

## The Mechanical Medicine of a Pious Man of Science: G. M. Lancisi's *De subitaneis mortibus* (1707)\*

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In 1705 and 1706, in the midst of the War of the Spanish Succession and only two years after a devastating earthquake, an 'epidemic' of sudden deaths terrorized Rome. Special liturgies were celebrated to implore God's clemency, and a lively medical debate arose in which different views about pathology and post-mortem evidence competed with one another. The treatise *De subitaneis mortibus*, published in 1707 by Giovanni Maria Lancisi (1654–1720), was written at the explicit command of Pope Clement XI after a series of public dissections in the university anatomical theatre. This book can be regarded as one of the most accomplished examples of mechanical philosophy in the life sciences to be produced in early eighteenth century Europe, as well as the model for a new pathological anatomy (more usually associated with the work of Giovan Battista Morgagni). At a time when both disciplines were still under attack from inside and outside the medical profession, the treatise raises a number of questions about the epistemological value of post-mortem evidence, about mechanistic and corpuscular philosophy in the Catholic context and about the role of papal patronage in science.

In this paper I shall argue that, thanks to papal patronage and to the resources of the Roman medical system, *De subitaneis mortibus* fostered a new synthesis between humoralism and solidism and enhanced the localization of physio-pathological processes in the field of practical medicine. A refusal to discuss the essence of natural principles and a reticence about crucial issues such as the rational faculties are features of Lancisi's work, although he does not refrain from asserting the truthfulness and scientific value of medicine. By referring to Hippocrates, he is able to preserve the authority of the ancients as an ideological support, on the basis of which he validates medical knowledge as rational in its own terms and as a field which combines different forms of observation (clinical, environmental, autoptic), 'protecting' it from theology.

Sudden death, however, was not only a scientific issue but also a religious one. When examined from the latter standpoint, it sheds light on the persistence of religious motivations in Roman medicine, though it reveals the new boundaries between theology and science which helped to create a 'modern medicine' in the

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papal city at the end of the seventeenth century. Both aspects will prove useful in exploring the features of scientific culture in early modern Rome.

#### A MECHANISTIC CHEF-D'OEUVRE IN HIPPOCRATES' NAME

On Thursday, 17 December 1705, Francesco Valesio noted in his diary the strange case of 'a certain greengrocer in place Navona, who was stricken by apoplexy while walking out of a tavern and talking with another man, and fell immediately dead'.<sup>1</sup> It was only the first of numerous comments that the learned antiquarian would write during the following months, recording the sudden deaths of people of different social position and lifestyle: craftsmen, servants, noblemen, a poor crippled beggar, a Jesuit, an old woman at the church door and a prostitute, who died 'after dining merrily ... and since she passed away without repenting, her corpse was buried outside the city walls'.<sup>2</sup>

The atmosphere of alarm caused by the War of the Spanish Succession was darkened by these obscure presages. The chain of fatal incidents continued for over a year, arousing fears that an unknown new epidemic disease might be spreading. The people 'shocked into silent fear and wandering about in fright' blamed different causes: 'at one moment the rotten quality of tobacco, and at another the fetid exhalations from past earthquakes, then again the abuse of chocolate and finally an unknown virus';<sup>3</sup> so that in 1706 the Vicar of Rome, Cardinal Gaspare Carpegna, established a special Mass *pro gratia bene moriendi*.<sup>4</sup> Soon the pope himself ordered the Protomedicus ('First Physician') and the Counsellors of the College of Physicians 'to inquire searchingly into the true causes of this raging death by post-mortem examination of the bodies of some of those who had died suddenly'.<sup>5</sup> Lancisi's *De subitaneis mortibus* is, therefore, simultaneously an account

1. Francesco Valesio, *Diario di Roma 1700–1740*, ed. G. Scano, III, Milan, 1971, p. 513: 'Un certo fruttarolo in piazza Navona, mentre usciti dall'ostaria di S. Giacomo sta discorrendo con un altro, assalito da accidente apoplettico, cadde immediatamente morto.'

2. *Ibid.*, p. 566: 'Doppo haver cenato allegramente ... onde per essere passata all'altra vita impenitente, fu il di lei cadavere sepolto a Muro Torto'.

3. G. M. Lancisi, *On Sudden Deaths*, transl. A. V. Boursy and P. D. White, New York, 1971 (hereafter cited as *SM*; unless otherwise stated, all English quotations of Lancisi's treatise come from this translation, which I have occasionally altered), p. XIX. References to the translation will be followed by the Latin original from the first edition of *De subitaneis mortibus*, Rome, 1707 (with the page numbers given afterwards in brackets): 'atque hinc vulgus, tacito percussus timore, ac metu errabundum, in diversa, ut assolet, scinderetur, nunc prava tabaci qualitatem, nunc putidos ex praeteritis terrae motibus excussos halitus, nunc abusu chocolatae, nunc ignotum ambientis virus imperite non minus, quam temere incusans' (unnumbered page). There is a partial Italian translation by G. Fravega, *Le morti improvvisate di G. M. Lancisi*, Pisa, 1963.

4. *Missa ad postulandam gratiam bene moriendi*, Rome, 1706.

5. *SM*, p. XIX: 'Iussit ... ut Protomedicus et Consiliarii Medicorum Almae Urbis Collegii, dissectis aliquorum, qui repente decesserint, cadaveribus, veras grassantis libitinae causas perquirent' (unnumbered page). Lancisi adds that he was personally commanded to preside over the autopsies. On Lancisi, see *DBI*, LIII, pp. 360–64; E. Brambilla, 'La medicina del Settecento: dal monopolio dogmatico

of the state of public health, a report on the autopsies which were performed and a treatise on practical medicine.

Book I considers the theory and practice of sudden death in general. It is an attempt to gain new insights into clinical signs by correlating anatomy and pathology through a systematic collection of observations. Lancisi treats the entire matter according to a mechanical and hydraulic paradigm, so that his book is a manifesto of mechanistic medicine, openly inspired by Galileo, Descartes and Giovanni Alfonso Borelli in its overall approach, and by Marcello Malpighi and Thomas Willis in its medical method.<sup>6</sup>

Sudden death was obviously not unknown. To medical professionals, it was a standard problem associated with apoplexy and syncope (i.e. heart failure), which had been described in many *loci* of the ancient masters, especially Hippocrates's *Sacred Disease* and *Aphorisms*, Aretaeus's *Causes and Symptoms in Acute and Chronic Diseases*, Galen's *On the Affected Parts* and *On Pulses* and Avicenna's *Canon*.<sup>7</sup> Late Renaissance Galenism produced renewed interest in the problem, as did the firm establishment of *medicina practica* in university medical faculties. It might seem contradictory to teach physicians how to foretell 'sudden death'; but the art of a skilled and learned practitioner was precisely that of anticipating, by means of an intricate complex of signs, an eventuality which endangered both earthly and eternal life. The issue was reinforced by the sacramental theology of the Council of Trent; and a specific medical literature on sudden death began to appear at the end of the sixteenth century along with works on apoplexy and diseases of the heart. Paolo Grassi's *Mortis repentinae examen*, Domenico Terilli's *De causis mortis repentinae* and François Ranchin's *De morbis subitaneis* are examples of the genre.<sup>8</sup>

alla professione scientifica', in *Storia d'Italia, Annali: 7, Malattia e medicina*, ed. F. Della Perruta, Turin, 1984, pp. 5–147 (46–54), and M. Conforti's article in this volume. See also G. Cosmacini, 'Sulle morti improvvisate', in *Il medico di fronte alla morte (secoli XVI–XXI)*, ed. G. Cosmacini and G. Vigarello, Turin, 2008, pp. 23–32.

6. Lancisi refers to Descartes as a philosophical source of inspiration, but he adopts an approach to the motions and forces of the human body which is more similar to that of Borelli in the Galileian tradition. On this issue see the classic studies by L. Belloni, 'Schemi e modelli della macchina vivente nel Seicento', *Physis*, 5, 1963, pp. 261–78; M. D. Grmek, 'Réflexions sur des interprétations mécanistes de la vie dans le XVII<sup>e</sup> siècle', *Episteme*, 1, 1967, pp. 17–30; F. Duchesneau, 'Malpighi, Descartes and the Epistemological Problems of Iatromechanism', in *Reason, Experiment and Mysticism in the Scientific Revolution*, ed. M. L. Righini Bonelli and W. R. Shea, New York, 1975, pp. 111–30; see also *Marcello Malpighi, Anatomist and Physician*, ed. D. Bertoloni Meli, Florence, 1997.

7. E. Clarke, 'Apoplexy in the Hippocratic Writings', *Bulletin of the History of Medicine*, 37, 1963, pp. 301–14; H. Bruun, 'Sudden Death as an Apoplectic Sign in the Hippocratic Corpus', *Classica et mediaevalia*, 50, 1999, pp. 5–24; A. Karenberg, 'Reconstructing a Doctrine: Galen on Apoplexy', *Journal of the History of the Neurosciences*, 3, 1994, pp. 85–101; and the remarks on Avicenna's *Canon* in S. Jarcho, *The Concept of Heart Failure from Avicenna to Albertini*, Cambridge, Mass., 1980, pp. 10–16.

8. Paolo Grassi, *Mortis repentinae examen una cum brevis methodo praesagiendi et praecavendi omnes, qui subeunt illius periculum*, Modena, 1612; Domenico Terilli, *De causis mortis repentinae tractatio in qua etiam disputatur quid sit mors et vita in genere et quae mortis causae communes, singula vero quae de causis mortis repentinae enarrantur*, Venice, 1615; François Ranchin, *Tractatus de morbis subitaneis*, in his *Opuscula*

A considerable distance separates *De subitaneis mortibus* from early seventeenth-century literature on the subject. There is no place in Lancisi's treatise either for vital heat and its dissipation/suffocation, or for the vapours and vitalist principles of Galenic medicine. Right from his preliminary definition of life and death, Lancisi abandons the Aristotelian heritage in favour of a clear mechanistic option. Thus, he defines life, according to anatomists and chemists, as 'due not merely to one, but to a combination of several principles and chiefly to two: to the organic structure of the solid parts of major function, and at the same time to corresponding mixture, to the fluidity and mass of liquid parts of like function'.<sup>9</sup> The rational soul is mentioned once at the beginning, as being 'in control' of the bodily machine (which in itself evokes a dualistic biology), and twice briefly as 'departing' from the dying body. Its omission otherwise is justified on the grounds of its inconsistency with the physician's and natural philosopher's research field: the opposite approach from that of earlier authors such as Terilli and Grassi, who were concerned to define the essence of life and to inquire into the human body's faculties, as was appropriate for learned professors of philosophy and medicine.

Three major organs of the human machine (lungs; heart and circulatory system; brain and nervous system) are held to be responsible for the conservation of life, together with three fluids: air, blood and the liquid secreted by 'the brain with its membranes' and propelled 'in a wavelike fashion' through the nerves.<sup>10</sup> The circulation of these fluids is given a central role, following William Harvey, whom Lancisi considers the inventor of modern medicine and whose teachings he extends to other functions (respiratory and cerebral).<sup>11</sup> Life itself can therefore be regarded as the 'constant flow and reflow of the air, the blood and the nervous liquid'.<sup>12</sup> All fluids and solids obey physical laws which are known by reason and experiment and

*medica*, Lyon, 1627, pp. 593–669. See also Annibale Albertini, *De affectionibus cordis libri tres*, Venice, 1618; Francesco Bartoletti, *Methodus in dyspnoeam, seu de respirationibus libri IV*, Bologna, 1633. For sudden death in connection with plague, see A. Pastore, 'La morte e la peste. Note sulla trattatistica medica della prima età moderna', in *Il medico di fronte alla morte* (n. 5 above), pp. 33–51.

9. *SM*, p. 2: 'non uni duntaxat, sed complexui plurimorum principiorum, ac duorum potissimum deberi, organicae nimirum structurae solidarum partium maioris usus, simulque congruae mixturae, fluiditati, ac moli partium liquidarum similis usus' (p. 3).

10. *Ibid.* For a general overview, see T. S. Hall, *Ideas of Life and Matter. Studies in the History of General Physiology, 600 BC–1900 AD*, Chicago and London, 1969, I, pp. 283–94, 312–48, 373–81.

11. As in the works of two influential Roman anatomists of his day, Giorgio Baglivi, *De fibra motrice et morbosa*, Rome, 1700, and Antonio Pacchioni, *De durae meningis fabrica et usu disquisitio anatomica*, Rome, 1701 (Lancisi mentions Pacchioni as his assistant, *SM*, p. 30), he attributes a pulsing action to the membranes of the brain, i.e., they perform a movement by 'squeezing' the glandular, sponge-like substance of the cortex so that it can filter blood into nervous fluid (sometimes referred to by the older name of animal spirits), according to the glandular conception of the brain of Malpighi and Willis (see n. 18 below); for references to the convulsion of the brain membrane, see *SM*, p. 18, 27, 31. See also E. Clarke, 'The Neural Circulation. The Use of Analogy in Medicine', *Medical History*, 22, 1978, pp. 291–307.

12. *SM*, p. 157: 'continuum fluxus ac refluxus plus, minusque sensibilis, aeris sanguinis et liquidi nervorum' (p. 4).

which are regarded as a priori and preliminary knowledge for the physician. This ‘natural necessity’ represents the background against which observations must be set in order to formulate explanations and conjectures.

