Empire to receive proper training. The borderline arcane education provided by the Jesuit professors at the University of Vienna for example, triggered a fierce reaction from the newly appointed Dutch Jansenist Gerard van Swieten (1700-1772). He reformed the medicine faculty drastically, branding the name of Vienna as a stellar educational institution. Under Joseph II, moreover, German became the standardized language in which professors lectured. So not only did the influence of the centralized state grow in regards to the estates, also in regards to the papacy and several Catholic orders, the second half of the eighteenth century was one of shifting power and responsibility.<sup>73</sup>

The University of Vienna was to play an important role in the secularized educational context of the Habsburg Empire's capital. Throughout its existence, the influence of the University of Vienna on local policy concerning epidemics has always been significant. Ever since it was founded in 1365, it had both functioned as an educational center for the training of medical personnel and as an important advisory board in the case of an epidemic disease causing havoc in the city. In 1679 the predecessor of the sanitary commission which would decide upon the preferred countermeasures against cholera was first appointed, as a consequence of the bubonic plague which spread through the city. From early on it was clear to the administrators that it was mostly the poorest inhabitants of the city who fell ill to most diseases. In 1708 the

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<sup>72</sup> Ibid, 162-166.

<sup>73</sup> Ibid, 170-174.

poor residents of the *Vorstädte* [suburbs] were provided with special doctors by the city council and trained by the university.<sup>74</sup> It was custom for richer inhabitants, that in case of illness, they would be attended by their personal or family physician. He would diagnose them and prescribe a fitting therapy to thwart the continuation of disease. However, there were quite some hospitals constructed before the *Allgemeines Krankenhaus*<sup>75</sup> [general hospital] opened its doors in 1784. Like elsewhere in Europe, the origin of these early, medieval hospitals was strongly connected to Christianity. In Vienna, most hospitals were originally nursing homes, resting places, for pilgrims moving east- or westwards.<sup>76</sup>

In the eighteenth century, especially during Joseph the Second's reign, the Habsburg state appropriated most of the responsibilities formerly dealt with by a coalition of religiously motivated hospitals and private entrepreneurs, as medical mercenaries. The general hospital was modeled after the *Hotel-Dieu* in Paris, but the first intention to construct a public hospital run specifically by the state can be traced back to 1686. At first, the idea was to construct an infirmary for crippled and handicapped soldiers, whom were not an uncommon sight in Vienna due to the many armed conflicts the state had during the seventeenth century.<sup>77</sup> The new hospital was used as both a space for care and a space for practical training and practice based university education. Patients were used to teach new generations of doctors how to diagnose and treat different kinds of diseases.

The medical clinic got a serious quality boost with the appointment of Johann Peter Frank (1745-1821), who served as director of the general hospital and professor of the medical clinic until 1804. He quarantined patients and greatly increased the amount of fresh water led to the

<sup>74</sup> Karl Heinz Tragl, *Chronik der Wiener Krankenanstalten* (Vienna: Böhlau Verlag, 2007), 26.

<sup>75</sup> From here on referred to as general hospital.

<sup>76</sup> Ibid, 28-30.

<sup>77</sup> Ibid, 33.

hospital and also expanded the number of patients used for educational ends.<sup>78</sup> These developments are important to keep in mind, because they laid the basis on which the so called second Viennese school of medicine, starting approximately around 1840, could flourish. It combined precise diagnosis with pathological anatomy, making Vienna the world class center of medical knowledge in the middle of the nineteenth century.<sup>79</sup>

A great problem underlying the practice of *Policey* was exactly the fact that it was a task without clear end. Opposed to what is at the core of liberalism, individuals were not conceived in a way that would allow them to have some innate capacity to self-regulate their behavior. Rather, a constant regulation from above, exerted by state officials, was necessary. This formed a remarkable juxtaposition with the preconceptions underpinning Adam Smith's *Wealth of Nations*, which Sonnenfels had read and even cited. For Sonnenfels, there was no possibility of a benevolent outcome without properly regulated government. Without a strongly organizing state, only disorder and decline could be the result.<sup>80</sup> It is also worth noting that the education Sonnenfels himself received was haphazard and not very thorough. He was acquainted with quite some of the most important contemporary intellectuals writing on the relationship between citizen and state, but not with the practical gathering of data which could possibly result in a sound economic policy.<sup>81</sup> The main currents of modern economic theory were not widespread in Vienna during the enlightened absolutism of Maria Theresa and Joseph II. The real impact of Adam Smith for example was delayed until the early nineteenth century.<sup>82</sup> Local nobility was

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<sup>78</sup> Ibid, 48.

<sup>79</sup> Ibid, 61-63.

<sup>80</sup> Keith Tribe, *Strategies of Economic Order: German economic discourse, 1750-1950* (Cambridge, Cambridge University Press, 1995), 24.

<sup>81</sup> Grete Klingenstein, "Between Mercantilism and Physiocracy: Stages, Modes, and Functions of Economic Theory in the Habsburg Monarchy, 1748-63," in *State and Society in Early Modern Austria*, ed. Charles W. Ingrao (West Lafayette, Purdue University Press, 1994), 200.

<sup>82</sup> Keith Tribe, *Strategies of Economic Order: German economic discourse, 1750-1950* (Cambridge, Cambridge University Press, 1995), 25.

more interested in agricultural revenues, than they were in commercial economical theory. Hence the task of Sonnenfels, to successfully start a popularizing campaign concerning modern economics, did not have a very successful result. He was overburdened with arduous tasks and was confronted with very similar obstacles in the process of gathering necessary information to base economic policy on, as Justi had been some decades earlier. A constant tension between a tradition of strong state regulation regarding the movement of commodities and people, as opposed to a more freely envisioned exchange lay at the heart of the Austrian Enlightenment. Control over state revenues was a core issue supporting this persistent tension.

There was a second side to the problem that imperiled the practical use of Justi's and Sonnenfels' endeavors. The compiled collections of data regarding the soil, peoples' mentalities, religions and so forth was of great interest to competing states, such as Prussia. For this reason a great controversy soon became apparent. Although much time and effort was invested in the hoarding of data, this newly acquired and possibly very useful information was only to be known by the highest royal elite. Common bureaucrats had no access to it. It did serve a purpose in the education of the future emperor Joseph II, but was not spread more widely. Moreover, the information that could be collected was itself the subject to a form of censorship in the process of obtaining data.<sup>83</sup> This inner tension of the Austrian enlightenment is remarkable, since it highlighted the changing relationship between states and their inhabitants between circa 1750 and 1820. The inhabitants of a state or principality were increasingly looked upon as being little parts in one body, obliged to work for the common good. A disease such as the cholera epidemic of 1831-1832 severely uprooted this imagined well organized and functioning social body and it

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<sup>83</sup> Grete Klingenstein, "Between Mercantilism and Physiocracy: Stages, Modes, and Functions of Economic Theory in the Habsburg Monarchy, 1748-63," in *State and Society in Early Modern Austria*, ed. Charles W. Ingrao (West Lafayette, Purdue University Press, 1994), 194.

was important to react to this threat in some way or form. The last part of this chapter will be devoted to these initial reactions of the Habsburg state to the epidemic.

### **Initial reaction to *Cholera morbus***

In the summer of 1830, people in Central and Eastern Europe were anxiously awaiting the difficult times to come. From 1825 *Cholera morbus*, or *epidemischen Brechruhr*, started its journey westwards, crossing swiftly the vast Chinese and Russian Empires. The Habsburg Empire shared a large border with the Russian Empire as the peripheral Galician province was the most eastern of the Habsburg domains. Consequently, the onset and spread of the epidemic throughout the Russian Empire was closely monitored in the Vienna.

These initial measures to stop the spreading of cholera were based upon the old bubonic plague regulations. As a consequence of this etiological tradition, various types of clothes and animals were suspected of spreading cholera, while water was for example never mentioned as a possible carrier of disease.<sup>84</sup> Intensive bureaucratization of trade was a first effect: all goods and persons were from June 1831 on required to have so called health-certificates, which had to be checked and stamped from the border on. The border in this case separated the healthy from the diseased area. Besides the extensive bureaucracy involved, severe punishments were issued to those who would break the cordon. Furthermore, unemployed individuals were deported from

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<sup>84</sup> “Zweiter Auszug aus dem neue Entwurfe zu einer Pest-Polizei-Ordnung für die k.k. Staaten (Die Waaren-Contumaz Betreffend),” 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/831, 3832, 4-5.

the crownlands.<sup>85</sup> Even though cholera broke out in late July, early August 1831, the cordons in Austria were maintained up to October 1831. Since the 27<sup>th</sup> of August anybody caught crossing a cordon or helping people and their commodities to do so, would be immediately executed.<sup>86</sup> After it became clear that the cordon was not effective in halting the disease, previously applicable punishments for breaching a sanitary cordon, such as imprisonment, became the norm again.<sup>87</sup>

Remarkably, the sanitary commission was not refraining from criticism towards its own application of bubonic plague regulations to the cholera epidemic:

Regardless of the preservation of these decrees, the disease continued spreading further, and the decisions and institutions based hereupon, faced the disadvantages this caused, as it was pointing to the fatal hardship accompanying the disease. They spread fear and fright and captivate peoples' moods. Specifically the barricades imperil the health conditions in closed down areas, whereby employed [military] forces often showed signs of illness, whereby they supported a disease they were supposed to protect us from.<sup>88</sup>

Cordons destabilized quiet regions and undermined the economically vital trade of Austria with Italy: in the summer of 1832 they would all be abolished.<sup>89</sup> The countermeasures that had proven to be at the least mildly effective to battle the bubonic plague, turned out to be completely futile and even counterproductive in the case of cholera.

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<sup>85</sup> Joseph Johann Knolz, *Darstellung der Brechruhr Epidemie in der k.k. Residenzstadt Wien, wie auch in dem flachen Lande, in Ostterreich unter der Enns, in den Jahren 1831 und 1832, nebst den dagegen getroffenen Sanitäts-Polizeylichen Vorkehrungen* (Vienna: Mayer und Compagnie, 1834), 224-225.

<sup>86</sup> Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 33990, 1-2.

<sup>87</sup> Joseph Johann Knolz, *Darstellung der Brechruhr Epidemie in der k.k. Residenzstadt Wien, wie auch in dem flachen Lande, in Ostterreich unter der Enns, in den Jahren 1831 und 1832, nebst den dagegen getroffenen Sanitäts-Polizeylichen Vorkehrungen* (Vienna: Mayer und Compagnie, 1834), 226-229.

<sup>88</sup> "Allein ungeachtet der Handhabung dieser Vorschriften, drang die Seuche unaufhaltsam weiter vor, und die hierauf gegründeten Verfügungen und Anstalten hatten Nachtheile im Gefolge, die sich weit unheilbringender, als selbst die durch die Krankheit herbeygeführten Drangsale zeigten. Sie verbreiteten Furcht und Schrecken und beengten die Gemüther. Insbesondere gefährdeten die Sperren den Gesundheitszustand in den abgesperrten Orten, gaben die hierbey verwendeten Truppen häufigen Erkankungen Preis und beförderten jene Krankheit, vor der sie schüssen sollten." Ibid, 231.

<sup>89</sup> Ibid, 236-238.

There was a certain logic buttressing the decisions to instill sanitary cordons and check particular commodities and people from a hygienic point of view. One of the dominant disease theories popular in the early nineteenth century was based around the idea of miasmatic vectors of disease. This theory was based on the assumption that diseases, in this case cholera was not contagious. This implied that no direct physical contact between people was necessary to spread the disease. Instead, diseases were caused by inanimate particles that spread through the air from region to region, sickening people who were predisposed to particular diseases under particular conditions.<sup>90</sup> This theory already existed in Roman times and was revived in the eighteenth and early nineteenth century, when the theories of the English physician Thomas Sydenham (1624-1679) formed the basis of dominant etiological concepts among medical specialists. Before the living environment of people would be thoroughly cleansed and purified, sanitary cordons were the most logical countermeasure to be taken by states. In the next chapter I shall describe how this model of disease gave way to new concepts, while maintaining some important presuppositions.

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<sup>90</sup> Dorothy Porter, *Health, Civilization and the State* (London: Routledge, 2005), 82.



## Chapter Three: The Great Importance of ‘Tiny Organic Bodies’

In the previous chapter I described how the concept of population became increasingly important in the late eighteenth and the early nineteenth century Habsburg context. A healthy population meant an employable population, filling the treasury with taxes and allowing for possible expansion of the Empire. An epidemic was thus imperiling the stability of the Empire on several levels and as a consequence, the importance of having medical knowledge on new disease such as cholera was extraordinary. This chapter analyses the development of medical publications on cholera between 1830 and 1850. These discourses were predominantly produced by medical personnel such as doctors working in so called cholera hospitals; or, alternatively, they were composed by state owned institutions or organizations, such as the Sanitary Council of Lower Austria. By looking at the way the Empire initially responded to the epidemic of 1831-1832 and by comparing the publications on cholera by two Viennese doctors, A.L. Köstler and Johann Romich, who were specialists on cholera, one publishing during the first epidemic and another publishing right after the third epidemic of 1848-1849, an answer can be formulated to the question: How did etiological discourses on cholera develop between 1830 and 1850 and what consequences did this entail?

### Publications preceding and during the first epidemic

An example of an early publication on cholera was an anonymous small handbook from 1830, entitled *Instruction für die Sanitäts-Behörden, und für das bei den Contumaz-Anstalten verwendete Personale, zum Behufe die Gränzen der k.k. Oesterreichischen Staaten vor dem*

*Einbrüche der im kaiserlich Russischen Reiche herrschenden epidemischen Brechruhr (Cholera morbus) zu sichern, und im möglichen Falle des Eindringens, ihre Verbreitung zu hemmen* [Instructions for the sanitary-officers and for the personnel employed in the erecting of sanitary cordons, in order to protect the borders of the Imperial and Royal Austrian state against the outbreak of *Cholera Morbus*, which currently prevails in the Imperial Russian Empire, and in case it invades Austria, to stop its spread].<sup>91</sup> The booklet was published well before cholera reached Vienna or even the Empire's periphery. Notably, the position the author(s) of the booklet on the question whether cholera was contagious or not, remained vague. On the one hand instructions were given to those inhabitants of the Empire who were unfortunate enough to have direct contact with cholera patients, in order to prevent contamination with the disease. These were directly followed by a chapter describing how to destroy the miasma deemed to be responsible for the spread of the disease.<sup>92</sup>

This document reveals several issues that ought to be taken into account in order to understand the reasoning supporting the kind of countermeasures that were eventually taken versus cholera. Firstly, the authors accepted the fact that the disease was very likely to be contagious. Relying on secondary sources, the Austrian authors who composed the booklet assumed that Cholera must have shared many qualities with the Black Death. Therefore, largely similar prophylactic tactics were to be employed that were custom during outbreaks of the Black Death. The construction of complete sanitary cordon, closing down all the borders of the Empire and inspecting all goods and people crossing its border followed swiftly.

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<sup>91</sup> "Instruction für die Sanitäts-Behörden, und für das bei den Contumaz-Anstalten verwendete Personale, zum Behuse die Gränzen der k.k. Oesterreichischen Staaten vor dem Einbrüche der im kaiserlich Russischen Reiche herrschenden epidemischen Brechruhr (Cholera morbus) zu sichern, und im möglichen Falle des Eindringens, ihre Verbreitung zu Hemmen," (Vienna: Kaiserliche Königliche Hof- und Staats-Aerarial Druckerey, 1830), 2.

