

History of Disease and the *Longue Durée*

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ABSTRACT - This paper summarizes Grmek's theoretical contribution to history of disease and explores to what extent the *longue durée* could still be a useful concept in order to better understand past perceptions of, and reactions to, diseases. The case of the medical responses to epidemic disease in pre-industrial Europe is synthetically expounded in order to illustrate this issue.

KEYWORDS - History of disease; epidemics in pre-industrial Europe; pathocoenosis; *longue durée*; Mirko D. Grmek (1924-2000).

1. Introduction

At the end of the introduction to his *Les maladies à l'aube de la civilisation occidentale*, the late Mirko Draz' en Grmek (1924-2000) significantly began his acknowledgements by paying tribute to Fernand Braudel, the 'father' of the *longue durée*, who in 1956 succeeded Lucien Febre as chief-director of the *Annales*. He said,

Ce livre n'aurait sans doute jamais vu le jour sans l'initiative de Monsieur Fernand Braudel, à une époque déjà lointaine, et sans les encouragements que ce prestigieux historien de la civilisation méditerranéenne a bien voulu nous prodiguer (Grmek 1983, 34).

Curiously enough, this is the only reference to Braudel that I have come across in the two major works Grmek dedicated to the history of disease, namely one on diseases in the ancient Greek world - prehistoric, archaic and classical - (Grmek 1983), and the other on AIDS in the late twentieth century (Grmek 1989). The fact that these dealt with the two historical poles of Western civilization, did not prevent his research from being guided in both of them by the same axis, namely his concept of pathocoenosis (*pathocénose*). He had first expounded it in the sixties (Grmek 1969) by analogy to the old ecological concept of biocoenosis (*biocénose*) coined by Karl Möbius

in his study of oyster beds (1877) in referring to what was later called 'biotic community' (Jahn 1990, 351; Labeyrie 1996, 302-303). Grmek characterized it as a whole set of pathological conditions, not only infectious, but also hereditary, degenerative and so on in a particular population according to space-time coordinates. Irrespective of several endogenous and ecological factors, the frequency and distribution of each disease condition in this set would allegedly depend on the frequency and distribution of the remaining ones. The pathocoenosis would tend towards a state of balance, particularly if the ecological situation were stable (Grmek 1969, 1476; 1983, 15). Leaning on researches on disease ecology made in the 1950s' and 1960s', Grmek claimed that the series of conditions related to a balanced pathocoenosis could be adjusted to a mathematical distribution corresponding to 'an interference between a simple and a normal logarithmical series' so that for each pathocoenosis there was 'a very short number of more frequent diseases and a large number of rare ones'. He resorted to the genetic analogy of dominant and recessive. He called those of the first group, which were the most serious in demographical and life quality terms for a given population, 'dominant diseases' (*maladies dominantes*). He called the rare diseases 'recessive diseases' (Grmek 1969, 1481; 1983, 16; Grmek and Sournia 1997, 271-272).

Grmek's pathocoenosis aimed to be instrumental not only for studying the synchronic interrelations among diseases at a precise historical moment, but also for dealing with diachronic changes in these disease sets – what he called *dynamique de la pathocénose* (Grmek 1969, 1476; 1983, 17). Thus, he claimed pathocoenosis as helpful also for explaining the rise of emerging diseases. And by always restricting himself here to the case of infectious diseases, he could claim that the disappearance of one or several conditions defining the epidemiological profile of a given population, might imply that the ecological balance among germs at that population was broken. So he could say that the way could be opened for the appearance of new diseases, meaning that other germs which had previously remained silent in the ecosystem, were then 'promoted' to become pathogens. Years later, he held that this mechanism and the disruptive effects of bio-medical technology – which indeed could act both as contributor to the disappearance of some disease conditions and as facilitator to the spreading of others – had indeed been essential for the outbreak of AIDS at the beginning of the 1980s (Grmek 1989, 260-264).