Given these premises, the reason for sudden death is evident: ‘if one of these, or several or all [of the major organs and fluids] have been impaired, either separately or together, to an extreme degree and most persistently, then an unexpected death is likely to threaten’.<sup>13</sup> In the rest of the treatise Lancisi develops a practical medicine which is compatible with this mechanical and hydraulic vision of the human body.

The content of the book as a whole is organized ‘by reason of the cause and of the manner, namely of the disease which induces death’, proceeding from the three fluids to the three major organs.<sup>14</sup> Lancisi examines the various combinations of defects which eventually produce unexpected death. An obstacle to the natural course of the three main fluids is presented as the most immediate and the swiftest cause. It sometimes originates from external circumstances (wounds, privation of air, excessive or insufficient air pressure), while the internal aetiology implies a combination of bad circulation of fluids and lesions in solids, that is, it generally happens when tissues are so damaged that they inhibit the circulation of fluids. In the ‘enchantingly delicate and fine and ingeniously interwoven and divided structure of fluids and solids’ that is life,<sup>15</sup> pathology most frequently results from a mutual impairment of fluids and solids: except for congenital malformations, the unhealthy state of air, blood and nervous fluid commonly erodes, tears or obstructs their respective organs, which in turn will not propel the necessary amount of fluid or will allow them to disperse and amass pathologically.

In other words, according to Lancisi, the defect leading to death is usually mechanical. This means that all organs need to be cleared of obstructions and that all tissues need to be ‘structurally in perfect and natural condition and ... continuously engaged in the alternate movement of contraction and dilation’,<sup>16</sup> since he regards ‘dilatability’ and ‘contractability’ as an intrinsic characteristic of human fibres, an idea which was developing in contemporary medicine in Rome.<sup>17</sup> It also means that the fluids obey exact hydraulic principles. So, an insufficiency of blood flow to the brain would lead to a deficiency in the amount of nervous fluid and to apoplexy,

13. *SM*, p. 12: ‘eapropter ab horum altero, pluribus, aut omnibus, seorsim aut simul, modo maxime et constantissime laesis, improvisa mors impendere potest’ (pp. 14–15).

14. *SM*, p. 6: ‘solummodo ratione causae, ac modi, nimirum morbi, qui mortem infert’ (p. 7).

15. *SM*, p. 9: ‘delicata, ac perexilis haec, affabreque contexta, ac dimota fluidorum, solidorumque compago, quam vitam in animalibus dicimus’ (p. 6).

16. *SM*, p. 26: ‘ut sint integra, seu organica naturali structura donentur; deinde, ut in alterno constrictionis, ac distensionis motu perpetuo versentur’ (p. 25); see also *SM*, p. 8.

17. M. D. Grmek, ‘La Notion de fibre vivante’, (1975), now in his *La Première Révolution biologique*, Paris, 1990, p. 159–88.

according to the ideas of Malpighi and Willis;<sup>18</sup> conversely, an excess of blood and high pressure would be sufficient to produce cardiac regurgitation or the rupture of the arteries around the heart or brain (as observed in repeated dissections by the first modern, Harveian author on apoplexy, Johann Jakob Wepfer),<sup>19</sup> because ‘the capacity for containing and the power of propelling blood in the heart and in the appended vessels are not unlimited’.<sup>20</sup> In Lancisi’s view, the mechanical ailment results in visible lesions, which show the impact or the ‘deviation’ of one of the fluids into improper channels and pores, for example, in pulmonary dropsy or alveolar obstruction by pus or water.

Otherwise, defects can be of a chemical nature. Neither air nor blood nor nervous fluid is elemental; and their morbid state originates from the quality and quantity of noxious particles. Often, Lancisi states, the abundance of acrid particles or excessive fermentation cause the lesion of vessels or the irritation of nerves, and may result in epilepsy and eventually death unless cured at an early stage. He does not describe in detail the fermentative process, so familiar had the theory of Franciscus de la Boë (Sylvius), Willis and their followers become (in Rome it had been introduced in the 1660s and then adapted to many pathologies in the following decades).<sup>21</sup>

Post-mortem evidence is presented in the course of Book I to support the main hypothesis. Lancisi relates how he observed the rupture of major blood vessels due to aneurysms or bony concretions compressing the arteries; he describes the cases of Chevalier Luigi dal Pozzo and of Cardinal Urbano Sacchetti at length as examples of brain tumours leading to what seemed to be a sudden death but which was preceded by migraine, melancholy and loss of consciousness.<sup>22</sup>

18. The idea that the brain was a ‘conglomerated gland’, put forward by Malpighi in his *De cerebro* of 1665 on the grounds of (misleading) microscopic evidence, led to a reformulation of the ancient definition of apoplexy as a sudden privation of animal spirits, while Willis’s anatomical description of the cerebellum could now explain why involuntary motions were able to continue; the ‘normalization’ of this theory, notwithstanding isolated objections (like François Bayle’s, *Tractatus de apoplexia... ex doctrina Hippocratis*, Toulouse, 1677), can be seen in repertories like J. J. Manget’s *Bibliotheca medico-practica sive thesaurus cumulatissimus quo omnes humani corporis affectiones... explicantur*, I, Geneva, 1695, pp. 94–134. But see below for the views of a contemporary and fellow citizen of Lancisi’s, Domenico Mistichelli.

19. *SM* p. 17. See Johann Jakob Wepfer, *Observationes anatomicae, ex cadaveribus eorum, quos sustulit apoplexia, cum exercitatione de ejus loco affecto*, Schaffhausen, 1658, and *Historiae apoplecticorum et exercitatio de loco apoplexia affecto observationibus et scholiis anatomicis et medicis*, Amsterdam, 1681; see also Lorenzo Bellini, *De urinis et pulsibus... de morbis capitis et pectoris*, Florence, 1683, pp. 384–400 (393–6).

20. *SM*, p. 15: ‘Non enim capacitas ad continendum, et vis ad pellendum sanguinem in corde, et appensis vasis sunt indifentae, atque immensae’ (p. 19).

21. Two works by Giacomo Sinibaldi, *Dell’abuso de’ vescicatori, discorso*, Rome, 1681, and *Apollo Bifrons medicas et amoenas dissertationes... exponens*, Rome, 1690, were especially important; for an overview of Willis’s fermentative theory, see D. G. Bates, *Thomas Willis and the Fever Literature of the 17th Century*, in *Theories of Fevers from Antiquity to the Enlightenment*, ed. W. F. Bynum and V. Nutton, London, 1981, pp. 45–70, as well as A. G. Debus, *Chemistry and Medical Debate: Van Helmont to Boerhaave*, Nantucket, Mass., 2001; E. D. Baumann, *François de la Boe Sylvius*, Leiden, 1949.

22. *SM*, pp. 28–30.

It is important to bear in mind that *De subitaneis mortibus* is intended to serve practical purposes and is largely devoted to clinical issues. Retaining the tripartite classification of lungs/air, heart/blood and brain/nervous fluid, Lancisi provides a diagnosis, prognosis and treatment for the unhealthy state of each unit. He enumerates a long list of signs, ranging from a suffocating cough with acrid fluid, when the arytenoid glands are diseased, to 'a marked slowness of the pulse with feeble individual beats, absorbing almost completely the intermediate time of the second beat',<sup>23</sup> with a strangling sensation around the heart and difficulties in lying on one side that suggest an ailment in the main arteries. Noteworthy signs also include a stench-like breath that can indicate abscesses in the lungs, blindness and loss of memory that hint at diseases of the brain.

According to the traditional practice of learned Western medicine, most clinical teachings were formulated in such a way as to be consistent with statements by Hippocrates and Galen. Some simply reproduced old habits of bedside observation, slightly modified to fit into a new physiological theory (such as the suppressed evacuations to which Lancisi often calls attention), while others were consistent with a closer examination of patients. Lancisi seldom speaks of sick people treated by other professionals, for he was the physician or the consultant in the large majority of cases which he discusses. And when the patients were of noble birth, they could provide a long and careful medical history, which was one of Lancisi's most valuable aids in addressing the clinical issues involved in sudden death. Autopsy would eventually provide the last word.

Indeed, in Lancisi's opinion, the manifest signs can only hint at the 'buried truth', the real causes of death, which the anatomist's knife would ultimately bring to light on the dissection table. His practice of morbid anatomy lies behind a few important clinical remarks, such as the warning that 'many symptoms, which according to appearances appertain to respiration, have their diseased root entirely in the heart itself and in the vessels appended'.<sup>24</sup> The attempt to correlate pre-mortem symptoms with post-mortem results is a key feature of *De subitaneis mortibus*; as I have indicated, the content of Book I is designed to give precedence to the organ or fluid as the cause of death. The chapters on signs follow a similar order as well, even though the notion of sign remains fairly unstable and at times somewhat blurred.<sup>25</sup>

23. *SM*, p. 56: 'pulsus utique tarditas, si eadem, singulis ictibus languide recurrens, alterius pulsationis intermedium tempus fere totum pertinaciter absumat' (p. 72).

24. *SM*, p. 54: 'sed quoniam multa symptomata, quae ad respirationem pertinere viderentur, radicem omnino morbosam habent in ipso corde, eique appensis vasis' (p. 69).

25. See especially *SM* p. 55, where Lancisi lists defects of the pulse, palpitation or pain in the heart, swooning, hemorrhages and aneurysms, obesity and suppression of certain evacuations among the 'signs of future death arising from the heart'; nevertheless, the analysis which follows distinguishes more clearly between signs and symptoms, while aneurysms are considered to be a lesion and cause of death, as has

Thanks to the mechanistic paradigm, Lancisi is able to refresh the traditional taxonomy of suffocation (asphyxia), syncope and apoplexy. These syndromes, already unsystematically evoked in previous works on unexpected death,<sup>26</sup> are ‘renamed’ on the basis of the impediments in the flux of air, blood and nervous fluid, as revealed by autopsy both in the macro- and micro-structure of the body, rather than from symptoms. Consequently, the *locus affectus* theme is revitalized: it is not sufficient to locate the diseased cavity (head or chest) or major organ, as it was in the previous medical literature, for example in the writings of Terilli or even Wepfer;<sup>27</sup> it is necessary to understand the way in which the deadly lesions were brought about in the fine texture of the bodily machine.

In accordance with his practical aim in *De subitaneis mortibus*, Lancisi also recommends a few treatments, while condemning the ‘secret remedies’ of charlatans to whom desperately sick people sometimes resort. Lancisi suggests the ‘sweetening’ and dissolving of the blood and nervous fluid to counter the lesions of the tissues which their acidity would in time produce, together with a number of preparations for specific problems (e.g., epilepsy).<sup>28</sup> He recommends fasting on several occasions, a regular and frugal lifestyle being the best prevention and dietary medicine still the most effective strategy for promoting health. Phlebotomy, however, is Lancisi’s most frequent therapy, since it perfectly suits his mechanistic and hydraulic idea of health and disease.<sup>29</sup>

It should be noted that the mechanistic and hydraulic paradigm has two main consequences. In the first place, extending the pathway which was already followed by anatomists like Jean Pecquet, Marcello Malpighi, Lorenzo Bellini, Niels Stensen, Raymond Vieussens and many others for normal physiology, it fosters the localization of diseases. If, however, all tissues and fluids are subject to the laws of physics, a number of pathological conditions can be deduced from physical concepts such as pressure, compression, weight (and from the work of physicists like Benedetto Castelli).<sup>30</sup> These eventually contradict localization, since the hydrometric

been proved ‘since autopsies on human bodies have become more common’, *ibid.* p. 59. For a different appraisal see Jarcho, *The Concept* (n. 7 above), pp. 257–74; for the earlier period, see N. G. Siraisi, ‘Disease and Symptom as Problematic Concepts in Renaissance Medicine’, in *Res et Verba in the Renaissance*, ed. E. Kessler and I. Maclean, Wiesbaden, 2002, pp. 217–39.

26. Cf., for instance, Grassi, *Mortis repentinae* (n. 8 above), pp. 29–62.

27. The notion of *locus affectus* had already undergone profound changes through the rediscovery of Galen; see N. G. Siraisi, ‘Life Sciences and Medicine in the Renaissance World’, in *Rome Reborn. The Vatican Library and Renaissance Culture*, ed. A. Grafton, Washington D.C. and New Haven, 1993, pp. 169–98.

28. The same therapeutic strategy was used by Malpighi and is now examined by D. Bertoloni Meli, ‘Mechanistic Pathology and Therapy in the Medical Assayer of Marcello Malpighi’, *Medical History*, 51, 2007, pp. 165–80.

29. But see H. Mikkeli, *Hygiene in the Early Modern Medical Tradition*, Helsinki, 1999, for a different appraisal of the decline of hygiene in early 18th-century medicine.