<sup>92</sup> Ibid, 4.

Moreover, physicians and other state personnel were compelled to report any suspicious cases of illness they encountered while the epidemic was moving westwards.<sup>93</sup> In fact, medically trained specialists were first and foremost instructed to protect the states' interests, above taking care of the health of individual citizens. For example, ill people could be forcibly removed from their houses and brought to hospitals, or be quarantined without the possibility to escape their premises.<sup>94</sup> As a consequence of the assumed similarity between cholera and the Black Death, the old *Pest-Policey-Ordnung* [Plague-Policey-Regulation] from 1710 was reprinted and handed out to those individuals responsible for creating sanitary cordons, called *Abtheilungs-Commissare* [districts-commissioners]. This was a new position in Vienna's bureaucracy; they were occupied with the exertion and maintenance of prophylactic measures during an epidemic.

Additionally, two methods were approved and implemented to disinfect goods, animals and possibly even people when passing the borders of the Habsburg Empire. Washing with fresh water was the initial measure, when required followed by treating the various commodities with a smoke-treatment. Saltpeter and sulfur were the two substances that were heated up and pulverized in order to eradicate 'miasmatic fumes', suspected of potentially spreading the disease.<sup>95</sup> One of the most dominant characteristics of etiological thought was present throughout the manual. Nature had two sides: one was capable to decimate the population by spreading an epidemic through contaminated air, yet the other was able to heal, through the purifying qualities of fresh air and water. This ambiguous view of the relationship mankind had with the forces of nature explains how it was possible that air, atmosphere and climate were held responsible for both the losing and saving of lives. After clinical research became the norm in hospitals and

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<sup>93</sup> Ibid, 5-6.

<sup>94</sup> Ibid, 4.

<sup>95</sup> "Zweiter Auszug aus dem neue Entwurfe zu einer Pest-Polizei-Ordnung für die k.k. Staaten (Die Waaren-Contumaz Betreffend)," 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/831, 3832, 8.

statistics were applied to therapeutic measures, this ambiguity led to a form of “therapeutic skepticism”. No matter how precise the diagnosis of a disease, effective treatment of humans was incomparable to the healing powers of nature, which would restore health in the body by itself, if little to no human intervention occurred. Only when the balance of humors was so disturbed that too much ‘vital life force’ was needed to restore the body’s balance, would death be inevitable.<sup>96</sup>

Since numerous popular scientific publications were published in 1830-1832 on cholera, the epidemic must have been expected and caused quite a stir among the population. Mostly written by practicing doctors in Austria, the vast majority of whom was employed in Vienna, they typically consisted of a broad range of prophylactic proposals and several recommended treatments. It becomes apparent from this literature that knowledge transfers on the disease must have been common and important, since references were made to observations of cholera in the Russian Empire, because this was the disease waged here for quite some years already and it was the Empire’s neighbor. This led at times to surprising statements, such as the one made by the local Viennese physician Anton Zhuber:

That chlorine-chalk does not offer any protection against cholera, is proven by several observations made in Moscow. Fabric workers surrounded by chlorine fumes fell ill of cholera. Many people who locked themselves up in their houses, after abundantly impregnating and surrounding everything with chlorine fume, still died of cholera.<sup>97</sup>

Zhuber made a clear distinction between buildings that were constructed at a higher altitude, and those that were located in the lower parts of the city. These lower residential areas were basically providing a more risky environment, since they were conceptualized as being more receptive to cholera inducing conditions.

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<sup>96</sup> Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900* (New York: Cambridge University Press, 2000), 29.

<sup>97</sup> “Dass der Chlorkalk vor der Cholera nicht schütze, beweisen mehrere Beobachtungen, die in Moskau gemacht wurden, indem Fabriks-Arbeiter mitten im Chlordampf an der Cholera erkrankten, und viele, die sich in Häuser mit Chlor reichlich versehen einsperrten, alles durch den Chlordampf empfangen und abgaben, doch an der Cholera starben.” Anton Zhuber, *Ermahnungs-Worte gegen die Cholera morbus* (Vienna: K.K. Hof- und Staats-Aerarial Druckerei, 1831), 17.

What does not need a special reminder, ist hat deeply allocated, moist and dark houses below the earth, such as cellars, should be avoided if possible. If this is not an option, at the very least the consult of a doctor and the help of the police should be requested, by which the house, in so far as that is possible, shall be turned into a healthy and livable space.<sup>98</sup>

Apparently, lower allocated plots in town ought to be frequented more by both the doctors and the police. As a consequence, the less wealthy strata of the society, who were not able to afford the more expensive higher allocated plots in the city, were prone to be more receptive to frequent visits of state officials. This was following the logic of miasmatic disease models that focused on poisonous or disease-inciting air, which was thought to be more abundant and endemic in lower, wetter areas of town. As described in the previous chapter, the dominance of miasmatic theory was not a recent development but had a much older tradition in Europe. One consequence of this theory was that unhealthy, disease-inciting locations could easily be identified by all who would use their sense of smell to avoid stinking areas or individuals, since the smell of putrefaction was a clear sign of unhealthy conditions.<sup>99</sup> Stench was thought to be highly hazardous, since it was an indication of fermentation and rot, an environment which could and would produce miasmatic air. The fear of badly smelling air was an acute issue during the first cholera epidemic in 1831. Right before the epidemic broke out, the Danube flooded the city, allowing Vienna's many open sewers to spread filthy water all over the city. As a countermeasure, after the epidemic ended, two channels were constructed in 1831 and 1836, on both banks of the Wien River. Three years later all channels leading water and filth from houses

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<sup>98</sup>“Das daher tiefe, feuchte, dumpfe Wohnungen unter der Erde, in Kellern, nach Möglichkeit vermieden werden sollen, braucht keiner besondern Erinnerung. Ist dieses indessen nicht thunlich, so muss wenigstens des Rath eines Arztes und die Hülfe der Polizei angesucht werden, damit die Wohnung, so viel sich es thun lässt, heilsam und bewohnbar gemacht werde.” Ibid, 5.

<sup>99</sup> Alain Corbin, *The Foul and the Fragrant: Odor and the French Social Imagination* (Cambridge: Harvard University Press, 1986), 16-21.

to the river were connected and also encapsulated by stone constructions, making sure the filthy waters in the city would neither be directly visible, nor smelled any longer.<sup>100</sup>

In Vienna, moral condemnation was often part of the framing of causes of disease. Moral degeneration made people more sensitive to disease. This link was exemplified in sermons that were held during the epidemic, delivered on the topic of cholera, which was at that point of time still at the borders of the Habsburg Empire. During the first weeks of the epidemic, the Viennese priest Wilhelm Zorciek warned his audience in the Stephansdom:

Or do you believe, Christian audience, that you have nothing to dread, you cannot be hurt by the Cholera Morbus, this threat is not applicable to you? You say, our air is clean and healthy – but don't you breath from all sides the defiled air of unbelieve, which everywhere attempts to oust the healthy, clean air of faith? As long as we are unclean sinners, we have deserved punishment from God and we have to dread his anger.<sup>101</sup>

The cholera epidemic of 1830-1832 was framed as a Europe-wide problem, but initially there was no coordination between states as to what kind of measures had to be taken to stop its spread. However, booklets were produced to inform other regions of Europe of the characteristics cholera had as a disease, as an abstract enemy of humanity and as an entity that could not be controlled. The Viennese physician J.A. Edler von Reider composed an alarming report for Berlin, during the summer of 1831.

The course and character of our common diseases here, and the whole genius of the prevalent disease constitution, was of such a type that we had to most probably expect the development of this fear-inciting disease into an epidemic form. In a local town we saw the cholera gradually and progressively develop, so that every attentive physician could not escape the conclusion that the disease was undergoing a metamorphosis into an epidemic condition. The development of the disease occurred so slow and progressed so gradually, that any unprejudiced man could not be deceived by it, and many of my local

<sup>100</sup> Peter Payer, *Der Gestank von Wien* (Vienna: Döcker Verlag, 1997), 61.

<sup>101</sup> "Oder glaubet ihr etwa, christliche Zuhörer, ihr habet nichts zu fürchten, euch könne die Cholera morbus nicht schaden, euch gelte nicht diese Drohung? Ihr saget, unsere Luft ist rein und gesund – athmet ihr denn nicht von allen Seiten die verpestete Luft des Unglaubens, welche die gesunde, reine Luft des Glaubens überall zu verdrängen strebt? So lange wir unrein und in Sünden sind, so lange haben wir Strafe von Gott verdient, so lange haben wir den Zorn Gottes zu fürchten." Wilhelm Zorciek, *Der Schrift zur Zeit der drohenden Gefahr einer verderblichen Seuche (Cholera morbus), eine Predigt* (Vienna: Druck und Verlag der Mechitaristen-Congregations Buchhandlung, 1831), 13.

colleagues here, who for some time considered the possibility of the disease spreading through contagion, and even thought that was the only way to explain the presence of the disease in our midst, no longer hold this view. At most they now hold the erroneous view that this disease, which was originally not contagious, perhaps in a later stage of development, under the right pernicious conditions and environment, can obtain contagious properties.<sup>102</sup>

Edler von Reider's ideas were in line with prevalent disease models of the time, which emphasized both the fluidity of diseases, able to evolve from one disease into another. Their causes consisted of a mixture of sudden changes in the atmosphere, air pressure, or mental instability, were thought to intensify the condition of the diseased, or even worse, lead to death. This was a way to frame several stages of disease, but also to come to terms with strange, at first sight, sets of symptoms.

## Organization

As mentioned earlier, one of the first policy measures put into practice by the Habsburg government was the appointment of *Abtheilungs-Commissare* [districts-commissioners], who were responsible for the proper execution of sanitary measures. On the 18<sup>th</sup> of July 1831 a seven page educational booklet was published in which their duties and methods were described. The city was to be separated in small administrative units over which police-supervisors would

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<sup>102</sup> “Der Gang und Charakter unserer gewöhnlichen Krankheiten hier, und der ganze Genius der herrschenden Krankheitsconstitution war von der Art, dass wir die Entwicklung dieser, so grossen Schrecken verbreitenden Seuche oder Krankheitsform, mit grosser Wahrscheinlichkeit erwarten mussten. In hiesiger Stadt sahen wir die Cholera allmählig und stufenweise sich entwickeln und keinem auch nur etwas aufmerksamen Arzte konnte diese langsame Ausbildung des Uebels aus epidemischen Einflüssen entschlüpfen. Wir sahen die Entwicklung dieser Seuche hier in so langsamer und allmählicher Fortschreitung dass für vorurtheilsfreie Männer jede Täuschung aufhört und schon jetzt viele meiner hiesigen Collegen, welche noch vor einiger Zeit der Möglichkeit der Verbreitung und Verschleppung des Uebels durch ein Contagium Raum gaben, oder gar seine Erscheinung in unserer Mitte nur auf diesem Wege für wahrscheinlich und thunlich hielten, von dieser Ansicht zum grosser Theile zurückgekommen sind und höchstens noch die aber ebenfalls irrige Meinung festhalten, das diese ursprünglich nicht ansteckende Krankheit vielleicht im weiteren Verlauf, in den spätern Stadien, unter sicher nachtheiligen Umständen und Verhältnissen eine solche contagiöse Eigenschaft erlangen könne.” J.A. Edler von Reider, *Die Cholera zu Wien* (Berlin: G. Reimer, 1831), 4.

preside, who directly reported all information to the *Abtheilungs-Commissare*. A unit consisted of six to twenty houses in the suburbs, and one to six houses in the inner city, where houses tended to be bigger.<sup>103</sup> Inside the different administrative units of the city, the *Abtheilungs-Commissare* had to appoint a local *Sections-Commissare* [Section-Commissioners].

These section-commissioners are from the citizenry and those individuals elected as such, should reside in the district and ought to take control. The election of the suitable individuals, is based on the property they own in the houses in their sections, and is regulated by the district-commissioners. They have to make sure active, appropriate individuals are elected into the office of section-commissioner.<sup>104</sup>

In other words, the wealthier citizens of the city were appointed to check and regulate the lifestyle and demeanor of the less well-off inhabitants, who typically resided in smaller houses. In case a doctor diagnosed an inhabitant of a house with cholera, two options were available. If the patient received help from a doctor inside his house, which was the preferred option for those who could afford to have a private physician, immediate quarantine was instilled and the house would be closed down for at least 42 days. If however, the patient was transported to a hospital the house would be closed down for 21 days. This was in accordance with the primary duty of this small army of bureaucrats and doctors: complete segregation of the contaminated and the healthy parts of the population.<sup>105</sup>

In order to establish this segregation, administrative personnel had the duty and the right to check any house in their district on cleanliness and order. In case a residence was deemed to

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<sup>103</sup> “Instruction für die in der Stadt und in den Vorstädten Wiens aufzustellenden Abtheilungs-Commissare,” 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28289, 2.

<sup>104</sup> “Diese Sections-Commissare sind aus der Bürgerschaft, und zwar aus jenen Individuen, die in der Section selbst wohnen, zu nehmen. Die Wahl des hierzu geeigneten Individuums ist aber den Eigenthümern der in dieser Section befindlichen Häuser unter der Leitung der Abtheilungs-Commissare zu überlassen, wobey bloss dahin zu wirken ist, dass diese Wahl auf thatige, zur Besorgung der beschwelichen Geschäfte der Sections-Commissare geeignete Individuen geleitet werde.” Ibid.

<sup>105</sup> Ibid, 6.



be too dirty to safely live in, the inhabitants would be removed from their property.<sup>106</sup> There was a certain 'spatial pathology' which to a large extent formed the basis of the decision making process as to what kind of spaces were deemed to be unfit for living during an epidemic. Individuals residing in such disease inciting spaces were thought to be prone to contamination during epidemics, because of the unhealthy environment they lived in. High density of people, small living spaces and filth combined with moisture or nearby swamps were the three main characteristics of these spaces, combined with moisture or nearby swamps.<sup>107</sup> The unemployed, who were often mentioned as being more receptive to epidemics, were put to work to clean these pathological spaces. The characteristics of pathological spaces were considered to be common knowledge and could these disease inciting environments could thus be avoided by people. By ascribing the likelihood of disease contraction onto the shabby houses which were usually occupied by the less wealthy members of Vienna, they were implicitly also made responsible for the wide spread of the epidemic.

## **Cholera Hospitals**

The construction of cholera hospitals was an important measure in the campaign to stop the epidemic. The design of these hospitals was based on military hospitals used during wars or battles. The hospitals were the designated spaces where patients could be healed, the last resort for the poor who could not afford to have private doctors attending them in the safe familiarity of their homes. Each of Vienna's hospitals had a capacity of eighty to a hundred patients. Like a regular hospital, the personnel consisted of doctors, wardens, cleaners, a gatekeeper and nurses.

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<sup>106</sup> Ibid, 3.

