

**Framing the History of Observation, Part II:  
OBSERVATION RISING: BIRTH OF AN EPISTEMIC GENRE,  
ca. 1500-1650.**

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**1. *A word for the practice.***

In the second half of the fifteenth century, what we would now call observational practices developed at an unprecedented pace in astronomy, astrology and astrometeorology, while also emerging in fields as diverse as medicine, alchemy, natural history, physiognomy, and even antiquarianism.<sup>1</sup> And yet throughout the fifteenth and even part of the sixteenth century there was apparently no word firmly attached to these practices; *experientia*, *experimentum*, *contemplatio*, *consideratio* and, less often, *observatio* could all be used for this purpose, in an unsettled and confused way. This teeming world of practices seems at first sight to be only palely reflected in Renaissance philosophical language, the lack of a specialized term suggesting an only incipient conceptualization of the cognitive act of observing.

Medieval Aristotelianism has been defined an “empiricism without observation”,<sup>2</sup> and this seems certainly true in a linguistic sense, in view of the fact that the vast literature on Aristotle’s natural books invariably referred to empirical knowledge by the terms *experientia*/*experimentum* -- never *observatio*. *Experimentum* was the Latin rendition of the Aristotelian *empeiria* as well as of the Hippocratic *peira*,<sup>3</sup> so the numerous Scholastic commentaries on Aristotelian and Hippocratic texts were sure to contain a definition of *experimentum* as a specialized term of philosophical and medical language.<sup>4</sup> In contrast, neither the Aristotelian nor the Hippocratic language contained the Greek original of the Latin *observatio* (*tērēsis*).<sup>5</sup> So it is not surprising that in late medieval philosophy *observatio* in a cognitive sense was only used sporadically and with a very narrow semantic focus, that is, the observation of the heavens.<sup>6</sup> In the late centuries of the Middle Ages, while *experimentum* became an object of discussion in both philosophy and medicine, *observatio* had as yet little or no currency as a philosophical term and it definitely was not an epistemic category.

More surprising is to find that nothing much seems to have changed in this respect during the Renaissance. *Observatio* does not appear to have been much used by sixteenth-century philosophers. If we turn to some emblematic works of sixteenth-century critics of

Scholastic Aristotelianism and advocates of empirical knowledge, such as Vives's *De disciplinis*, Ramus's *Scholae in liberales artes*, and Sanchez's *Quod Nihil Scitur*, we find that the key words referring to empirical knowledge are still *experientia* and *experimentum*, while *observatio* seems to have been used much more rarely.<sup>7</sup> This relative rarity of the term is obscured by modern translations, which often interpolate "observation" and "to observe" where the Latin text does not have the noun *observatio* or the verb *observare*.<sup>8</sup> Even in Bacon's *Novum Organum*, the crucial words are *experientia* and especially *experimentum*, not *observatio*.<sup>9</sup> Also in Bacon's case, if we compare the original with a modern translation, we find repeated instances of the modern penchant for introducing observation more often than warranted by the Latin text.<sup>10</sup>

What explains *observatio*'s timid debut on the sixteenth-century philosophical stage? A debut of some kind there was: *observatio* started to appear in the trail of *experimentum*, as in the expression, typically in the plural, "*experimenta et observationes*".<sup>11</sup> But *experimentum* remained apparently the dominant term. Why? One possible reason is obvious. For all the limits of their value in Aristotelian Scholastic epistemology, *experientia* and *experimentum* were well entrenched philosophical concepts, with a long history of usage at their back.<sup>12</sup> On its first appearance in sixteenth-century intellectual life, in contrast, *observatio* was a parvenu, with little or no philosophical pedigree -- or rather with a pedigree that had been marginal or forgotten in medieval philosophy, and was fully rediscovered only in the middle years of the sixteenth century.

By which route did *observatio* enter early modern philosophical language? In ancient Greek culture, an elaboration of the concept of observation (*tērēsis*) had first emerged in the Hellenistic age with the medical sect of the Empirics, to be further developed, with wider philosophical significance, in late ancient Scepticism. Basically unknown in the Middle Ages, the Empirics' conceptualization of *tērēsis* trickled back into Western medicine in the fourteenth century, but its meaning seems to have been fully recovered by European scholars only in the 1560s, concomitantly with the first Latin translation of the works of Sextus Empiricus, which marked the advent of Scepticism on the early modern philosophical scene.<sup>13</sup> As a category originally associated with medical Scepticism, *observatio* was a new entry in early modern philosophy. In fact, although the term gained wide currency in general scholarly usage in the seventeenth century, its assimilation into standard philosophical language was a

very slow business, fully completed only in the eighteenth century. Surprising as it may seem, *observatio* does not even appear as an entry in the philosophical dictionaries until the eighteenth century – with one significant exception, the medical lexica, which featured the lemma, reporting its ancient Empiric definition, as early as 1564.<sup>14</sup>

Although *observatio* was nearly invisible in the philosophers' lexica, *observationes* (in the plural) emerged and proliferated in European scholarly culture beginning in the middle decades of the sixteenth century. In fields ranging from astronomy and astrology to philology and lexicography, from jurisprudence to medicine and to travel writing, scholars wrote new kinds of texts which they presented deliberately, with assertive pride, under the new title of *observationes*.<sup>15</sup> In spite of its limited philosophical currency, two major shifts mark the semantic history of the term *observatio* in early modern learned culture. First, the emergence of the word in the plural as a title.<sup>16</sup> From annotations written on the margin of other texts, as they used to be in late medieval astrometeorology,<sup>17</sup> *observationes* became a distinctive and autonomous form of writing, a recognized scholarly genre. Strikingly, this move from marginalia to title happened roughly in the same decades, between the 1530s and the 1570s, in a variety of disciplines – most prominently, though not exclusively, astronomy and medicine. The rise of the *observationes* in the mid-sixteenth century was not circumscribed to a few fields or to a few years. Far from being a passing phenomenon, it inaugurated a trend that would expand dramatically in the seventeenth century.

Starting in the same years (ca. 1530-1570), and again accelerating over the course of the seventeenth century, a major change took place in the core meaning of the word *observatio*, which shifted from observance to empirical observation. Since antiquity, the words denoting observation, the Greek *tērēsis* and its Latin equivalent, *observatio*, had a double meaning. They could mean either observance (in the sense of obedience to a rule), or observation in the sense of attentive watching of objects and events.<sup>18</sup> Throughout its long history, the semantics of *observatio* straddled the prescriptive and the descriptive, and every translator should be advised to keep this fundamental ambivalence in mind. In the ancient world, the primary meaning of *tērēsis* seems to have been “observance”, as in the expression “observing the law”; and the same was true of *observatio* in classical Latin, though the empirical observational sense was clearly featured in astronomical, medical and other scholarly contexts.<sup>19</sup> In medieval Latin, the prescriptive meaning of *observatio* as observance all but completely obliterated the

observational meaning.<sup>20</sup> It was only in the mid-sixteenth century that *observatio* conspicuously came again to indicate empirical observation, as in the ancient world, although the following of a rule remained a vital part of the term's semantic core in everyday usage as in philosophical parlance. In Montaigne's *Essais* (1580), for instance, the French word *observation* appears rarely, and mostly signifying "a rule".<sup>21</sup> And yet in those same years when Montaigne wrote his essays, astronomers and physicians were already busily engaged in exchanging, through intense epistolary networks, texts that they called *observationes*, which were indeed reports of what they had observed -- in the heavens, in weather conditions, in the interior of anatomized bodies, in the course of disease. Gathering momentum in the last decades of the sixteenth century, and proceeding at an accelerated pace in the seventeenth, this trend is so pronounced that, while it seems to be the case that *observatio* was not yet a generally recognized epistemic category, one must state that in this very same period observation became an epistemic genre.

Genres are standardized textual formats – textual tools, we may call them – handed down by tradition for the expression and communication of some kind of content. In the case of epistemic genres, this content is seen by authors and readers as primarily cognitive in character. As shared textual conventions, genres are intrinsically social: contributing to a genre means consciously joining a community. Indeed, some genres are eminently instruments of "community-building", tools for the establishment of a collective scholarly endeavour as a social and intellectual shared space. This, we shall see, was very much the case of the early modern *observationes*, whose rise and fortune was linked to the development of horizontal networks of exchange among European scholars. While most medieval epistemic genres were attuned to teaching and the establishment of academic rank (*quaestiones disputatae*, *lectiones*, *tractatus*, *commentaria* being all subservient to the practice of university lecturing) the early modern *observationes* were fundamentally geared to the goal of exchanging and circulating information within communities wider than those identified by school training. The opening of broader horizons beyond the narrow *familia* formed by teacher and students,<sup>22</sup> or beyond the closed space of the guild, is a defining trend of early modern scholarly culture, and the rise of the *observationes* is very much part of its story.

This second part of our attempt to trace the outlines of the pre-modern history of observation will concentrate on these major early modern developments: the rise of the

*observationes* as a new epistemic genre and the conceptualizing of observation as a new epistemic category. We will first examine the rise of the *observationes* in general terms and in a variety of fields, and then “zoom in” on their origin and growth in a specific discipline – late Renaissance medicine. Far from being casual, this focus on medicine is strongly warranted by the sources. Like astronomy, medicine was a major field where observational practices, codified by a new disciplinary genre called *observationes*, arose meteorically in the late sixteenth and the early seventeenth centuries. Furthermore, the epistemology of medicine provided the breeding ground for the revival of the ancient Empiric/Sceptic concept of empirical knowledge (a concept significantly different from the Aristotelian/Scholastic *experientia*), which would prove decisive for the development of the new epistemic category of observation in the seventeenth and eighteenth centuries.

## **2. From backstage to limelight: enter the *observationes*.**

Astronomical and astrological pursuits were the cradle of the *observationes* as a disciplinary genre. In the last decades of the fifteenth century, Johannes Regiomontanus and his pupils routinely used *observatio* and *observare* to refer to their newly intensive observations of the heavens.<sup>23</sup> More importantly, it is in the astronomical context that we see an early example of the transformation of *observationes* from marginalia<sup>24</sup> or private work records, meant at most for scribal transmission from mentor to pupil, into printed book material addressed to a wider public.

In the early decades of the sixteenth century a new interest in more accurate observation of celestial and meteorological phenomena was spurred by the attempts to purge astrology of what was considered its superstitious component, which had been scathingly attacked by Giovanni Pico della Mirandola in his *Disputations against Divinatory Astrology* (1496).<sup>25</sup> But in spite of this new flurry of observational practices, the *observationes*, whether of the heavens or of the weather, were not yet an established genre of astronomical/astrological writing. The major genres were *tabulae* and *canones* for astronomy, and for astrology the variously called *judicia*, *pronostica*, *tacuina*, *ephemerides* (all variants of the almanac), which predicted the positions of the celestial bodies and their influences on earthly events.<sup>26</sup> Often written in the margins of an astronomical calendar or table, observations were not considered important *per se*, but as subservient to astrological predictions.<sup>27</sup> So when in the 1540s Joannes Schöner

decided to publish the *Nachlass observationes* of four previous generations of astronomers, Georg Peurbach, his disciple Regiomontanus, Regiomontanus's pupil Bernard Walther, plus Johannes Werner's weather observations, his was an unprecedented enterprise that marks a turning point in the early history of the genre.<sup>28</sup>

Schöner's decision to print these records clearly suggests a new perception of their significance. In the dedicatory letter to his 1544 publication, he stressed that *observationes* were foundational for the "mathematical arts", provided they were made "not by anybody but by the art's eminent members". For this reason, he says, he decided to add to his volume, which contained primarily Regiomontanus's treatise on astronomical instruments, "a not unworthy treasury of observations [*Thesaurum Observationum*], which I found most conscientiously stowed away and diligently safeguarded in a certain small chest".<sup>29</sup>