30. Explicit reference to Benedetto Castelli’s *Delle misure dell’acque correnti* (1628) on p. 145 of *SM*.



principles at times forestall any actual inspection of the impediments to circulation. Especially when it comes to the nerve fluid, Lancisi's descriptions remain generic, in spite of the widespread interest in the physiology of the nervous system which was then producing an increasing amount of research, also in Rome.<sup>31</sup> A passage like the following, from Book II, can serve as example, though it is not the only one:

If the quantity of the blood effused [in the brain] is enormous, then without any doubt this defect must of necessity be followed by a deadly compression of the cerebrum and the cerebellum ... [but] an excessive amount of these same spirits ... can at some time, by too great a pressure and by distention of the cortical glands of the brain, compress the passages of the nerves to such a degree that there is no room left for the animal liquid that is about to flow through.<sup>32</sup>

The second corollary is corpuscularianism. The unhealthy state of air, blood and nervous fluid originates from the quality and quantity of noxious particles, which can be described as mechanical or chemical depending on the scale of the observation. Lancisi never opts for one or the other mode of description; his definitions remain deliberately vague and alternate between what seems to be an essentialist qualitative (chemical) perception and a more mechanistic view of the minimal particles. In a case study of 'a sudden death from syncope due to enlargement, prolapse and aneurysm of the heart', for instance, he speaks of 'wedge-like' eroding salts gradually tearing apart the fibrous connection, but on the following page refers to chemical reactions between acrid and sulphurous particles.<sup>33</sup>

The chemical bent of Lancisi's analysis – which has been considered a vestige of humoralism<sup>34</sup> – is the point at which the environmental issue enters into medical discourse, to be developed in the second part of the volume. Where do the noxious particles come from? Why are there so many sudden deaths at that particular time and place? Consequently, in the manner of Hippocrates's *Airs, Waters and Places*,

31. M. Neuberger, *The Historical Development of Experimental Brain and Spinal Cord Physiology Before Flourens*, transl. and ed. with additional material by E. Clarke, Baltimore and London, 1981.

32. *SM*, pp. 17–18. The entire passage reads as follows: 'si fuerit ingens copia effusi sanguinis, eiusdem procul dubio defectum mortifera cerebri, ac cerebelli compressio sequatur necesse est. Possunt pariter iidem spiritus deficere, cum eorum excursus per nervos ad praecordia, aliasque maximi usus partes, penitus intercluditur vi convulsionis, compressionis, vel obstructionis, e solo corporis vitio, aut simul animi motibus pendentium. Possunt quoque deesse spiritus ob inedia, ob motuum violentiam, ob nimias evacuationes, ob intemperantem veneris usum, praesertim in senibus, quos satis iam aetas spiritibus destituerat ... . Secundo, nimia etiam eorundem copia, quae semper sanguinis ubertatem comitatur, nimia pressura, et inflatione glandularum corticalium cerebri, nervorum vias potest aliquando comprimere, ut fluxuro animali liquido omne spatium adimatur, fiatque propterea, ut, vel in cerebro spiritus non separetur, vel a cerebro ... in praecordia non dimittantur' (pp. 21–2).

33. *SM*, pp. 141–2: 'percussionis, ac repercuSSIONis vi ... energia cunei erodentium salium' (p. 192). This is a clear allusion to Giovanni Alfonso Borelli's *De vi percussionis liber*, Bologna, 1667.

34. M. Hoffmann, *Die Lehre vom plötzlichen Tod in Lancisi's Werk 'De subitaneis mortibus'*, Berlin, 1935, p. 59.

Book II deals with sudden deaths and their causes, as they occurred at Rome in 1705 and 1706.

Lancisi rules out poisonous subterranean exhalations from the 1703 earthquake as the source of noxious particles, which had been suggested in the plague literature. He prefers to take into consideration winds, air pressure and sudden temperature changes, insisting on the dangerous association between temperature and winds (which interfere with bodily fluids) and lifestyle. Why did death strike mostly men? Was it because ‘women, constantly cleansed by their menstruations are prevented from acquiring the disease afflicting mechanism to the fullness of its irritative and suffocative power’, or instead because ‘women, also those from among the common stratum, do for the most part lead a more temperate life and are thus less inclined to the accumulation of injurious fluids?’<sup>35</sup>

On this basis, Lancisi refutes the idea of an ‘epidemic’ of sudden deaths in Rome. In fact, he states that ‘the cause of these unforeseen deaths was not one that was absolutely common to all’,<sup>36</sup> and then describes the most interesting cases, each showing a different lesion: sarcomas on the tricuspid valve of the heart, *cor bovinus* and enlargement of the aorta, prolapse of the heart and swelling of the left auricles, aorta aneurysm and lacerated vena cava in the pericardium and so on. He then discloses the methodological foundation of his modern rational medicine: ‘Even though I had easily come to this conclusion by reasoning from the signs, in the end I was only then truly satisfied when I saw that the internal perception of my mind had been proven by external testimony of the things themselves and by the positive evidence of the examinations.’<sup>37</sup> The correlation between reasoning, observation and post-mortem discovery is weaved into a coherent discourse; and, with the aid of authoritative references to Hippocrates throughout, the rationality of medicine is constructed from the combination of mental image (reasoning), history (case stories, environmental records) and sensible data (autopsy). As a consequence, in the chain of causality there are now the circumstances, as well as an individual’s constitution and habits, which may produce a defect if combined in the wrong way, and then there are the concrete ailments which ultimately bring about death: once the dissection takes place, the proper cause of death can be traced back or conjectured from the visible lesions.

35. *SM*, p. 92: ‘An quia mulieres, catamensiis repurgatae, morbificum apparatus ad irritativam, ac suffocativam plenitudinem colligere ... an satius quia foeminae, etiam plebeiae, temperantius vitam plerunque ducentes, minus pravorum succorum solent congerere?’ (pp. 119–20).

36. *SM*, p. 85: ‘causam improvisarum mortium non unam omnibus absolute communem, sed singulis morientibus maiori ex parte propriam extitisse’ (p. 112). He also rules out the idea of a pestilential disease, since neither the families of the deceased nor those performing the autopsies were infected, *ibid.*, p. 93.

37. *SM*, p. 85: ‘Quod sane, tametsi prae me ratiocinando ex signis facile fuerim assecutus, tum vero mihi tandem placui, cum internum animi sensum externo ipsius rei testimonio, atque certa experimentorum fide comprobatum intellexi’ (p. 112).

The bulk of Book II consists of *historiae*.<sup>38</sup> Each case is individual and different. Those who died unexpectedly and were publicly dissected have nothing in common except basic human physiology, and the method of inquiry which they undergo. For seven cases there is a detailed ‘history’, ‘dissection of the corpse’ and ‘scholium’, except for one or two which narrate successful treatments. Similar schemes, which were codified in the second half of the seventeenth century, help Lancisi to show his mastery in describing post-mortems, as can be seen especially in relation to heart disorders (on which he would later write his magnum opus, *De motu cordis et aneurysmatibus*):

The heart, even though on the outside there was nothing which was evident, apart from rather dry fibres that were furrowed lengthwise with some kind of grooves, presented to us, however, in its interior ... a rare ... finding: at the entryway of the large artery there were present in the individual semilunar cusps certain uneven and thin sarcomata, which, lengthened similar to a condyloma into fringes and flaps, projected into the aorta. ... They had their origin in the elongated fibres and vessels of the cusps, and indeed not because they had been compacted through simple adhesion. Finally, there was found within the descending aorta a substance, uneven and round and of a truly polypous nature, which filled up almost the entire cavity.<sup>39</sup>

The scholia, then, are meant to make ‘the peculiar cause of each sudden death stand forth, disentangled and in clear light’.<sup>40</sup> Lancisi tries to correlate what was visible on the dissected body with the recorded symptoms in the framework of his general, a priori vision of the body-machine. The emphasis is on fluids – blood which is too dense or too soluble, or too acrid, nervous fluid which is too irritating – but the ailment is deduced from the kind of lesions left in the gross and fine structures. The mutual action of fluids and solids is given careful attention as well, according to Lancisi’s main (mechanistic) tenet that diverse, mutual impairments develop together: ‘the abnormalities of both types necessarily work together ... ; for that

38. On the transformations of this concept in the framework of early modern empiricism, see G. Pomata, ‘“Praxis Historialis”: The Uses of *Historiae* in Early Modern Medicine’, in *Historia. Empiricism and Erudition in Early Modern Europe*, ed. G. Pomata and N. G. Siraisi, Cambridge, Mass., 2005, pp. 105–46.

39. *SM*, p. 124: ‘Cor, quanquam exterius nihil spectabile patefaceret praeter aridi usculas, et sulcis quibusdam per longum exaratas fibras; interius tamen (etiamsi sanguine, ac polypis omnimo vacuum) raram certe, ac memoria hominum aeternum duraturam rem nobis exhibuit; scilicet ad ostium arteriae magnae in singulis valvulis semilunaribus aderant inaequalia quaedam, ac exigua sarcomata, quae in fimbrias, ac lacinias, instar condylomatum protensa, intra aortam inclinabant; neque interim a valvulis, citra scissuram se avelli patiebantur; ut nullum propterea fuerit dubium, quin ex productis valvularum fibris, vasisque nata, non vero per simplicem adhaesionem compacta, corpora illa penderent. Denique intra aortam descendentem substantia inaequalis, ac rotunda, naturae vero polypeae, cavitatem fere totam opplens inventa fuit’ (p. 162). See also his remarkable description of an aneurysm of the aorta on pp. 164–5.

40. *SM*, p. 132: ‘ut particularis cuiusque subitaneae mortis causa extricetur, atque reluceat’ (p. 174).

reason you do not find any defect of the solids which is likely to kill suddenly, unless it blocks the movement of the body liquids, nor ... in turn any lethal defect of the fluids without some injury to the solids'.<sup>41</sup> Although the interpretation is often naively dependent on Willis's idea of blood pathologies as excessive or defective fermentation and on a rather schematic hydraulic perception of the body (to some extent, however, made subtler through the notion of fibres used to explain the phenomena of porosity and capillarity, in the manner of Borelli),<sup>42</sup> it does not really interfere with the accurate description of the autopsy findings.

In the light of the theory set out in Book I, which is partly based on those same autopsies, Lancisi is able to conclude that only rarely do mortal incidents occur that 'may not also be foreseen through some hidden and extraordinary symptom, and then delayed for some little while through the administration of a medicament, at least for the benefit of the soul'; for 'there is neither any cause nor any illness capable of killing with extreme swiftness, which does not bring about its effects through divisible moments of time'.<sup>43</sup> This is the reason why

sudden deaths usually happen to those who, because they have become familiar with certain diseases, regard them as of no consequence, either due to the easy nature of their symptoms or because they have been accustomed to them and hope that their illness will either mend with the help of nature alone, or that they would die only after a prolonged agony.<sup>44</sup>

As for Rome, the unexpected deaths 'were due in large measure to bodies being already predisposed by some sort of disease',<sup>45</sup> and nothing can be imputed to the government or to extraordinary circumstances of any kind. He also adds that the wise physician should always attempt a cure; and when he is successful in desperate cases, by means of his own skills, he comes to resemble God.<sup>46</sup>

Thus, Lancisi accomplishes the task which the pope assigned to him and fulfils his public role by reassuring those who were frightened, but nevertheless exhorting

41. *SM*, p. 21: 'utriusque ordinis causae mutua sibi opem, ad subitum inferendum interitum, necessario praebent; ut proinde non invenias vitium solidorum, repente aptum occidere, quod motui saltem liquidorum non officiat; et vicissim fluidorum vitium lethale absque solidorum laesione' (p. 25).

42. Cf. especially Giovanni Alfonso Borelli, *De motu animalium*, II, Rome, 1681, cap. IX, prop. CXLII.

43. *SM*, p. 6, p. 11: 'ipsa quoque occulto aliquo, et peculiari praevideri signo, atque exhibitio pharmaco, saltem ad animae salutem, aliquantisper prorogari possint' (p. 6); 'nullam esse causam, seu aegritudinem, celerissime occidere potentem, quae vires suas per divisibilia temporis momenta non exercent' (p. 13).

44. *SM*, p. 49: 'repentinae mortes iis potissimum solent accidere, qui morbos aliquos, vel propter symptomatum levitatem, vel propter assuetudinem, sibi familiares redditos, facile despiciunt, sperantes, se aut sola natura ope convalescentes, aut nonnisi praevia longi agonis admonitione fore decessuros' (p. 64).

45. *SM*, p. 89: 'celeris interitus, Romae hoc praesertim tempore contingentes, magna ex parte praedispositis vitio aliquo corporibus debeantur' (p. 115).

46. *SM*, p. 37.

them to live a sober (Christian) life. In doing so, he establishes his personal authority and that of the whole medical élite, but also legitimates mechanistic medicine and ‘experimental’ philosophy in an official publication under the pope’s aegis.

COLLEAGUES AND COMPETITORS: THREE OTHER WRITERS ON THE SUDDEN DEATHS

*De subitaneis mortibus* enjoyed considerable success: it was reprinted four times in the early eighteenth century.<sup>47</sup> It later became the object of differing assessments: it was considered to be an ingenious theory full of mistakes in the clinical descriptions or the beginning of epidemiology in connection with autopsy.<sup>48</sup> Historians of cardiology have argued that it marks a significant advance in the diagnosis of distinctive heart failures;<sup>49</sup> but other specialists have pointed out the vagueness of Lancisi’s definitions, the omission of key symptoms and the persistence of humoralism despite the new mechanistic terminology.<sup>50</sup>

All these assessments contain some element of truth, depending on the standpoint they come from. But I am not sure whether such considerations are of real interest for the purposes of gaining a better understanding of scientific culture in early modern Rome. It seems preferable to concentrate on the circumstances which led to a work like Lancisi’s: to what extent and in what sense is *De subitaneis mortibus* the outcome of Roman science, in particular, and not, more generally, of contemporary mechanistic medicine? One answer might come from other medical authors writing about the events in Rome in 1706, who could help to highlight common trends and distinctive features.