<sup>107</sup> Kaiserliche und Königlische Sanitäts- und Approvisionirungs-Commission für die k.k. Haupt- und Residenzstadt Wien, 20 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28019, 2

The number of people working at these hospitals is unknown. A small pharmacy and an administrative unit were also present, since every possible cost had to be registered.<sup>108</sup> Only the poorest patients could not afford the services of a doctor attending them in their homes, so the kinds of patients who would end up in these public cholera hospitals, were not able to refund the costs' made during their stay in the hospitals. They would only cost the Empire money and not generate any income for the treasury. The only requirement to apply for any of the vacant jobs in the newly constructed hospitals, besides that of doctor, was a 'morality certificate'. Since the pressure to quickly recruit abundant personnel to tend for patients who just contracted a completely unknown disease with horrible side-effects was huge, it must have been difficult to find new staff that had experience in nursing.<sup>109</sup>

The heads of cholera hospitals were commonly referred to as *Hausvater* [householder].<sup>110</sup> This terminology is a clear indication of how patriarchal the relationship between inhabitants of the Empire and the bureaucratic elite was envisioned at this time. Although this indicated an element of subordination, the householders of the hospital were also obliged to take in any patient in need of care and treat them with the utmost care and attention. A manual was published for the householders of cholera hospitals, of which most pages were devoted to bureaucratic concerns, especially the correct registration of any costs made on the behalf of patients.<sup>111</sup> Clearly the most pressing concern was to not overspend on the caretaking and services offered in the hospitals. Medical specialists also had a say concerning the set up of rooms and care offered to patients, but ultimate responsibility resided with the municipal

<sup>108</sup> "Instruction für die in der Stadt und in den Vorstädten Wiens aufzustellenden Abtheilungs-Commissare," 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28289, 2.

<sup>109</sup> Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28591.

<sup>110</sup> "Instruction für den Hausvater eines Cholera-Spitals," Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/800, 35086.

<sup>111</sup> Ibid, 1-6.

government.<sup>112</sup> Householders and the rest of the staff were appointed by the municipal government and dependent on the sanitary commission's approval in case they wanted to take in more patients or make some other change. Patients, on the other hand, had little to no rights at all. The cholera hospitals were closed off to the public and patients did not have the right to leave after entering the hospital, unless, they were diagnosed as healthy by the medical personnel. Otherwise, the doors of the hospital opened only to transport the bodies of the dead and to let in medical personnel on duty.<sup>113</sup> Even though the hospitals had a bad reputation, all of them were full by the 21<sup>st</sup> of September 1831, compelling the municipal authorities to issue a request to the citizens of Vienna to open their houses for the needy, as an emergency measure.<sup>114</sup> Making private spaces into temporary hospitals would have implied the poor to enter under the worst of conditions the houses of the healthy, usually wealthier inhabitants of the city. Such instances must have been rare and clues to their practical existence are not to be found today.

## Discourses on disease

One of the first authors on cholera in Vienna was the Viennese physician A.L. Köstler. Little is known about him, besides that he was an experienced doctor who had been working in Vienna for quite some time already. His two books on the topic were published during the first big epidemic affecting the Habsburg Empire in 1831-1832. First of all, he was one of the very few authors who published twice on cholera in a short timeframe – the difference between both

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<sup>112</sup> Ibid, 5.

<sup>113</sup> “Zweiter Auszug aus dem neue Entwürfe zu einer Pest-Polizei-Ordnung für die k.k. Staaten (Die Waaren-Contumaz Betreffend),” 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/831, 3832.

<sup>114</sup> Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 5, Verzeichnis Q 556/830, 29572.

publications cannot have been more than several months.<sup>115</sup> He combined knowledge accumulated by his own observations of the disease while taking note of previous publications on the topic.

In his function as a district-doctor in Vienna, Köstler must have been consulted by many patients throughout the 1830's. Even though he was active in Vienna, he drafted his publications based on his own observations of cholera in Galicia, the Empire's largest, poorest and most eastern crown-land. This reaffirms the central position Vienna occupied in the hierarchy of the Empire – not only on a political, but also on a scientific and specifically medical level. Köstler's texts are a testimony to a world that was becoming larger, with knowledge exchange on many topics and also on cholera.

Taking this into account it is worth mentioning the following history: When in the year 1827 cholera approached the Chinese-Russian border, the Russian customs-officer in Kiachta had a discussion on the precautionary measures with a Chinese colleague. He explained why there were no similar measures in China, because the empire was so big it made little sense. By the way, the disease knows its victims well: only those people fell prey to the plague who were living unclean and in excess as opposed to those who keep their moods high. To prove his statement, the Chinese remarked that Beijing ought to thank the Emperor's steady will first and foremost for the liberation of the disease: Don't believe the illness is more powerful than you are, since only those with little courage die from it.'<sup>116</sup>

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<sup>115</sup> A.L. Köstler, *Anweisung sich gegen die epidemische Cholera zu schützen, und dieselbe bey ihrem Beginn zweckmäßig zu behandeln* (Vienna, Mörschner und Jasper, 1831), 27.

<sup>116</sup> "Merkwürdig ist in dieser Hinsicht folgende Geschichte: Als in Jahre 1827 sich die Cholera der Chinesisch-russischen Gränze näherte, hatte der russische Gränzzolldirector zu Kiachta eine Unterredung mit einen chinesischen Oberbeamten, um sich wegen der getroffenen Vorsichtsmaßregeln zu besprechen, wobey dieser erklärte, das man in China keine vergleichen Maßregeln kenne, denn diese Krankheit verschaffe ihrem Reiche nur um so mehr Raum, je ungewöhnlich mehr Menschen sie hinwegrasse; übrigens kenne die Seuche ihre Opfer wohl, da sie nur solche Menschen wahlte, welche in Unsauberkeit und Unmäßigkeit leben, im Gegentheil das unverzagte Gemüth sicher vor ihr sey. Als beweis fugte er hinzu, das Peking keine Befreyung von der Seuche allein dem festen Willen des Kaisers verdankte, welcher zu seiner Umgebung sagte: 'Glaubt nicht, das die Krankheit machtiger sey als ihr, nur Kleinmüthige sterben daran.'" Ibid, 13.

Köstler was thus aware on how the Russian versus the Chinese state had dealt with cholera.<sup>117</sup>

This eastern focus is interesting because it counters the often held assumption that primary knowledge on cholera was spread from the United Kingdom, through its colonies India and Bangladesh, from where the disease pandemic started its long travel to Europe in 1817. Köstler was convinced that his own Austrian state was most capable of battling the disease, because its ruler was the best of Europe:

What is done in lands and cities to halt the contagion is done by the government that is concerned about the wellbeing of its citizens in a fatherly fashion. Especially the measures taken in Austria serve as a model for other states to look up to.<sup>118</sup>

Köstler had two goals in mind with his initial publication on the disease. Firstly, he wanted to share his meticulous observations on the nature of cholera, so that families could protect themselves sufficiently from the threat. Secondly, he wanted to temper the fear caused by the disease. This second element was very important since it touched upon the heart of his etiological theory. From 1832 onwards, doctors were advised not to disclose the diagnosis ‘cholera’ to patients and their family since it was assumed this could cause panic and these bystanders would become significantly more predisposed to the disease.<sup>119</sup> This was potentially dangerous, since mood swings were suspected of inciting disease in the healthy or deteriorate the condition of the ill.

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<sup>117</sup> Ibid, 13-14.

<sup>118</sup> “Was zur Abhaltung des Contagiums von Ländern und Städten gethan werden soll, dafür sorgen für das Wohl ihrer Unterthanen väterlich besorgte Regierungen, und insbesondere wurden die in Österreich bestehenden Sanitätsmassregeln immer als Muster für andere Staaten aufgestellt.” Ibid, 20.

<sup>119</sup> Joseph Johann Knolz, *Darstellung der Brechruhr Epidemie in der k.k. Residenzstadt Wien, wie auch in dem flachen Lande, in Ostterreich unter der Enns, in den Jahren 1831 und 1832, nebst den dagegen getroffenen Sanitäts-Polizeylichen Vorkehrungen* (Vienna: Mayer und Compagnie, 1834), 361.

A lethal form of cholera Köstler described was the so called *cholera epidemica*, a particular type of the disease that was considered to be especially dangerous and deadly.<sup>120</sup> It was opposed to other, endemic types of cholera, which in the belief of contemporary medics encompassed a broad range of common stomach related pathological patterns. In their understanding of the disease, cholera was not that different in this regard from the disease category fevers. A wide range of fevers was thought to exist, and correct diagnosis of the type of fever an individual had contracted, was the first step to ascribing an effective therapy. This was a very complicated process, since according to contemporary theories quite some separate factors were able to cause the onset of fevers and diseases in an individual. Some epidemics were for example thought to be associated with particular times of the year or season, which led to the conclusion among some men of medicine in Britain that cholera might be the latest seasonal fever, replacing previously present fevers.<sup>121</sup>

Besides these factors, Köstler also employed the important category of predisposition. This concept was used to explain why, especially during epidemics, particular people became ill and others were not affected. It was a complicated category that presupposed, among other things, that the body and health were part of one fragile system. Influences upon this system were able to disturb a fragile and necessary balance of this system and a person could become sick as a result. The dominance of the predisposition category had great consequences in connection to the way disease could be accounted for by doctors. Its most dramatic difference with contemporary understanding of the body and disease is the fact that it led to absolute individualization of both disease and therapy. Conveniently, it was only the doctor who was

<sup>120</sup> A.L. Köstler, *Aus der Erfahrung geschöpfte Andeutungen zur Erkenntniss und Behandlung der Epidemischen Cholera* (Vienna, Mörschner und Jasper, 1831), 8.

<sup>121</sup> Margaret Pelling, *Cholera, Fever and English Medicine 1825-1865* (London: Oxford University Press, 1978), 54-55.

capable of assessing the necessary therapy and medicine. Thus through this etiological reasoning the epistemological dominance of the medical profession, institutionalized by medical schooling, became increasingly narrow. Competitors on the drug market were accused of quackery. Especially pernicious was the so called universally applicable medicine: the idea of one disease having one causal agent and thus one specific medicine which could cure the patient, regardless of place, gender or age.<sup>122</sup> Universal drugs were strongly associated with quackery.

In *Anweisung sich gegen die epidemische Cholera zu schützen, und dieselbe bey ihrem Beginn zweckmäßig zu behandeln* [Direction on how to protect oneself against epidemic cholera and how to treat it effectively from the start onwards] Köstler was writing for a lay audience, describing how citizens can protect themselves against cholera. The goal of his earlier publication *Aus der Erfahrung geschöpfte Andeutungen zur Erkenntniss und Behandlung der Epidemischen Cholera* [Hints derived from experience on how to recognize and treat epidemic cholera] was to determine under what circumstances the feared *cholera epidemica* could come about. Underlying his theory is the idea that this type of cholera could evolve out of other diseases. Central to the understanding of the epidemic was thus to establish the circumstances that were common in all places where epidemics broke out and this did not only apply to cholera. The general conditions that would render people sensitive to disease were to be established first, so that these conditions could be evaded whenever possible. Köstler attributed great importance to differences in temperature, soil and level of moisture. Nevertheless, the disease could only be diagnosed by closely observing the body of patients and changes of appearance that erupted within them.<sup>123</sup>

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<sup>122</sup> Ibid, 15-16, 26.

<sup>123</sup> Ibid, 3-7.

In Köstler's work the Hippocratic trio of airs, waters and places was clearly a great source of inspiration. Diseases could be explained by using these three categories. Akin to the methods of the English physician Thomas Sydenham (1624-1689), Köstler tried to discover regularity in the chaos the disease cholera caused. Like Sydenham he focussed on observing disease, in this case cholera, in all its symptoms and complexities, identifying a main type which could be used to establish a swift diagnosis. By concentrating on the time and place where the disease broke out, by mapping these two variables, it would perhaps be possible to predict future epidemic patterns, hoped Köstler.<sup>124</sup> The establishment of an epidemic constitution, the conditions under which an epidemic would spread easily because many people became vulnerable to its effects, was the desired outcome of the observations.

Special attention was devoted to the poor from the early stages in 1831 onwards. The first countermeasures were in fact mostly aimed towards the poorest part of the population, since it was known in earlier descriptions of cholera that it ravaged mostly among this social stratum. Two concrete measures were taken in 1831: as a preparation to a possible outbreak of the disease, personnel in infirmaries taking care of people was doubled in size and it was made compulsory by law for doctors to provide care to any person who was suspected of being ill of cholera. Moreover, the poor were to receive food, wood or even money in order to strengthen themselves in the face of the coming epidemic. If qualified doctors did not provide adequate care (including the compulsory touching of patients through feeling the pulse and pressing the stomach with fingers) the doctors would immediately lose the right to exercise their craft.<sup>125</sup> It is not that surprising that such pressure was exerted onto doctors to take care of all patients: as

<sup>124</sup> Dorothy Porter, *Health, Civilization and the State* (London: Routledge, 2005), 55.

<sup>125</sup> Joseph Johann Knolz, *Darstellung der Brechruh Epidemie in der k.k. Residenzstadt Wien, wie auch in dem flachen Lande, in Ostterreich unter der Enns, in den Jahren 1831 und 1832, nebst den dagegen getroffenen Sanitäts-Polizeylichen Vorkehrungen* (Vienna: Mayer und Compagnie, 1834), 239.



qualified specialists, they were the only ones who were allowed to officially diagnose somebody with cholera. This was a direct consequence of the cholera epidemic: a strong rise in the importance of the medical professions' authority.<sup>126</sup>

These examples provide insight into an often neglected side of the changing role of medicine in the nineteenth century: it also pressured doctors into a different role, one they were not always willing to fulfil. They had to enforce regulations and were made responsible for the well-being of the state, by taking care of the people. Nonetheless, a certain divergence based on wealth in protecting the population was present. The wealthy inner city of Vienna was heavily guarded, whereas the poorer suburbs were receiving a much less thorough protection by barricades. Also, barricading the places focused mostly on not letting people out, while enclosure of a district was more aimed at not letting people in a particular area.<sup>127</sup> These measures revealed a certain bias towards ill people, who were thought to spread disease due to their immoral behaviour which was partially the initial cause of their sickness. It also reveals how the poorer districts were imagined as being dens of disease from which the wealthier upper strata had to be protected.

### **Microscopic vision, macroscopic consequences**

During the period 1835-1845 the use of the microscope as an innovative instrument leading to new theories regarding the origins of disease was an important development. In both the German lands as in Great Britain microscopy gained a lot of popularity, resulting in numerous

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<sup>126</sup> Ibid, 359-360.

<sup>127</sup> Ibid, 241.

publications on those tiny animalcules that could be observed under the magnifying glasses.<sup>128</sup>

These developments also had an impact on the formulation of theories on cholera in Vienna. In the wake of the cholera epidemics of 1848-1849 the Viennese doctor Johann Romich published his *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeüßerung einen Somnambulen* [The principal cholera treatments, next to a most remarkable manifestation of a sleepwalker].<sup>129</sup> The first fifty pages covered a wide variety of topics related to cholera. Starting with a firm warning not to trust the widespread miracle cures against the disease, the text presented several therapies to heal cholera, methods of diagnosis and precise descriptions of symptoms commonly expressed by those who suffered from the disease.

Romich was working as a doctor in one of the cholera hospitals in Vienna, the one at *Rennweg* to be precise. Besides, he was a member of the Viennese *collegium* [college] of doctors. He must have been well informed into the general state of the medical profession, must have had regular contact with many of his colleagues and observed the disease with his own eyes, something which distinguished him from some of the authors of similar books written during the first epidemic of 1831-1832. It is significant to notice that in the introduction to his text Romich emphasized the importance of the duty medical professionals had to the public at large to publicize on any remarkable observations made during their work in hospitals, especially since it was through *their* eyes that *treue Beobachtung* [true observance] of phenomena of reality could be recorded.<sup>130</sup> Making a correct diagnosis, was reserved for those who had the unique skill to make observations in accordance with a solid, irrefutable and objectively existing reality.