In his article of 1969, which was mentioned above, Grmek had

announced a forthcoming article where he would further develop the concept of pathocoenosis. Yet that announced work does not seem to have ever been published.¹ And in his two afore-mentioned monographic studies on the history of disease published in the 1980s Grmek did no more than summarise the major points of his 1969 article. In fact, irrespective of its eventual value and applicability as a methodological tool, the Grmekian concept of pathocoenosis seems to have been paid a rather limited attention by historians in recent years, even among those under direct influence of the *Annales* school.²

This leads me now to explore Grmek's connection with Braudel's way of understanding history. In the 1960s, under the leadership of Fernand Braudel, the *Annales* took up a systematic and sustained enquiry into bio-medical aspects of history. Braudel addressed an open invitation to historians and non-historians to contribute to this research program using new perspectives from the widest variety of social, human and bio-medical sciences. According to Grmek, Braudel's history of the *longue durée* was the history of the permanent features of a civilization, and it could by no means be reduced to the sociological aspects, for 'through the history of mentalities, the history of the "social facts" is linked to that of the ideas'. By questioning any 'narrow social determinism of "pure" or "hard" sciences', Grmek asserted the value of psychological (i.e., 'the genius of the great scientists') and epistemological (i.e., their internal logics) explanations of scientific theories (Grmek 1993b, xxiii-xxiv). And he did, indeed, a great deal of work on both of these issues.

However, Grmek's major contribution to the Braudelian *Annales* were his proposals as a medical historian to provide the history of dis-

¹ I have found no trace of the announced article in the extensive 'Bibliographie choisie' of Grmek that was prepared by Danielle Gourevitch and included right at the beginning of the collective volume of *mélanges* in his honour edited by Gourevitch herself (1992).

² I will give just four pieces of evidence — all of them from the 1990s — on which I am basing my claims. Jean-Noël Biraben's long chapter on diseases in ancient and medieval Europe (Biraben 1993) for the first volume of the history of Western medical thought, edited by Grmek, was indeed built upon the notion of pathocoenosis under the close inspiration of Grmek (1983). However, of the thirty contributions to the collective volume *Maladie et maladies. Histoire et conceptualisation* in Grmek's honour (Gourevitch, ed., 1992), only a short and rambling one — without notes nor bibliography — deals with this notion (Niaussat 1992), which apparently is mentioned nowhere in the remaining works. Furthermore, in a monographical issue of *History and Philosophy of Life Sciences* with the papers presented at the Conference on 'Emerging Infectious Diseases: Historical Perspectives' held at Geneva in April 1992, pathocoenosis was only referred to by Alfred Perrenoud and by Grmek himself, in both cases in passing and in generic terms (Perrenoud 1993, 310; Grmek 1993, 296). Last but not least, Grmek's and Sournia's chapter on 'dominant diseases' for the third volume of the history of Western medical thought, focused on the nineteenth century, sums up again the main points of Grmek's 1969 article (Grmek & Sournia 1999, 271-274).

ease with theoretical frameworks from an eco-medical perspective (Gelfand 1987, 21-22; Fee & Krieger 1993, 464). In fact, six years before the above-mentioned work where he first expounded his notion of pathocoenosis (Grmek 1969), Grmek had published another article to argue for an essential role for medical geography in the history of civilizations. In this previous work, he had emphasized the close and complex interrelations between geographical factors of every kind (physical, biological and social) and epidemiology, as well as the value of epidemiology in providing explanations of many historical events (Grmek 1963). And from his contribution to a conference held in Toulon-Ollioules in 1985 to pay tribute to Fernand Braudel, it is clear that the medical historian Grmek assigned himself a sort of bridge role between historians and biologists, when he claimed:

We will only be able to elucidate the respective role of the biological and human factors through a close collaboration between historians and biologists, with absolute respect for historical facts (Grmek 1989b, 24).

In general terms, Braudel's *longue durée* paradigm was focused on historical structures so that time was measured in centuries. And people were analyzed as populations shaped by these big structures mostly beyond their understanding or control so that there was little concern for individual actors or small communities (Gelfand 1987, 22-23). As far as I can see, Grmek's approach to the history of disease shows Braudel's claim to write a sort of 'scientific history', in which the controlling role of great impersonal structures – ecological, biological, economical, social, technological – acting on wide geo-historical areas, continues to be over-emphasized at the expense of conscious human agency (Iggers 1985, 175-205; McNeill 1986, 199-226; Grmek 1989b, 19-24). Furthermore, Grmek tended to consider disease as a primarily biological and ecological phenomenon so that he was very confident – perhaps too confident – about the capacities of modern bio-medical science as a technical tool to make historical sense of past diseases.