The wave of unexpected deaths provoked a public debate. A few professionals seized the opportunity to show off their skills and to stand out within the crowded international medical marketplace of papal Rome. Among these were: Angelo Evangelista, who wrote a *Lettera informativa intorno alle cause delle morti improvise*; Manoel Da Sylva Pereyra, author of *Romanorum lachrymae subitaneis mortibus effusae exsiccantur*; Antonio Nicola Bernabei, who published a *Dissertazione delle morti*

47. Lucca 1707; Venice 1708; Rome 1709; Leipzig 1709; some of his descriptions and case reports were also excerpted for dictionaries and repertories in the 18th century.

48. See, e.g., A. Portal, *Histoire de l’anatomie et de la chirurgie*, VI, Paris, 1770, pp. 39–46; G. Weber, *Aspetti poco noti della storia dell’anatomia patologica tra ’600 e ’700*, Florence, 1997, p. 59. For a new appraisal of the genesis of modern anatomico-clinical medicine and of Lancisi’s role, see O. Keel, *L’avènement de la médecine clinique moderne en Europe, 1750–1815: politiques, institutions et savoirs*, Geneva and Montreal, 2001, esp. pp. 180–86.

49. E. R. Long, *A History of Pathology*, 2nd ed., New York, 1965, p. 67; J. O. Leibowitz, *The History of Coronary Heart Disease*, Berkeley, 1970, pp. 3–4. Lancisi’s accurate account of the slowness of the pulse could describe what is today known as Stoke syndrome, according to A. Boursy and P. D. White, editors of the American edition of Lancisi’s *SM*, p. 56; see also N. Latronico, *Il cuore nella storia della medicina*, Milan, 1955.

50. Jarcho, *The Concept* (n. 7 above), p. 257–74.

*improvvisate nella quale si ragiona delle perucche, e degli acidi*; and Domenico Mistichelli, with his *Trattato dell'apoplessia*.<sup>51</sup> The background of these writers hints at the complexity of the medical scene in Rome: a Portuguese doctor formerly in the Prince of Portugal's service; two private practitioners and a hospital servant from Fermo, the native province of many prominent physicians.

To a certain extent, Da Sylva and Bernabei could be considered as representatives of two opposite attitudes in dealing with health and disease and two different ideological strategies. While the former was anxious to preserve and reassert the authority of the ancients, the latter was keen on displaying his modernity by quoting Boyle and Borelli, Francesco Redi and Leonardo Di Capua.

Faithful to Hippocrates and Galen, Da Sylva spends much effort in defending the usefulness of the classical notion of epidemic. The ancient masters regarded an 'epidemic' as a disease which strikes regardless of individual *habitus* and disposition, and Da Sylva thinks that this is what happened in Rome, where there were many dead with little in common, but all had 'difficulty in breathing, anxiety of the heart, oppression and anguish, a hazy dizziness'.<sup>52</sup> Da Sylva's verdict is clear: it is an epidemic and originates from the air, or more precisely from terrestrial exhalations spread by earthquakes into the atmosphere. A cursory recollection of historical sources from Livy onwards confirms him in his theory, which shares many points in common with standard seventeenth-century explanations of plague.<sup>53</sup> Da Sylva adds that the 'vitriolic and arsenical' quality of the earthly exhalations are noxious because they dispose the blood to stagnation,<sup>54</sup> and he considers this defect of circulation more dangerous than simple plethora. Autopsies can be interpreted in the light of his rather generic stagnation theory, since the Protomedicus and his colleagues found a rupture of major blood vessels in the chest or head of all the dissected cadavers. Other signs are interpreted as consistent with the idea of blood stagnating in the heart or in the brain: pallor and *praefocatio* in the viscera, or headache, dizziness and ringing in the ears. The six non-naturals are examined one by one in order to choose the appropriate rule of hygiene, and phlebotomy is selected as the most effective cure.

51. All printed in Rome, in 1706, 1706, 1708 and 1709 respectively. Unfortunately, I was not able to find out much about these authors; on the medical professional market in Rome, see A. L. Bonella, 'La professione medica a Roma tra Sei e Settecento', *RMC*, 6, 1998, pp. 349–66; M. P. Donato, 'La medicina a Roma tra Sei e Settecento. Una proposta di interpretazione', *RMC*, 13, 2005, pp. 99–114.

52. Da Sylva, *Romanorum lachrymae* (n. 51 above), p. 9: 'Omnes ... antecederentur conquirebantur de difficultate respirationis, cordis anxietate, oppensione et angustia, vertigine tenebricosa'.

53. See I. Diemerbroek *Tractatus de peste*, Amsterdam, 1646. On the transformations of plague theories due to corpuscularianism, see A. Wear, *Knowledge and Practice in English Medicine, 1550–1680*, Cambridge, 2000; for 17th-century Rome, see M. Conforti, 'Peste a stampa: trattati, relazioni e cronache a Roma nel 1656', and M. P. Donato, 'La peste dopo la peste. Economia di un discorso romano (1656–1720)', both in *RMC*, 15, 2007, pp. 135–58, and 159–74.

54. Da Sylva, *Romanorum lachrymae* (n. 51 above), p. 16: 'Respondeo sua deleteria qualitate vitriolica et arsenicali sanguinem ad stagnatione disponere'.

Unlike his Portuguese colleague, Bernabei professes modern tenets. Preferring Willis, Malpighi and Borelli to Galen, he states that syncope – except for ‘stomach syncope’ caused by food regurgitating in the hypochondria – results only from the impeding of animal spirits: if they do not flow into the nerves which move the heart, the heartbeat abruptly ceases and death occurs. The whole pathological process is considered from a corpuscularian standpoint, since neither natural elements nor bodily fluids are elemental, and their defective composition produces various diseases. Human blood, with its very tiny ‘reddish little globules’ described by Christiaan Huygens,<sup>55</sup> is considered particularly liable to contamination by noxious particles which render it too dense or too watery (as proved by Carlo Fracassati),<sup>56</sup> preventing circulatory or fermentative movement. The nervous fluid also turns bad and is unable to flow.

Unlike Lancisi, however, Bernabei sees diseases as chemical, not mechanical, ailments, which are related solely to the physiology of the bodily fluids. Unlike Lancisi, too, he thinks that the lacerated vessels found during autopsy are the effect of the convulsions of the dying person rather than the cause of death.<sup>57</sup> Therefore, ‘corpses do not shed much light which enables us to see clearly the true causes of deaths, since in the last days and in the last hours of life the whole machine of man is upset, overturned and transformed’;<sup>58</sup> and, as the ailment is in the fluids, it could only be revealed by vivisection.

The remote origin of the imbalance of blood and nervous fluid can also be found in corrupt air, according to Bernabei, for air can carry an excess of noxious, irritating and acrid particles (even though he does not exclude the possibility of miasmas and astral influence). Despite the rather old fashioned physiology on which he now and then draws,<sup>59</sup> he is keen to show off his up-to-date scientific knowledge and refers to Gassendi, Borelli and Di Capua to demonstrate the corpuscular nature of air. Accordingly, he makes modern physics agree with Hippocrates, suggesting that each locality abounds in peculiar salts, which would explain the discrepancies in the mortality rates of different towns. The unhealthiness of the air and climate of Rome had, after all, been known since antiquity, the bad food consumed by the

55. Bernabei, *Dissertazione delle morte improvise* (n. 51 above), p. 19.

56. Carlo Fracassati, *Dissertatio epistolica responsoria de cerebro*, in [Marcello Malpighi and Carlo Fracassati], *Tetras anatomicarum epistolarum*, Bologna, 1665, pp. 258–429.

57. Bernabei, *Dissertazione delle morte improvise* (n. 51 above), p. 3: ‘Se uno starnuto, una tosse, una caduta posson esser cagioni di lacerazioni di vasi, possiamo ragionevolmente sospettare, che le medesime, vedute ne’ cadaveri, sieno stati effetti de’ spasmi nelle ore dell’agonia, bastevoli a far crepare canali di bronzo, non che i vasi linfatici, le vene, e le arterie tumefatte da liquori già non più abili a scorrere.’

58. *Ibid.*, p. 4: ‘I cadaveri dunque non ne porgono tanto di lume, che chiaramente veder possiamo le cagioni veridiche delle morti; posciaché negli ultimi di e nelle ultime ore della vita si sconvolge, si rovescia, e si muta la macchina tutta dell’uomo.’

59. E.g., he still differentiates between vital and animal fluids, both produced in the brain but flowing in the arteries and in the nerves respectively, *ibid.*, p. 22.

populace and the toxic mercury potions against French pox provided by quacks doing the rest.<sup>60</sup>

Still, Bernabei rejects the idea of an epidemic of sudden deaths: the general conditions of the outside world, however bad, do not cause harm unless the individual disposition is unhealthy, that is, unless there is a previous preternatural accumulation of acrid corpuscles (which are otherwise necessary and useful).<sup>61</sup> So, with some inventiveness, he suggests that the new fad for wigs, spreading among all sorts of people in Rome, is the real origin of unexpected deaths. Malpighi provides the anatomical rationale for the idea that wigs suppress natural evacuations, while the low mortality rate in female monasteries provides an *a contrario* argument.<sup>62</sup> The moral disapproval for the new French fashion which was currently being voiced by ecclesiastics thus turns into medical condemnation.<sup>63</sup> At the very end of the work, however, Bernabei maintains that lead pipelines may be an additional source of noxious acids, and this enables him to praise Clement XI for refurbishing the Roman aqueducts. Yet, there is no better way to conclude the dissertation than to repeat the old prayer: 'A peccato, a ira tua, libera nos Domine ... a subitanea et improvisa morte'.<sup>64</sup>

In spite of their different backgrounds and attitudes, strong similarities exist in the conceptual tools of Da Sylva and Bernabei, which are also apparent in Lancisi's work. Firstly, they all share the circulatory physiology which had been at the core of medical learning for decades, including explanations of apoplexy since Wepfer, but which was still potentially a resource for reformulating practical medicine.<sup>65</sup> The ancient notion of humoral plethora is correspondingly adjusted to a more modern version of blood overabundance, eventually including the fermentative theory of fevers.<sup>66</sup> Even more than Lancisi, Da Sylva and Bernabei are devoted to Willis's explanation of the pathologies of the blood. This circulatory physiopathology enables them to maintain a Christian moralizing attitude, since good blood circulation depends at least partly on a regulated diet and lifestyle. This represents a further common element, although Da Sylva focuses on the canonical non-naturals, while Bernabei points an accusing finger at novelty (wigs). For both authors, the fermentative theory implies a non-essentialist understanding of bodily fluids and of natural elements, even if it does not require agreement about their

60. For the deleterious effects of mercury preparations used against French pox, see *ibid.*, p. 8 (and cf. *SM*, p. 25).

61. His source is Giacomo Sinibaldi, quoted at Bernabei, *Dissertazione*, p. 77.

62. *Ibid.*, p. 51. A similar argument can be found in earlier medical writing on various topics, especially plague; see, e.g., Gregorio Roscio, *De postrema pestilentia urbis Romae*, Rome, 1665.

63. Ludovico Sergardi, *Quinti Settani Satyrae*, Rome, 1696; Costantino Roncaglia, *Le moderne conversazioni, volgarmente dette de' cicisbei*, Lucca, 1720.

64. Bernabei, *Dissertazione* (n. 51 above), p. 84.

65. See R. G. Frank, *Harvey and the Oxford Physiologists*, Berkeley, 1980.

66. See *Theories of Fevers* (n. 21 above).



actual composition. There are differences between them in this respect: Da Sylva adopts a rather vague chemical conception of the noxiousness of the air; Bernabei prefers a corpuscularian version, then oscillates between what seems a mechanical appraisal of air and blood particles and a qualitative one.

Secondly, although their philosophical vocabulary differs greatly, the clinical language of both authors is comparable, and so, too, is their use of historical sources, including reports of wonders and strange cases. Both make reference to the public autopsies of the Protomedicus in order to support their theories of sudden deaths; but they speak of corpses which they did not personally examine (even though Bernabei is eager to boast about his acquaintances among the most prominent physicians in Rome). In other words, they use what Ian Maclean has nicely termed ‘heteropsy’: dissections performed or *historiae* told by others.<sup>67</sup> The medicine of Da Sylva and Bernabei is one of reasoning and learning, in which experience is still interchangeable with textual traditions of medical and non-medical origin, and the notion of medical evidence is indistinguishable from deductive logic. Sylvius’s acids/alkalis or Willis’s fermentation theories – according to which health and disease were the result of the chemical interaction of the components of the blood – rational and general as they were, could very well hinder or make superfluous any pathological investigation, rather than orient – even if misguidedly – the interpretation of real autopsies.<sup>68</sup>

The issue of direct access to corpses and of post-mortem evidence unites Domenico Mistichelli to the other two doctors, while also distinguishing him from them. As a physician at the small Fatebenefratelli hospital, Mistichelli could treat many patients and perform many dissections. He thus acquired considerable anatomical experience and was eager to show it off. His *Trattato dell’apoplessia in cui con nuove osservazioni anatomiche, e riflessioni fisiche si ricercano tutte le cagioni e spezie di quel male e vi si palesa fra gli altri un nuovo ed efficace rimedio* begins with a comprehensive introduction to the anatomy of the brain and heart, where he presents his own up-to-date research, as well as that of others, on many disputed topics, before addressing the issue of apoplexy.