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<sup>128</sup> W. D. Foster, *A History of Medical Bacteriology and Immunology* (London: William Heinemann Medical Books, 1970), 8-12.

<sup>129</sup> Johann Romich, *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeüßerung einen Somnambulen* (Vienna: Leopold Sommer, 1850).

<sup>130</sup> *Ibid*, V.

The establishment of the professional position of doctors and physicians was inevitably connected to the skill of proper observation of the disease. In this fashion, Romich opened his book by condemning the commercial enterprise of medical magic bullets, popularized medicaments that were sold at a large scale to a wide audience. In this sense a cholera epidemic provided the opportunity for reckless entrepreneurs to brand their products successfully via pamphlets, advertisements and mouth-to-mouth rumors. Unqualified medical entrepreneurs were direct competitors to professionals like Romich. He was on the one hand active as a medical professional, and as an author publishing on cholera was reconfirming his position as a *professional* who had privileged access to crucial medical knowledge.

How many families do not mourn the loss of their breadwinners, who became careless after obtaining such an anti-cholera medicine. They did not take heed of the necessity and possibility of consulting a rational doctor during the most pressing times, since they were convinced to have obtained a medicine which could save them even when they were turning black; and this consoling thought was often the last they had, which led them into the hereafter.<sup>131</sup>

Without the intervention of the rational eye of the doctor, the chances of the patient were even more hopeless, according to Romich. Doctors were imagined to be the sole resource of rational authority, capable of providing effective therapies to stop the development of cholera. Accordingly, Romich described several successful therapies. The first he mentioned was cold water. The idea of pure, natural water being able to rebalance the body through its tranquillizing qualities was not unique to cholera epidemics. What was remarkable, however, was that Romich explicitly mentioned the danger of water being infected with what he called *Choleragift* [cholera

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<sup>131</sup> “Wie viele Familien beklagen nicht den Verlust ihres Brotgebers, welcher im Besitze eines solchen Anticholera-Mittels sich einer gewissen Sorglosigkeit überläßt, und die günstigsten Momente zur noch möglichen Bekämpfung der Cholera durch einen rationellen Arzt aus dem Grunde nicht beachtet, weil er ein Mittel zu besitzen glaubt, welches, wenn er auch schon wirklich ganz schwarz wäre, noch im Stande ist, ihn zu retten; und dieser tröstende Gedanke ist wohl auch der letzte, welcher so viele Kranke nach Jenseits begleitet.” Ibid, 12.

poison].<sup>132</sup> The danger of the disease spreading by water was thus explicitly mentioned as a possibility. This was a strong indication that Romich was aware of the work of the German chemist Justus Liebig (1803-1873), who in the 1830's expounded his new concept of the nature of contagious matter. According to Liebig, it spread through air, consisting of poisonous substances responsible for specific diseases: for each disease its own poison, flowing through the air, being absorbed in the blood of victims where it was to cause poisoning through contamination and fermentation and could then lead to a disease.<sup>133</sup> Liebig's disease theory was essentially based on changes in the blood of patients and assumed that cholera was not contagious: prevailing the possibility of organic waste to rot and ferment in public space was the best prophylactic measure to be taken against cholera according to this logic and thus shows how Romich most likely supported sanitary measures and would not recommend the installment of sanitary cordons.<sup>134</sup>

Other therapies mentioned by Romich consist of a range of medicines that indicate theories on disease that were apparently still in sway in 1850. One of these was the idea of irritability. Disease was caused by irritation of several inner organs which would not therefore not properly transport blood through the veins of patients. This refers back to a mixture of William Harvey's theory of blood transmission made in 1628 and the kind of theories that were dominantly present during the 1830's, based on humoral theory inspired by the Greek medical theorist from antiquity, Galen (A.D. 129-199/217).<sup>135</sup> Romich was aware of the fact that most of the therapeutic measures taken in the Viennese cholera hospitals were based on fighting

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<sup>132</sup> Ibid, 14.

<sup>133</sup> Dorothy Porter, *Health, Civilization and the State* (London: Routledge, 2005), 84.

<sup>134</sup> Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900* (New York: Cambridge University Press, 2000), 41.

<sup>135</sup> Johann Romich, *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeußerung einen Somnambulen* (Vienna: Leopold Sommer, 1850), 15.

particular uncanny symptoms of cholera, but could not diagnose the cause of the disease: the ephemeral cholera-poison. As a consequence of this realization, bleeding was no longer perceived to be an effective measure and this recognition meant a break from a centuries old medical practice, one in which bleeding, letting out blood that was perceived to be infected or abundant, was left behind.<sup>136</sup>

The last explicitly mentioned medicine was opium, a new kind of drug in the Austrian context. According to Romich this was regularly prescribed by the English physicians in India and other colonies, where the drug was to be found in abundant quantities. In Vienna the drug became popular during the late 1840's. "During such terrible times, the doctor must often give way to the impulse of the public. He cannot evade the question: did you also try opium, which is so highly recommended by the 'Wiener Zeitung'?"<sup>137</sup> Opium was not a favorite medicine of Viennese doctors, since it was considered to be ineffective and possibly even detrimental to the patients' health.

Two of the most prominent symptoms of cholera were largely stopped as a side effect of large, regular quantities of opium: excrements and vomit would no longer escape the body. The loss of gargantuan amounts of moisture from the body was the result of these symptoms, but this was seen by Romich as a part of the healing process, a symptom of the body cleaning itself from poisons and starting a healing process. If this would be stopped halfway, it would force the body to absorb the cholera poison into the blood, spreading the disease over the entire body.<sup>138</sup> As a consequence of these considerations, the body was perceived to be inherently capable of healing itself by purging itself from poisonous elements. Human intervention of the disease and healing

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<sup>136</sup> Ibid, 16-19.

<sup>137</sup> "Der Arzt muss in so einer Schreckenszeit sehr oft dem Drange des Publikums nachgeben, weil er der Frage nicht ausweichen kann: haben Sie auch das Opium, welches in der 'Wiener Zeitung' so gelobt wird, angewendet?" Ibid, 20.

<sup>138</sup> Ibid, 21.

process was thus minimal. When compared to Köstler's texts from the 1830's, Romich's text points to several important changes that had developed in medical theory. The idea that diseases could not change from one into another, but were specific, unique entities, was gaining ground. The possibility that the *same* disease could make from very different areas of the world ill, also contradicted previously used atmospheric or predisposition based models of disease and health. This opened the way for the theoretical possibility of once producing medicines that would work universally, regardless of local environmental conditions.

### **Non-contagious spreading of disease**

One of the most pressing matters concerning cholera was around 1850 still the highly debatable question of contagiousness. The question how cholera spread among populations, cities or from state to state could not be ignored. Romich's text differs in this matter from those written during the first epidemic in 1831-1832. Miasmatic theory still held an important position in Romich's narrative. Initially, he believed cholera would spread through air, but only for a very short time, after which it was absorbed by dew, fog and ripe. It would then drop to the ground and through the earth or plants be absorbed in groundwater, which would later be consumed by humans. This explained how some areas in a city had more victims to the disease than others: their environment was more poisoned by the cholera poison. This was not such an innovative idea in 1850, but what was remarkable was that Romich signified that cholera was caused by a *peculiar* poison, unique to the disease. The concept of specific diseases caused by one unique agent was thus used by him for the first time.<sup>139</sup>

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<sup>139</sup> Ibid, 23.

The recommended way to prevent cholera from spreading was to cleanse and purify the water from the freshly acquired poison by mixing it with rock salt and fresh, cold water. Even though this treatment to purify water was obviously not very well developed, the innovative aspect of Romich's text is that he explicitly stated how the cholera agent was contained in human excrements of patients suffering from the disease.<sup>140</sup> He connected this to the possibility of infecting water meant for consumption, resulting in the spread of cholera. Amazingly, through meticulous observation as a doctor employed in a Viennese cholera hospital, Romich constructed a surprisingly accurate causal chain of how cholera spread. He was in a sense right to notice that the disease was not directly contagious from one to another person, as was the case with the bubonic plague at first sight, but cholera was clearly in need of a transmitter. In a very odd way, Romich claimed he gained these new insights by questioning a sleepwalker in a kind of hypnotic state. Most likely, this was a way to justify his, in 1850, unorthodox analysis of the disease.<sup>141</sup> A second explanation for the use of this odd narrative structure to introduce new knowledge on cholera could have been the importance of somehow avoiding possible accusations of plagiarism.

Directly after the mentioning of the sleepwalker as a source of information, Romich referred to two British doctors, William Budd (1811-1880) and Frederick Brittan (date of birth and death unknown), who through their collaborated microscopic research of the excrements of cholera patients established that in several tests the same kind of "organische Körperchen" [small organic bodies or corpuscles] could be found, the likely carriers of disease.<sup>142</sup> This was a very remarkable statement to make in 1849. It implied that tiny living entities that were present inside

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<sup>140</sup> Ibid, 24.

<sup>141</sup> This interpretation of mine is supported by the fact that in the second edition of the book, published in 1866, Romich completely deleted any reference to sleepwalking and instead fully focused on his writing on cholera. Johann Romich, *Neueste Beobachtungen über die epidemische Cholera* (Vienna: Carl Gerold, 1866).

<sup>142</sup> Johann Romich, *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeußerung eines Somnambulen* (Vienna: Leopold Sommer, 1850), 25.

the body of cholera patients were able to make more people ill of the disease. It also allowed for the possibility that cholera might be contagious, a highly debatable statement at the time. Romich stated that these were the same tiny animals that flowed through the air as part of miasma, carrying the cholera poison to new places all over the continent.

The fact that Romich based some of the most relevant pieces of information in his book on the discoveries made by the two British physicians revealed the growing importance of medical specialists communicating via specialized magazines, such as *The Lancet*. Through such magazines articles spread relatively quickly around the continent, so that for example in 1839 the discovery that for the first time by using a microscope it was proven that a microparasite was directly responsible for a human disease inside the human body, namely ringworm.<sup>143</sup> However, also in the British context claims of specificity related to particular disease vectors, to be discovered by the usage of a microscope, were criticized. The discoveries of Brittan were not accepted by the cholera sub-committee of the college of British physicians, who claimed that the disease was instead caused by a kind of fungi. Besides, according to them it was as of yet impossible to establish with certainty that tiny organisms found in the excrements of cholera patients, were the same as those found in the nearby water: they all looked alike.<sup>144</sup> The fact that Budd's discoveries hardly received any serious attention in Great Britain makes it even more remarkable that exactly this controversial text was consciously used and re-represented by Romich, a doctor working in what is often supposed to be one of the most conservative areas of Europe at that time.<sup>145</sup>

<sup>143</sup> This discovery was made by a Swiss professor of medicine, Johan Schoenlein: W. D. Foster, *A History of Medical Bacteriology and Immunology* (London: William Heinemann Medical Books, 1970). 7.

<sup>144</sup> William Baly and William W. Gull, "The Cholera Sub-Committee of the College of Physicians, on the Cholera Fungi," *The Lancet* 9 (November 3, 1849): 493.

<sup>145</sup> George Rosen, *A History of Public Health* (Baltimore: Johns Hopkins University Press, 1993), 262-264.



## Debatable specificity

The most famous publications on cholera from the nineteenth century are most likely still those of John Snow, a physician who researched the onset and spread of cholera during the epidemics of 1849 and 1854 in London and Bristol. In 1849 he published a book which differed in one significant aspect from earlier writings on cholera. Snow insisted that cholera predominantly spread through one medium: water. Therefore he recommended to wash hands regularly, boil water and avoid using contaminated wells or water which might be mixed with that of cesspools. Snow's insistence on the importance of *pure* water, meant one step further away from miasmatic models of disease. Notably, he only placed focus on the medium by which the disease spread, not its cause. Also, he did not exclude the possibility of miasma:

It should be observed, that the mode of contracting the malady here indicated does not altogether preclude the possibility of its being transmitted a short distance through the air; for the organic part of the faeces, when dry, might be wafted as a fine dust, in the same way as the spores of cryptogamic plants, or the germs of animalcules, and entering the mouth, might be swallowed.<sup>146</sup>

The observations by Snow do not attribute much causal agency to animalcules, or organic living entities in the water. It was his emphasis on water as the medium through which the disease spread that was novel. However, in the same year, there were other doctors working in the U.K. who did combine the medium and the causal agent of cholera in their publications. One of these contributors was the aforementioned Frederick Brittan, a lecturer in general anatomy and physiology at the Bristol Medical School. He used a tool which was gaining much epistemic credibility throughout the middle decades of the nineteenth century, the microscope. In his article

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<sup>146</sup> John Snow, "On the Mode of Communication of Cholera," *The London Medical Gazette*, September 9-10, 1849, 466-469.

*Report of a Series of Microscopical Investigations on the Pathology of Cholera*, he presented his results to the British medical society.<sup>147</sup> “I lay the following facts before the profession. It must be borne in mind that they are put forward as facts, and not mere opinions, and that the validity of my statements have been and can be demonstrated to be true or false by anyone who will take the trouble.”<sup>148</sup> In fact, Brittan came to a surprising conclusion. By employing the microscope as an instrument of ever more precise observation, he discovered that under the lenses of the instrument, all researched cholera patients had one common denominator.

While collecting this series, I examined and compared the specimens with others obtained from patients free from cholera. I found that in healthy solid motions these bodies did not exist (fig. 4), nor could I meet with them in the fluid stools of typhus and other diseases, by that they were present in the cases of severe choleric diarrhea so prevalent in districts where the disease abounds; and I was thus led to the necessary inference that these bodies were peculiar to the evacuations of cholera patients, and must have some essential relation to the disease.<sup>149</sup>

What separated this publication of Brittan apart from the vast majority of texts published around this time is the mentioning of an *essential relation*, the reframing of cholera as a *specific* disease, one that is fundamentally different from other diseases that spread easily in the urban environment such as typhus.

After repeatedly coming across the same kind of ‘bodies’ in the vomit and excrement of cholera patients, Brittan raised the question what kind of connection he was actually observing between those suspicious bodies and the disease.

Having thus led to consider these bodies (which, from the characteristic of their appearance, I have termed annular bodies), in some manner essentially connected with cholera, I wished to ascertain whether it might be as cause and agent, or effect and product: that it could not be the latter seemed evident at once from the fact that they were unlike any of the known healthy or morbid elements of the body, or secretions, and as

<sup>147</sup> Frederick Brittan, “Report of a Series of Microscopical Investigations on the Pathology of Cholera,” *The London Medical Gazette*, September 21, 1849, 530-542.

<sup>148</sup> Ibid, 530.

<sup>149</sup> Ibid, 531.

they were found in the vomited matters apparently in early stage of development, it seemed probable they were introduced from without, and would be met with in the atmosphere, &c. of places where cholera was rife.<sup>150</sup>

Brittan described his observations as mere registrations of the reality surrounding scientists, but one unattainable unless the microscope as an instrument of inquiry was employed, especially with the aid of the rational gaze of the professional scientist. To boost the validity of his discoveries, he tried to position himself as an objective observer, not being personally involved with his research, but merely registering his discoveries.