This is an early example of the use of the *observationes* as a tool to promote some kind of collective empiricism (the *thesaurus* metaphor is revealing in this respect, and it will keep coming back in the history of the genre). But it is a collective empiricism of quite a different sort from that of the millennial *observationes* of farmers and seafarers, described by Pliny, or of the astrologers that Giovanni Pico had strongly criticized on the ground of historical chronology.<sup>30</sup> The Plinian *observationes* were typically anonymous, as are proverbs and folktales.<sup>31</sup> What we have here, in contrast, is one of the first attempts to transform *observatio* from an agglomerate accumulation of experience, built up over the centuries by anonymous or dimly identified observers, into a specific product of just as specific an author/observer. It was in fact a deliberate effort to stamp observation with the mark of an author, and a model author at that. It is important to notice that his predecessors' *observationes* were not for Schöner what they look like to us – data pure and simple. For him, they were examples of the way observations *should be made*, because they were made by the masters of the craft. His main motivation in publishing them was pedagogic: Schöner thought that the *observationes* made within Regiomontanus's scholarly *familia* should be used beyond that limited sphere.<sup>32</sup>

The *observationes* emerge here as a bridge from the small circles formed by generational chains of teachers and pupils to a wider astronomical community. Within this community, the *observationes* of the best authors should circulate to provide a standard and a model. We see here at work the Humanist pedagogical preference for teaching by means of *exempla* -- the virtues exemplified being in this case not moral but epistemic, the virtues of the

diligent observer. We can also hear, even in this clearly observational context, the prescriptive ring of the word *observatio* -- not simply an act of observing but an act guided by a rule, protocol, or code of behavior, and therefore different from *experientia*, which can be of *anybody*. In other words, the *observationes* emerge not simply as a genre, but as a genre with a canonical author – the diligent observer, whose primary feature is that he checks first-hand the observations received from tradition in order to improve their accuracy. So Gemma Frisius, *mathematicus*, physician, cartographer, and a leading spirit of the attempt to reform astrology in Louvain in the middle years of the sixteenth century, compared unfavorably the compilers of the Alfonsine Tables, who “did not use observations (*observationes*) they themselves made, but rather followed those of Ptolemy and others”, with Copernicus who, in contrast, “emended many things by comparing what he had observed himself (*sua observata*) with what observed by his predecessors”.<sup>33</sup>

When the astronomers were newly publishing *observationes* in the middle decades of the sixteenth century, they were by no means the only ones to do so. Indeed, in this period the title *observationes* shows up in a surprisingly variegated ensemble of disciplines -- philology, jurisprudence, medicine, natural history, travelogues.<sup>34</sup> It may seem that all that *observationes* meant in these titles was simply “notes”, work-in-progress for semiprivate use, and it may have been so occasionally<sup>35</sup> -- but typically no, it goes deeper than that. Take for instance the case of philology. Already by the late fifteenth century humanist scholars called *observationes* their philological works on ancient texts -- a title that was going to persist in classical scholarship into the nineteenth century.<sup>36</sup> We may surmise that in this context *observationes* simply meant a collection of miscellaneous “notes”. Actually, as in astronomy, the word was used to indicate the work of a competent scholar, who proceeds by careful scrutiny of his sources. So Mario Nizolio, the author of a magnificent Ciceronian lexicon, *Observationes in Marcum Tullium Ciceronem* (1535; over seventy printings between 1535 and 1630) proudly called himself an “*observator*”.

“*Observatores* – he wrote – do not amass their materials cursorily and, so to speak, by chance, without discriminating between authors, like the *lexicographi* do. *Observatores*, on the contrary, [...] restrict themselves to the work of the ancients, and of the most approved men. [...] They collect their *observationes* from things most carefully read and considered, and they credit them to their diverse authors”.<sup>37</sup>

In Nizolio's use of *observator* we can hear a clear echo of the ancient meaning of *observare* as an action performed according to a high standard, with attentive, quasi-religious care. As in classical Latin, where *observator* meant primarily "he who obeys the law or custom", Nizolio used it as the appropriate epithet for an author who upheld the rules of true scholarship.<sup>38</sup> But at the same time, quite possibly, the word also meant for him "he who observes what is actually there in a text", focusing on the text's lexical elements.<sup>39</sup>

This reference to the observation of discrete particulars is also to be found in the use of *observator* in other contexts. An interesting example comes from quite a different field – physiognomy. In an early sixteenth-century physiognomical text that presents impressive evidence of the rise of observational practices in this area, the physician Bartolomeo della Rocca Cocles included himself among the "learned *physici observatores* of the course of nature", while bragging that none of them had observed such a great number of individuals as he had himself.<sup>40</sup> Here, to be sure, *observator* has primarily an observational meaning, as Cocles is referring to his vast experience in minutely observing human beings to trace the correlation between their physical and moral characteristics. And yet throughout the text Cocles indicates the act of observing for physiognomic purposes by a cloud of verbs – *notare*, *experiri*, *videre*, *aspicere*, *inspicere*, *conspicere*, and only occasionally *observare* --<sup>41</sup> thus confirming our general contention that the act of observing was not yet primarily linked to a specific word. And why, we may wonder, did Cocles call himself an *observator* rather than an *experimentator*, though he often uses *experiri* to indicate the act of observing, as innumerable authors had done before him? Possibly, because the term *experimentator* was associated with *empiricus* -- definitely not a flattering association, especially in medicine, where the collections of *experimenta* often included remedies drawn from the experience of illiterate peasants and old women.<sup>42</sup> In whatever context the words *observator* and *observatio* come up, in contrast, they invariably carry a strong connotation of high-status learning and assertive professional pride -- not at all the stuff of just anybody's experience, as Johannes Schöner would have said.

This is confirmed by the fact that in the mid-sixteenth century the genre of *observationes* spread to two very status-conscious liberal arts, the law and medicine, in both cases referring to works that contained specialized professional knowledge on how to handle specific cases. The compilations of *observationes legales* or *forenses*, which start to come out in the 1530s and '40s, had a strong link to judicial practice. They were initially compendia of solutions to



hypothetical (fictive) legal cases, based on the jurists' "common opinion".<sup>43</sup> But they soon evolved into reports of real cases as discussed and decided by the courts.<sup>44</sup> Here also the term *observationes* straddled the prescriptive and the descriptive: in describing real cases, the goal was to provide guidelines, based on precedent, on how to solve similar lawsuits in the future.<sup>45</sup> The title *observationes* was used for collections of cases drawn from professional practice also in the case of medicine, as we shall see. In the law as in medicine, the history of the *observationes* suggests that professional practice was a factor that fostered the belief in the value of descriptive observational knowledge *per se*, even without a direct link to generalization and theory.<sup>46</sup>

Clear evidence in this sense comes from the medical *observationes*. The adoption of the title *observationes* in a descriptive sense is particularly interesting in the case of medicine, because in medical language the word had traditionally had a strong normative meaning. Throughout the Middle Ages, from Anthimus in the sixth century to Arnald of Villanova in the fourteenth, *observatio* meant an observance or regimen -- a series of medical rules and prescriptions.<sup>47</sup> And sure enough in the very first occurrences of *observatio* as a medical title at the end of the fifteenth century, the word is still used in the sense of observance. The title of Alessandro Benedetti's *De observatione in pestilentia* (1493) does not refer to what he observed during an epidemic, but to the rules to be kept for the preservation from pestilence.<sup>48</sup>

Around the 1560s, however, we start seeing examples of medical works called *observationes* in an unequivocally descriptive, observational sense. An outstanding specimen is Gabriele Falloppio's *Observationes anatomicae* (1561), which inaugurated the subgenre of anatomical *observationes*, destined to flourish in the seventeenth century. Falloppio's text is written in the shape of a letter to a colleague, with an informal and colloquial tone, quite different, in style and format, from a systematic treatise like Vesalius's *Fabrica*.<sup>49</sup> In fact, his goal was to vet the *Fabrica* for observational mistakes, in the acknowledged conviction that like Homer, even Vesalius may have napped at times. Throughout this text, Falloppio constantly uses the verb *observare* when referring to his own anatomical observations.<sup>50</sup> This seems remarkable, as traditionally the verbs used for anatomical practice were various and unspecialized, such as *videre*, *perscrutari*, *inspicere*, among others. The insistent use of *observare* -- often in the first person of the past tense, *observavi* -- suggests a new self-consciousness of the anatomical observer.

Anatomy was by no means the only part of medicine where the *observationes* developed. In fact, the genre is primarily exemplified by a new form of writing devoted, as I have already mentioned, to the observation of cases. In medicine as in the law the collection of cases already existed as a genre, the *consilia*, which had flourished since the Middle Ages.<sup>51</sup> What was the need then for a new genre apparently serving the same purpose? In the case of the law the answer is plain. The medieval legal *consilia* were the consultations of a single jurist; the early modern *observationes*, in contrast, were reports of cases as decided by a specific court of law.<sup>52</sup> In the case of medicine, however, no such difference exists: both the medieval *consilia* and the early modern *observationes* collect the medical consultations of a single doctor -- the volume's author. In medicine, moreover, the report of cases, together with the treatment administered inclusive of recipes, featured also in another traditional genre, the *experimenta*. In other words, there were already not one but two medical genres that dealt with cases. What explains the emergence of a new genre in addition to the *consilia* and the *experimenta*? A close look at the origin of the medical *observationes* will allow us to answer this question, and to survey at the same time a new observational trend in medical practice.

## 2. *How to invent an epistemic genre.*

If the attention to individual cases was not unprecedented in medicine, the creation of an epistemic form for their description was an intellectual novelty of the Renaissance. Narrative accounts of the treatment of single patients had been inserted, as *exempla* or *casus*, in the medieval textbooks of the *practica* genre from Archimatheus in the twelfth century to Michele Savonarola in the fifteenth.<sup>53</sup> But in medieval medicine case histories were to be found in the folds of the text, so to speak: they did not emerge as a genre on their own. Even in the *consilium*, the genre apparently devoted to the discussion of individual cases, the goal was not describing the individual case *per se*.<sup>54</sup> Though starting from a case, the medieval *consilium* dealt typically with a disease, not with a sick person, and the description of the symptoms was usually minimal, dwarfed by the heavy apparatus of references to the authorities.<sup>55</sup>

A decisive breakaway from this traditional approach is signalled by the collections of *curationes* and *observationes* (the two words are often joined in the titles)<sup>56</sup> that start to appear

in the second half of the sixteenth century. For the first time, accounts of cases were presented no longer semi-hidden in the doctrinal framework of a text, but prominently displayed as free-standing on their own, loosely organized by numerical order, often in groups of hundreds, as the *Centuriae Curationum* that the great Jewish physician Amatus Lusitanus published in seven instalments between 1551 and 1566.<sup>57</sup> Here also, as in the case of the astronomical *observationes*, we see material that had been considered marginal or ancillary move to the forefront of attention.

The new interest in cases may have developed in medicine through the influence of the legal *observationes*,<sup>58</sup> or possibly through the concerns of medical astrology. In the years 1549-1554 the French physician and astrologer Thomas Bodier drew for each of his patients the chart of the astrological dispositions at the onset of illness, and subsequently carefully compiled a history of the case until recovery or death. In 1555 he published a collection of such charts and case narratives, referring to fifty-five patients, with the object of testing the medical theory of the critical days of illness. As in the case of weather observations recorded with the object of checking astrological weather predictions, Bodier's idea was to compare the patients' astrological dispositions with the outcome of their diseases. Observation was for him subservient to prognostication.<sup>59</sup> The astrologically motivated routine of observing the stars and the weather may have led some physicians to keep regular notes of their cases as well. Cornelius Gemma, son of the astronomer, astrologer and physician Gemma Frisius, reported in 1561 that his father had kept two observational journals: one was "a report of everything that pertained to the positions of the stars, as well as to the daily mutations in the atmosphere" while the other contained "his experience in the whole medical art".<sup>60</sup> It is clear that in the middle decades of the sixteenth century an interest in observation developed at the interface of astronomy and medicine. The author of what is arguably the most important late sixteenth-century collection of medical *observationes*, the Dutch physician Pieter van Foreest, reminisced about moving in his youth from astronomical to medical observation.

"I was once engaged with my teacher Ophusius, the eminent *mathematicus*, in making on the heavens of Harlem those observations of which Johannes Regiomontanus wrote and to which additions were made by Johannes Schöner of Karlstadt. [...] Since that time, being of weak health and unable to stand the harmful exposure to the night air while observing the stars, I decided, mindful of my profession, namely medicine, [. . .] that I would make observations of the microcosm rather than of the heavens".<sup>61</sup>

And he certainly did, publishing up to thirty-two volumes of *observationes* of his patients between the years 1584 and 1609.