Mistichelli was a devoted anatomist. Using various techniques (maceration in liquids, ink injections, microscopy, etc.), he was the first to describe the crossing of the medulla oblongata fibres, explaining the phenomena of inverted paralysis and cross-lateral control which had been known since antiquity.<sup>69</sup> In his tract he is prepared to contradict Malpighi and Willis on the micro-anatomy of the grey

67. I. Maclean, *Logic, Signs and Nature: Learned Medicine in the Renaissance*, Cambridge, 2002, p. 207.

68. On the success of these theories, see T. M. Brown, ‘The College of Physicians and the Acceptance of Iatromechanism in England, 1665–1695’, *Bulletin of the History of Medicine*, 44, 1970, pp. 12–30.

69. Mistichelli, *Trattato dell’apoplessia* (n. 51 above), p. 58 and plate 1; Neuburger, *The Historical Development* (n. 31 above), pp. 57–8.

matter, the glandular nature of which he firmly denies. By contrast, relying on the ideas of Antonio Pacchioni and Giorgio Baglivi concerning the central role of meninges in the functions of the nervous system (but citing Aristotle and Andrea Cesalpino instead), he suggests that the brain membranes originate from the tunica of the carotid artery and perform the essential task of filtering the nervous fluid (instead of the cortex) by their contraction and dilation.<sup>70</sup> Consequently, he thinks that apoplexy is produced by the ‘convulsion’ of brain membranes, which causes a defect in the flow of animal spirits and is itself brought about by numerous causes, since virtually anything can irritate them. Nerves, membranes, tunica and muscular and tendon fibres may all convulse and result in apoplexy:

since sense and movement are brought about by the animal spirits and the nerves, it must be deduced that in apoplexy, by which those functions are halted, the affected parts are the animal spirits or the nerves, or both; even better, since this ailment renders the whole body senseless, one has to conclude that the lesion is impressed at the origin of all the nerves, that is to say, the meninges that cover the brain, or the medulla oblongata, which are the root of the nerves.<sup>71</sup>

This comprehensive outlook on apoplexy – which is partly the outcome of Mistichelli’s preliminary and conventional nosography, in contrast to his colleagues, who endeavoured to find the appropriate definition for unstructured medical events such as ‘sudden death’ – ends up in the analysis of causes, hesitating between a pathological approach reminiscent of Lancisi’s and a scholastic classification. If a cause is whatever precedes and stirs up a certain illness, there are remote or external causes: the abuse of the non-natural things, accidents, suppressed or excessive evacuations, excessive study, asthma, aneurysms, constitution of the body, age, time of the year and so on; and there are internal or near causes which, according to Galen, pertain to the body itself: lymph, catarrh, blood, polyps in the heart, convulsion of the brain membranes, obstruction of the veins. ‘Each and every one of these causes, both internal and external, can contribute to bringing about a single effect such as sudden death; therefore, it is not surprising that [medical] authors have always disagreed in their works on its true origin, since the dissections of corpses have revealed different causes [of death].’<sup>72</sup>

70. *Ibid.*, pp. 19–21; cf. also p. 60.

71. *Ibid.*, p. 45: ‘essendo che il senso et il moto si fa per opera de spiriti animali, e delli nervi, bisogna credere che nella apoplessia, per cui mancano tali funzioni, le parti offese siano o li spiriti animali o li nervi, o gli uni e gl’altri; anzi, poiché questo male rende attonito tutto il corpo, bisogna persuadersi che la lesione s’imprima nel principio di tutti i nervi, cioè nelle meningi che vestono il cervello, o la midolla oblongata, che sono il caudice de’ nervi’.

72. *Ibid.*, p. 52: ‘Tutte queste, diverse cagioni, così interne così esterne, possono concorrere separate e congiunte a partorire un sol prodotto qual è la morte improvvisa, onde non è maraviglia se gli autori ... mossi ancor’essi dalle molte aperture de cadaveri, ne’ quali sempre si è trovata varia la cagione, habbiano variato in deciderne, colla propria sentenza, la vera origine.’

Mistichelli tries to classify the various types of apoplexy according to their ‘origin’, a term which is partly the equivalent and partly the opposite of ‘cause’. Still, his imitation of Lancisi is apparent in his classification of the different types: apoplexy from wounds, from the constriction or relaxation of solids,<sup>73</sup> and from the coagulation or dissolving of liquids (plus a special kind of ‘narcotic’ apoplexy). But when he discusses the situation in Rome, the scholastic framework behind these modern chemical explanations becomes more evident. Mistichelli is mainly interested in proving the rationality of his theory by establishing a causal chain reaching back to universals; and what is more universal than air? As shown by John Mayow and others,<sup>74</sup> in the lungs, blood is combined with a number of active chemical substances, which mix and react with those already in the body and affect the blood and nervous fluid; therefore, it can be asserted that the cause of apoplexy is air. Why then, ‘if the causes of apoplexy were universal in Rome, was the illness not universal and common to all?’<sup>75</sup> The answer is commonplace – the sick person had ‘in himself some particular principles condensing the spirits’ – and so, too, is the general conclusion: the apoplexies in 1705 and 1706 began in bodies which were already susceptible

by reason of some volatile ammoniac principles or some fixed and oily ones, as the nearest and concomitant cause; or on account of the impure constitution of the Roman air, which too readily compresses and dilates, as the universal cause; or due to the bad weather, namely, the southern and northern winds, as an occasional and predisposing cause; and, lastly, because of the consumption of certain foods and unripe fruits, which were full of fixed and rigid salts, as a remote and external cause.<sup>76</sup>

The argumentation as a whole is quite revealing of the tenacity of old-fashioned causal reasoning, according to which each different factor contributes equally to producing a diseased condition.

73. This category, although reminiscent of Hippocrates and the ancient Methodists, was clearly inspired by Baglivi’s *De fibra motrice et morbosa*. In the same year that Mistichelli’s book appeared, Herman Boerhaave published his hugely influential *Aphorismi de cognoscendis et curandis morbis*, in which the pathology of constricted and relaxed fibres became canonical.

74. Mayow is quoted repeatedly; on his theory see Frank, *Harvey* (n. 65 above), pp. 224–32; A. Clericuzio, *Elements, Principles and Corpuscles. A Study of Atomism in the 17th Century*, Dordrecht, 2000, pp. 149–51. Mistichelli tries to integrate Mayow’s chemical stance with the more mechanical approach of Boyle and Borelli to respiratory physiology, treating nitre as the ‘elastic’ component responsible for air compression and dilation.

75. Mistichelli, *Trattato dell’apoplessia* (n. 51 above), p. 98: ‘Essendo state in Roma universali le cagioni dell’apoplessia, il male non fu universale e comune a tutti’.

76. *Ibid.*, pp. 99–100: ‘in certi corpi già disposti, come da cagione immediata e congiunta da alcuni principi volatili armoniacali, o pure da altri fissi e lissivali; come da un cagione universale dalla costituzione dell’aria romana impura e facile a troppo stringersi, o dilatarsi, come da una cagione occasionale e dispositiva dall’intemperie della medesima aria cioè da venti australi e settentrionali, e finalmente come da cagione remota ed esterna dall’uso di certi cibi e di alcune frutta immature, tutti pregni di sali fissi et austeri’.

The second part of Mistichelli's book is concerned with the 'practice' of treating apoplexy. Following the traditional conventions found in any good handbook, he organizes remedies into surgical, medical (pharmaceutics) and preventive (hygiene) ones.

Mistichelli's work can be seen as mirroring his position in the Roman medical system. As a hospital physician, he was part of a dense network connecting the major city hospitals (and was therefore aware of current research); but as an unprivileged practitioner, he was excluded from, and in competition with, the medical élite.<sup>77</sup> So, he criticizes celebrities like Malpighi, though implicitly relying on their authority to justify his anatomical endeavours; and he refers instead to Aristotle and Galen, using the traditional scholastic presentation of arguments. He introduces new observations – his book is yet another source showing that dissections were routinely practised in Roman hospitals – but makes little use of them while searching for universal explanatory principles encompassing all clinical manifestations of apoplexy. Lastly, he does not try to correlate clinical and post-mortem observations, even though he has direct access to sick people in hospital beds.

One of the reasons for this probably lies in the social status of the hospital patients whom Mistichelli treated (and dissected). Unlike Lancisi, who was physician to courtiers and prelates, Mistichelli could not rely on detailed medical histories; so it was more difficult for him to correlate symptoms and post-mortem findings. His description of the autopsies is rather cursory, serving mainly to confirm his rational theory of apoplexy.<sup>78</sup> This was also true for earlier authors, Terilli or the Roman Professor Domenico Panaroli, for instance,<sup>79</sup> who 'saw' the suffocation of vital heat by the humoral plethora, just as Bernabei 'saw' the coagulated blood in the arteries and Mistichelli the convulsion of meninges.

77. Some of his clinical observations are included in Lancisi's work: *SM*, p. 102. Mistichelli claimed that he did not publish his book earlier because he was aware that Lancisi, who as Papal Archiater and a member of the College of Physicians was a much more prominent figure, was writing his own treatise.

78. See, e.g., the report in Mistichelli, *Trattato dell'apoplessia* (n. 51 above), p. 165: 'Giuseppe d'anni 20, sottoposto agl'insulti epilettici, cadde per una di queste invasioni, e restò ferito nella tempia sinistra. Subito fu condotto all'ospedale, che fu il 19 di agosto 1701, fu posto al letto n. 7, ed essendo privo di tutte le facultà, morì dopo 6 ore. Fu aperto il cranio, che fu trovato con una fessura nell'osso della fronte presso la sutura coronale verso la ferita: sopra la dura madre si vidde una copiosa quantità di sangue stravasato, et in particolare nell'occipite; ne' ventricoli del cervello si trovò un siero copioso et acre al gusto, con molte iatidi nel plesso coroide.' On the limited use of case reports of hospital patients, see J. J. Bylebyl, 'The Manifest and the Hidden in the Renaissance Clinic', in *Medicine and the Five Senses*, ed. W. F. Bynum and R. Porter, Cambridge, 1993, pp. 40–60.

79. Terilli, *De causis* (n. 8 above), p. 109; Domenico Panaroli, *Iatrologismorum, seu medicinalium observationum Pentecostae quinque*, Rome, 1652, part II, obs. XI. Such sources were later reported by Théophile Bonet in his *Sepulchretum*, Geneva, 1679 (on sudden death I, pp. 881–97) and his *Medicina septentrionalis collatitia*, I, Geneva, 1686, pp. 496–532; see also H. Schutta and H. Howe, 'Seventeenth Century Concepts of "Apoplexy" as Reflected in Bonet's "Sepulchretum"', *Journal of the History of the Neurosciences*, 15, 2006, pp. 250–68.

Dissection, in any case, was not (any longer) innovative in itself, and normal anatomy was not the same thing as morbid anatomy. The wealthy and well-organized hospitals of Rome could provide a mass of observations on the sick and the dead; but these did not necessarily produce innovation either in normal or in pathological anatomy unless they were related to a new notion of medical truth. But, outside the framework of scholastic Aristotelianism, who could assert the physician's claim to truth in Rome?

ON THE USEFULNESS OF MORBID ANATOMY FOR RATIONAL MEDICINE

Lancisi's work shares a number of ideas and tenets with that of his contemporaries, such as circulatory physiology, a mild mechanical-chemical corpuscularianism and a moralizing approach to hygiene. But many other characteristics divide them, including the practice of dissection and the trust in morbid anatomy, which at first glance might seem universal. This is precisely what distinguishes simple practitioners like Bernabei or Mistichelli from Lancisi, who as Papal Archiater not only personally supervised the public autopsies ordered by the pope in 1706 but also collected a variety of information about pre-mortem signs.

Lancisi's prominent position in the medical system of Rome is one of the elements we need to take into account in order to understand *De subitaneis mortibus*. His long career encompassed important positions, one after the other. After graduating in philosophy and medicine, he worked at the S. Spirito hospital (Rome's main *opera pia*) for several years; he then became a lecturer in anatomy at the Sapienza, where he supported the refurbishment of the anatomical theatre as part of Pope Innocent XI's effort to revitalize the *Studium Urbis*. For a brief period he was Secret Archiater to Innocent XI, a position he lost but eventually recovered when one of his main patrons, Cardinal Giovan Francesco Albani, was elected to the papacy in 1700. In the meantime, he entered the College of Physicians. It is worth noting that in 1707, the year *De subitaneis mortibus* was published, he was elected to a life-time position in the College as one of the four so-called 'perpetual magistrates'.<sup>80</sup> He was therefore familiar with various different medical and social worlds, which were nevertheless interwoven with and connected to the Curia;<sup>81</sup> and he was at the centre of a network that brought him information (clinical observations, autopsy reports, trials of remedies) which, both in quantity and quality, was not available to other authors.

80. Giovanni Mario Crescimbeni, *Vita di monsignor Gio. Maria Lancisi ... medico di Nostro Signore Clemente XI*, Rome, 1721, commissioned by Sinibaldo Doria, *commendatore* of the hospital of S. Spirito, and dedicated to Clement XI.

81. On the network connecting the hospitals with the papal court, see S. De Renzi, "A Fountain for the Thirsty" and a Bank for the Pope: Charity, Conflicts, and Medical Careers at the Hospital of Santo Spirito in Seventeenth-Century Rome', in *Health Care and Poor Relief in Counter-Reformation Europe*, ed. O. P. Grell, A. Cunningham and J. Arrizabalaga, London and New York, 1999, pp. 102–31.