On this account, also, I have studiously avoided giving any opinion at all on the facts brought forward, lest I might by doing so distract attention from them, and because I would wish them to stand alone as a fixed and demonstrated truth, from which others, as well as myself, may draw their inferences.<sup>151</sup>

Brittan framed the causal agents of cholera he thought to be observed in terms of cells, reminiscent of Theodor Schwann's introduction of the cell metaphor into microscopy in 1840.<sup>152</sup> Brittan's text combined elements of old discourses on disease etiology with new discoveries and theories. Miasmatic theory was still very much present in his theory for example, since he claimed to observe agents of cholera in the atmosphere. Yet at the same time, cholera became a specific disease, one linked to the presence of bodies found under the lenses of microscopes, data unattainable outside of the fact-producing fabric of the laboratory, unattainable by non-scientists who were incapable of distancing themselves' from reality and thus observe facts.

Initially, the research undertaken by Brittan and his colleagues Budd and Swayne was not recognized. A committee of British physicians announced after checking the experiments and repeating them, that the three provincial microscopy-enthusiasts had made clumsy errors, mistaking the so called cholera cells for very common fungi found in particular kinds of bread.

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<sup>150</sup> Ibid, 533.

<sup>151</sup> Ibid, 541.

<sup>152</sup> Theodor Schwann, *Mikroskopische Untersuchungen über die Übereinstimmung in der Struktur und dem Wachstum der Thiere und Pflanzen* (Berlin, 1839).

Two weeks after this publication, Swayne felt compelled to continue the debate in the annals of the *London Medical Gazette*. In its issue of the 2<sup>nd</sup> of November 1849, he defended his own microscopic research results. Notably, the bodies scrutinized with the help of the microscope, were still described by Swayne as cholera cells, fungi or cholera poison.<sup>153</sup> They were not framed in terms relating to their animal-like nature or origin. The membership of a microscopy society was also used by Swayne to strengthen his argumentation. Indeed, the institutionalization of science offered practitioners of different kinds of science a strong argument to support the epistemic validity of their claims. By organizing themselves in societies with their own research-institutes or laboratories, stronger claims could be justified by medical specialists.

After Snow's first publication on cholera, a lively debate took place lasting several months on the pages of the *London Medical Gazette*. Snow published a second article, *On the Pathology and Mode of Communication of Cholera*, in which he further elaborated how the disease spread by water. Snow did not believe it could spread by air, or was influenced necessarily by the altitude of a given location. Rather, he attributed the way the disease spread to two main factors: the presence of water and the presence of an infected individual whose body could communicate the "cholera poison" further. Snow did not describe the agent of cholera as a disease, but was focused on the method employed by the disease agent in spreading itself.<sup>154</sup>

In Romich's text there were still many elements to be found from the older discourses on cholera. Especially references to climatic conditions as an important factor in the intensity of an epidemic and the mentioning of miasmatic factors influencing the spread of cholera are clearly

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<sup>153</sup> Joseph Griffith Swayne, "The Cholera Fungi and Uredo," *The London Medical Gazette*, November 2, 1849, 859-862.

<sup>154</sup> John Snow, "On the Pathology and Mode of Communication of Cholera," In: *The London Medical Gazette*, November 2, 1849, 746.

similar to the previously described discourses from the 1830's.<sup>155</sup> The fertile reception awaiting the tiny carriers of cholera, the small organisms that could survive so well in water, was to be found in a particular kind of house, where spatial pathology thrived.

That the drinking water during the current epidemic times is especially responsible for the spread of the epidemic, will not be doubted by anyone who knows about the birth of cholera in Ganges river. Swamp-air, filth from the earth, fog and moisture seem to be the carriers, which disseminated these poisonous organic particles, mostly through rivers flowing in all directions of the world. Wherever these particles found shelter in moist layers of air, such as deeply allocated, damp and narrow spaces, where many people live together and almost no fresh air comes in, there, in houses where due to a lack canals the sinks come together in a pit, where as a consequence there is always moist air, these particles seek for their continuous existence a particular medium, which they find in drinkingwater and well-water, in which Dr. Butt [sic] observed these particles in abundance, wherever cholera had prevailed.<sup>156</sup>

Even though the recommended methods to somehow eradicate the danger of cholera spreading did not change much when the 1830's texts are compared to Romich's text from 1850, it is striking to notice the rise of the microscope as a tool of inquiry and a tool demarcating medical specialists from the ordinary onlooker.

The cold water, in which calcium has its pure effect, just like quicklime, when taken in bulk, destroys the organic fibers, also the extremely delicate ones, the ones that can only be discovered through the microscope, which according to Dr. Brittan, Dietl, Butt [sic]. Esquirol, Wiedemann, Heidler, Reale, Greser and Albers produced the cholera.<sup>157</sup>

<sup>155</sup> Johann Romich, *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeufferung einen Somnambulen*, (Vienna: Leopold Sommer, 1850), 26-29.

<sup>156</sup> "Dass nun das Trinkwasser zur Zeit der Epidemie die höchste Mitschuld zur Verbreitung derselben trägt, wird derjenige nicht in Zweifel ziehen, welcher die Geburt der Cholera aus dem Ganges-Strome weiss. Sumpluft, Erddünste, Nebel und überhaupt Feuchtigkeit scheinen die Träger zu sein, welche diese giftigen organischen Körperchen meist in der Richtung der Flüsse nach allen Weltgegenden verbeiten, und wo diese Körperchen eine stagnirende, mit Feuchtigkeit geschwängerte Luftschichte finden, wie in tiefliegenden, feuchten und engen Räumen, wo viele Menschen zusammenleben, und fast nie gelüftet wird; in Häusern, wo wegen Mangel an Kanälen die Ausgüsse sich bloss in einer Grube sammeln, und so stets eine feuchte Luft bilden, suchen sie das zu ihrer Fortdauer bestimmte Medium, und erhalten es theils durch das im Zimmer stehende Trink- theils durch das Brunnenwasser, in welchen Dr. W. Butt [sic] diese Körperchen überall in hinreichender Menge gefunden, wo die Cholera bestanden hat." Ibid, 28-29.

<sup>157</sup> "Das Kaltwasser, welches die Calciumwirkung in ihrer Reinheit einschliesst, kann eben so wie der Ässkalk, wenn er in Substanz genommen wird, die organische Faser zerstört, auch die äussert zarten, bloss durch das Mikroskop zu entdeckten Körperchen, welche nach Dr. Brittan, Dietl, Butt [sic], Esquirol, Wiedemann, Heidler, Reale, Greser und Albers die Choler erzeugen, vernichten." Ibid, 32.

In some important aspects theories on cholera did not change significantly between 1830 and 1850. Elements of miasmatic theory were still present, albeit less dominantly. The description of pathological spaces where it was thought to be easier to contract the disease were still those damp, filthy, densely inhabited houses and streets where the lower classes resided. In therapeutic terms there was still a constant need to warn the population not to trust the so called ‘magic bullets’, medicaments that promised instant protection and healing of cholera. However, some changes did take place in those twenty years. One of the most important changes in the framing of cholera was that by 1850 it was described as a particular disease, with its own, unique pathological process and agents spreading it. Whereas John Snow devoted most attention to the medium (water) used by the disease to spread, in the Viennese context the *eigenthümliches Choleragift* [cholera poison] received most attention.

A synthesis between these two would later in the century develop to the theoretical chain of causality proven by Robert Koch, namely that a bacterium was responsible for the spread of cholera, predominantly through contaminated water. At the first sight, this new conceptualization of cholera did not directly result in new spatial planning or urban construction. As I will argue in the next chapter, however, similar processes of urban construction continued, supported by a changed conception of cholera. In a sense it was irrelevant to the decision to increase the fresh-water supply to the city for example, if the disease spread through contaminated water alone, or initially via miasmatic particles that would quickly dissolve from the air into water. The change from disease conceptions based on symptoms and results to a framing of cholera based predominantly on processes and causes of disease did not result in significantly changes in sanitary measures or urban constructions.<sup>158</sup> Nevertheless, one important change did occur. After

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<sup>158</sup> Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900* (New York: Cambridge University Press, 2000), 4.

recognizing cholera was a specific disease, it was also possible to precisely define symptoms unique to that disease, disregarding the singularity of a patients' body, the place the disease was contracted or the exact time a patient got ill. Considerations of space and time were less important in this framework, while the importance of having a standardized and specialized treatment of particular diseases, valid for the whole population, became more important.<sup>159</sup>

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<sup>159</sup> Ibid, 30.

## Chapter Four: Cholera as a Catalyst of Change

Cholera was not the first disease that visited all European states with horrifying effects. The Black Death had preceded the cholera epidemics in the European context as the disease *par excellence* that triggered a quick and direct countermeasure in the form of sanitary cordons, resulting in a tightening of political state-borders.<sup>160</sup> Moreover, the two diseases' shared one important characteristic. They confronted large parts of the world with a very similar problem, challenge, or enemy, depending on how the disease was imagined and framed. During times of epidemics, the big question was how the disease spread, although it is an anachronism to think that there was at the time any form of definite answer to this question. After all, there was no consensus on the question if cholera was contagious to begin with. But by being confronted with the same problems caused by the same disease, medical specialists and state officials had very similar challenges to overcome. This realization of having a similar uncertainty regarding the prospects of surviving epidemic diseases was to a large extent brought about by the great increase of trade and traffic across continents. On a national level the disease clearly contributed to the growing desire to have a more coordinated national public health policy, which encouraged, for example Great Britain and the United States, to found new organizations intended to regulate public health programs.<sup>161</sup>

Since the beginning of the nineteenth century, these epidemics were an important catalyst in fostering international communication between states and all kinds of local commissions dealing with disease, traffic and sanitary affairs in general. This reality, brought about by a 'common enemy', in the form of a disease, we have only relatively recently encountered in the

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<sup>160</sup> Emmanuel Le Roy Ladurie, *The Mind and Method of the Historian* (Chicago: University of Chicago Press, 1981), 28-50.

<sup>161</sup> George Rosen, *A History of Public Health* (Baltimore: Johns Hopkins University Press, 1993), 254.



form of AIDS or new forms of influenza. Thus the words of French *Annales* school historian Le Roy Ladurie, when applied to almost any epidemic of the twentieth century, make sense today just as they do for the cholera epidemics of early nineteenth century Europe. “Unification by disease as the evil concomitant of expansion and trade has gradually, in modern times, lost its capacity to fashion the destiny of mankind.”<sup>162</sup> Even though epidemic diseases are still feared and respected, they at least seem to have lost their decimating effects, resulting in a powerless and helpless conglomerate of European states’ and citizens. We take it for granted that there is something like a World Health Organization, but this was not always the case.

## A European affair

Two important developments in the European nineteenth century were industrialization and urbanization, even though the tempo by which these processes occurred varied greatly from region to region. An important side effect of these developments was the great increase of social mobility, resulting in growing numbers of people migrating from rural to urban areas. New challenges were the result of these developments and the resolving would predominantly be the responsibility of states and municipal bureaucracies. They were to cope with the great influx of poor migrants. The rise of particular diseases from an endemic to an epidemic level was one of the gloomier side effects of the great increase in traffic of both humans and commodities all over the world. Obviously, this was not a problem unique to the nineteenth century. The multitude of plague epidemics spreading over Europe from the mid fourteenth to the seventeenth century onwards, were in several ways important predecessors to the epidemical diseases of the nineteenth century such as typhus, but above all, cholera. As a new disease, cholera led to a form

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<sup>162</sup> Emmanuel Le Roy Ladurie, *The Mind and Method of the Historian* (Chicago: University of Chicago Press, 1981), 83.

of internationalization, which the historian Valeska Huber labeled “the unification of the globe against disease”.<sup>163</sup> Cholera traveled much faster than previous pandemics had done and the period between contracting the disease and possibly succumbing to its symptoms, was significantly shorter as compared to other epidemic diseases. It was a disease characterized by its velocity in spreading over spaces and in patients’ bodies.

Because of the rapid spread of cholera over vast parts of the world, awareness of the need to develop a common strategy to halt the further spread of the disease was recognized. The classic concern with the protection of borders that manifested it self in enormous sanitary cordons, led to a realization that such regulations were practically impossible to implement successfully.<sup>164</sup> As a consequence the first international sanitary conference on cholera was held in Paris in 1851, bringing together diplomats, nobility and medical specialists from all over Europe. After months of negotiation and mounting frustration a universal detailed convention was finally drafted, to be implemented only by France, Portugal and Sardinia.<sup>165</sup> This showed that the unification of the globe against disease was a slow and problematic process, which was thwarted to a significant extent by different explanations concerning the origin and possible contagiousness of diseases in general and cholera in particular. In Vienna, the disease actually acted as a catalyst for correspondence among medical professionals which indirectly led to a more systematic policy on the construction of urban infrastructure, such as canalization and the supply of fresh-water.

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<sup>163</sup> Valeska Huber, “The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851-1894,” *The Historic Journal* 49, no. 2 (2006), 454.

<sup>164</sup> *Ibid*, 456.

<sup>165</sup> *Ibid*, 457-461.

## The professionalization and reorganization of medical specialists

During the first half of the nineteenth century, doctors were increasingly presenting themselves as rational experts of health and disease. Vienna, the center of the Habsburg Empire, was the place in Central Europe where the best medical personnel were educated since the late eighteenth century. The intellectual origins of the state-centered concern with the health of the inhabitants of the realm could be traced back to cameralist theories on relationship between the state and its inhabitants, as I described in chapter two. In the decades between 1820 and 1860, a reformulated relationship between patient and doctor started to develop. Because diseases were reframed according to their causes and processes and diagnosis was less based on symptoms as registered by patient and doctor, the suffering of patients in the age of clinical medical research lost its importance in the establishment of sound diagnosis and therapy.<sup>166</sup>

The new relation between the doctor and the patient was notably less empathic and much less intimate. In order to legitimize the increasingly dominant claims of medical specialists, especially regarding the origin and cause of disease, a number of competitors on the medical market needed to be challenged and discredited. One of the instruments employed in this process, as I have described in the previous chapter, was the microscope. Because of the hitherto limited success medical specialists had had in prescribing effective therapies against a great number of diseases, it was not easy until the middle of the nineteenth century, to justify the legitimacy of professionally trained doctors vis-à-vis the great number of medical entrepreneurs. One of the ways this was achieved was through ascribing a growing number of judicial powers

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<sup>166</sup> Thomas N. Burg, *“Sieches Volk macht siechen Staat”* (Vienna: Praesens 1994), 22-23.

and rights to the Sanitary Commission, belonging to the municipal authorities, responsible for all sanitary developments in Vienna.<sup>167</sup>

From 1773 onwards the head of all sanitary employees and commissions in the Empire had to be from Vienna and by decree he was able to appoint local sanitary commission leaders throughout the provinces.<sup>168</sup> From 1819 onwards, the district medical officers were also responsible for the production of a vast set of medically relevant statistical data, such as proper registration of medical practitioners in a given locality.<sup>169</sup> In general the organization of medical science and knowledge did not change significantly until 1850, but in the second half of the nineteenth century new developments changed the medical profession in Vienna. In the wake of the cholera epidemic of 1848-1849, in 1850 *öffentliche Gesundheitspflege* [public healthcare] was strengthened by the creation of a Medical Commission, responsible for overseeing Empire-wide medical regulations.