But the development of the medical *observationes* was also made possible by textual resources available inside the medical tradition, namely, by the adaptation and transformation of old genres. Though certainly a novelty, *curationes* and *observationes* share some basic traits, in fact, with the older genre of *experimenta*, and in several ways seem to derive from it. Medieval collections of *experimenta* recorded remedies that had proved successful but whose efficacy could not be justified on doctrinal grounds.<sup>62</sup> The format for storing and transmitting this empirical knowledge was the recipe, usually prefaced by the name of the disease to which it should be applied, but sometimes also by a brief narrative of the case in which it had given good results.<sup>63</sup> Like the medieval *experimenta*, the late Renaissance *curationes* and *observationes* were presented as therapies legitimized mainly by efficacy. Like the *experimenta*, moreover, they contained recipes, but with an important novelty -- the case narrative had now become the main object of attention.<sup>64</sup>

A focus on the case narrative was introduced by Amatus's *Curationes*. In organizing his text as a case collection, Amatus departed creatively from the *experimenta*, where the focus was on the recipe, and from the *consilium*, where the cumbersome references to doctrine had overshadowed the factual details of the case. Amatus brought the case to the fore by separating each *curatio* (the case narrative) from the scholion (the learned commentary) appended to it. The separation was clearly marked even typographically, with the *curatio* set in roman type and the scholion in italics, for the reader's ease in immediately distinguishing them. [fig. 2.1] Amatus had already used this combination of description plus commentary in his earlier work on Dioscorides' *materia medica*.<sup>65</sup> In the *Curationes*, he applied the same combination of description plus commentary to his own cures; only, in this case, the description did not come from an ancient authority (Dioscorides) but from his own observation. In a daring move, he combined his description of the case with the scholarly commentary (the scholion), which had been absent in the *experimenta*, being reserved traditionally to high-status classical texts.<sup>66</sup> In other words, he presented his own cases as significant enough to deserve learned notice.<sup>67</sup> In contrast to the traditional *consilium*, it was doctrine that was now confined to the subsidiary role of footnote, while the observed case had become the primary object of attention. The cognitive hierarchy of doctrine over practice (and I might add, of theory over observation) was

subtly altered in favour of the latter. Amatus's innovation exemplifies how a change of genre can involve a change in the structure of attention.

Amatus was certainly not the only physician in those years who kept records of his cures, but he was the first to publish them in this new format.<sup>68</sup> We can compare Amatus's *Centuriae* with an unpublished manuscript of *curationes*,<sup>69</sup> written at Ferrara in the 1540s, the same years in which Amatus himself practiced in that city. The manuscript's author was an unidentified student of Antonio Musa Brasavola's, the great humanist physician, who was indeed a close friend of Amatus, according to the latter's testimony.<sup>70</sup> The form and content of these unpublished *curationes* are remarkably similar to those of Amatus, with one fundamental difference: they do not include a commentary on each case.<sup>71</sup> Occasionally Brasavola's pupil did add, on the margins of the manuscript, a few references to medical texts relevant to the case in point,<sup>72</sup> but he never developed these notes into a full doctrinal discussion, as Amatus did in the scholia appended to his *curationes*.

The manuscript suggests that the writing of *curationes* and *observationes* may have developed out of new methods of note-taking in the context of the humanist reform of medical training.<sup>73</sup> It shows that at Ferrara in the 1540s Brasavola was encouraging his pupils to keep records of patients in a way that paid unprecedented attention to the case history of disease. We know that around the same years Giovan Battista Da Monte was doing much the same thing at Padua, teaching his students how to construct a "simple *historia*" out of the particulars of each case.<sup>74</sup> And we know that some of the so-called "Paris Hippocratics" were keeping records of their cases in the 1570s.<sup>75</sup> We have thus evidence that at Ferrara, Padua and Paris, in the middle decades of the sixteenth century, a new habit of keeping records of cases was developing in medical training and in medical practice.

Neither Brasavola nor Da Monte, nor the Paris Hippocratics, however, ever published their own *curationes*.<sup>76</sup> They probably viewed them as practical knowledge of minor significance, to be transmitted orally to students -- useful enough in itself, but unworthy of the dignity (and effort) of publication. Amatus did, and in so doing he created an immensely successful new genre.<sup>77</sup> Not only were his *Curationes* reprinted and quoted for centuries but, more importantly, they had a paradigmatic influence on the new genre as it developed in the last decades of the sixteenth century. The *observationes* that appeared in the 1570s and 1580s - - François Vallerioli's *Observationes medicinales* (1573), Rembert Dodoens's *Medicinalium*

*observationum exempla rara* (1581) and van Foreest's *Observationes et curationes medicinales* (1584)– all followed Amatus's textual structure, not only in organizing their material as a case collection, but also in adopting the hallmark of Amatus's format, the separation of case history from commentary.<sup>78</sup>

What explains the success of the new genre? For one thing, Amatus's seven hundred cases, told as stories one after another, strongly appealed to the huge appetite for *varietas*, which was a marked trait of late-Renaissance intellectual taste.<sup>79</sup> Some readers may even have perceived epistemic implications in the new genre's exuberant wealth of particulars. So the physician and philosopher Francisco Sanches used Amatus's account of human variability as grist for the mill of his scepticism. Addressing an imaginary Aristotelian reader he wrote:

“You say that there is no science of individuals, because they are infinite. But species are either nothing or something imagined. Only individuals exist, only they can be perceived, it is only of them that knowledge can be gained, snatched from them. If it is not so, show me your universals in nature. You will show them to me in the particulars themselves. Yet in those particulars I do not see any universal – they are all particulars. And how much variety can be seen in them? A truly marvelous amount. [...] One man falls into a swoon at the scent, or the sight, of a rose. Yon fellow dislikes women. This woman feeds on hemlock... (see Amatus, *Centuria* II, *curationes* 69, 36, 76)”.<sup>80</sup>

But more to the point, Amatus's intuition of the potential of the case collection met with a crucial trend of sixteenth-century medicine – the rise of neo-Hippocratism. The revival of Hippocratic medicine played a pivotal role in reorienting medical observation in this period. A primary impulse to the collecting and publishing of *observationes* came definitely from a conscious effort to emulate the case histories in books 1 and 3 of the Hippocratic *Epidemics*, which emphasized the role of the physician as the attentive observer of the natural course of disease in each single case.<sup>81</sup> Nor is it a coincidence that it is in a medical dictionary, compiled within the neo-Hippocratic circles in Paris in 1564, that we find the first retrieval of the ancient Empiric notion of observation, which emphasized the distinction of observation and theory.<sup>82</sup> By introducing a separate space for the case narrative, clearly distinguished from the scholion, Amatus paved the way for a new focus on the observational aspect of the case, as in the Hippocratic *Epidemics*. After Amatus, several medical writers used the format he had created to adhere more closely to the Hippocratic model. The goal of fashioning his case records “according to Hippocrates' rules” was declared for instance by François Valleriola, when he published his *Observationes medicinales* in 1573, after forty years of practice.<sup>83</sup>

But there were also social reasons for the success of the new genre, as is apparent from the sociology of the *observationes*. In the early stage of the genre, from the late sixteenth century to the first half of the seventeenth, the authors of *observationes* were mostly practitioners -- town physicians or court physicians, not university doctors. An itinerant Jewish physician, like Amatus Lusitanus, court physicians such as Dodoens, and especially town doctors, like Valleriola and van Foreest.<sup>84</sup> The social profile of the authors of *observationes* is that of the *practicus*, often with a leaning to medical heterodoxy, such as Paracelsianism.<sup>85</sup> The main impulse to the publication of *observationes* came from a more assertive attitude of self-promotion by doctors such as court and town physicians, who stressed success in practice, over and above academic learning, as a core element of their professional identity. In stark contrast to Scholastic medicine, where the source of legitimacy was doctrine, the late Renaissance *observationes* indicate the emergence of practice as a new source of validation of medical knowledge. Amatus brilliantly captured this shift by creating the *curatio/observatio* as a new form of medical writing, one that combined an emphasis on practice with scholarly credentials, while giving new visibility, significance and circulation to the expertise of practitioners.

Circulation is the key word here. Some of the *observationes* were published by ex-students, who capitalized on the notes they had taken when doing the rounds of patients with a famous teacher.<sup>86</sup> In fact, a posthumous publication, by ex-students or by physicians' sons, themselves physicians, is not uncommon for the medical *observationes*,<sup>87</sup> just as it was not uncommon, as we have seen above, for the astronomical *observationes*. Like the astronomical *observationes*, the medical *observationes* developed originally within the narrow circle formed by a teacher's *familia* of pupils. As for the astronomical *observationes*, however, by the mid-sixteenth century a trend was underway for the publication of these records, indicating a strong interest in them beyond the purposes of medical apprenticeship.

A family resemblance connects the texts called *observationes* in fields as various as astronomy, jurisprudence, and medicine, suggesting that the rise of observation as an epistemic genre transcended to some extent early modern disciplinary boundaries. In all these fields, *observationes* indicated the knowledge of particulars collected in the daily practice of the discipline as distinct from the discipline's doctrinal apparatus. Traditionally this knowledge would be transmitted only within the small group formed by a practitioner and his pupils. The

*observationes* emerged because of a new urge to share this knowledge in a wider scholarly community, newly envisioned as a *res publica*, a commonwealth.

#### 4. *The observatio: a template for scientific communication.*

In 1571, in a Europe horribly torn asunder by religious conflict and in a medical community divided, like in late antiquity, among bitterly opposed sects, the Paracelsian physician Petrus Severinus idealized the old-time Hippocratic medicine as a golden age of harmonious medical cooperation:

“Great was the industry and the concord of the mortals of those times. Each would openly share his observations (*observationes in medium attulit*). Indeed they thought that the brevity of life would not suffice for the completion of the art, which can only advance by means of the collection of many observations. [...] But all that is human is prone to ruin and error. [...] As the labours of experience declined, while language instead grew in honor, the sap from the ancient roots was exhausted. Sloth did its part. Shortcutting the art and the quick facility of hypotheses are embraced much more willingly than the long and unsung practices of experience”.<sup>88</sup>

*Observationes in medium afferre*, sharing observations -- to use Severinus's phrase -- would become the rallying cry of the period when the new genre coalesced. It was the ideal that inspired the most important collection of *observationes* of the end of the sixteenth century, Johann Schenck's *Paratērēseis, sive observationes medicae, rariae, novae, admirabiles et monstrosae* (*Paratērēseis, or Medical Observations, Rare, New, Wonderful, and Monstrous*, 1584-97), the text that signals the coming of age of the *observationes* as a primary form of medical writing. Also a town doctor like many authors of *observationes*, Schenck built his seven-volume collection not on first-hand experience, as Amatus did, but by using the jack of all trades in the humanist textual toolbox -- the *ars excerpenti*.<sup>89</sup> His opus is a masterpiece of excerpting and rearranging; the *observationes*, both anatomical and medical, culled from hundreds of ancient and modern authors, are organized according to the conventional head-to-toe order of textbooks of practical medicine. His text is like a gigantic concordance, and in fact he used textual devices not unlike those that Nizolio used on Cicero; he excerpted and listed observations that seemed to refer to the same object, and carefully gave the source for each of them.<sup>90</sup> Only, what he worked on was not a single author, but collective medical experience. He cast his net very wide. The list of authors from which he excerpted *observationes* included ancient Greek and Roman, medieval Jewish and Arab medical writers, and of the moderns, also



those physicians who wrote in the vernacular. He scoured the texts of the medical tradition to retrieve, so to speak, the fragments of observation scattered in a great sea of doctrine. And he did not only look to the past. He included his own observations,<sup>91</sup> and he wrote near and far to his colleagues to ask that they contributed their own unpublished *observationes*. Schenck stressed that his enterprise was made possible by a wide network of correspondents (he listed seventy-one), who helped either by sending him the references to rare observations they had come across in their reading, or by allowing him to use their own unpublished notes. Thus for instance Joachim Camerarius sent him his “*sylva of observationes*, containing over fifty *historiae*”; Jean Bauhin sent him his private journals, containing *observationes* and *curationes* “written for his own private use”.<sup>92</sup> Schenck conceived and presented his collection as a truly joint enterprise.