The favour of Clement XI appears to have played a key role in this whole story. It was a crucial factor both in Lancisi's career and, more specifically, in his work on *De subitaneis mortibus*. Indeed, Lancisi endlessly repeats that it was the pope himself who ordered a full medical inquiry with public autopsies. Although Rome enjoyed a long and prestigious tradition of anatomical studies, involving human dissection – also dependent on papal patronage, as various historians have shown<sup>82</sup> – and although sparse evidence exists that similar inquiries had already been performed (at least once in Alexander VII's reign for sudden deaths),<sup>83</sup> the circumstances were nevertheless notable. This is why a lay witness such as Francesco Valesio made a record in his journal of an event which was not as ordinary as his sober prose might make it look.<sup>84</sup>

The idea that the pope would resort to his Archiater and to the College of Physicians for the solution of a potentially dangerous situation at a very delicate moment for both Church and State reveals a huge investment in the political value of medicine and, more precisely, a modern rational medicine which insisted on the usefulness of morbid anatomy for the understanding and cure of diseases. It also sheds light on the way in which extraordinary medical facts were naturalized, resulting in a further separation of medical and religious discourse, as we shall see later on.

In order to avoid a selectively teleological approach to the history of medicine, we must not forget that such a strategy vis-à-vis medical expertise, with its specific techniques, was still far from universally accepted. In those very years, Rome and Bologna were the main Italian centres for a bitter debate over the usefulness of anatomy and the 'uncertainty of medicine' which had been going on for decades, in spite of – and partially due to – dramatic advancements in anatomy (including microscopic anatomy).<sup>85</sup> It is worth recalling that the empiricists and traditionalists made common cause in blaming the moderns (especially their most outstanding representative, Malpighi), not only for the uselessness of anatomy and *anatomia subtilis* for practical purposes, but also for the irreligious mechanistic and materialistic ideas which their research implied and promoted.<sup>86</sup> No later than 1704, Gian

82. Siraisi, 'Life Sciences' (n. 27 above); for medieval precedents, see A. Paravicini Bagliani, *Il corpo del papa*, Turin, 1994, pp. 194–6.

83. By Lancisi's own testimony: *SM*, p. 94.

84. Valesio, *Diario* (n. 1 above), p. 540, 549, 570.

85. Marta Cavazza has thoroughly investigated this diatribe in her 'L'impegno del giovane Morgagni per la riforma dell'Accademia degli Inquieti e in difesa della tradizione malpighiana', in *De sedibus et causis Morgagni nel centenario*, ed. V. Cappelletti and F. Di Trocchio, Rome, 1986, pp. 91–103 (in the same volume, see also A. Dini, 'La difesa della "medicina razionale" e il giovane Morgagni', pp. 147–54); see also Marta Cavazza, 'The Uselessness of Anatomy: Mini and Sbaraglia against Malpighi', in *Marcello Malpighi* (n. 6 above), pp. 129–47.

86. For the Roman side of the polemics, see Barnaba Ciccolini, *Via brevis ad veram naturalis philosophiae et medicinae scientiam perducens... contra atomistarum dogmata... demonstrata*, Rome, 1696; Pietro Angelo Papi, *Sacra auctorum recentiorum critica in philosophia, chimia, et medicina*, Rome, 1706. See M. P. Donato,

Girolamo Sbaraglia, a professor at Bologna and the main opponent of Malpighi, published a vehement tract, *Oculorum et mentis vigiliae ad distinguendum studium anatomicum et ad praxim medicam dirigendam*, in response to which Malpighi's disciples Domenico Guglielmini and Giovan Battista Morgagni wrote pamphlets published in Rome, with Lancisi's discreet help.<sup>87</sup>

Given these circumstances, and given the Roman Catholic Church's persistent suspicion of modern natural philosophy and the open hostility of the Inquisition towards mechanistic biology after the suspension *donec corrigantur* of Descartes's works in 1663,<sup>88</sup> it may seem surprising that Lancisi fulfilled the pope's wishes for medical expertise by writing in such openly mechanistic terms – and that the *imprimatur* for his treatise was granted and the dedication to the pope accepted.

It would not even be incorrect to say that Lancisi's mechanistic medicine verges on materialism. No principle apart from the material 'animal economy' is brought into play. The term animal spirits is used as a synonym for nervous fluid and denotes a real liquid flowing in specific vessels and performing distinctive tasks. The 'pulsative faculty' of the heart and arteries is mentioned once; but it appears to be a generic designation of their movement (active for the heart and passive for the arteries). It is equally true, however, that, after a few introductory remarks, Lancisi avoids formal and general statements about matter and about the relationship between the mind and the body; nor does he take a position on the subject of the ultimate nature of material corpuscles. He remains in the field of *medicina practica* and, in addition, draws on a few Renaissance authors who were at odds with mechanism, introducing contradictory ideas but also moderating the ideological outlook of his work.<sup>89</sup>

This 'conciliatory' approach is consistent with the specific habits of practical medicine, which differed from those in anatomy and physiology and were more inclined to eclecticism. The physician's most important task, in the final analysis,

'Scienza e teologia nelle congregazioni romane: la questione atomista, 1626–1727', in *Rome et la science moderne*, pp. 595–634.

87. C. Pighetti, 'Un dialogo di Domenico Guglielmini restituito alla critica da Giambattista Morgagni', in *De sedibus* (n. 85 above), pp. 125–33. Malpighi finished his long career as Pope Innocent XII's Archiater, and in Rome he gathered together a group of disciples, including Lancisi.

88. J.-R. Armogathe and V. Carraud, 'La Première condamnation des Oeuvres de Descartes, d'après des documents inédits aux Archives du Saint Office', *Nouvelles de la République des Lettres*, 2001, 2, pp. 103–38; condemnations of Cartesian authors such as Antoine Le Grand and Alessandro Pascoli followed in the next decades; see U. Baldini, 'Die Römischen Kongregationen der Inquisition und des Index und der Naturwissenschaftlichen Fortschritt im 16. bis 18. Jahrhundert: Anmerkungen zur Chronologie und zur Logik ihres Verhältnisses', in *Inquisition, Index, Zensur. Wissenskulturen der Neuzeit im Widerstreit*, ed. H. Wolf, Paderborn, 2001, pp. 229–78.

89. E.g., the idea that death can be brought about by worms in the praecordia (*SM*, p. 23), by the 'acridity' flowing from the uterus into the blood (*SM*, p. 16) or by 'acid and sulphurous ferment raised from the hypochondria' (*SM*, p. 110). Worms in the praecordia formed a class of diseases up to G. B. Morgagni, *De sedibus et causis per anatomen indagatis*, Padua, 1761, and J. Lieutad, *Historia anatomico-medica*, Paris, 1767.

was to cure and to give counsel, rather than to philosophize about the nature of things. It also suited Lancisi's temperament: he was famous for being a 'learned and generous man, eager to help, keen on settling disputes'.<sup>90</sup> But his reticence – which he shared with the vast majority of his contemporaries – could just as well be a manifestation of what has been called the self-censorship of Italian scientists after Galileo's condemnation.<sup>91</sup> It should not be forgotten that throughout the seventeenth century, the Inquisition and the Congregation of the Index continued to seize books which questioned the scholastic hierarchy of the disciplines and trespassed the boundaries of metaphysics when treating physics or medicine. The control was particularly strong in Rome, and Lancisi himself, as an academician of the *Congresso medico romano*, had been involved in the harsh repression of atomism which reached a climax in the 1690s.<sup>92</sup> Yet, in Rome, the margins remained open for a plurality of philosophical options; and at times the *novatores* were able to attract patronage from those prelates who thought that the credit and power of the Roman Catholic Church and Curia would be better defended through an alliance with modern science, provided that it steered clear of metaphysical speculation and a few particularly delicate subjects.

From a medical viewpoint, the mechanistic and mildly materialistic approach of *De subitaneis mortibus* offered new insight into sudden deaths, enabling Lancisi to provide a rational, natural and reassuring explanation of the lethal events of 1705 and 1706, thus accomplishing the task which Clement XI had assigned to him at a particularly difficult time: the War of the Spanish Succession, with the emperor's troops marching south and new, more aggressive claims against the Church's privileges coming from many courts in Europe. In other words, Lancisi was faced with two contradictory tasks: on the one hand, he had to deal with facts which needed to be identified and explained as natural; and, on the other, he had to demonstrate that he was a good Catholic and a learned natural philosopher. Neither could be achieved without demonstrating his mastery of medicine, ancient and modern, to the learned readership for whom the book was intended. He neverthe-

90. A. von Haller, *Bibliotheca medicinae practicae*, III, Berne, 1779, p. 508: 'Virus eruditus ac philanthropus, adjuvare merentes, lites componere amans'; a similar judgement on Lancisi by Morgagni is quoted by A. Bacchini, *La vita e le opere di Giovanni Maria Lancisi (n. 1754–1720)*, Rome, 1920, p. 27.

91. *La scuola galileiana. Prospettive di ricerca*, Florence, 1979. On several occasions the strategy adopted vis-à-vis the Church authorities and the Inquisition caused tension among those who claimed to share Galileo's heritage, because the time seemed ripe for a more open debate: see S. Gómez López, *Le passioni degli atomi: Montanari e Rossetti, una polemica tra galileiani*, Florence, 1997. But the tactic usually followed in medicine had been to select the topics for discussion carefully and to avoid general statements. This was certainly Malpighi's strategy, as well as Redi's; but even Borelli – who is often regarded as Galileo's most uncompromising and philosophically aware disciple – wrote his *De motu animalium* as a *physica particularis*; published posthumously in Rome under the auspices of Queen Christina of Sweden, this book is reticent about its metaphysical premises.

92. M. P. Donato, 'L'onere della prova. Il Sant'Uffizio, l'atomismo e i medici romani', *Nuncius*, 18, 2003, pp. 69–87.



less managed to do both tasks successfully: thanks to his clinical stance, he could leave a number of questions unresolved; while, because of his prominent role and his official appointment, he could proclaim his orthodoxy with a single allusion to the rational soul and then develop his medical discourse in mechanistic terms, under the pope's direct protection. Clement XI's open support was, therefore, decisive for Lancisi, enabling him to pursue the normalization of mechanism and of modern physio-pathology. It is not surprising that he wrote an enthusiastic dedicatory epistle to his patron, asking him to lend his support to science in order to make Rome into the 'Athenian Academy' of all the arts.<sup>93</sup>

This does not mean, however, that Lancisi refrained from generalizations, nor that he considered medicine to offer merely probable knowledge. His book proceeds in an authoritative mode, presenting his new idea of sudden death in the manner of a classical, deductive exposition, for which all the basic principles had already been ascertained by a century of modern physiology.

Again, the issue of post-mortem evidence was a key element and deserves further attention. Clearly, the large number of observations which Lancisi was able to collect was crucial in elaborating and affirming his idea of scientific truth in medicine. In his view, though disease arises from the convergence of many factors, it nevertheless results in a visible lesion which would be revealed by dissection. His trust in the 'anatomist's knife' is adamant, for it shows how, in each individual case, the general, necessary laws of nature (both physical and biological, which he regards as *a priori*) combine. What has only been guessed at in life can be observed in death, when 'a priori conjectures find their confirmation in what has clearly occurred in the body'.<sup>94</sup> Mechanistic philosophy and the systematic use of dissection validate each other to build up a conceptual framework for the rational medicine of the moderns, while the (Hippocratic) concern with the environment is the scale against which the variable circumstances can be adjusted.<sup>95</sup>

Obviously, post-mortem findings are not the disease itself, nor are they self-evident. They need to be interpreted, in the light of the general knowledge of human physiology, of the laws of physics and geometry (in the Galilean sense, as the basic language of natural reality) and of the signs recorded during the patient's life. Nevertheless, they exist and provide real, sound evidence, which is superior to

93. *SM*, p. XVIII. On Clement XI's patronage of science and art, see C. M. S. Johns, *Papal Art and Cultural Politics: Rome in the Age of Clement XI*, Cambridge, 1993; however, other historians consider his reign as a period of normalization, for instance Brambilla, 'La medicina del Settecento' (n. 5 above), pp. 54–67.

94. *SM*, p. 138: 'Firmant deinde nostras a priori coniecturas ea, quae in cadavere palam occurrerunt' (p. 182, my translation).

95. E. Hamraoui, 'L'oeuvre d'Hippocrate revisitée par la pensée médicale des Lumières: l'exemple des traités médicaux de G. M. Lancisi (1654–1720)', in *Hellénisme et hippocratisme dans l'Europe méditerranéenne: autour de D. Coray*, ed. E. Andréani, H. Michel and E. Pélaquier, Montpellier, 1996, pp. 101–19.

simple symptoms. The medieval and Renaissance dichotomy between manifest and hidden is turned inside-out: autoptic findings are manifest facts,<sup>96</sup> on the basis of which the natural, organic cause of disease and death comes to be known, if not with absolute certainty, then at least as a probable conjecture.