On the municipal level, district doctors and professors of medicine became more influential positions in the cities' political organization. The intention of the authorities was that the medical specialists would foster a kind of social integration after the political consternation caused by the 1848 revolution, healing the social body both metaphorically and literally.<sup>170</sup> The authority of medical specialists grew significantly from this moment on. In consequence, the highest medical authority in the Habsburg Empire was, since 1851, the Medical Commission, which consisted solely of medical specialists. The only occasion on which localized similar commissions were allowed to take autonomous decision and action themselves without notifying

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<sup>167</sup> Ibid, 59.

<sup>168</sup> Ibid, 60.

<sup>169</sup> Ibid, 66-67.

<sup>170</sup> Ibid, 68-70.

or consulting the main commission was when cholera epidemics hit a village or city.<sup>171</sup> This made sense, since cholera was predominantly an urban problem, requiring administrative bodies and able individuals who could act independently and swiftly, which as a side-effect led to more independence of local, urban authorities' vis-à-vis the state.

A prominent society, in which the rising status and influence of institutionalized science as a political force could be observed, was the Royal Austrian Academy of Sciences, founded in 1847. The first request to found such a society was already made in 1837, but under the auspices of the conservative Metternich regime the foundation of new societies and institutions was thwarted significantly out of fear of creating possible centers of revolutionary ferment.<sup>172</sup> Although initially medical specialists were not allowed to enter the elitist academy, this changed after the turmoil following the revolutionary events of 1848.

Freedom of knowledge and learning was a key principle that the members of the Academy of Sciences embraced during this hectic period of time and, as the revolution was taking place, the members of the academy decided to allow medical specialists to enter their ranks. The famous anatomist Carl von Rokitansky (1804-1878) was one of the first to do so. During the 1850's and 1860's Rokitansky became a prominent member of the academy and the most renowned medical specialist in the Habsburg Empire. As a pathological anatomist was a prime exponent of the second school of Viennese medicine, which was based on the principle that diseases could be located inside the body, by pathological anatomical comparison for example. His self-representation and reputation was that of a meticulous and precise scientist, who used his eye and experience in conducting autopsies to make diagnosis of the exact cause of

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<sup>171</sup> Ibid, 73-75.

<sup>172</sup> Felicitas Seebacher and Stefan Sienell, "Carl Freiherr von Rokitansky und die Kaiserliche Akademie der Wissenschaften," *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, ed. Christine Otter (Vienna: Böhlau Verlag, 2004), 66-67.

death as precise as humanly possible.<sup>173</sup> During the latter part of his career he also applied this logic to the way he envisioned the medical science as a political actor, observing and reporting on social problems in society, such as a lack of properly constructed houses for the poor, which led to overcrowded houses. During a lecture for the Royal Academy of Sciences in March 1858 for example, Rokitansky specifically linked medicine as practice and as a social science.<sup>174</sup>

In practice, outside of theoretical books, medicine was highly politically charged as it increasingly claimed to have the power to influence public policy in urban centers, by targeting tackling problems of public health, such as overcrowded slums. Similar developments took place around the same time in other areas of Europe. The liberal German medical specialist Rudolf Virchow (1821-1902) is a better known example of a medical scientist who became politically involved in a similar way as Rokitansky and the Viennese society of doctors' did.<sup>175</sup> In Austria, medical specialists were among the biggest groups to participate in the revolution of 1848. In fact, almost half of the regiments fighting on the barricades consisted of students, professors and professionals of medicine – including some of the biggest authorities in the field.<sup>176</sup> In fact, in Austria, where no such thing as political parties in our modern understanding of the term existed, scientific societies at times functioned as political meeting places, where politics and arts were discussed along with science.<sup>177</sup> Scientific societies could thus also acquire a political role in an urban context.

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<sup>173</sup> Ibid, 70.

<sup>174</sup> Peter Urbanitsch, “Zwischen Revolution und Konstitutionalismus: Rokitansky's Weg in die Politik,” *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, ed. Christine Otter (Vienna: Böhlau Verlag, 2004), 152.

<sup>175</sup> Christian Andree, “Waren Rokitansky und Virchow Feinde?,” *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, ed. Christine Otter (Vienna: Böhlau Verlag, 2004), 83-102.

<sup>176</sup> Peter Urbanitsch, “Zwischen Revolution und Konstitutionalismus: Rokitansky's Weg in die Politik,” *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, ed. Christine Otter, (Vienna: Böhlau Verlag 2004), 148-149.

<sup>177</sup> Ibid, 154.

## Part grassroots, part state organized new policies

The cholera epidemic of 1831-1832 had one important indirect consequence in the Austrian and especially the Viennese context. In 1837 it led to the founding of the *Kaiserliche und Königlische Gesellschaft der Ärzte zu Wien* [Imperial and Royal Viennese Doctors' Society] which was the first purely scientific medical association of its kind in Vienna.<sup>178</sup> As one of its founders, Franz Ritter von Wirer<sup>179</sup> (1771-1844) phrased it:

Before the first cholera epidemic in Vienna in 1831, I, with several colleagues felt the strong desire to found a doctors' society. In the society, we could advice each other on the most pressing topics of importance, during a repressive time. At the next public facultymeeting, I proposed the foundation of such a society, to which all faculty members present agreed and they made me responsible for realizing the idea.<sup>180</sup>

The organization was founded to foster communication between the by now ever more widely dispersed medical specializations existing in medical science.<sup>181</sup> Its members met in the aula of the general hospital and the majority of its members were somehow affiliated with the medical faculty of the University of Vienna.<sup>182</sup>

The Viennese Doctors' Society was sponsored by three different actors. First of all, the members were paying a yearly fee. Secondly, the provincial authorities invested 1200 Florins in the project, and von Wirer donated an impressive sum of 2000 florints.<sup>183</sup> Another 450 florints were invested by the provincial government in 1841, in order to help the association in raising

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<sup>178</sup> Karl Hermann Spitzzy, *Gesellschaft der Ärzte in Wien 1837-1987* (Vienna: Christian Brandstätter, 1987), 9.

<sup>179</sup> Von Wirer became a member of the Austrian lower nobility after a long and successful medical career and spent a lifetime on the discovery, subsequent exploitation and recognition of the healing qualities the springs of Bad Ischl were rumored to posses: Karl Hermann Spitzzy, *Gesellschaft der Ärzte in Wien 1837-1987* (Vienna: Christian Brandstätter, 1987), 9.

<sup>180</sup> "Vor dem Ausbruch der ersten Choleraepidemie in Wien im Jahre 1831 fühlte ich mit mehreren Kollegen das lebhafteste Bedürfnis, einen ärztlichen Verein zu bilden, um uns in demselben kollegialisch über die so wichtigen Verhältnisse jener bedrängten Zeitperiode beraten zu können. Bei der nächsten öffentlichen Fakultätsversammlung machte ich daher den Vorschlag zur Bildung eines solchen Vereines, mit dem alle anwesenden Fakultätsmitglieder einverstanden waren und dessen mögliche Ausführung sie mir übertrugen." Karl Hermann Spitzzy, *Gesellschaft der Ärzte in Wien 1837-1987* (Vienna: Christian Brandstätter, 1987), 10.

<sup>181</sup> *Statuten und Geschäfts-Ordnung der k.k. Gesellschaft der Ärzte zu Wien* (Vienna: Carl Ueberreuter, 1847), 5.

<sup>182</sup> Hermann Spitzzy, *Gesellschaft der Ärzte in Wien 1837-1987* (Vienna: Christian Brandstätter, 1987), 11.

<sup>183</sup> Ibid, 29.

enough capital to exist of the interest its savings provided. In this way, enough funds could be created to hold a yearly essay competition: anyone practicing medicine in the city was encouraged to send in their most interesting medical discoveries made throughout the year, in the form of an essay. The winner was eligible to receive a prize of one hundred florints. Scientific essay competitions were of course not a novelty, but is interesting to note that members of the nobility, the state and the middle-class all contributed to the creation of a thriving climate of medical scientific debate in Vienna, under the aegis of the Viennese Doctors' Society.<sup>184</sup>

The society can be seen as an important center of knowledge production and concentration. It was founded to increase the communication between representatives of several medical specializations, who were all represented equally in the organization's structure. Four different groups were explicitly mentioned: pharmacology, pathology, hygiene and therapy.<sup>185</sup> On a monthly basis, members of the various groups were expected to get together at a general meeting and exchange their latest findings concerning topics such as out of the ordinary disease diagnoses, newly developed therapies and current epidemics in the city.<sup>186</sup> To facilitate and strengthen the growth of medical knowledge in Vienna, the society also founded its own magazine, library and reading room.<sup>187</sup> The library started functioning in 1842.<sup>188</sup> Since 1841 and thanks to Wirer, the society had its own laboratory at the general hospital, where chemical-pathological research could be conducted by the members of the society.<sup>189</sup> This was a big step, since it was almost impossible for regular physicians and doctors save very few to conduct

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<sup>184</sup> *Statuten und Geschäfts-Ordnung der k.k. Gesellschaft der Ärzte zu Wien* (Vienna: Carl Ueberreuter, 1847), 31-32.

<sup>185</sup> Ibid, 9.

<sup>186</sup> Ibid., 12.

<sup>187</sup> Ibid, 5.

<sup>188</sup> Hermann Spitzzy, *Gesellschaft der Ärzte in Wien 1837-1987* (Vienna: Christian Brandstätter, 1987), 12.

<sup>189</sup> Ibid, 15.



independent laboratory research at home during the nineteenth century.<sup>190</sup> On top of these initiatives, the society also had a keen eye on the knowledge that foreign medical specialists could exchange with the members of the society. Therefore, it was a relatively open center of knowledge production, concentration and exchange. For a negligible and modest fee, outsiders were allowed to access the reading room and library and after asking permission to the chairman, were also allowed to attend lectures or readings organized at the premises' of the society.<sup>191</sup>

As mentioned earlier, the Viennese Doctors' Society started to become an influential actor in the city, especially after the publication of its journal since 1844, in which knowledge of widely diverse medical topics was collected and presented. The internationalization of science and medicine can be observed throughout the pages of the magazine. In 1848 an article by the Viennese trained medical specialist A.Spiro was included, a high ranking official responsible for hygiene policy in Moscow. Working as an official specialized in public hygiene in Moscow he warned the Viennese Doctors' Society by reporting on the Moscow cholera epidemic of 1847-1848, which was caused by the same disease that had hit Vienna so badly in 1831, according to his observations. He based this remarkable theory on his experiences early in his career, when he was working for over three months at the Gumpendorfer cholera-hospital in Vienna.<sup>192</sup> Consequently, he was aware of the limited success the Viennese had had in tackling the epidemic in 1831, when they attempted to thwart the further spread of cholera by creating sanitary cordons throughout the Habsburg Empire and its capital.

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<sup>190</sup> Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900* (New York: Cambridge University Press, 2000), 20-21.

<sup>191</sup> *Statuten und Geschäfts-Ordnung der k.k. Gesellschaft der Ärzte zu Wien* (Vienna: Carl Ueberreuter, 1847), 14-16.

<sup>192</sup> A. Spiro, 'Sendschreiben an die k.k. Gesellschaft der Ärzte in Wien über die jetzt in Russland herrschende cholera-epidemie', *Zeitschrift der k.k. Gesellschaft der Ärzte zu Wien*, band 2. (Vienna: Kaulfuss Witwe Prandel & Comp., 1848), 393-394.

The treatment of this still mysterious disease has unfortunately made very little progress. Also during this epidemic, almost all previously praised and newly devised treatments were gone through again, without significant success. Particularly pernicious were the so called specific methods, supported by imaginary theories, which in practice almost always let you down. Symptomatic treatments seemed to be more effective, they satisfied in each individual case, based on the available indications.<sup>193</sup>

This statement by Spiro reveals just how different the opinion on the origins of cholera and its spread by the medical specialists in Moscow and London was during the same epidemic. Whereas in Moscow medical specialists were clearly still preferring a symptom-based, individualized therapy, in London specialists were focusing on the transmitter of an unique disease, a poison which spread by means of water.

The dominance of sanitary theory was in this case only enhanced by communication between medical practitioners throughout Europe. Spiro's advice supported one of the observations specialists from London to Moscow often agreed on: it was according to Spiro near damp, water-infested residential areas of Moscow where both most people fell ill of cholera and eventually died from it.<sup>194</sup>

The preoccupation with healthy water provision was one of the key topics picked up by the Viennese doctors' society during the 1850's. This was already for several decades a topic of importance. In the aftermath of the first cholera epidemic of 1831, the canalization system of Vienna was expanded significantly, but mostly to get rid of rain and filth.<sup>195</sup> Like similar institutions in cities such as London and Paris, the Viennese Doctors' Society became active on the urban political field between 1840 and 1860. For example, in 1857 the society published a

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<sup>193</sup> "Die Behandlung dieser noch immer rätselhaften Krankheit hat leider nur sehr geringe Fortschritte gemacht. Auch in dieser Epidemie wurden fast alle Behandlungsarten, die in der früheren angepriesen wurden, wieder durchgemacht, und neue ausgedacht, aber alle ohne erheblichen Erfolg. Besonders verderblich zeigten sich die sogenannten specifischen Methoden, die, auf erdachte Theorien fussend, in der Praxis fast immer im Stich liessen. Zweckmässiger erschien die symptomatische Behandlung, die für jeden einzelnen Fall die vorhandenen Indicationen erfüllte." Ibid, 395.

<sup>194</sup> Ibid, 397.

<sup>195</sup> Franz Innhauser, *Über Retiraden, Pisssoirs, Senkgruben und Canäle in sanitätspolizeilicher Hinsicht mit besonderer Rücksicht auf Wien* (Vienna: Carl Gerold's Sohn, 1857), 15.

special print of a long article which was printed earlier in the pages of its magazine, written by one of the responsible district-doctors of Vienna, Franz Innhauser.<sup>196</sup> The small book was part of a persistent attempt made by the doctors' society of Vienna to convey the importance of better and more strictly regulated public health policies. By comparing Vienna extensively to Paris and London, Innhauser attempted to persuade the civil administrators to issue new canalization and waste disposal policies and constructions, partially by pointing out how unhealthy it was to live in Vienna for people living in small houses next to canals connected to an open sewage system.<sup>197</sup> The argumentation employed by Innhauser was partially based on medical considerations, but predominantly on economical arguments. From the perspective of medical history, the text is an example of how miasmatic theory was still very much alive in the late 1850's. The installment of toilets and closed drainage systems in every Viennese home was for example necessary, in order to separate poisonous hydrogen-sulfide and ammonia gasses from intoxicating inhabitants.<sup>198</sup>

Political pressure was exerted by comparing Vienna's outdated sanitary infrastructure to that of Berlin, Paris and London, who all had improved access to large amounts of fresh-water and were thus cleaner and more civilized.<sup>199</sup> One of the proposed solutions to resolve Vienna's chronic failure of maintaining sanitary standards up to a desirable level was to increase the legislative power of medical authorities in the city, by allowing them to issue punishments and warnings to individuals who did not heed their call for clean housing.<sup>200</sup> Innhauser also argued that by extending the sanitary infrastructure by means of canalization, the construction of toilets

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<sup>196</sup> Franz Innhauser, *Über Retiraden, Pissours, Senkgruben und Canäle in sanitätspolizeilicher Hinsicht mit besonderer Rücksicht auf Wien* (Vienna: Carl Gerold's Sohn, 1857).

<sup>197</sup> Ibid, 5.

<sup>198</sup> Ibid, 7.

<sup>199</sup> Ibid, 8.