Schenck’s volume provides strong evidence that the habit of keeping detailed records of cases (especially the most unusual ones)<sup>93</sup> was spreading fast among European physicians. We should probably assume that the published collections of *observationes* are just the tip of the iceberg.<sup>94</sup> The publication of manuscript *observationes* was encouraged and eagerly anticipated. Schenck urged the colleagues in the medical faculty at the University of Louvain to publish the *historiae medicae* that Cornelius Gemma had promised but failed to publish before his death. We know that Cornelius Gemma was the author of astrological *Ephemerides* devoted to weather observations.<sup>95</sup> Evidently, like his father before him, he also kept records of his medical cases.

Schenck’s work illustrates the extension that medical epistolary networks had reached by this time.<sup>96</sup> The development of scholarly correspondence in the early modern period has been amply documented and investigated in the case of natural history,<sup>97</sup> but there was certainly a lively medical contribution to this process. A minor genre of early modern medicine was the *epistolae medicae* (medical letters), which contained reports of cases since its inception in the early Renaissance.<sup>98</sup> But the sharing of *observationes* set in motion a much more intensive epistolary exchange, which involved a marked trend towards collective empiricism,<sup>99</sup> and even some embryonic forms of shared authorship. It was not unusual for a medical author to print next to his own observations those that had been communicated to him by other physicians. The itinerant surgeon Fabricius Hildanus, author of six *centuriae of Observationes et curationes chirurgicae* (published 1606-1619) cited 348 colleagues who

shared his observations with him by letter or in person.<sup>100</sup> The defining trait of the new genre was an emphasis on the collection and circulation of observational knowledge, envisioned as a joint enterprise binding together past, present and future members of an ideal medical community – a *res publica medica*, as Theodor Zwinger called it in his prefatory letter to Schenck’s book. The history of the *observationes* is also the story of the successful attempt to turn a virtual *res publica medica* into a real community, bound together by forms of shared identity and authorship. There is no mistaking the proud sense of collective identity, projected not only into the past but even more into the future, that the collections of *observationes* convey. Their authors plainly believed what is said in one of the celebratory poems that open Schenck’s volume:

We shall bear through the centuries the name of observers (*observatores*)

This name and these writings will last for ever.<sup>101</sup>

There is ample evidence of the success of the *observationes* in the first half of the seventeenth century. At least twenty important collections were published in this period, several of which would keep being reprinted, translated and excerpted in the second half of the century and even in the eighteenth.<sup>102</sup> By the second half of the seventeenth century, the *observationes* were fully established as the primary medium for the circulation of information in the *res publica medica*. When the members of the newly founded Academia Naturae Curiosorum (the Academy of Those Curious about Nature), the future Academia Leopoldina, created by a group of town doctors in the imperial city of Schweinfurt in Southern Germany, decided in 1670 to publish their own periodical, after the model of the other learned societies of Europe, they adopted the form of a miscellaneous list of *observationes*.<sup>103</sup> It is no surprise that physicians such as the Curiosi would choose the *observationes* as the elective format of their publishing program. When needing a model of scholarly correspondence, they naturally turned to the sharing of medical observation through epistolary networks that doctors had been practicing all over Europe for more than a century.

Animated by the dream of retrieving every particle of the “*thesaurus* of medical experience”,<sup>104</sup> some of the Curiosi collected for the purpose of publication all the manuscript *observationes* left by physicians in the past. So Georg Hieronymus Welsch published in 1668, together with his own *observationes*, those of five other physicians whose manuscripts he had acquired.<sup>105</sup> [fig. 2.2] In the preface to this volume, he listed all the “not yet published

*observationes, curationes, epistolae*” he knew of, indicating the location of the manuscripts. This effort to unearth the *bibliotheca latens*, the “hidden library”, of what observed in the past went hand in hand with the activation of networks for the circulation of observations in the present.<sup>106</sup>

At the turn of the seventeenth century, the community-building role of the *observationes* that we have examined in the case of medicine was unfolding simultaneously in other disciplines, such as natural history and astronomy<sup>107</sup>. In fact, it cannot be stressed enough that the ideal of collective empiricism expressed by the sharing of *observationes* cut across disciplinary boundaries, not least because early modern disciplinary boundaries were much more porous than we tend to perceive them in retrospect. Many early modern physicians also engaged in astronomical and astrological pursuits, and conversely some full-time astronomers, like Tycho Brahe, had medical and alchemical interests.<sup>108</sup> In some cases, and especially for medicine and natural history, drawing a dividing line between the medical and the natural historical community would completely distort the picture of what was in fact the joint pursuit of scholars who were both physicians and natural historians throughout their lives.<sup>109</sup> The networks of the medical *observationes* largely overlapped with those of natural history, and the links between the two fields became, if anything, even more pronounced in the first half of the seventeenth century.

The *observatio* was ideally suited to serve the polymathic interests and the nearly-omnivorous pursuit of empirical knowledge that characterized many protagonists of seventeenth-century scientific life, from Peiresc and Gassendi to Boyle.<sup>110</sup> Typically cast in the form of a letter, or a short report on a specific piece of first-hand observation (astronomical, medical, anatomical, natural historical or natural philosophical), the *observatio* was knowledge that could easily travel. It was unencumbered by lengthy references to points of doctrine and theory. If present, these were set apart in a typographically separated scholion, which was supposed to be written “without any of the acrid salt of criticism, with the sole intent of clarifying and further explicating the narrated case with similar histories”.<sup>111</sup> Thanks to its lightweight format and its avoidance of theoretically divisive issues, the *observatio* was well positioned to become the primary vehicle of the new “learned empiricism” that bound together European scholars across disciplinary, philosophical and religious divisions.<sup>112</sup> In the second half of the seventeenth century, the relatively new genre of the *observatio* would become the

preferred format for intellectual exchange in the Republic of Letters, as shown by its adoption by the periodicals of the newly-founded learned societies.<sup>113</sup>

### 5. *Observation and the new language of experience.*

In the first half of the seventeenth century *observatio* was not only established as an epistemic genre; it also started to emerge as a new cognitive category, whose use extended beyond the disciplines that had been its incubation ground, astronomy and medicine. It was in this period that the concept of *observatio* spread to natural philosophy and made its entry into mainstream philosophical language. How did this happen? A preliminary exploration suggests that it was in medicine, in the second half of the sixteenth century, that *observatio* first became a distinct epistemic category, and that from medicine the concept passed on to general philosophical language as part of a new conceptualisation of experience. The category of *observatio* first emerged in neo-Hippocratic medical circles with the recovery of the ancient Empiric/Sceptic philosophical vocabulary, together with two other concepts, *autopsia* and *phainomena*, also destined to play a fundamental role in the early modern renewal of the language of experience. The combined purport of these terms, in their ancient Empiric/Sceptic acceptance, was an emphasis on the distinction between direct experience (*autopsia*) and indirect experience, the insistence on focused and repeated observation (*tērēsis*) as the foundation of empirical knowledge, and the urge to keep to the phenomena (*phainomena*, or things as they appear) avoiding useless and contentious theorization.<sup>114</sup>

Between the sixteenth and the seventeenth century, *phainomena*, *autopsia*, *observatio* entered learned language and acquired an epistemic resonance that went far beyond their context of origin. *Phainomena*, which had been originally associated with astronomy, and indeed had been used mostly to refer to celestial objects, was extended to cover all natural processes, as it had been employed by the ancient Sceptics.<sup>115</sup> The neologism *phenomena* gradually replaced *apparentia*, which had been the medieval rendition of *phainomena* as used in astronomical texts. In his translation of Sextus Empiricus, which was one of the main sources of the Sceptical revival in the late Renaissance, Henri Estienne used *apparentia* when the Greek original referred to celestial objects, but kept the Greek *phainomena* whenever Sextus had used it with a wider philosophical meaning, thus paving the way to the introduction of *phenomena* as a neologism.<sup>116</sup>

The case of *autopsia* is similar and even more relevant to our purposes, since the word followed the same trajectory of *observatio*, with which it was closely associated semantically. *Autopsia* first appeared in the same medical dictionary as *tērēsis/observatio*, Jean de Gorris's *Definitiones medicae* (1564), where it is called, like *tērēsis*, "a word of the Empiric sect".<sup>117</sup> The term carried a strong connotation of first-hand ocular experience, or inspection. In the late Middle Ages and the early Renaissance, it had been variously translated as "*per se inspectio*" or "*intuitus proprius*".<sup>118</sup> *Autopsia*, the Latinized transliteration of the Greek word, is also, like *phenomena*, a late sixteenth-century neologism.<sup>119</sup> Its emergence suggests a new awareness that the available philosophical terminology lacked a specific term to denote first-hand experience – and in fact no such term was available either in the Aristotelian or the Galenic conceptualization of experience.

Though explicitly identified as "a word of the ancient Empirics", *autopsia* spread rapidly into general medical usage, and by the early seventeenth century had become a commonly recognized medical category, beyond sectarian divisions between Empiricist and Rationalist schools. It was used, in fact, by physicians who certainly did not identify with an Empiric or Sceptical epistemology, but were strongly committed to a program of anatomical inquiry, such as William Harvey. Harvey used the term *autopsia* repeatedly, both in *De motu cordis* and in *Exercitationes de generatione animalium*,<sup>120</sup> not in a narrow anatomical sense (i. e., dissection), but to indicate "*experientia propria*" (one's own experience). His use of the term was certainly deliberate, as it features in the philosophically self-conscious preface to the *Exercitationes*, where Harvey sketched "the way and order in which knowledge should be acquired", trying to reconcile his anatomical work with an Aristotelian epistemology.<sup>121</sup> By using *autopsia* in this context, Harvey interpolated a concept of Empiric extraction into his otherwise Aristotelian view of knowledge. The adoption of *autopsia* in mainstream medical language, irrespective of philosophical allegiance, is confirmed by a later entry in Castelli's medical dictionary (1688), which states that the term "was once a word belonging to the Empirical sect [...] but nowadays *autopsia*, that is, the observation (*observatio*) and memory of those things examined with one's own eyes, is eminently necessary to Rational Medicine".

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Like *autopsia*, *observatio* was adopted into the mainstream language of medicine in spite of its original Empiric derivation.<sup>123</sup> But differently from *autopsia*, whose use remained

mostly circumscribed to medicine, *observatio* was fated to gain much wider currency. A decisive step in launching the term's philosophical career was probably the fact that in the late sixteenth century *observatio* was newly interpolated into the standard Aristotelian vocabulary of experience, of which previously it had never been part. This innovation can be traced back to Petrus Ramus's effort to revise Aristotelian epistemology by placing a stronger emphasis on experience. Extolling the Aristotelian terms for empirical knowledge, *empeiría* and *historía*, in his *Scholae in liberales artes* (1569), Ramus rendered *historía* with *observatio*.<sup>124</sup> This new twist to the Aristotelian vocabulary of experience spread further thanks to the philosophical eclecticism of early seventeenth-century encyclopedists, such as Johann Heinrich Alsted, who, revisiting in 1623 the Aristotelian constellation of empirical terms (*aisthēsis/sensus*, *historía/historia*, *empeiría/experientia*, *epagōgē/inductio*), followed Ramus in translating *historía* as *observatio*.<sup>125</sup> This usage seems to have been adopted even by self-conscious Aristotelians. William Harvey, for instance, added *observatio* to the classic Aristotelian account of empirical knowledge (as given in *Posterior Analytics*: from sense perception derives memory, from memory experience) stating that true knowledge is based on "one's own experience acquired through manifold memory, frequent sense perception, and diligent observation".<sup>126</sup> By the mid-seventeenth century, the identification of *historia* and *observatio* had become commonplace, and indeed the two terms got to be practically synonymous in medical and philosophical terminology.<sup>127</sup> *Historia* was an epistemic category with a multifaceted pedigree, which came to signify, in the early modern period, a descriptive account of observational knowledge in any field, and as such enjoyed enormous vogue in the language of early modern "learned empiricism".<sup>128</sup> Associated with *historia*, *observatio* acquired generalized currency in scholarly language as a key term of the new vocabulary of experience, so much so that, like *historia*, it came to be identified with *experientia* itself.<sup>129</sup>

But *observatio* was actually quite different from the old category of *experientia*. Even when coopted into mainstream philosophical terminology, *observatio* kept a strong flavor of the Empiric/Sceptical source from which it had originated. It invariably indicated, as it did for Harvey, *experientia propria*, *autopsia*, authored observation – not the generic, anonymous experience of the Aristotelian *empeiría* or of the Plinian *observationes*.<sup>130</sup> *Observatio*, moreover, kept its ancient antagonism to hypothesis, doctrine, or theoretical

speculation. A suspicion of theory, which was never part of the Aristotelian notion of experience, nor of the Galenic model of “rationalist empiricism”, was at the very core of the concept of *observatio* as it gained ascendancy in early modern philosophical language. Severinus noted, as we may recall, that the decline of the *observationes* was directly related to the tempting “facility of hypotheses”; in the same years, Petrus Ramus and Copernicus’s pupil Rheticus seriously discussed the possibility of freeing astronomy from all hypotheses and basing it exclusively on observations.<sup>131</sup> *Observatio* and *hypothesis* stood as two firmly separated and indeed antithetical concepts. From Amatus’s *Curationes* in the mid-sixteenth century to the Curiosi’s *Observationes* in the second half of the seventeenth, the distinctive hallmark of the *observatio* as a vehicle of scientific communication was the separation of the observational report from its theoretical interpretation.