Among the sources and the results of such rational empiricism – or empirical rationalism – is an understanding of causality that proceeds a step further in the wake of the collapse of Aristotelianism and Galenism, which still confusingly provided the organization for practical medicine. Too frequently, says Lancisi, ‘the blame for being the real causes of sudden deaths is placed on certain factors which should instead be looked on as precipitating’, even though he admits that ‘the causes which are able to bring about sudden death are innumerable and are usually, in their various ways, so intermingled among themselves that you will rarely find one that is simple’.<sup>97</sup> As I have already pointed out, however, his main tenet is that the real causes – an expression of Galilean resonance, which he uses repeatedly – will be visible during dissection (although they will still have to be interpreted).<sup>98</sup> The chain of causality is modified accordingly, since the diverse factors causing disease and, eventually, death are reorganized and hierarchized: the roots of disease remain multiple and vary in each sick person, but some consist of the circumstances and an individual’s constitution and habits which may produce a defect if they combine in the wrong way, while others are concrete ailments which ultimately bring about death. Once the time of dissection has come, the proper cause of death can be traced back or conjectured from the visible lesions (the classification of causes into curable and incurable introduced in Book I is consistent with the clinical purposes of the treatise and should not be given too much emphasis). In this process, the causal reasoning, necessary to claim real scientific knowledge in an Aristotelian context – as Rome still was, if one considers the weight of the ecclesiastical scholastic tradition – coincides with the description of facts.

Once again, we can see that a new understanding of the causes of diseases enabled Lancisi to assume two different attitudes. On the one hand, by maintaining a Hippocratic attitude, he followed a traditional and prudent approach, focused on

96. As defined by Lancisi: *SM*, p. 23 and *passim*. On Fernel’s version of ‘occult causes’, see L. D. Richardson, ‘The Generation of Disease: Occult Causes and Diseases of the Total Substance’, in *The Medical Renaissance of the Sixteenth Century*, ed. A. Wear, R. K. French and I. M. Lonie, Cambridge, 1985, pp. 175–94; see also Jean Fernel, *On the Hidden Causes of Things: Forms, Souls and Occult Diseases in Renaissance Medicine*, ed. J. Henry and J. M. Forrester, transl. J. M. Forrester, Leiden, 2005.

97. *SM*, pp. 11–12: ‘quaedam pro veris subitaneorum mortium causis saepe saepius accusari, quae potius occasiones videntur habendae ... quamquam vero innumerae sint causae, quae subitaneas mortes velent inducere, eaque varie inter se misceri, et complicari soleant, ut raro simplicem invenias’ (pp. 13–14).

98. In one single passage, Lancisi refers to Anton M. Valsalva, *De aere humana* (1704), admitting that the compression of the nerves of the heart might not leave any trace in the corpse: *SM*, p. 31.

the individual. He could thus accomplish his task as a health official, since he was able to reassure the public that there was neither an epidemic of sudden deaths which the government needed to control, nor any extraordinary, preternatural state of affairs. On the other hand, by reorganizing the causal chain and establishing a hierarchy among the different types of experience (with post-mortem evidence on top), he could free the notion of medical evidence from metaphysical and theological questions.

To a certain extent, *De subitaneis mortibus* represents Lancisi's practical answer – deeply indebted to Malpighi's rational medical empiricism, but also to the Inquisitorial policy of opposing atomism – to the debate over the usefulness of anatomy and the uncertainty of medicine which had been going on for half a century and to which he had already contributed with a remarkable essay *On the Method of Philosophizing in the Medical Art* (1696).<sup>99</sup> At that time, it was a question of refuting the Inquisitors' allegations that the *novatores* in the Congresso medico romano were teaching atomistic heterodoxy. He responded to the theologians' challenge by delimiting the medical philosopher's field, which implied refusing to speculate on the ultimate nature of matter (though assuming the reality of corpuscles) but asserting the usefulness of modern physics and chemistry to investigate the visible, perceptible reality of the human body with the aim of ascertaining truth. Fifteen years later, the moment came for him to put these propositions into practice and to prove the scientific value of medical discourse in relation to its own methods and in its own domain.<sup>100</sup>

#### THE LOST AND THE SAVED: SUDDEN DEATH AS A MORAL PROBLEM

Lancisi's treatise shows that the idea that papal Rome was a stronghold of conservatism is inexact, if not inaccurate. On the contrary, an up-to-date scientific culture, nurtured by a powerful medical system and a lively research practice, was able to establish itself among the diverse, sometimes conflicting, exigencies of 'reason of state' and 'reason of Church'. The pope's open support must be regarded as decisive, enabling Lancisi to pursue the normalization of modern rational

99. Giovanni M. Lancisi, 'Del modo di filosofar nell'Arte medica, e si prova che per la medicina razionale è meglio servirsi della filosofia sperimentale che di qualunque altra', *Galleria di Minerva*, 4, 1700, 3, pp. 33–9.

100. Later in his career, with his fame greater and his official position even stronger, Lancisi would assert a similar medical philosophy as a guideline for medical education in his *De recta medicorum studiorum ratione instituenda*, where he promotes the study of 'mechanicas facultates, quippe quae ad viventium, ac humani potissimam corporis fabricam, motus, ac vires rite cognoscendas apprime conspirant', and, in particular, the practice of human and comparative anatomy, including all possible experimental techniques, and of morbid anatomy 'per quam viscerum laesiones, modique laedendi proclivus ostenduntur ... latentes, novasque morborum causas saepep saepius in locis antea inopinatis recludit ac detegit', in his *Opera*, II, Geneva, 1718, pp. 213 and 220). For a different, though not incompatible appraisal of Lancisi's oration, see Brambilla, 'La medicina del Settecento' (n. 5 above), pp. 55–61.

(mechanistic) medicine as part of the growing separation of the medical and religious spheres.

That Lancisi provided a natural explanation of an event perceived as extraordinary, powerfully symbolic and potentially endowed with supernatural qualities does not mean that religion was irrelevant to *De subitaneis mortibus*. Quite the contrary: the whole book is deeply imbued with religious considerations. Sudden deaths threatened salvation by hindering repentance and confession. Lancisi himself, like Da Sylva and Mistichelli, states clearly that one reason for writing the treatise is to explain when and how the physician should intervene in order to gain time for the administration of sacraments to the dying, and to make any pious, religious person watchful that sick people are not delivered to mortuary bearers through ‘the carelessness of practitioners and their co-workers’.<sup>101</sup> Before him, authors like Paolo Grassi frankly admitted their religious motivation: to avoid putting souls and the social order at risk by death without penitence and the opportunity to write a last will and testament.<sup>102</sup>

I have already argued that the emergence of specific medical writing on sudden death must be understood in the context of Tridentine Catholicism. It is well known that the Council of Trent reaffirmed the value of the seven sacraments and that it was followed by an immense effort to define sacramental practice and moral theology. Medical doctors were also called on to co-operate in this noble enterprise, for they had to provide definitions of life and death, of will and reason, of mental ability and madness in order to help the theologians specify all the circumstances in which each sacrament could and should be dispensed.<sup>103</sup> Apoplexy and syncope were obviously of great significance, as were apparent death and unconsciousness; and it is not by chance that Paolo Zacchia devoted several chapters of his best-selling and authoritative *Quaestiones medico-legales* (first published in 1621) to similar questions. He was not only Protomedicus of the Papal States, but also served as an expert for various tribunals and congregations which ruled over the Catholic world from Rome, such as the Sacra Rota or the Congregation of Rites.<sup>104</sup> Lancisi himself was still strongly dependent on Zacchia with regard to the problem of apparent

101. *SM*, p. 43: ‘artificum, assidentium incuriae’ (p. 55). On the fears aroused in the 18th century by hasty inhumations, see C. Milanese, *Morte apparente e morte intermedia: medicina e mentalità nel dibattito sull’incertezza dei segni della morte, 1740–1789*, Rome, 1982.

102. Grassi, *Mortis repentinae* (n. 8 above), p. 4; in line with this purpose, he ended his tract with a few prayers imploring the protection of Jesus and Mary from sudden death, *ibid.*, pp. 96–8.

103. On birth and baptism, for instance, see now A. Prosperi, *Dare l’anima. Storia di un infanticidio*, Turin, 2005.

104. A. Pastore, *Il medico in tribunale. La perizia medica nella procedura penale di antico regime*, Bellinzona, 1994; S. De Renzi, ‘Witnesses of the Body: Medico-Legal Cases in 17th-Century Rome’, *Studies in the History and Philosophy of Science*, 33, 2002, pp. 219–42; Paolo Zacchia, *Alle origini della medicina legale 1584–1659*, ed. A. Pastore and G. Rossi, Milan, 2008. Zacchia also wrote *De subitis et insperati mortis eventibus, eorumque praecognitione*, now lost; see G. Marini, *Degli Archiatri pontifici*, II, Rome, 1784, p. 121.

death in Book I of *De subitaneis mortibus* (though amending specific points).

Predictably, Rome was one of the main centres for this immense project, which also brought about a stricter subordination of medicine to theology and religion. The risk of sudden death in apparently healthy or only slightly ill individuals was one of those areas in which the demands of religion outweighed medical considerations: the good Catholic physician was supposed to inform the sick person and his family about the risks of death, regardless of his personal reputation as a skilled practitioner. Both lay authors in medical deontology, such as Giovan Battista Codronchi and Gabriel Fonseca, and ecclesiastics, such as the Jesuit Daniello Bartoli, insisted on this point (which Lancisi would implicitly invalidate by recommending prudence and discretion).<sup>105</sup>

At the same time, Trent also brought a deeper insight into the doctrinal issues related to divine grace and to the role of the sacraments in salvation. Although simple attrition, that is, repentance originating solely from the ugliness of sin and the fear of hell, was decreed to be a gift from God, contrition was necessary for the remission of sins; it could intervene in the course of confession or suffice in itself if it originated from charity (perfect contrition) and was combined with the intention of taking the sacraments as soon as possible. This meant that good Catholics should continuously scrutinize their souls, a practice which required time and skill. On this basis, the theme of sudden death acquired a growing pastoral significance, in order to recall people to a life of penitence, to daily acts of contrition and to the frequent use of the sacraments (while the prediction of one's own death was regarded as God's special grace and a sign of sanctity).

Jesuits (who were favourable to frequent confession and communion) were particularly adept at this kind of spiritual and moral writing, following in Loyola's footsteps; the *Practica de ajudar a morir* by Juan Baptista Poza or the *Remèdes souverains contre la peste* by Etienne Binet, with long digressions on the subject of sudden death, are characteristic examples.<sup>106</sup> The whole idea – and literary genre – of the *ars moriendi* changed: it was no longer an instant that could compensate for worldly errors but a life-long preparation through penitence and virtue. The influential and widely read *Ars bene moriendi* by Cardinal Robert Bellarmine illustrates this new perspective.<sup>107</sup>

It would be tempting to see in *De subitaneis mortibus* a medical reinterpretation of this same attitude. What I have characterized as a Christian moralizing approach,

105. Giovan Battista Codronchi, *De christiana ac tuta medendi ratione*, Ferrara, 1591, pp. 57–9; Gabriel Fonseca, *Medici oeconomia: in quae ad perfecti medici munus attinent brevibus explanantur*, Rome, 1623, pp. 91–7; Daniello Bartoli, *L'huomo al punto cioè l'huomo in punto di morte*, Rome, 1667, pp. 316–24. And cf. *SM*, pp. 47 and 65, where Lancisi states, along with Hippocrates, that in clinical medicine certitude is rarely found.

106. First printed, respectively, in Madrid, 1629, and in Lyon, 1628.

107. Robert Bellarmine, *De arte bene moriendi libri duo*, Rome, 1620. On this subject see R. Chartier, 'Les Arts de mourir, 1450–1700', *Annales ESC*, 1, 1976, pp. 51–76; P. Ariès, *In the Hour of our Death*, transl. H. Weaver, London, 1981

which Lancisi shared with his contemporaries, certainly shows the deep impact of the Counter-Reformation. Many elements perfectly coincide with Bellarmine's arguments: the rules for a healthy life, the praise of fasting, the abhorrence of disordered emotions and passions, and the criticism of the rich. Such an interpretation, though not false, is nevertheless insufficient and to some extent misleading, since *De subitaneis mortibus* is less the fruit of generic Counter-Reformation Catholicism than of the reorientation of Roman theology in what is known as the Neo-Tridentine age. This needs to be understood in various senses.

Firstly, the second half of the seventeenth century witnessed a notable shift in moral theology and in the doctrines of grace. The more the range of exceptions to an exact administration of sacraments had been enlarged by early seventeenth-century casuists, the more rigorists now insisted on the inadequacy of simple attrition (which obviously meant that the moment of trespass could hardly be sufficient for a sincere and effective repentance).<sup>108</sup> The disputes among schools reached new heights in the 1660s and converged on Rome, where the Holy Office and the papacy tried to settle them. Alexander VII prohibited any debates on the subject of attrition in 1667, but he also issued the first condemnations of laxist morals. Innocent XI pursued and tightened this policy; in 1679 sixty-two probabilistic propositions were censured, including a few on the sacraments *in articulo mortis* and on attrition.<sup>109</sup> Although after Innocent XI's death (1689) there was a more even balance between theological schools, the dispute over attrition and contrition continued for decades and was still very much alive in early eighteenth-century Rome. Between 1703 and 1709, for instance, the Jesuit Baldassarre Francolini and the Augustinian hermit Pierre Lambert Le Drou confronted each other in several books,<sup>110</sup> all dedicated to Pope Clement XI, who tried to maintain a neutral stance.

The wave of sudden deaths occurred precisely in this context, which might partly explain Clement's decision to hold an official medical inquiry into an issue that had profound resonance within the life of the Church. Lancisi, moreover, took the opportunity to make brief allusions to the matter, supporting the rigorist position.<sup>111</sup>

The strengthening of rigorist spirituality increased the criticism of 'superstitions', which is the second facet of late seventeenth-century Roman Catholicism. It has often been argued that the Augustinian emphasis on God's omnipotence, once associated with miracles, played a crucial role at this time in what has been

108. As explicitly stated, for instance, by Francesco Marchese, *Preparamento a ben morire. Opera postuma*, Rome, 1697, p. 34.