Without denying the valuable insights that *longue durée* history has achieved in explaining demographic and epidemiological patterns thanks to new bio-medical technologies, Gelfand has pointed out that 'this approach failed to recognize the problems inherent in viewing biology and medicine simply as technical historical tools' by stressing that 'beyond the epistemological pitfalls of plugging modern sciences into fragmentary data from mediaeval and early modern sciences, there was a failure to appreciate a crucial distinction between

medicine in history and the history of medicine and the difficulties of applying the first without understanding the second' (Gelfand 1987, 23). To a greater or lesser extent, these comments might be applied to Grmek's approach to the history of disease.

Let me now come to the central point of my paper. In his work for the Grmek Memorial Symposium, Frederic Lawrence Holmes (1932-2003) – whose death sadly prevented him from participating in it – stresses the current shift in the history of science 'from the history of scientific thought to that of practices, institutions, and cultures in science' (Holmes 2003, 465). I would like to pursue this line and show to what extent the *longue durée* could still be a useful concept in order to better understand past perceptions of, and reactions to, diseases. I will do it by means of an historical case, that of the medical responses to epidemic disease in pre-industrial Europe.

2. The *Longue Durée* of Medical Galenism in the Responses to Epidemic Disease in Pre-Industrial Europe

During the last twenty-five years or so, historico-medical studies have shown that if there is a historical turning point in the way in which Western learned physicians viewed human diseases, it should be placed at the turn of the nineteenth century. Two major historical features played an essential role in this process of medical change, namely the gradual replacement of a causal system whose origins went back to Classical Greek Antiquity by another, entirely new, one; and the development of a new kind of medicine based on the laboratory. If the old way of medicine was typical of *Old Regime* societies (pre-industrial, so to speak), the new one has characterized that of the bourgeois class societies. Let us briefly define both ways.

The old way corresponded to a general pattern of learned medicine that began in the eleventh century with the reintroduction into Latin Europe of Aristotelian philosophy, of the Hippocratico-Galenic medical tradition, and of Roman Law. While it was subject to successive reforms and reformulations, nevertheless this way indisputably dominated European medicine until the end of the sixteenth century, and its views on causality still persisted into the early nineteenth century. The new medical way consolidated its hegemony over the course of the nineteenth century as a result of the rise of a new medicine based on the natural sciences (physics, chemistry, biology) – new disciplines that had come into existence as a result of the transformation of the intellectual and social conditions

for the cultivation of natural philosophy at the turn of the nineteenth century. Under the new circumstances, university medicine was based for the first time in its history on generally agreed conceptual and methodological assumptions, rather than on disagreements between authors or schools – the assumptions, that is, of the ‘medical science’ whose essential elements are still current today.

In order to see the major differences with respect to medical responses to diseases between old, pre-modern, practitioners and new, modern, ones, let us take the case of epidemic infections. Over the course of the nineteenth century, as a result of laboratory medicine and, particularly, the germ theory, infectious diseases became specific disease entities caused by specific microbes, whose detection and isolation in the tissues and fluids of a sick person was an indispensable condition for establishing the correct diagnosis (Cunningham 1992).

2.1. *Understanding Pestilence*

The situation in pre-modern university medicine, by contrast, was much more complex. From the mid fourteenth-century epidemic outbreak of Black Death onwards, this social calamity underwent a gradual ‘medicalization’ as a result of the efforts made by university practitioners in terms of the specific care they gave to the victims, as well as of their interpretations of the nature and causes of this condition (Arrizabalaga 1994; Cohn 2002, 57-95). While the medical image of pestilence experienced noticeable changes during the subsequent four hundred years, mostly in accord with whatever intellectual trends were dominating medicine in each place and at each moment, yet the theoretical model which guided university medical responses remained essentially constant during the whole period (Hirst 1953, 1-100; Martin 1996, 89-144; Cunningham 1992, 219-223).

Generally speaking, late medieval and early modern university medical practitioners tackled pestilence as a medical problem, and did so with the help of the following three intellectual and technical resources. First, they used their university training, which was based upon a particular medical system – Galenism in its different varieties until the late sixteenth century, and thereafter gradually combined with elements from new systems like Paracelsianism, mechanicism and others. Secondly, they used their previous medical experience, both their own and that of other practitioners, when confronted by deadly epidemic diseases. And thirdly, they used the authoritative knowledge

of the peculiar ancient (Greek and Roman), medieval (Byzantine, Arab and Latin) or early modern physicians that they preferred.

By ‘pestilence’ most physicians understood a universal condition of the air that was attributable to ‘celestial causes’, although the emphasis on this kind of cause varied according to time and place, and the concern with them decreased gradually and continuously over the course of the early modern period.