Several interweaving intellectual strands combined to form the category of observation in the seventeenth century. From the astronomical tradition came the emphasis on seriality, mathematization and the striving for more and more exact and calibrated measurement. From medicine, via the Empiric/Sceptic legacy revitalized by neo-Hippocratism, came the clearcut distinction between direct and indirect experience, and the separation of observation from theory. From the philological training shared by all early modern scholars came habits of accuracy in identifying sources and a whole array of textual tools, from the *ars excerpendi* to the concordance and the thesaurus, that could be used to master complexity, of texts as of things.<sup>132</sup> And binding all these strands together was the overarching sense of observation as an observance, a dedication of one’s whole life to a rule-bound activity that had the powerful appeal of a mission. By the mid-seventeenth century observation had become a cognitive activity with a distinct literary format, an ever increasing barrage of instruments, an ever widening set of practices; an activity that could be pursued everywhere but had already long developed its own specialized sites, from the botanical garden to the anatomical theater to the astronomical observatory. It was an activity whose immense appeal to seventeenth-century minds was both cognitive and aesthetic, as testified by the lovely pictures in which Donato Creti used the conventions of late Baroque landscape painting to portray and celebrate astronomical observation.<sup>133</sup> [fig. 2.3]

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- <sup>1</sup> See the essay by Katharine Park in this volume for the astral sciences, and in general Anthony Grafton and Nancy Siraisi, eds., *Natural Particulars: Nature and the Disciplines in Renaissance Europe* (Cambridge, Mass.: MIT Press, 1999), especially the essay by Katharine Park, "Natural Particulars: Epistemology, Practice and the Literature on Healing Springs", pp. 347-67 (on medicine and natural history); Chiara Crisciani, "*Experientia e opus* in medicina ed alchimia: forme e problemi di esperienza nel tardo Medioevo" in *Quaestio*, 4 (2004) pp. 149-173 (on alchemy); Joseph Ziegler, *Médecine et physiognomie du XIVe au début du XVIe siècle*, in *Médiévales*, 46 (2004) pp. 87-105 (on physiognomy); Brian Curran and Anthony Grafton, "A Fifteenth-Century Site Report on the Vatican Obelisk" in *Journal of the Warburg and Courtauld Institutes*, 58 (1995) pp. 234-48 (on antiquarianism).
- <sup>2</sup> Edward Grant, "Medieval Natural Philosophy: Empiricism without Observation" in *The Dynamics of Aristotelian Natural Philosophy from Antiquity to the Seventeenth Century*, ed. C. Leijenhorst, C. Lüthy, and J. M. M. H. Thijssen (Leiden: Brill, 2002) pp. 141-68, esp. pp. 141-146.
- <sup>3</sup> Aristotle, *Metaphysics*, I. 1, 980a 27- 981 b13; *Posterior Analytics*, 19, 100a 4-9; Hippocrates, *Aphorisms*, I.1.
- <sup>4</sup> Jole Agrimi and Chiara Crisciani, "Per una ricerca su *experimentum-experimenta*: riflessione epistemologica e tradizione medica (secc. XIII-XV)" in *Presenza del lessico greco e latino nelle lingue contemporanee*, ed. Pietro Janni and Innocenzo Mazzini (Macerata: Pubblicazioni della Facoltà di Lettere e Filosofia dell'Università degli Studi di Macerata, no.



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55, 1990) pp. 9-49 (p. 20, n. 25 for a list of medieval commentaries on Hippocratic *Aphorisms* containing a definition of *peira* as *experimentum*).

- 5 On Aristotle see Park in this volume, p. 18; on the Hippocratic Corpus see Gianna Pomata, “A Word of the Empirics: The Ancient Concept of Observation and Its Recovery in Early Modern Medicine,” in *Annals of Science*, 68, no.1 (2011), pp. 1-25. In the philosophical legacy of Antiquity as known to the Middle Ages, *observatio* in the sense of natural inquiry figured only as a term used in Cicero’s *De divinatione* and in Pliny’s *Natural History*, and in neither did it receive a philosophical treatment even remotely comparable to the Aristotelian *empeiria*, which was an important component of the Aristotelian vision of knowledge. On *empeiria* in Aristotle, see Ezio Riondato, *Storia e metafisica nel pensiero di Aristotele* (Padua: Antenore, 1961) pp. 65-78, and more recently Catherine Darbo-Peschanski, *L’Historia. Commencements grecs* (Paris: Gallimard, 2007) pp. 112-132.
- 6 Park in this volume, pp. 20, 28. Grant gives two examples from Thomas Aquinas: “per observationem caelestium corporum” and “per astrologicas observationes”: “Medieval Natural Philosophy”, p. 145, n. 13, referring to R. Deferrari et al., *A Lexicon of St. Thomas Aquinas* (Washington: Catholic University of America Press, 1948) p. 758.
- 7 On the significance of *experimentum* in Vives see Carlos G. Noreña, *Juan Luis Vives* (The Hague: Martinus Nijhoff, 1970) p. 286; cf. for instance Vives, *De prima philosophia* in *Opera omnia* (Valencia, 1992-93) vol. 3, p. 184. For Sanches, see Elaine Limbrick, Introduction, in Francisco Sanches, *That Nothing is Known*, ed. Elaine Limbrick and transl. Douglas F. S. Thomson (Cambridge: Cambridge University Press, 1988) p. 25. Ramus saw *experientia* as a general cognitive category and used *observationes* in a limited astronomical sense (see below, n. 131). But he translated the Aristotelian term *historía* with *observatio*, thus giving *observatio* a wider philosophical significance. See below, n. 124.
- 8 To give just an example out of many: in the modern translation of Sanches’ *Quod Nihil Scitur* (*That Nothing is Known*, ed. Limbrick, cited above, n. 7), what the translator rendered uniformly as “to observe” is almost always *videre* (to see), or less often *animum vertere* (to direct the mind to something), not *observare*. A few examples: “nil in rebus perpendentes” (literally: “not taking things in consideration at all” is rendered as “judging nothing in terms of (observed) facts” (p. 92 for the original, p. 277 for the translation). “Sed etsi plura videret, non tamen omnia posset, quod necesse est vere scienti” (p. 162) is translated as “even if he were to observe a huge number of facts, yet even so he would not be able to observe all the facts” (p. 287). *Videns* (p. 129) is translated as “observer” (p. 234).
- 9 Marta Fattori, *Lessico del Novum Organum di Francesco Bacone* (Rome: Edizioni dell’Ateneo & Bizzarri, 1980: Lessico Intellettuale Europeo XXII) vol. 2, pp. 449, 480: *experientia* appears 64 times, *experimentum* 108 times – *observatio* only 24 times. The verb *experiri* appears 25 times (plus two cases of *experimentare*), the verb *observare* only 13 times. Fattori has stressed that *experimentum* appears in the *Novum Organum* almost double the times than *experientia*. This is a peculiar novelty of Bacon’s language. In early modern philosophical parlance, *experientia* was usually the term more frequently used. See Marta

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Fattori, “Parole e storia della filosofia. Alcuni esempi dal vocabolario filosofico del Seicento” in Marta Fattori, *Linguaggio e filosofia nel Seicento europeo* (Florence: Olschki, 2000) pp. 208-216, at p. 209.

- <sup>10</sup> I have compared the Latin text of the *Novum Organum* with the nineteenth-century translation in Francis Bacon, *The Works*, ed. James Spedding et al., vol. 4 (London: Longman, 1860). The translation was done, apparently, by an unnamed Cambridge undergraduate, and finalized by James Spedding. For example: “ex sensu proprio” rendered as “of his own observation” (p. 43); “particularium sylva et materies” rendered as “a store of particular observations” (p. 94).
- <sup>11</sup> See Pomata, “Word of the Empirics” (cited above, n. 5) at n. 113, for early examples from Giovanni Pico della Mirandola; Sebastian Fox Morcillo, *De demonstratione, eiusque necessitate ac vi* (Basel: Ioannes Oporinus, 1556) pp. 7-8: artes...ac disciplinae fundatae et constitutae **experimento, observatione**que diuturna”. Fox Morcillo was influenced by Vives (Limbrick, Introduction, in Sanches, *That Nothing is Known*, p. 35). The two words are sometimes associated in titles: see for instance Dietrich Dorsten, *Botanicon...additis etiam quae neotericorum observationes et experientiae* (Frankfurt, 1540).
- <sup>12</sup> The *experimentum* of late medieval philosophy was far from being a mere replica of the original Aristotelian concept. In natural philosophy and possibly even more so in medicine, a survey of texts suggests that *experimentum* was acquiring a more sharply focused epistemic significance, thanks to a new emphasis on its value as *cognitio singularium* (knowledge of particulars) and as trait d’union between knowledge and *opus* (the practical application of knowledge). See Agrimi-Crisciani, “Experientia-Experimentum” (cited above, n. 4) pp. 12, 22; 26-30. On *empeiria* in Aristotle, see most recently Darbo-Peschanski, *L’Historia*, (cited above, n. 5) pp. 112–32. On the philosophical history of the concept, see the essays collected in Marco Veneziani, ed., *Experientia* (Florence: Olschki, 2002); and the special issue of *Quaestio* 4 (2004), especially Paolo Ponzio, “The Articulation of the Idea of Experience in the Sixteenth and Seventeenth Centuries,” pp. 175–95.
- <sup>13</sup> Pomata, “Word of the Empirics” (cited above, n. 5).
- <sup>14</sup> Jean De Gorris, *Definitiones medicae* (Paris, 1564), s.v. “*Tērēsis, Observatio*,” p. 328 rv; on the philosophical dictionaries, see Pomata, “Word of the Empirics,” (cited above, n. 5) at n. 1, and the essay by Lorraine Daston in this volume, n. 1.
- <sup>15</sup> A bibliography of works titled *Observationes* for the period 1500-1800 prepared by Sebastian Gottschalk using the World Cat, British Library, Library of Congress, and Herzog-August Bibliothek online catalogues indicates that philology, lexicography, jurisprudence, medicine, astronomy/astrology, and travel writing are the areas in which the term was used in titles in the sixteenth and seventeenth centuries. This confirms what is indicated by the entry *Observationes* in Martinus Lipenius, *Bibliotheca Realis Philosophica* (Frankfurt, 1682), which lists mostly philological works, and in Lipenius’s *Bibliotheca Realis Medica*

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(Frankfurt, 1679) and *Bibliotheca Realis Juridica* (Frankfurt, 1679), which have long lists of medical and legal *Observationes*.