109. J.-L. Quantin, 'Le Saint-Office et le probabilisme (1677–1679). Contribution à l'histoire de la théologie morale à l'époque moderne', *MEFRIM*, 114, 2002, pp. 875–960.

110. E.g., Baldassarre Francolini, *De dolore ad sacrae poenitentiae rite suscipiendum necessario*, Rome, 1706, and Pierre Lambert Le Drou, *De contritione et attritione dissertationes quatuor*, Rome, 1707. See J. I. von Döllinger, *Geschichte der Moralstreitigkeiten in der römisch-katholischen Kirche seit dem sechzehnten Jahrhundert*, Nördlingen, 1889, which is not completely out-of-date.

111. *SM*, p. 68, p. 96.

termed the end of final causes, the mechanization of the worldview or the victory of natural necessity.<sup>112</sup> To be sure, the rigorist desire for a reform of Baroque piety implied a certain suspicion of a worldview based on wonders and on the unlimited plasticity of nature, which could be traced back to the Aristotelian heritage (tinged with Platonic elements over the previous three centuries).<sup>113</sup> Historians have associated the increasing disbelief in cases of miraculous possession with a disdain for late scholasticism which was spreading in the Roman Catholic Church.<sup>114</sup> Although demonology and possession were the weakest points in the hylemorphic doctrine of the body-soul relationship, I think that a similar trend affected other aspects of natural and medical learning.

Much still needs to be done to understand the factions in play at the papal court and the intersection of moral, theological and philosophical issues; but I would argue that the pope's decision to resort to science as a means of explaining what could equally have been regarded as a supernatural phenomenon should be set against such a background. The naturalization of sudden death went along with the normalization of mechanistic medicine. Mechanism provided a coherent and comprehensive explanation (and stressed the individual's responsibility to live a healthy life), just as it had done twenty years before, in Innocent XI's time, when Lancisi had explained the strange case of a virgin vomiting stones and charms in terms of natural, Malpighian pathogenesis.<sup>115</sup>

This is not to say that the weapons of piety were neglected, nor that the faith in genuine (i.e., canonically proven) miracles ceased to characterize Roman Catholicism. I have already mentioned that extraordinary liturgies were celebrated. Moreover, a new saint was even canonized to protect the Catholic flock from unforeseen death. Andrea Avellino, a regular cleric, whose canonization process had been lying in the archives of the Congregation of Rites for years, had died of apoplexy while celebrating mass; before dying he had signalled by a movement of his eyes that he was still capable of

112. The historiographical debate has not yet ended, especially in relation to Malebranche; but see K. R. Hutchinson, 'Supernaturalism and the Mechanical Philosophy', *History of Science*, 21, 1983, pp. 297–333; D. Clarke, *Occult Powers and Hypotheses: Cartesian Natural Philosophy under Louis XIV*, Oxford, 1989; M. J. Osler, *Divine Will and the Mechanical Philosophy: Gassendi and Descartes on Contingency and Necessity in the Created World*, Cambridge, 1994; *Causation in Early Modern Philosophy: Cartesianism, Occasionalism and Preestablished Harmony*, ed. S. Nadler, University Park, Penn., 1993; *Kausalität und Naturgesetz in der Frühen Neuzeit*, ed. A. Hütteman, Stuttgart, 2001.

113. D. Des Chene, *Life's Form: Late Aristotelian Conceptions of the Soul*, Ithaca and London, 2000.

114. E. Brambilla, 'La fine dell'esorcismo: possessione, santità, isteria dall'età barocca all'illuminismo', *Quaderni storici*, 112, 2003, pp. 117–64. On the court factions, see *Court and Politics in Papal Rome, 1492–1700*, ed. G. Signorotto and M. A. Visceglia, Cambridge, 2002.

115. *Congressus Medico-romanus habitus in aedibus D. Hieronymi Brasavoli die lune 21. Septembris 1682*, Rome, 1682. Similar arguments have been put forward by L. Brockliss in reference to Guy Patin's rationalistic Galenism against the Fernelians, in his 'Seeing and Believing: Contrasting Attitudes Towards Observational Autonomy Among French Galenists in the First Half of the 17th Century', in *Medicine and the Five Senses* (n. 78 above), pp. 69–84.

receiving communion and extreme unction. Among various miracles, he was credited with healing people stricken by apoplexy. In 1704 the pope admitted three other miracles reported since his beatification: the prodigious cures of a paralytic and of a man who had badly wounded his head in the collapse of a building in which villagers were dancing (not really the safest way to die from a spiritual point of view) and the resurrection of a child with broken neck vertebra.<sup>116</sup> It is difficult to avoid the impression that Andrea's canonization on 12 May 1707 was connected to the sudden deaths still terrifying Rome. That he also embodied the heroic virtues of the ecclesiastical reformer, that he was the model of a good confessor, that he was Neapolitan and already a protector of the cities of Naples, Palermo, Messina and elsewhere could not but add strength to the decree of the Congregation of Rites in the particular circumstances of the War of the Spanish Succession.<sup>117</sup>

The solemn celebration of the new saint took place a few years later, after the unsuccessful war against the emperor. On 22 May 1712 a magnificent ceremony was held in the Vatican Basilica (which was adorned with large panels depicting scenes from saints' lives) to proclaim him, together with Pius V (who had reigned at the time of the Battle of Lepanto and was credited with a miraculous premonition of the Christian victory over the Turks), Felix of Cantalice and Catherine of Bologna, and to beg that Rome should be liberated from its present evils.<sup>118</sup> The pope also ordered the Accademia di San Luca to select episodes from the new saints' lives as subjects for the Concorso Clementino of the following year; the pictures of Andrea dying of apoplexy on the altar painted by the academy's apprentices were then displayed in the Capitoline palace.<sup>119</sup>

Andrea's co-religionist Tommaso Schiara promptly published a *Vita di s. Andrea Avellino, chierico regolare*, published by Giovanni Francesco Buagni, who was also the publisher of Lancisi's *De subitaneis mortibus*.<sup>120</sup> The book is hagiographical, but the narration of Andrea's death is enriched with medical details: clinical signs such as the reddishness of his face and his shortness of breath are presented as manifesta-

116. The preparatory documents, including testimonies and reports by medical experts were printed for the Congregation of Rites as *Canonizationis B. Andreae Avellini*, Rome, 1695 (see the copy in the BAV: Stamp. Barb. LL.III.55).

117. R. De Maio, 'L'ideale eroico nei processi di canonizzazione della Controriforma', in *Riforme e miti nella Chiesa del '500*, Naples, 1992, pp. 253–74. Lancisi himself made notes on Andrea's miracles: MS Rome, Biblioteca Lancisiana, 307 LXXVII.3.1, fols 362–384.

118. *Distinto racconto di quanto si è operato nella canonizzazione de quattro santi ... il giorno della SS. Trinità 22 maggio 1712*, Rome, 1712. On the symbolic value of Pius V's canonization, see M. Caffiero, 'La "profezia di Lepanto". Storia e uso politico della santità di Pio V', in *I Turchi, il Mediterraneo e l'Europa*, ed. G. Motta, Milan, 1998, pp. 103–21.

119. *Il trionfo della fede solennizzato nel Campidoglio dall'Accademia del Disegno*, Rome, 1713; see *I premiati dell'Accademia 1682–1754*, ed. A. Cipriani, Rome, 1989, s.v.

120. Tommaso Schiara, *Vita di s. Andrea Avellino, chierico regolare*, Rome, 1712. This biography draws heavily on Giovanni Bonifacio Bagatta, *Vita dell'ammirabile servo di Dio B. Andrea Avellino dell'ordine de Chierici Regolari*, Naples, 1696.



tions of his final battle with evil. The book ends with the issue of sudden death, showing that although some medical arguments were already popular with lay authors, the main appeal was still religious. Addressing Andrea, Schiara writes:

Since Rome is subject more than any other city to apoplectic incidents, and since you died of apoplexy, and before dying you proved the holiness of your soul in a battle with the Devil, pray God that He shall mercifully deliver the world, and especially Rome, from such evils, so that sudden death does not destroy our blessed eternal life along with our earthly existence. And because in life you miraculously healed some of your devotees from apoplexy, we shall increase our devotion to you in our spirit in order to obtain from God, by your intercession, the grace to be cured of, or not to fall prey to, apoplectic incidents.<sup>121</sup>

In 1720 – the year of Lancisi’s death – a beautiful folio volume by the Master of Pontifical Ceremonies, Giustiniano Chiapponi, celebrating the canonization of Andrea Avellino, Pius V, Felix of Cantalice and Catherine of Bologna, was published.<sup>122</sup> This was followed by biography after biography well into the nineteenth century; these fashioned Andrea Avellino into the protector from sudden death, and he became the object a deep popular devotion.<sup>123</sup>

Yet, it would be incorrect to deduce from this that, on account of stronger and higher religious motivations, the naturalization of extraordinary medical events in papal Rome did not outlive the particular political circumstances. In the first place, by resolving the sudden death emergency of 1705–6, Lancisi established a style of medical expertise which would play a role on several other occasions. The inquiry into sudden deaths served as a model for further research headed by Lancisi – on the ‘rheumatic epidemic’,<sup>124</sup> on cattle plague,<sup>125</sup> on the effluvia from the marshes<sup>126</sup>

121. *Ibid.*, p. 371: ‘perché Roma soggiace più di ogni altra città agl’incidenti apoplettici, e voi per un accidente apoplettico moriste, e prima di morire provaste con tutta la santità del vostro spirito, battaglia si fiera dal demonio in quell’incidente, pregate Iddio che voglia per sua misericordia liberare da simili incidenti il mondo, e Roma in primo luogo, accioché la morte improvvisa non ci faccia perdere colla vita temporale la beata eternità della vita. E se vivendo qui in terra risanaste miracolosamente dall’incidente apoplettico alcuni vostri divoti, a fine di ottenere da Dio con la vostra intercessione questa grazia di guarire o di non soggiacere agl’incidenti apoplettici, faremo vivere nel nostro spirito verso di voi la nostra divozione.’

122. Giustiniano Chiapponi, *Acta canonizationis Sanctorum Pii V pont. max, Andreae Avellini, Felicis a Cantalicio, et Catharinae de Bononia*, Rome, 1720.

123. See, e.g., *Breve ristretto della vita, e miracoli prodotti nella canonizzazione del glorioso e miracoloso Santo Andrea Avellino*, Rome, 1712; I. R. Savonarola, *Compendio della vita, virtù e miracoli del gloriosissimo Santo Andrea Avellino*, Milan, 1713; G. M. Magenis, *Vita di Santo Andrea Avellino della religione Theatina*, Venice, 1714; J. F. da Sylva, *Breve compendio de la prodigiosa vida de Santo Andres Avellino*, Salamanca, 1719; T. C. de Bem, *Vida de Santo André Avellino clerigo Regular*, Lisboa, 1767. The devotion to St. Andrew was still very wide in the 19th century in all Catholic Europe, see for instance *De la mort subite et imprévue et de la dévotion à saint André Avellino, avec une notice abrégée de sa vie et de sa mort suivie de prières et d’une neuvaine en son bonneur*, Paris, 1863.

124. Giovanni M. Lancisi, *Dissertatio de nativis, deque adventitiis romani coeli qualitibus, cui accedit Historia epidemiae rheumaticae, quae per hyemem anni MDCCIX vagata est*, Rome, 1711, on which see S.

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– as the alliance between the pope and Roman medical authorities continued in the name of *buon governo*. Secondly, among the dear friends remembered in Lancisi's last will was Prospero Lambertini, at the time a well-known lawyer and *promotor fidei* for the Congregation of Rites, and later to become Pope Benedict XIV. Author of a scholarly *summa* entitled *De servorum Dei beatificatione, et beatorum canonizatione* (1734–8), Lambertini would establish a 'regulated' and rational use of medicine in the Catholic doctrine of sanctity which would guide the Roman Catholic Church for nearly two centuries.<sup>127</sup> Perhaps Lancisi had, if not the last word, at least a long-lasting one.

Jarcho, 'The "Epidemia Rheumatica" Described by Lancisi (1711)', in *Healing and History: Essays for George Rosen*, ed. C. E. Rosenberg, New York, 1979, pp. 51–8.

125. Giovanni M. Lancisi, *Dissertatio historica de bovilla peste ex Campaniae finibus anno MDCCXIII Latio importata*, Rome, 1715. However, it is not to be overlooked that this particular tract could draw on other models, namely Girolamo Gastaldi's *Tractatus de avertenda et profliganda peste politico-legalis*, Bologna, 1684.

126. Giovanni M. Lancisi, *De noxiis paludum effluviis eorumque remediis*, Rome, 1717, on which see now M. Conforti, S. Marinozzi and V. Gazzaniga, 'Delle arie, acque e luoghi: igiene e sanità pubblica a Roma nell'opera di Giovanni Maria Lancisi', *RMC*, 13, 2005, pp. 115–32.

127. F. Vidal, 'Miracles, Science, and Testimony in Post-Tridentine Saint-Making', *Science in Context*, 20, 2007, pp. 481–508; and see L. Dacome's article in this volume.