According to the Christian vision of the cosmos, a view which was unquestionable in Europe until well into the eighteenth century and was also shared by Judaism and Islam – the two other great monotheist religions in the Mediterranean – God’s will was the first cause of pestilence as well as of everything else in His Creation. However, after Christian scholastic natural philosophers had constructed the idea of a natural world autonomously run by natural laws except for the unusual circumstances of miracles, Christian medical practitioners were assigned competence on secondary causes of human health and disease, while theologians kept their intellectual and professional monopoly on the *Primum Movens*. Apart from that, Albumassar’s constellation theory was their main point of reference to interpret the ways by which (allegedly) the macrocosm continuously influenced the microcosm; and the Aristotelian concepts of generation and corruption – the two basic movements in the sub lunar world – were the core of all their interpretations concerning the ways in which pestilence broke out and spread.

Sometimes, along with celestial causes (influences from the planets, zodiacal signs and comets, among others), university practitioners made ‘terrestrial causes’ (exhalations from the earth and waters) play a role in the generation of pestilence. This resort was particularly handy when they needed to explain the appearance of a pestilence circumscribed to a more restricted area.

Finally, the feasibility of causing pestilence by means of human artifice was also considered. Then and now, this idea, which allows a society to project the social anxiety caused by the presence of a deadly epidemic onto specific scapegoats, was used politically to foster the stigmatization of certain social groups. The most infamous historical case concerns the major role played by some university practitioners in blaming the Milanese plague of 1630 on the *untori* – the framework of Alessandro Manzoni’s historical novel *I promessi sposi* (1825-1827) – but similar accusations against the Jewish minority were circulating among Montpellier physicians as early as 1348 (Guerschberg 1948; Hirst 1953, 18-21; Arrizabalaga 1994, 256-259; Amasuno 1996, 41-48; Martin 1996, 110-111).

The universal condition of the air that was defined as pestilence indicated a change 'against nature' in the substance of this primary element, that is, its corruption. Given that air was considered as the most essential element, the effects of this alleged corruption should be almost infallibly massive; otherwise, it should not be considered as a 'true plague'. Thus, rather than a disease in itself, plague was the cause of numerous and diverse effects deriving from the massive corruption of living things in the sublunar world, among which there were many disease conditions. For instance, when faced with the mid fourteenth-century Black Death, Jacme d'Agramont (d. 1348), a medical lecturer at the University of Lerida, in the Crown of Aragon, stated that pestilence (*pestilència*) successively involved all the beings of the 'three degrees of life' (trees and plants, animals and human beings) through the food chain. Among its effects he pointed out 'corruptions, sudden deaths and various disease conditions' (Agramont 1998, 54).

From 1348, university medical practitioners were also concerned about establishing noticeable signs in the physical environment that would allow them either to forecast the outbreak of pestilence or to detect its actual presence at any place. Generally speaking, they paid attention to rare natural phenomena, referring to air and meteors, to plants and animals, and to the local pattern of diseases. Along with such signs, they constantly and unequivocally associated the bad smell of air with the presence of corruption in this element – which indeed warned them about the risk or actual presence of pestilence. As we will see later, this association would have a wide impact on the setting up of preventive measures, whose purpose was eliminating any stink and, even more so, perfuming the atmosphere on the assumption that this would reinforce its resistance to corruption (Larrea Killinger 1997).

Although the outbreak of pestilence was essentially unpredictable because it depended, in the last resort, upon macro- and micro-cosmic powers out of human control, its potential of spreading was directly related to the amount of air involved in the corruption process. Thus, in these circumstances the accumulation of organic matter multiplied the chance of propagation of pestilence. Some natural meteors, like winds, could accelerate its diffusion. At the same time, most disease conditions which were held to be the effects or accidents of pestilence, were allegedly transmissible through interpersonal contagion by different ways – breath, skin exhalations, sight, personal objects, closeness – the nature of which was subject to medical debate.