<sup>200</sup> Ibid, 27.

and the separation of urine from other waste disposal, both the Viennese industry and agriculture could be boosted, by using human excrements as fertilizer for example.<sup>201</sup> The fact that Innhausers' narrative climax was dominated by economic arguments was more than a strong indication of how the medical sciences were still clearly connected to economic interests. It was also a way to show how investing in medical knowledge and implementing their policy recommendations could be used to serve the cities' economic and political interests.

Another example of the social and political engagement of the society was the publication in 1862 of *Die Wasser-Versorgung Wiens* [The Water Supply of Vienna].<sup>202</sup> The author, Adolf Schauenstein, was a professor at the University of Vienna and secretary of the Viennese Doctors' Society. The publication shows how the professionalization of the medical sciences in Vienna during 1830-1860 could have a direct influence on urban infrastructure, but is also an example of the medicalization of urban life. Schauenstein critically assessed the conditions of public health in Vienna by drawing comparisons with Paris, New York and Constantinople. Clean and plentiful fresh water was elevated to the status of a benchmark of a society's overall health. Consequently, the rural areas were deemed to be healthier as opposed to urban life.

The importance that the wealth of usable water has for a densely populated city, the intimate connection between irrigation conditions and health care in general, the favorable influence an ample water supply has on health, convenience for the lifestyle, the general prosperity and the indirect influence it thereby exercises on the moral and intellectual education of a population- these are facts that are confirmed by an experience a long time ago, facts confirmed by the enormous waterworks and aquaducts that we still admire, standing wherever the romans' world-dominating eagle had been planted, and which surrounds in the Orient every water-source with lavender, a sign of religious gratitude and admiration, and the establishment of a source is not only a charitable enterprise for the common good, but also a god-pleasing work.<sup>203</sup>

<sup>201</sup> Ibid, 12 and 34-36.

<sup>202</sup> Adolf Schauenstein, *Die Wasser-Versorgung Wien's* (Vienna: Carl Ueberreuter, 1862).

<sup>203</sup> "Die Wichtigkeit, welche der Reichthum an nutzbarem Wasser für eine grosse dichtbevölkerte Stadt hat, der innige Zusammenhang der Bewässerungsverhältnisse mit der Gesundheitspflege überhaupt, der günstige Einfluss, den eine reichliche Wasserversorgung auf Gesundheit, Bequemlichkeit, auf die Lebensweise, den Allgemeines Wohlstand und dadurch mittelbar auch auf die intellectuelle und sittliche Bildung einer Bevölkerung übt – das sind Thatsachen, welche die Erfahrung längst constatirt, eine weise Staatskunde schon längst anerkannt hat, Thatsachen,

The booklet was directed at the municipal administration, the city council of Vienna, and served a purpose: to convince the city council to enlarge the provision of water to Vienna's growing population. This would also increase the influence of medical specialists on the cities' future construction. Three water sources were mentioned: wells, filtered water from the Danube, or lastly water from newly constructed reservoirs outside of the city that would deliver water by aqueducts and spread it by a newly constructed water-pipe system.<sup>204</sup> The last option was advised and implemented. Unlike what is argued anachronistically by some, these sanitary policies had little to do with our contemporary understanding of disease etiology. It were not the *Lebende thierische Organismen* [living animal organisms], as Schauenstein called them, observed under microscopes, which made water possibly unfit for consumption, but the amount of minerals and metals in it.<sup>205</sup>

Schauenstein based his recommendations and observations partially on the work undertaken by a group of sixteen prominent men two years earlier before he wrote his book. This work, entitled *Das Wasser in und um Wien* [The Water In and Around Vienna], was the first large scale study conducted with the purpose of formulating a new set of recommendations to the city council, in order to assess and possibly improve the water quality of Vienna. The commission consisted of two groups: one working on the analysis of water and another one devising practical measures in fields such as canalization and city enlargement. Consequently, only a minor part of the group was trained in medicine, while this was clearly a concern of public health. Members of

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deren Anerkennung die riesigen Wasserwerke und Aquädukte schuf, die wir noch jetzt dort bewundern, wo der Römer seinen weltherrschenden Adler aufgepflanzt hatte, und im Oriente jeden lavenden Quell mit dankbar religiöser Achtung umgibt und die Errichtung eines Brunnens zu öffentlichen Gebrauche nicht nur als gemeinnütziges Unternehmen, sondern als ein frommes, gottgefälliges Werk erscheinen lässt." Ibid, 1.

<sup>204</sup> Ibid, 7-14.

<sup>205</sup> Ibid, 8.

the police, nobility, administrators of the city and architects also had their say.<sup>206</sup> By 1860, it was the level of unhealthy substances in the water possibly designated to become drinking water that raised most concerns. Nonetheless, living tiny organisms were also considered to be undesirable in water designated for consumption.<sup>207</sup> The sheer amount of water available for consumption became by this time a hallmark of civilization.

Rightfully so, a famous German scholar has considered the amount of soap used as a reliable measurement of the present level of education and norms; but the amount of water used must be an even better assessment of the development of a culture, since the amount of soap applied as a means of cleaning, is depended on water. .... At the present state of civilization, as it has been reached in most parts of Europe, it is no longer sufficient to have enough water to drink; people need it much more for cooking their food, the washing of linen and utensils, to water the meadows and gardens and for many other purposes.<sup>208</sup>

The influence of medical specialists was traditionally big in urban centers where they received their training and this influence grew during the nineteenth century. In the previous chapter I referred to the problem of bad housing conditions of the poor and the description of pathological spaces in texts on cholera. Initially, this concern of poor housing was mostly based on the idea that the poor were living in close proximity to disease-inducing factors, such as rivers, cesspools and open sewers. In the first half of the nineteenth century, an extra element was attached to the problem of proper housing, namely the concept of overcrowded houses and rooms due to a lack of sufficient and proper housing in the city. The great urbanization process of the second half of the nineteenth century did not diminish these problems. This issue was specifically addressed by

<sup>206</sup> *Das Wasser in und um Wien* (Vienna: k.k. Hof- und Staatsdruckerei, 1860), IV-V.

<sup>207</sup> Ibid, 12.

<sup>208</sup> “Mit Recht hat ein berühmter deutscher Gelehrter die Grösse des Verbrauches von Seife als sicheren Massstab der herrschenden Bildung angesehen; aber der Wasserverbrauch muss ein noch besseres Mass für die Cultur abgeben, da die Verwendung der Seife als Reinigungsmittel immer an die Mitwirkung des Wassers gebunden ist.<sup>208</sup> .... Bei dem gegenwärtigen Stande der Civilisation, wie er wenigstens in Europe fast durchgehends erreicht ist, genügt es dem Menschen nicht mehr, genug Wasser zum Getränke zu haben; man bedarf davon weit mehr zum Kochen der Speisen, zum Reinigen des körpers und zu Bädern, zum Waschen des Weisszeuges und der Geräthschaften, zur Bewässerung der Wiesen und Gärten und zu vielen anderen Zwecken.” Ibid, 1.

medical specialists and organizations and comprised basically some of the first, as we now understand the concept, instances of public health policy.<sup>209</sup> It was quite literally vital for the survival and functioning of the whole Empire that Vienna was doing well, since a significant part of the administrative and aristocratic elite was residing in the city. In the nineteenth century, absolutely and relatively, the presence of small entrepreneurs and their small scale industry and trade would grow immensely in Vienna. Large fabrics were not necessarily there, but many smaller businesses were active in the city.<sup>210</sup> With the growth of population, Vienna's social structure changed. However, the lay-out of Vienna did not change much, since it continued to reflect the class-based hierarchy of society. Even though medical theories identified overcrowding and a lack of urban infrastructure such as fresh-water as a prime cause of disease, these conditions did not change until the 1860's. The core of Vienna was made up of the powerful and rich, while the further one went away from there, in general, the poorer and more destitute the inhabitants of the city became.<sup>211</sup> Between 1800 and 1830 the population grew with 37,5%, from 231 049 to 317 768.<sup>212</sup>

However, the really significant change took place between 1820 and 1875. The population living in the richer, inner city grew with 158,9% to 673 865, while the poorer part of the population, which mostly consisted of poor migrants, lived in the suburbs. These grew from 38 515, to 346 905 people, a growth of 800,7%.<sup>213</sup> The relative part of the poor suburb population grew from 13% of the total city population in 1830, to 23% in 1857.

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<sup>209</sup> Peter Feldbauer, *Stadtwachstum und Wohnungsnot: Determinanten unzureichender Wohnungsverorgung in Wien 1848 bis 1914* (Vienna: Verlag für Geschichte und Politik, 1977), 212.

<sup>210</sup> Ibid, 30-31.

<sup>211</sup> Ibid, 51.

<sup>212</sup> Ibid, 36.

<sup>213</sup> Ibid, 37.

These numbers convey one important information: the fact that the concerns of overcrowding and the necessity to issue more regulations to somehow systematize the sprawling suburbs were quite likely based more on pragmatic concerns, than on a strong desire to control and observe society. The number of unhealthy living quarters grew due to large scale migration, even though awareness of an abundance of overcrowded residential areas existed since the 1830's. With the decision to take down the old city walls and use the glacis for housing projects in 1857, an attempt was made to solve the housing-deficiency problem. This problem existed since the early nineteenth century and never left Vienna during that century. Due to inadequate financing, lack of suitable and affordable ground and new regulations hindering flexibility in the height of buildings and the broadness of streets, the problem of constructing enough new houses was never solved.<sup>214</sup> Overcrowded suburbs and cold, improper houses were consistently recognized between 1830 and 1850 as den's of disease, but the housing situation was not sufficiently resolved by 1850. Both in qualitative and quantitative terms government regulations only exacerbated the problem of overcrowded living quarters.<sup>215</sup>

In the latter half of the nineteenth century, the responsibility for these substandard living conditions was ascribed to the poorer inhabitants of the city suburbs living in great numbers in small flats predominantly in the new tenement houses. They were assumed to have chosen to live in an unhealthy fashion and to disregard the common good out of sheer laziness and apathy.<sup>216</sup> Retrospectively, all evidence seems to support the claims made by contemporary medical specialists and critics of social economic conditions alike. Indeed, exactly during the decades in which cholera first took hold in Europe and Vienna, living conditions for the poorest segments of the city were not improving. While the population grew rapidly, the amount of newly constructed

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<sup>214</sup> Ibid, 58-59.

<sup>215</sup> Ibid, 127.

<sup>216</sup> Ibid, 217-218.



houses grew significantly slower, while the average prices of rent-houses went up. Even the first couple of cholera epidemics in 1831-1832, 1836 and 1848-1849 did not cause a significant change in the cities' residential areas, nor did it cause a reconstruction and improvement of poorly constructed suburbs.

## Conclusion

This thesis started with the question what the relationship was between cholera and urban developments in Vienna between 1830 and 1850. In the chapters following the introduction, I have analyzed this relationship using concepts such as ‘population’, ‘pathological space’ and ‘knowledge production’. This resulted in a broad answer to my research question, emphasizing the political engagement of medical specialists and the association of medical theory and economic interests from the perspective of state and municipal authorities. The narrative could have been dominated by a very different approach to the historical problem of cholera epidemics. Like the cultural historian Olaf Brieze, I could have focused on the cultural origins and impact of the initial cholera epidemics, in letters, books and poems.<sup>217</sup> Or akin to Peter Baldwin’s approach I could have stuck to a political interpretation of the quarantine versus anti-quarantine debate throughout the nineteenth century, while only briefly referring to changing medical discourses.<sup>218</sup> However, I opted for neither of these approaches. Instead, the majority of this work was dominated by considerations, interpretations and comparisons of medical theories and how they related to people in urban space.

By comparing two authors, Köstler and Romich, who were both active as practicing doctors in Vienna and had extensive practical experience with cholera during the epidemic of 1831 and the epidemic of 1848-1849, it becomes clear that even though the framing of cholera changed between 1830 and 1850, conceptions of pathological spaces largely remained the same. Both during the 1830’s and the 1850’s, overcrowded, damp and filthy residential areas were framed as disease inducing spaces, in which it was easy to contract cholera, or other diseases.

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<sup>217</sup> Olaf Brieze, *Angst in den Zeiten der Cholera* (Berlin: Akademie Verlag, 2003).

<sup>218</sup> Peter Baldwin, *Contagion and the State in Europe, 1830-1930* (New York: Cambridge University Press, 1999).

The fact that also other diseases could be contracted in such pathological spaces, shows how *specific* diseases were not yet linked to *specific* spaces that were deemed to make people more sensitive to the possible contamination with a certain disease. There was no specificity of pathological spaces with particular diseases, since miasmatic theories remained to be based on the commonly shared assumption that environmental circumstances can greatly diminish an individuals' health, enlarging its receptivity to a wide variety of illnesses.

Cholera was indeed a powerful force during the nineteenth century. In 1948, Erwin H. Ackerknecht, the famous historian of medicine and life sciences published what is most likely the single most influential paper on cholera to this very day.<sup>219</sup> He highlighted the political implications and presuppositions which, according to him, explained why the belief that cholera was not contagious could remain such a persuasive idea during the nineteenth century. By equating the believe in the contagious nature of disease and subsequent quarantine measures with political conservatism, as opposed to the political stance of those who did not believe in the contagious nature of disease, which was associated with more open-minded liberalism, Ackerknecht attempted to draw attention to the crossroads of disease etiology and political ideology. But also in a political context which can hardly be described as very liberal, such as Austria of the 1840's, the trust in the effects that sanitary cordons had versus cholera, was diminishing.

In politically conservative environments, scientific and other kinds of societies or foundations could be a hotbed of controversy, such as liberal ideas. It can be argued that cholera also functioned as a catalyst for scientific communication in the medical world, both on the local

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<sup>219</sup> Alexandra Minna Stern and Howard Markel, "Disease etiology and political ideology: revisiting Erwin H Ackerknecht's Classic 1948 Essay, 'Anticontagionism between 1821 and 1867,'" *International Journal of Epidemiology* 38 (2009): 31-33.

level of Vienna and on an international level through sanitary congresses. By shifting the attention from the political to the scientific world and its networks, it became apparent how theories on the etiology of disease were not always strongly politically motivated, but could be created inside scientific networks, through a multitude of actors who shared their knowledge with one another, by reading each other's articles in magazines for example.

By applying instruments such as the microscope with two magnifying glasses, the long standing trope that tiny organisms could be a cause of diseases, was rejuvenated by new observations. This did not result in researchers immediately abandoning miasmatic theories. Instead, a synthesis was formed between miasmatic theory and the idea of specific diseases being caused by specific poisons. Tiny organisms which under the right environmental and personal conditions could cause pathological conditions in the patients' body would initially spread by air, defying futile sanitary cordons, after which the tiny organisms responsible for epidemics would drop to the ground, to fester in cesspools or other wet and damp environments. Thus not only was the main transmitter of cholera theoretically reframed as contaminated water, instead of contaminated air, but these theories were practically supported by microscopic research conducted in Great Britain.