- <sup>16</sup> The notion of title should be historicized, of course. In the late fifteenth and early sixteenth century, with the advent of printing, titles acquired a new significance as identifiers of books in the consciousness of authors and readers. In antiquity, in contrast, the same work could be known under several names, or have no title at all, usually substituted with the incipit. See Jean-Claude Fredouille et al., eds., *Titres et articulations du texte dans les oeuvres antiques*, (Paris: Collection des études augustinienes, sér. “Antiquité”, no. 152, 1997).
- <sup>17</sup> Park in this volume, p. 29-32, 37.
- <sup>18</sup> On the double meaning of *tērēsis* see David L. Blank, *Ancient Philosophy and Grammar. The Syntax of Apollonius Dyscolus* (Chico, CA: Scholars Press, 1982) p. 71, n. 2; Jonathan Barnes, “Pyrrhonism, Belief and Causation. Observations on the Scepticism of Sextus Empiricus”, in *Aufstieg und Niedergang der Römischen Welt*, II, 36, 4 (1990), pp. 2608-95 at p. 2642 n. 138. For *observatio*, see the entry in Mario Nizolio, *Lexicon Ciceronianum*, 3 vols. (London, 1820).
- <sup>19</sup> Pomata, “Word of the Empirics” (cited above, n. 5) at nn. 84, 85, 86. Other primary meanings include surveillance, vigilance, guarding; custody, preservation, safekeeping.
- <sup>20</sup> Park in this volume, p. 21.
- <sup>21</sup> Pierre Villey, *Lexique de la langue des Essais de Montaigne* (Paris, 1933; reprint New York: Burt Franklin, 1973) p. 452, s. v. *observation*. I have checked the word usage also through the digitized version of Montaigne’s *Essais* in the 1595 text from *Le Corpus des Oeuvres de philosophie en langue française* at <http://artfl.uchicago.edu/cgi-bin/philologic/search3t?dbname=cphil&word=observe&OUTPUT=conc&CONJUNCT=PHRASE&DISTANCE=3&author=Montaigne&title=essais&date=&sortorder=author%2C+title&DFPERIOD=1&POLESPAN=5&KWSS=1&KWSSPRLIM=500&trsortorder=author%2C+title>
- <sup>22</sup> On *familia* as the basic metaphor for the medieval teacher-student relationship see Chiara Crisciani, “Teachers and Learners in Scholastic Medicine: Some Images and Metaphors”, in *History of Universities*, 15 (1997-99) pp. 75-101.
- <sup>23</sup> Park in this volume, pp. 33-35.
- <sup>24</sup> Park in this volume, p. 31 and n. 63. The *observationes* on the margins of astronomical tables, almanacs, etc. seem to have stemmed from a goal of “*mise en pratique*” of the text, as was also the case of medical manuscripts. See Marilyn Nicoud, “Les *marginalia* dans les manuscrits latins des *Diètes* d’Isaac Israël conservés à Paris”, in *Scientia in Margine. Études sur les marginalia dans les manuscrits scientifiques du Moyen Âge à la Renaissance*, eds. Danielle Jacquart and Charles Burnett (Geneva: Droz, 2005) pp. 191-216, esp. pp. 208-9.

- <sup>25</sup> Giovanni Pico della Mirandola, *Disputationes adversus astrologiam divinatricem*, ed. Eugenio Garin, 2 vols. (Florence: Vallecchi, 1943). Steven Vanden Broecke has shown that Pico's strictures motivated an attempt to reform astrology's observational basis in mid-sixteenth century Louvain: *The Limits of Influence. Pico, Louvain, and the Crisis of Renaissance Astrology* (Leiden: Brill, 2003). This effort had strong religious motivations, as had been the case originally for Pico's work; also the Protestant Reformers felt the need to distinguish between superstitious or divinatory astrology and the natural astrology that predicted events on the basis on knowledge of causes and effects: see Melanchton, *Quaestiones Academicæ*, in *Corpus Reformatorum*, ed. C. G. Bretschneider (Halle, 1842) vol. 10, col. 714: "Ordinationes Dei in natura **observare**, pium et utile est, non superstitiosum (...) Sed **Observationes** astrologicae sunt **observationes** causarum physicarum, quae sunt ordinationes Dei. Sicut Medicorum praedictiones sunt ordinationes Physicae causarum et effectuum". Cf. also cols. 751-52, 887. See Sachiko Kusakawa, "Aspectio divinorum operum: Melanchton and Astrology for Lutheran Medics" in O. P. Grell and A. Cunningham, eds., *Medicine and the Reformation* (London: Routledge, 1993) pp. 33-56.
- <sup>26</sup> Emmanuel Poulle, *Les sources astronomiques (textes, tables, instruments)* (Turnhout: Brepols, 1981) pp. 55-64 (tables), pp. 64-66 (almanacs). The *judicium*, also called *pronosticon*, was the prognostication of events; *tacuinum* was the health advice, including the days propitious for bloodletting and purging. The three were basically the same genre. *Judicia* and *tacuína* were often commissioned by town or university authorities. In late medieval and early modern Bologna, for instance, the compilation of the yearly *tacuinum* was one of the responsibilities of the astrology or medicine university Reader: see Elide Casali, *Le spie del cielo. Oroscopi, lunari e almanacchi nell'Italia moderna* (Turin: Einaudi, 2003) pp. 35-50.
- <sup>27</sup> Otto Brunfels's dictionary of astrological terms (1534) does not include an entry for *observatio*. It has instead "ἀποτέλεσμα/*judicium* seu sententia astrologica, latine praedictio vel *judicium*": *De diffinitionibus et terminis astrologiae libellus isagogicus*, in *Astronomicorum libri VIII*, ed. Nicolaus Prucknerus (Basel: I. Ervagus, 1551) s.v. The term *observationes* seems to be fairly rare as incipit of sixteenth-century astrological manuscripts: Lynn Thorndike and Pearl Kibre, *A Catalogue of Incipits of Medieval Scientific Writings in Latin* (London: Medieval Society of America, 1963) has only one example at p. 455, col. a. Only one example of *observationes astrologicae* also in Jole Agrimi, *Tecnica e scienza nella cultura medievale: inventario dei manoscritti relativi alla scienza e alla tecnica medievali (secc. XI-XV) nelle biblioteche di Lombardia* (Milan: Angeli, 1976) at p. 126. There are some sixteenth-century examples: Jeahn Guido, *Astrorum, annique partium integra atque absoluta animadversione, .... anni observationes pro variis temporum distinctionum...*, (Paris, 1543); Battista Ruberti, *Osservazioni de astrologia et altre appartenenze circa della medicina & mutatione de tempi...* (Florence, 1567). There is no entry *observatio/observationes* in Gerolamo Vitali, *Lexicon mathematicum, astronomicum, geometricum* (Paris, 1668).
- <sup>28</sup> *Scripta Clarissimi Mathematici M. Joannis Regiomontani De torqueto, astrolabio armillari, regula magna Ptolemaica baculoque astronomico et observationibus cometarum, aucta*

*necessariis Ioannis Schoneri Carolostadii. Item Observationes motuum solis, ac stellarum tam fixarum quam erraticarum* (Nuremberg: Joannis Montanus and Ulricus Neuber, 1544). See Park in this volume, p. 33 and n. 72. Two years later Schöner published Joannes Werner's *Canones*, including, as signalled in the subtitle, also Werner's *Observationes de mutatione Aurae*, which were weather observations for the period 1513-1520 plus practical aphorisms (*praecepta*) on how to make weather predictions: Joannes Werner, *Canones, sicut brevissimi, ita etiam doctissimi, complectens praecepta et observationes de mutatione Aurae* (Nuremberg: Joannes Montanus and Ulricus Neuber, 1546). See Vanden Broecke, *Limits of Influence* (cited above, n. 25), pp. 204-5.

- 29 Schöner, dedication to the Senators of Nuremberg, in *Scripta Clarissimi Mathematici M. Joannis Regiomontani De torqueto*, a iij. Emphasis added: “Cum enim observationes sint fundamenta harum praestantissimarum disciplinarum, quae fiunt non a quibuslibet, sed ab egregis artificibus: utilissimum est adolescentes magnorum virorum exemplis, ac praeceptis assuefieri ad legitimam horum instrumentorum tractationem, quibus coelestes motus summi artefices observarunt. Eamque ob causam adiecimus reliquo operi non contemnendum Thesaurum Observationum, quem sanctissime reconditum, ac diligentissime munitum in capsula quadam invenimus...”. Osiander also used the metaphor of the “*thesaurus observationum*” in his preface to Copernicus's *De Revolutionibus* (1543).
- 30 Pico had called a “lie of the astrologers” their claim to have “tot miliorum annorum observationes” (*Disputationes*, ed. Garin, vol. 2, p. 472). Some of Pico's arguments against astrology came from Sextus Empiricus, whose work circulated in manuscript in Florence at the end of the sixteenth century. See Gian Mario Cao, “The Prehistory of Modern Scepticism: Sextus Empiricus in Fifteenth-Century Italy”, *Journal of the Warburg and Courtauld Institutes*, 64 (2001) pp. 229-79, and Pomata, “A Word of the Empirics”.
- 31 But it should be noticed that Pliny sometimes mentioned the authors of astrometeorological observations, as in the case of Caesar's *paraepgmata* (*Natural History*, XVIII, 65. 237).
- 32 Indeed, Schöner passed on to Copernicus some of Walther's as yet unpublished observations, which Copernicus used in *De Revolutionibus*: see Park in this volume, n. 86. Sharing observations appears to have been a new feature of Renaissance astronomy. We find nothing comparable in Greco-Roman antiquity: Ptolemy, for instance, mentions only one contemporary scholar (Theon), who shared his observations with him. See Olaf Pedersen, *A Survey of the Almagest* (Odense: Odense University Press, 1974) pp. 12-13 and items 56, 57, 58, and 61 in appendix A “Dated observations in the Almagest”, pp. 408-422, at pp. 416-17.
- 33 Cited in Vanden Broecke, *Limits of Influence* (cited above, n. 25), p. 155 n. 31, p. 180 and n. 138). Gemma advocated systematic empirical verification of the stars positions in his *De radio astronomico* (1546). On Gemma Frisius's circle in Louvain around the 1540s and 1560s, and this group's observational activities related to astrological concerns, see the detailed reconstruction in Vanden Broecke, *Limits of Influence*.