We have seen that most university medical practitioners agreed that

air was the vehicle of pestilence spreading. Yet, since 1348 some of them began to wonder why each pestilence had some specific signs and not others. To Gentile da Foligno (d. 1348), a medical teacher at the Italian university of Perugia, when the corrupted air of pestilence penetrated a body unable to resist corruption, then a 'poisonous matter' was generated close to the lungs and heart. This matter did not act by means of the properties derived from its humoural mixture (*complexio*), but by means of its 'poisonness', that is, as a result of its specific property of being poisonous. Gentile claimed that because of its power of self-multiplication, even very small amounts of this poisonous matter could infect the whole body, corrupt all the bodily members (including the heart), and eventually cause the death of the person infected. In turn, 'poisonous vapors' that were exhaled by the bodies of those infected, enabled pestilence to be passed from one person to another, and from one place to another. Quite significantly, at this point Gentile da Foligno echoed a well-known paragraph from *De differentiis februm* where Galen referred to 'certain seeds of pestilence' that were thrown out by any pestilent body into the surrounding air (Arrizabalaga 1994, 260-262).

In all events, Gentile's views implying a vague notion of causal specificity were barely accepted in 1348. However, over the course of the subsequent centuries they had an increasing impact on university practitioners' views on the causes of pestilence. If they had hitherto used to think that in the pestilence times individuals got sick because corrupted air fell on bodies whose complexion was unbalanced as a result of an unsuitable life regime, during the fifteenth and early sixteenth centuries they gradually accepted that people could *also* suffer from pestilence as a consequence of a direct action on their bodies by the poisonous matter of this condition.

The rapid and wide acceptance of Girolamo Fracastoro's systematic reformulation of Galen's views on contagion (1546) means that the notion that individuals *only* suffered from an infectious condition – either epidemic or not – when they came into contact with its peculiar morbid matter, had gained many supporters among university medical practitioners by the mid sixteenth century (Nutton 1983; 1990). Anyhow, this poisonous matter was not assumed to be a *sufficient* cause of pestilence until infectious conditions and their causality were reformulated in the context of late nineteenth-century germ theory. Indeed, the concurrence of other kinds of causes that were analogous – if not identical – to the Galenic ones was required in the causal interpretations advanced by most pre-bacteriological medical schools (Hamlin 1992; Rodríguez Ocaña 1995).

Certainly, the nosological efforts made in the late eighteenth and early nineteenth centuries made possible a growing consensus around the view that epidemic diseases were specific disease conditions, and not merely particular signs of a general epidemic constitution. But the final consensus among university physicians only arrived when the germ theory was widespread at the turn of the twentieth century (Hirst 1953, 73-77). Previously, diseases had continued to be conceived as predominantly 'physiological' (Temkin 1977). It was therefore admitted that a given cause could result in multiple disease conditions and equally that a given condition could be due to multiple causes; that people could suffer from 'mixed' disease conditions; and that over the course of a given condition its 'morbific matter' could freely move within the body of the sick person, change its seat from one bodily part to another, and even be transformed into the matter of another disease (Cunningham 1992; King 1982, 131-183; Nicolson 1988; Codell Carter 1997).

2.2. Preventing Pestilence

Since the triumph of germ theory over the Pettenkoferian view of infectious disease at the turn of the twentieth century, the pre-nineteenth century history of fighting against pestilence has been traditionally represented in terms of two antagonistic strategies, namely the aerist or miasmist (also known as anti-contagionist) view and the contagionist view, which allegedly throughout the centuries brought university physicians into conflict with one another, and most of them into conflict also with the local rulers of European municipalities and states.

According to these assumptions by historians, 'aerists' defended the spreading of pestilence through corrupted air (the 'miasmas') and denied the contagiousness of this condition, while the 'contagionists' restricted its means of propagation to contagion between individuals or through goods. Until the alleged formulation of the theory of *contagium vivum* by Girolamo Fracastoro, the aerist ranks would have included most university medical practitioners, who – blinded as they supposedly were as a result of their faithfulness to ancient and medieval medical authorities – had turned their back on the 'contagionist' health measures that the most dynamic European municipalities and states had been promoting during the centuries subsequent to the 1348 Black Death under the inspiration of what was interpreted as laymen's 'healthy empirism'. And it would be only

after Fracastoro that some physicians had begun to oppose the aerist views that were dominant among university medical practitioners, to defend the contagiousness of pestilence, and to take up as a part of their discourse and practices these decisive public health novelties that their civil communities had already been implementing in previous centuries (Hirst 1953, 33, 47-50; Arrizabalaga 1994, 259).

This widespread and persistent historical construction has been greatly revised over the last decades. Indeed, it has been shown that the notion of contagion was alien neither to Galen nor to late medieval and renaissance Latin Galenism, and that Fracastoro's merit was not so much the supposed originality of his theory as his success in systematizing Galen's ideas on contagion and in consciously adapting them – always within the framework of humanist Galenism – to the specific demands of his historico-cultural context. The rapid and uncontroversial spreading of Fracastoro's theory among European medical circles during the second half of the sixteenth century is the clearest evidence of the familiarity of contemporary physicians with these views (Nutton 1983; 1990; Arrizabalaga 1994, 260).