The fact that knowledge could be exchanged by medical specialists in a swift and organized manner was a development that intensified during the middle decades of the nineteenth century, enabled by the foundation of scientific societies and organizations. By publishing magazines, they offered local scientists a stage to present their research results to a domestic and foreign audience. The example of the Viennese Doctors' Society shows how a scientific society could have several functions in an urban environment. It could be a center of knowledge production through its laboratory, knowledge exchange through its physical social

space in the form of a library and reading room and on top of that through the pages of its journal a center of knowledge dissemination. But the Viennese doctors' society, initially created to debate problems of a scientific nature, became a political actor on the urban level during the 1850's. The several authors who wrote scientific pamphlets, in which they argued for growing political authority residing in the hand of medical specialists, were exemplary of the growing self-confidence men of medicine acquired in the second half of the nineteenth century. By attempting to interfere in urban policies and succeeding in doing so, they were able to exert a profound influence on the construction of urban infrastructure, in the form of canals, the construction of particular toilets and a great increase in the constant supply of fresh-water to the inhabitants of Vienna. These sanitary measures were predominantly based on miasmatic theories of disease, but were later identified as great hallmarks of early public health movements. It is a testimony to the importance of continuing research into 'failed science'; as it allows us to better comprehend the at times sudden and rapid growth of particular urban phenomena, such as canalization. By scrutinizing scientific theories or ideas that are now discarded as obsolete or false, historians can analyze the impact they had on shaping the contemporary world. If only 'successful' theories are taken into account, we run the risk of placing our current ideas in the minds of people who lived a couple of centuries before us, and by doing so we fail to grasp their logic and reasoning, even though we think we do.

Even though Michel Foucault's assertion that political power was instrumental to the rise of clinical research is difficult to refute, this thesis analyzed why radical measures such as the installment of quarantines versus diseases, were also informed by medical theories which were not always supporting state interests'. The fact that sanitary cordons throughout the 1840's and definitely in the 1850's became increasingly localized (around houses with cholera patients for

example), instead of the closing down of entire countries or regions, shows how the importance of a continuous flow of commodities by trade and commerce eventually outweighed the fear of cholera's effects on a population. Ongoing commerce over longer distances became increasingly important for a smoothly functioning European state. With the change of medical theories of disease, the kind of countermeasures taken against cholera also changed. Essentially, economic interests remained central to the argumentation used to justify the issuing of new medically based policy recommendations, such as the construction of canals, or the enclosure of open sewers. Even though the influence of medical professionals on the urban policy of Vienna's municipal authorities grew, one core problem identified in medical theories was not resolved. Overcrowded housing was not solved during the nineteenth century.

Nonetheless, the last noteworthy outbreak of cholera in Vienna occurred in 1873 and was severely limited compared to the previous epidemics. Even though the precise cause(s) of the disappearance of cholera as a European wide epidemical disease are not known, it seems likely that the supply of plentiful fresh-water to every house and the enclosure of open sewers certainly improved the health of inhabitants. By the last quarter of the nineteenth century, these sanitary projects were mostly completed. Effective countermeasures were thus taken, predominantly based on miasmatic theories of disease. This was the big paradox of the nineteenth century: the wrong theories led to the right conclusions and it is quite likely that they, indirectly, lengthened the average lifespan of the Viennese inhabitants. Poor housing though, with overcrowded, damp cellars and moisture-rich rooms, remained a serious issue in Vienna's cityscape.

# Bibliography

## Primary Sources

“Instruction für den Hausvater eines Cholera-Spitals.” Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/800, 35086.

“Instruction für die in der Stadt und in den Vorstädten Wiens aufzustellenden Abtheilungs-Commissare.”, 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28289.

“Instruction für die Sanitäts-Behörden, und für das bei den Contumaz-Anstalten verwendete Personale, zum Behuse die Gränzen der k.k. Oesterreichischen Staaten vor dem Einbruche der im kaiserlich Russischen Reiche herrschenden epidemischen Brechruhr (Cholera morbus) zu sichern, und im möglichen Falle des Eindringens, ihre Verbreitung zu Hemmen.” Vienna: Kaiserliche Königliche Hof- und Staats-Aerarial Druckerey, 1830.

“Zweiter Auszug aus dem neue Entwürfe zu einer Pest-Polizei-Ordnung für die k.k. Staaten (Die Waaren-Contumaz Betreffend.)” 18 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 4, Verzeichnis Q 556/831, 3832.

Baly, William, and William W. Gull. “The Cholera Sub-Committee of the College of Physicians, on the Cholera Fungi.” *The Lancet* 9 (November 3, 1849): 493.

Brittan, Frederick. “Report of a Series of Microscopical Investigations on the Pathology of Cholera.” *The London Medical Gazette*, September 21, 1849, 530-542.

*Das Wasser in und um Wien.* Vienna: k.k. Hof- und Staatsdruckerei, 1860.

Edler von Reider, J.A. *Die Cholera zu Wien.* Berlin: G. Reimer, 1831.

Innhauser, Franz. *Über Retiraden, Pissoirs, Senkgruben und Canäle in sanitätspolizeilicher Hinsicht mit besonderer Rücksicht auf Wien.* Vienna: Carl Gerold's Sohn, 1857.

Kaiserliche und Königliche Sanitäts- und Approvisionirungs-Commission für die k.k. Haupt- und Residenzstadt Wien, 20 July 1831, Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28019.

Knolz, Joseph Johann. *Darstellung der Brechruhr Epidemie in der k.k. Residenzstadt Wien, wie auch in dem flachen Lande, in Ostterreich unter der Enns, in den Jahren 1831 und 1832, nebst den dagegen getroffenen Sanitäts-Polizeylichen Vorkehrungen.* Vienna: Mayer und Compagnie, 1834.

Köstler, A.L. *Anweisung sich gegen die epidemische Cholera zu schützen, und dieselbe bey ihrem Beginn zweckmäßig zu behandeln.* Vienna, Mörschner und Jasper, 1831.

Köstler, A.L. *Aus der Erfahrung geschöpfte Andeutungen zur Erkenntniss und Behandlung der Epidemischen Cholera*. Vienna, Mörschner und Jasper, 1831.

Romich, Johann. *Die Vorzüglichsten Behandlungsarten der Cholera nebst der höchst merkwürdigen Aeußerung einen Somnambulen*. Vienna: Leopold Sommer, 1850.

Romich, Johann. *Neueste Beobachtungen über die epidemische Cholera*. Vienna: Carl Gerold, 1866.

Schauenstein, Adolf. *Die Wasser-Versorgung Wien's*. Vienna: Carl Ueberreuter, 1862.

Schwann, Theodor. *Mikroskopische Untersuchungen über die Übereinstimmung in der Struktur und dem Wachstum der Thiere und Pflanzen*. Berlin, 1839.

Snow, John. "On the Mode of Communication of Cholera." *The London Medical Gazette*, September 9-10, 1849, 466-469.

Snow, John. "On the Pathology and Mode of Communication of Cholera." *The London Medical Gazette*, November 2, 1849, 745-752.

Spiro, A. "Sendschreiben an die k.k. Gesellschaft der Ärzte in Wien über die jetzt in Russland herrschende cholera-epidemie." *Zeitschrift der k.k. Gesellschaft der Ärzte zu Wien*, band 2. (Vienna: Kaulfuss Witwe Prandel & Comp., 1848): 393-394.

*Statuten und Geschäfts-Ordnung der k.k. Gesellschaft der Ärzte zu Wien*. Vienna: Carl Ueberreuter, 1847.

Swayne, Joseph Griffith. "The Cholera Fungi and Uredo." *The London Medical Gazette*, November 2, 1849, 859-862.

Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 33990.

Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 3, Verzeichnis Q 556/830, 28591.

Wiener Stadt- und Landesarchiv, Main register Q, Sanitäts- und Verkehrsgegenstände, 556, box 5, Verzeichnis Q 556/830, 29572.

Zhuber, Anton. *Ermahnungs-Worte gegen die Cholera morbus*. Vienna: K.K. Hof- und Staats-Aerarial Druckerei, 1831.

Zorciek, Wilhelm. *Der Schrift zur Zeit der drohenden Gefahr einer verderblichen Seuche (Cholera morbus), eine Predigt*. Vienna: Druck und Verlag der Mechitaristen-Congregations Buchhandlung, 1831.



## Secondary Sources

Ackerknecht, Erwin H. "Anti-contagionism between 1821 and 1867." *Bulletin of the History of Medicine* 22, (1948): 562-593.

Andree, Christian. "Waren Rokitansky und Virchow Feinde?." In *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, edited by Christine Otter, 83-102. Vienna: Böhlau Verlag, 2004.

Baldwin, Peter. *Contagion and the State in Europe, 1830-1930*. New York: Cambridge University Press, 1999.

Birkner, Othmar. *Die Bedrohte Stadt: Cholera in Wien*. Vienna: Franz Deuticke, 2002.

Briese, Olaf. *Angst in den Zeiten der Cholera*. Berlin: Akademie Verlag, 2003.

Burg, Thomas N. "*Sieches Volk macht siechen Staat*". Vienna: Praesens 1994.

Bury, Michael. *Health and Illness*. Cambridge: Polity Press, 2005.

Canguilhem, Georges. *On the Normal and the Pathological*. Dordrecht: D. Reidel Publications, 1978.

Carroll, Patrick E. "Medical Police and the History of Public Health." *Medical History* 46, no. 4 (2002): 461-494.

Corbin, Alain. *The Foul and the Fragrant: Odor and the French Social Imagination*. Cambridge: Harvard University Press, 1986.

Craddock, Susan. *City of Plagues: Disease, Poverty, and Deviance in San Francisco*. Minneapolis: University of Minnesota Press, 2000.

Cunningham, Andrew. "Transforming Plague: The Laboratory and the Identity of Infectious Disease." In *The Laboratory Revolution in Medicine*, edited by Andrew Cunningham and Perry Williams, 209-244. Cambridge: Cambridge University Press, 1992.

Daunton, M.J. *Housing the Workers, 1850-1914: A Comparative Perspective*. London: Leicester University Press, 1990.

Davison, Graeme. "The City as Natural System: Theories of Urban Society in Early Nineteenth-Century Britain." In *The Pursuit of Urban History*, edited by Derek Fraser and Anthony Sutcliffe, 349-370. London: Edward Arnold Publishers Ltd, 1983.

Dierig, Sven. "Engines for Experiment: Laboratory Revolution and Industrial Labor in the Nineteenth Century City." *Osiris* 18, (2003): 116-134.

Evans, Richard E. *Death in Hamburg: society and politics in the cholera years, 1830-1910*. London: Penguin Books, 1990.

Feldbauer, Peter. *Stadtwachstum und Wohnungsnot: Determinanten unzureichender Wohnungsversorgung in Wien 1848 bis 1914*. Vienna: Verlag für Geschichte und Politik, 1977.

Fleck, Ludwig. *Genesis and Development of a Scientific Fact*. Edited by Thaddeus J. Trenn and Robert K. Merton. Chicago: University of Chicago Press, 1979.

Foster, W. D. *A History of Medical Bacteriology and Immunology*. London: William Heinemann Medical Books, 1970.

Foucault, Michel. *Security, Territory, Population*. New York: Palgrave MacMillan, 2007.

Foucault, Michel. *The Birth of the Clinic*. London: Routledge Classics, 2003.

Golinski, Jan. *Making Natural Knowledge: Constructivism and the History of Science*. Cambridge: Cambridge University Press, 1992.

Gottdiener, Mark. *The Social Production of Urban Space*. 2<sup>nd</sup> ed. Austin: University of Texas Press, 1997.

Huber, Valeska. "The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851-1894." *The Historic Journal* 49, no.2 (2006): 453-476.

Huisman, Frank, and John Harley Warner. *Locating Medical History: The Stories and Their Meanings*. London: Johns Hopkins University Press, 2006.

Klingenstein, Grete. "Between Mercantilism and Physiocracy: Stages, Modes, and Functions of Economic Theory in the Habsburg Monarchy, 1748-63." In *State and Society in Early Modern Austria*, edited by Charles W. Ingrao, 181-214. West Lafayette, Purdue University Press, 1994.

Latour, Bruno. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge: Harvard University Press, 1987.

Latour, Bruno. *The Pasteurization of France*. Cambridge: Harvard University Press, 1993.

Le Roy Ladurie, Emmanuel. *The Mind and Method of the Historian*. Chicago: University of Chicago Press, 1981.

Lesky, Erna. *Die Wiener medizinische Schule im 19. Jahrhundert*. Cologne: Hermann Böhlhaus Verlag, 1965.

Lesky, Erna. *Meilensteine der Wiener Medizin: Grosse Ärzte Österreichs in drei Jahrhunderten*. Vienna: Maudrich Verlag, 1981.

Maderthaner, Wolfgang, and Lutz Musner. *Die Anarchie der Vorstadt: Das Andere Wien um 1900*. Frankfurt: Campus Verlag, 2000.

Minna Stern, Alexandra, and Howard Markel. "Disease etiology and political ideology: revisiting Erwin H Ackerknecht's Classic 1948 Essay, 'Anticontagionism between 1821 and 1867.'" *International Journal of Epidemiology* 38 (2009): 31-33.

Payer, Peter. *Der Gestank von Wien*. Vienna: Döcker Verlag, 1997.

Pelling, Margaret. *Cholera, Fever and English Medicine 1825-1865*. London: Oxford University Press, 1978.

Picon, Antoine. "Urban Cartography and the Scientific Ideal: The Case of Paris." *Osiris* 18, (2003): 135-149.

Porter, Dorothy. *Health, Civilization and the State*. London: Routledge, 2005.

Raeff, Marc. *The Well-Ordered Police State*. London: Yale University Press, 1983.

Reid, Donald. *Paris Sewers and Sewermen: Realities and Representations*. Cambridge: Harvard University Press, 1990.

Rosen, George. *A History of Public Health*. Baltimore: Johns Hopkins University Press, 1993.

Rosenberg, Charles E. *Explaining Epidemics and Other Studies in the History of Medicine*. Cambridge: Cambridge University Press, 1992.

Rosenberg, Charles E. *The Cholera Years: The United States in 1832, 1849 and 1866*. Chicago: Chicago University Press, 1987.

Schorske, Carl E. *Fin-de-Siecle Vienna: Politics and Culture*. New York: Vintage Books, 1981.

Scott, H.M. *Enlightened Absolutism. Reform and Reformers in Later Eighteenth-Century Europe*. London, Macmillan, 1990.

Seebacher, Felicitas, and Stefan Sienell. "Carl Freiherr von Rokitansky und die Kaiserliche Akademie der Wissenschaften." In *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, edited by Christine Otter, 65-80. Vienna: Böhlau Verlag, 2004.

Spitzzy, Karl Hermann. *Gesellschaft der Ärzte in Wien 1837-1987*. Vienna: Christian Brandstätter, 1987.

Tragl, Karl Heinz. *Chronik der Wiener Krankenanstalten*. Vienna: Böhlau Verlag, 2007.

Tribe, Keith. *Strategies of Economic Order: German economic discourse, 1750-1950*. Cambridge: Cambridge University Press, 1995.

Urbanitsch, Peter. "Zwischen Revolution und Konstitutionalismus: Rokitansky's Weg in die Politik." In *Carl Freiherr von Rokitansky (1804-1878): Pathologe – Politiker – Philosoph*, edited by Christine Otter, 147-161. Vienna: Böhlau Verlag, 2004.

Weiner, Dora, and Michael Sauter. "The City of Paris and the Rise of Clinical Medicine." *Osiris* 18, (2003): 23-42.

Worboys, Michael. *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900*. New York: Cambridge University Press, 2000.

World Health Organization. "Health Topics: Cholera." World Health Organization. <http://www.who.int/topics/cholera/en/> (accessed March 3, 2011).