- <sup>34</sup> For travelogues see for instance Pierre Belon, *Les observations de plusieurs singularitez et choses memorables, trouuées en Grece, Asie, ...* (Paris, 1553: Latin transl., *Plurimarum singularium et memorabilium rerum in Graecia, Asia... Observationes*, Antwerp: Plantin, 1589); Gabriello Simeoni, *Les illustres observations antiques du seigneur Gabriel Symeon en son dernier voyage d'Italie l'an 1557* (Lyon, 1558). On the role of the *ars apodemica* in the history of observation see Daston in this volume, p. 89.
- <sup>35</sup> The great scholar and printer Henri Estienne published six months of his philological/philosophical notes under the title of *Schediasmata*, or *observationes*, declaring that he had chosen such a new-fangled denomination because “unpretentious” (“a fastu absit”), and moreover because the fragmentary nature of the text precluded naming each section a chapter, as normally in a book: see Henri Estienne, *Schediasmatum variorum, i. e., Observationum, Expositionum, Disquisitionum libri tres* (Geneva: Henri Estienne, 1578), unpaginated preface “to the reader”.
- <sup>36</sup> Among early examples are Domizio Calderini’s *Observationes quaedam*, in appendix to his edition of Statius’s *Sylvae* (Rome, 1475), and Marino Becichemo’s *Variae Observationes* in his *Aurea Praelectio in C. Plinium Secundum* (Brescia, 1504), which contains notes on *loci* in Catullus and other classical authors. See also, for example, Mario Nizolio, *Observationum in M. T. Ciceronem prima-secunda pars* (ex Prato Albuini: Giovanni Francesco Gambara, 1535); Fernando Núñez de Guzmán, *Observationes in loca obscura aut depravata historiae naturalis C. Plinii* (Antwerp: Nutius, 1547). Some early examples of the title *observationes* as used by physicians refer in fact to philological works on ancient medical authors, as for instance the translation of Alexander of Tralles by the physician Johann Winter: *Alexandri Tralliani libri XII, Joanne Guinterio interprete... adiectae sunt per eundem variae exemplarium lectionis observationes* (Basel: Petrus, 1556); and the physician and philologist Giovanni Battista Rasario’s *Observationes in novem Oribasii libros*, published in appendix to his translation of Oribasius: *Oribasii Sardiani ad Eunapium libri quatuor* (Venice: Vincenzo Valgrisi, 1558).
- <sup>37</sup> *Nizolius sive linguae Latinae thesaurus* (Venice, 1551), preface, n.p. See also Mario Nizolio, *De veris principiis*, ed. Quirinus Breen (Rome: Brocca, 1956) vol. 2, pp. 71-72, where he draws a distinction between “observatores linguarum” and “grammatici et lexicographi”. On the editions of Nizolio’s Ciceronian *Observationes* see Quirinus Breen, “The *Observationes* in M. T. Ciceronem of Marius Nizolius” in *Studies in the Renaissance*, 1 (1954) pp. 49-58, at pp. 50-51. Nizolio listed approvingly other scholars who deserved the epithet of *observatores* (like Bartolomeo Ricci and Étienne Dolet) thus suggesting an emerging community of philologists of the right sort.
- <sup>38</sup> See Forcellini, *Totius Latinitatis Lexicon*: *observator et custos bonorum* (Seneca, *Ep.* 41.2; *Catholicae legis, Codex Theod.* 16.5.1; and *Thesaurus Linguae Latinae*, 2007 digitalized version, 5<sup>th</sup> edition, s. v.
- <sup>39</sup> Nizolio was a scholar with a philosophical mind: he was strongly critical of Aristotelianism and of Scholastic teaching, and he drew on Cicero for philosophical views that strongly

leaned to nominalism and scepticism. He is credited with having first introduced a new definition of the word *dogmaticus* as “he whose freedom to argue has been lost, he who in a discussion does not follow his own judgement but obeys the authority of others”: see Maximilian Herberger, *Dogmatik. Zur Geschichte von Begriff und Methode in Medizin und Jurisprudenz* (Frankfurt a. M.: Klosterman, 1981) pp. 273-75. On Nizolio see Schmitt, *Cicero Scepticus* (The Hague: Nijhoff, 1972) pp. 72 ff.; Brian P. Copenhaver and Charles B. Schmitt, *Renaissance Philosophy* (Oxford and New York: Oxford University Press) pp. 207-209; Charles B. Schmitt, Quentin Skinner, Ekkhard Kessler, Jill Kraye, *The Cambridge History of Renaissance Philosophy* (Cambridge: Cambridge University Press, 1990) p. 207.

- <sup>40</sup> Cocles’s *Chiromantie ac physiognomie anastasis* (1504), quoted in Joseph Ziegler, “Observing Living Bodies in Pre-Modern Learned Physiognomy: The Physiognomic Portraits in Bartolomeo della Rocca Cocles’s *Anastasis*,” paper presented at the Max-Planck-Institut für Wissenschaftsgeschichte, Abt. II Colloquium, 12 Sept. 2008. According to Ziegler, a new focus on observational practices developed in physiognomy at the end of the fifteenth century. This trend intensified over the following century: see Jean Jacques Courtine in “Le miroir de l’âme” in G. Vigarello, ed., *Histoire des corps: 1. De la Renaissance aux Lumières* (Paris: Seuil, 2005) pp. 303-9.
- <sup>41</sup> According to Ziegler, Cocles occasionally uses *observare* to indicate the act of empirical observation, but most often he uses for that purpose other verbs such as *notare*, *experiri*, and verbs with visual connotation such as *videre*, *aspicere*, *conspicere*, *inspicere* (Ziegler, “Observing living bodies”: for example, *notare*: pp. 13, 17, 24, 26-27, *experiri*: p. 22 n. 44, *videre*: p. 20 n. 40, *inspicere*: pp. 24, 27, *aspicere*: p. 28 nn. 56-57, *conspicere*: p. 4). Cocles uses *observare* to indicate prolonged and repeated observation over time: for example, “Observavi usque ad hunc diem...” (p. 23 n. 46) and “iam sunt circa tres anni quod incepti observare decentem apparentiam in ipsis” (p. 18 n. 34). He also uses the expression “observationem factam reperire” in the sense of finding in preceding authors records of observations made by them on a certain subject (p. 22 n. 44, p. 26 n. 53).
- <sup>42</sup> Symphorien Champier’s flatly equated *experimentator* with *empiricus* (*Vocabulorum medicinalium epitome* in *Vocabularius sive collectaneum difficilium terminorum naturalis philosophiae et medicinae*, in S. Champier, *De triplici disciplina* (Lyon: Simon Vincent, 1508), s. v. *empiricus*. On *rustici* and *vetulae* as authors of *experimenta* see Agrimi-Crisciani, “Experientia-experimentum” (cite above, n. 4), pp. 29-30, 42; on the preference of academic physicians for being called *periti* rather than *experti*, because of the proximity of *expertus* to *empiricus*, *ibidem*, pp. 37-38.
- <sup>43</sup> Among early examples of the genre are Goffredo Lanfranco Balbi, *Observationes nonnullarum in iure decisionum* (Lyon: Vincent de Portonariis, 1538); Marco Mantova Benavides, *Observationum legalium libri X* (Lyon: Johannes Pullonus, 1546). See also Bernhard Wurmser and Hartmann Hartmann, *Observationes practicae* (Basel, 1570); Alessandro Stiatichi, *Praxis iuridicalis, hoc est observationes et animadversiones quaedam* (Venice: Zilettus, 1580). The works by Balbi and Stiatichi are explicitly meant as help to judicial practice, that is, they offer concise solutions to doubtful or controversial points of the

law, based on hypothetical cases, for the benefit of the judges. Stiatichi notes, in the preface “to the reader”, that the literature on legal practice was at his time mostly directed to lawyers, not to magistrates: “Advocatos et Procuratores instruunt omnes, et Iudicem nemo” [...] Sedet (ut summam dicam) inter Advocatos et Procuratores Iudex, tamquam asinus inter simias” (“Everybody writes for the instruction of lawyers and attorneys, nobody writes for the judges [...] To put it briefly, the judge sits among lawyers and attorneys like an ass surrounded by monkeys”). The practical expertise of the authors is stressed in the books’ titles, where Balbi is called “insignis practicus” (eminent practitioner) and Stiatichi “inter practicos celeberrimus” (the most celebrated among practitioners).

- <sup>44</sup> They are therefore closely related to the development of case law and the publishing of *decisiones* (i. e., series of reports on tribunal rulings). See for instance Andreas von Gail, *Practicarum observationum tam ad processum judicarium praesertim Imperialis Camerae, quam causarum decisiones pertinentium libri duo* (Cologne, 1578); Polidoro Ripa, *Singulares Observationes in foro responsae* (Venice: Petrus Dusinelli, 1605); Jorge de Cabedo, *Practicae observationes sive decisiones supremi senatus regni lusitani* (Offenbach-Ysenburg: Nebenius, 1610); Hartmann Pistoris, *Observationes singulares, quibus CCXXX memorabiles casus sive quaestiones explicantur* (Leipzig, 1621). These collections are often organized in *centuriae* (of the texts quoted above, this is the case for Gail and Ripa) as were also some of the medical *observationes*. Both Gail and Ripa start from a hypothetical case (e.g., “whether a daughter who marries against her father’s will is entitled to her dowry”, Gail, *observatio* 95, pp. 475-78) but then argue on the basis of real cases. Ripa usually concludes each *observatio* with the decision he took in that case, identifying the lawsuit by the names of plaintiff and defendant. This explains why the collections of *observationes* often merge with the collections of *decisiones*, which reported and commented the actual verdicts of specific law-courts. On the development of this literature see O. F. Robinson, T. D. Fergus and W. M. Gordon, *An Introduction to European Legal History* (Abingdon: Professional Books, 1985) pp. 325-26, 346-7.
- <sup>45</sup> As would also be the case of the medical *observationes*, the writing of legal *observationes* grew rapidly over the course of the seventeenth century, and by the end of the eighteenth century the genre had reached massive proportions. See the copious listings under the heading *observationes juris* in Martin Lipen, *Bibliotheca Realis Juridica*, with additions by F. G. Struvius and G. A. Jenichenius (Leipzig: apud Ioannem Wendlerum, 1757) vol. 2, pp. 92-95; *Supplementa* (Leipzig, 1775) pp. 352-53; *Supplementa* (Leipzig, 1789) cols. 295-97.
- <sup>46</sup> On the epistemic significance of *practica* in the legal tradition see Danilo Segoloni, “*Practica, practicus, praticare* in Bartolo e in Baldo”, in *L’educazione giuridica*, II, Profili storici (Perugia: Consiglio Nazionale delle Ricerche, 1979) pp. 52-103, at pp. 70-71 and n. 62, p. 98; and for the Renaissance Herberger, *Dogmatik* (cited above, n. 39), pp. 210-31, 257-58, which amply documents the close connection between the legal and the medical view of *practica*, as for instance in Johannes Nevizanus’s defense of the jurist’s practical knowledge, which stressed the parallel with the physician’s “*frequentia actionum in aegris*” (*Sylva nuptialis* [1524], cited in Herberger, *Dogmatik*, p. 217).



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- <sup>47</sup> Anthimus, *De observatione ciborum* (*On the Observance of Foods*), ed. and trans. Mark Grant (Blackawton: Prospect Books, 1996); Pomata, “Word of the Empirics” (cited above, n. 5) at n. 89 (on Arnald).
- <sup>48</sup> Alessandro Benedetti, *De observatione in pestilentia* (Venice: Giovanni and Gregorio De Gregori, 29 July 1493). This was also the sense in which the ancient medical writer Celsus had employed the word (see Pomata, “Word of the Empirics”, cited above, n. 5) at nn. 86-87) and Benedetti, a consummate humanist physician, may have followed him in this respect. Celsus was one of the sources Benedetti listed at the beginning of his *Anatomice*: see Giovanna Ferrari, *L’esperienza del passato. Alessandro Benedetti filologo e medico umanista* (Florence: Olschki, 1996) p. 109. Heinrich Stromer von Auerbach, *Saluberrimae adversus pestilentiam observationes* (Leipzig, 1516), which uses the word in the same sense as Benedetti, was republished in 1519 together with an extract from Celsus, *Observatio in pestilentia*. A later example is Raymund Minderer, *De pestilentia liber unus, veterum et neotericorum observatione constans* (Augsburg, 1608).
- <sup>49</sup> Gabriele Falloppio, *Observationes anatomicae ad Petrum Mannam medicum cremonensem*, (Venice: apud Marcum Antonium Ulmum, 1561). I quote from the photostatic reprint, Modena: Mucchi, 1964, which includes an Italian translation by Gabriella Righi Riva and Pericle Di Pietro). Falloppio says that the work developed out of “notes” (*commentarii*) that he wrote down whenever he would observe “new things” in his anatomical practice. “Once I had observed (*observaverim*) them, I immediately changed my previous opinion and put them down in writing, in an orderly fashion, and made myself some memoranda (*commentarii*), which I decided to keep private for eight years before communicating them to other people; intending however to publish them at the right moment” (p. 4v).
- <sup>50</sup> Falloppio, *Observationes*, examples at pp. 17v, 36r, 37v, 45v (“Quod ego maxima cum animi voluptate fortasse primum observavi”), 51v, 57r, 183v. Falloppio was very proud of his acuity as an observer and was fond of referring autobiographically to observations he had made even as a child: see the passages quoted in Giuseppe Favaro, *Gabriele Falloppia* [sic] *modenese. Studio biografico* (Modena: Tipografia editrice Immacolata Concezione, 1928) pp. 48-49.
- <sup>51</sup> Law and medicine shared since the Middle Ages a long tradition of similarly named and similarly conceived genres, such as first of all the *consilia*. On the parallels between juridical and medical mental framework in the Renaissance see Herberger, *Dogmatik* (cited above, n. 39), pp. 211-275 and Ian Maclean, *Logic, Signs and Nature in the Renaissance. The Case of Learned Medicine*, (Cambridge: Cambridge University Press, 2002) pp. 84-86.
- <sup>52</sup> See Robinson et al., *An Introduction to European Legal History* (cited above, n. 44) at pp. 94, 113-14 on the *consilia* as a late medieval legal genre, and at pp. 325-26 on the early modern *observationes* as reports of cases discussed by specific courts.
- <sup>53</sup> Jole Agrimi and Chiara Crisciani, *Edocere medicos: medicina scolastica nei secoli XII-XV*, (Milan: Guerini, 1988) pp. 216-17; Chiara Crisciani, “Histories, Stories, Exempla and

Anecdotes: Michele Savonarola from Latin to Vernacular,” in *Historia: Empiricism and Erudition in Early Modern Europe*, ed. Gianna Pomata and Nancy G. Siraisi (Cambridge, Mass.: MIT Press, 2005), 297–324. On *practica* in medieval medicine see also Luke Demaitre, “Theory and Practice in Medical Education at the University of Montpellier in the Thirteenth and Fourteenth Centuries” in *Journal of the History of Medicine and Allied Sciences* 30 (1975) pp. 103-23 and of the same author “Scholasticism in Compendia of Practical Medicine 1250-1450” in *Manuscripta* 20 (1976) pp.81-95; Andrew Wear, “Explorations in Renaissance Writings on the Practice of Medicine” in A. Wear, R. K. French and Iain M. Lonie, eds., *The Medical Renaissance of the Sixteenth Century* (Cambridge: Cambridge University Press, 1985) pp. 118-45.