Undoubtedly, it cannot be denied that there was a certain tension between the aerist and the contagionist poles in the early modern medical debates on the occasion of different epidemics. Yet, what was at issue in these debates were not so much irreducible conceptual disagreements concerning the nature of epidemic disease, as differences of emphasis associated with the peculiarities of the socio-cultural context and with the variety of social agents involved in the process of disease negotiation in pre-industrial Europe. In fact, to almost every university medical practitioner spreading air and contagion were but two different and successive stages in the process of pestilence diffusion, and by no means alternative and exclusive ways for its dissemination (Hirst 1953, 51-72). Only during the first two thirds of the nineteenth century did medical disputes about the causes of epidemic diseases become polarized in a rather irreducible way around both of these positions (Ackerknecht 1948; Porter 1999, 81-87).

It has been also confirmed that faced with late medieval and early modern epidemics there was a close interrelation – and by no means discontinuity or disconnection – between university physicians' preventive prescriptions and the public health measures implemented by European local rulers. A brief review of them both is enough to show this interrelation.

Confronted by the 1348 Black Death, university practitioners usually prescribed preventive measures pointing towards three major,

complementary goals. First, they tried to avoid or stop the process of air corruption by keeping rooms, houses and cities well ventilated and free of rubbish, particularly manure and animal entrails, because of their alleged great facility to give rise to corruption, and they also strove to eliminate the bad smell by means of burning aromatic herbs and of vinegar fumigations, in order to purify the air and reinforce its resistance to corruption. Secondly, they tried to keep individuals resistant to pestilence by means of a regimen most suitable to neutralize the natural proclivity of the patient's complexion to humoral corruption, with the supplementary help of some specific antidotes of proved efficacy against this condition. Finally, once the epidemic had broken out, they recommended their patients to avoid any occasion of interpersonal transmission of pestilence, by means of practical measures that went from avoiding crowds to following the popular advice – caricatured *ad nauseam* – of *fugere cito, longe, et tarde reverti* ('escape early and far away and turn back as late as possible'; Arrizabalaga 1994, 274). Any further modification of these measures that might have been introduced on the outbreak of further epidemics during the next four hundred years or so merely showed a quantitative development of these guidelines – albeit always in with growing sophistication (Biraben 1975-1976, 160-181; Martin 1996, 115-131).

On the other hand, the strategies that city and state rulers deployed against pestilence also grew in number and sophistication in late medieval and early modern Europe, but they never went beyond the guidelines of university medical discourse. Generally speaking, they consisted of public health measures that were introduced or reinforced on the occasion of the presence or threat of epidemics; and that could be ordinary, like urban sanitation and sick poor relief, and extraordinary, like eliminating bad smells to avoid air infection, putting plague physicians under contract, publicly administering theriac and other alleged antidotes against pestilence, quarantining ships, travelers and goods, setting up lazaretti to confine the plague-ridden or those suspected of being infected, and burning such people's belongings to eliminate infection foci and to avoid the pestilence spreading (Gottfried 1983, 122-126; Biraben 1975-1976, 85-159; Cipolla 1973, 1976, 1993; Palmer 1978; Rubio Vela 1979, 1994-1995; Slack 1990, 199-310; Carmichael 1986, 108-126; Henderson 1989; Betrán 1996, 177-314; Martin 1996, 131-144).

Last but not least, it seems evident that university medical discourse was rapidly accepted by local rulers (García-Ballester 1988; 1994; 2001; McVaugh 1993), since from the fourteenth century it not

only articulated the public health measures they set up, but it was also a key for their social legitimating. The amount of plague tracts which were entrusted and/or addressed to the political authorities from the 1348 Black Death, and the involvement of university practitioners in the political institutions and in their health boards are additional pieces of evidence in favor of this claim (Arrizabalaga 1994; Cohn 2002).

In all events, these are incontrovertible samples of the promptness and rapidity with which the new medical and natural-philosophical knowledge emerging from the universities, went beyond the limits of the academic world and was accepted by cities and states of late medieval and early modern Europe as an essential tool for articulating responses which were perceived as socially efficient for urgent and unavoidable demands.

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