- <sup>54</sup> In their thorough study of the medieval *consilia*, Agrimi and Crisciani have shown that the *consilium* dealt typically with a disease, not with a sick person: see Jole Agrimi and Chiara Crisciani, *Les ‘consilia’ medicaux* (Turnhout, Brepols: Typologie des sources du Moyen Age Occidental no. 69, 1994); see also Chiara Crisciani, “L’individuale nella medicina tra Medioevo e Umanesimo: i *Consilia*” in Roberto Cardini and Mariangela Regoliosi, eds., *Umanesimo e medicina. Il problema dell’individuale* (Rome: Bulzoni, 1996) pp. 1-20.
- <sup>55</sup> The doctrinal apparatus became even heavier in the fourteenth- and fifteenth-century collections: see Crisciani, “L’individuale nella medicina” (cited above, n. 54) p. 20 n. 33. The thirteenth-century *consilia* of Taddeo Alderotti, for instance, were relatively less focused on doctrine. Even Taddeo’s *consilia*, however, only rarely contain detailed descriptions of cases. See Taddeo Alderotti, *I Consilia*, ed. G. M. Nardi, (Turin: Minerva medica, 1937); Nancy G. Siraisi, *Taddeo Alderotti and His Pupils: Two Generations of Italian Medical Learning*, (Princeton, N.J.: Princeton University Press, 1981) pp. 270-302, esp. 270-73.
- <sup>56</sup> As, for instance, in van Foreest’s *Observationes et curationes*, cited below, n. 61, or Paul de Reneaulme’s *Ex curationibus observationes* (Paris, 1606).
- <sup>57</sup> Amatus Lusitanus, *Curationum medicinalium centuria prima* (Florence: Lorenzo Torrentino, 1551). Amatus says that he finished writing the first centuria in Florence in 1549. The seventh *centuria* came out in Venice in 1566 (see *Index aureliensis: Catalogus librorum sedecimo saeculo impressorum*, 15 vols., Baden-Baden, 1965-2005, vol. 1, s.v.). Most of the editions of the *Centuriae* are listed in Maximiano Lemos, *Amato Lusitano. A sua vida e a sua obra* (Porto: E. Tavares Martins, 1907), pp. 200-203. On Amatus (1511-1568), a naturalist and physician, one of the most prominent Jewish scholars of the late Renaissance, see Harry Friedenwald, *The Jews and Medicine* (Baltimore: Johns Hopkins University Press, 1944) vol. 1, pp. 332-80; George H. Tucker, *Homo Viator. Itineraries of Exile, Displacement and Writing in Renaissance Europe* (Geneva: Droz, 2003), pp. 195-238.
- <sup>58</sup> Francis Bacon seems to have thought so when he noted that medical writers should not ape the men of law in this respect. If the physicians wanted to write down cases – he noted – let them follow the Hippocratic model, instead of copying the jurists. See Bacon, *De augmentis scientiarum*, in *Works*, ed. Spedding et al., vol. 1, pp. 591-92: “Atque hujus rei nactis nobis jam exemplum tam proprium atque insigne, in eo scilicet viro qui tanquam parens artis

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habitus est, minime opus erit exemplum aliquod forinsecum ab alienis artibus petere; veluti a prudentia jurisconsultorum, quibus nihil antiquius quam illustriores casus et novas decisiones scriptis mandare, quo melius se ad futuros casus muniant et instruant” (“and since we have of this thing an example so proper and eminent in that man who is considered as much as the father of the art [of medicine], it will hardly be necessary for them [the physicians] to beg for a somewhat extraneous model from the other arts, such as from the wisdom of jurists, for whom nothing is more ancient than putting down in writing the more illustrious cases and the recent sentences of the courts of law, in order to better strengthen and prepare themselves for future cases”).

<sup>59</sup> Thomas Bodier, *De ratione et usu dierum criticorum* (Paris, 1555), pp. 17r-51r. Bodier organized his fifty-five cases in fourteen *observationes*, each *observatio* grouping a certain number of cases from which he drew a specific rule for prognostication. Unlike later authors, he used the word *observatio* to indicate a rule based on the observation of several cases, not the description of a case. But he also used *observatio* as a synonym of “eventorum visus” (the vision of events), that is, empirical observation: “Observatio et eventorum visus ita esse docuerit, cum disciplina haec ab observatione coeperit” (“Observation and the vision of events taught that this is the way things are, as this discipline [astrology] originated from observation”) (13r). On Bodier see Steven Vanden Broecke, “Evidence and Conjecture in Cardano’s Horoscope Collection” in Günther Oesterman, H. Darrell Rutkin, Kocku von Stuckrads, eds., *Horoscopes and Public Spheres* (Berlin/New York: de Gruyter, 2005), pp. 215-17; Nancy Siraisi, “Anatomizing the Past: Physicians and History in Renaissance Culture”, in *Renaissance Quarterly* 53 no. 1 (2000), p. 8. Another interesting case is that of Cesare Ottato, *Opus tripartitum de crisi, de diebus criticis et de causis criticorum* (Venice, 1519). Ottato adduced empirical evidence (the results of phlebotomy in hospitals) against the theory of critical days: see Anthony Grafton and Nancy G. Siraisi, “Between the Election and my Hopes: Girolamo Cardano and Medical Astrology” in William R. Newman and Anthony Grafton, eds., *Secrets of Nature: Astrology and Alchemy in Early Modern Europe*, (Cambridge, MA: MIT Press, 2001), pp. 69-131. On the connection between case writing and astrology it should be noted that as late as the 1670s John Aubrey’s *Brief Lives* developed out of his interest in horoscopes: see Michael Hunter, *John Aubrey and the Realm of Learning*, (New York: Science History Publications, 1975) pp. 119-120; see also illustration 9, showing a page of the manuscript of Aubrey’s *Brief Lives* with a biography written around the horoscope of its subject. The connection between case writing and astrology should be further explored.

<sup>60</sup> Cited in Vanden Broecke, *Limits of Influence* (cited above, n. 25), p. 196. Starting in 1561, Cornelius Gemma published a series of annual *Ephemerides meteorologicae*, devoted mostly to weather predictions, and not to prognostications of harvests, diseases, wars, etc., as in the convention of the genre. On Cornelius Gemma see Hiro Hirai, ed., *Cornelius Gemma: Cosmology, Medicine and Natural Philosophy in Renaissance Louvain* (Pisa: Fabrizio Serra, 2008). John Dee, also a member of the Louvain group, wrote weather observations for the years 1547-1551 on the margins of his astronomical *ephemerides*. See Vanden Broecke, *Limits of Influence*, pp. 187-88, 206, 208.

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- <sup>61</sup> Pieter van Foreest, *Observationes et curationes medicinales* (Leyden: Plantin, 1584) Praefatio ad lectorem, pp 15-16: “Cum enim aliquando cum Ophusio mathematico insigni praeceptore meo observationes Harlemi in coelo perscrutarem, de quibus Johannes Regiomontanus scripsit, quas et Johannes Schonerus Carolostadius additionibus quoque auxit, [...]: ab eo quidem tempore cum debilis essem, nec iniurias æris ferre possem, ut noctu stellas ita observarem, professionis meae, nempe medicinae memor [...] potius in microcosmo [...] observationes postea instituere decrevi, quam in ipso coelo.”
- <sup>62</sup> Park in this volume, p. 36; Agrimi and Crisciani, “*Experimentum-experimenta*” (cited above, n. 4) at pp. 39-47. Lynn Thorndike, *History of Magic and Experimental Science*, 8 vols. (New York: Columbia University Press, 1923–58) vol. 2, pp. 751–808.
- <sup>63</sup> The fourteenth-century *experimenta* of Arnald of Villanova present both formats: the simple recipe and the recipe cum case narrative. See the texts in appendix to Michael McVaugh, “The Experimenta of Arnald of Villanova”, in *Journal of Medieval and Renaissance Studies*, 1 (1971) pp. 107-118.
- <sup>64</sup> On this shift from recipe to case narrative, see Gianna Pomata, “Observatio ovvero Historia. Note su empirismo e storia in età moderna”, in *Quaderni storici*, 91 (1996) pp.173-98.
- <sup>65</sup> Amatus Lusitanus, *Index Dioscoridis. En, candide lector, Historiales Dioscoridis campi*, (Antwerp : Vidua M. Caesaris, 1536). In this book, Amatus had adopted a structure probably derived from a volume with a similar title, *Galenii historiales campi*, published in 1532 by Symphorien Champier. Champier had excerpted descriptions of cases (*historiae*) from Galen, appending his own comments to each *historia*. Similarly Amatus quoted for each plant the description given by Dioscorides, and added his own comment. On Champier’s *Galenii Historiales Campi* see Gianna Pomata, “*Praxis historialis*: The Uses of *Historia* in Early Modern Medicine” in Pomata and Siraisi, *Historia* (cited above, n. 53), pp. 105-146, at pp. 123-24.
- <sup>66</sup> On the history of the commentary genre see Marie-Oudile Guilet-Cazé, ed., *Le commentaire entre tradition et innovation* (Paris: Vrin, 2000).
- <sup>67</sup> As Brian Nance has perceptively noticed, the authors of *observationes* “took their own practice seriously enough to make written accounts of their cases, rather than a classical text, the subject of their own learned commentary”: “Wondrous experience as text: Vallerioli and the *Observationes Medicinales*”, in Elizabeth Lane Furdell, ed., *Textual Healing. Essays on Medieval and Early Modern Medicine* (Leiden: Brill, 2005), pp. 101-118, at p. 115. I would like to thank Prof. Nance for kindly sending me a copy of his essay.
- <sup>68</sup> To my knowledge, Antonio Benivieni’s *De abditis ac mirandis morborum et sanationum causis* (1507) is the only example of case collection before Amatus’s: his text did not include scholia, and remained therefore closer to the traditional *experimenta*. On Benivieni see Nancy Siraisi, “Remarkable Diseases, Remarkable Cures, and Personal Experience in Renaissance Medical Texts” in her *Medicine and the Italian Universities, 1250-1600*

(Leiden: Brill, 2001) pp. 226-252. In contrast with Amatus, his contemporary Girolamo Cardano never published his *curationes* as a separate work. He first listed them in his *De libris propriis* (1557) as a continuous autobiographical narrative about a series of patients that he had successfully cured. He then revised and included them in other publications, and finally in section 3 of his *De methodo medendi* (1565) (in *Opera omnia*, Lyon, 1663, vol. 7, pp. 253–64), where they appear as a numbered series of thirty *curationes* and seven *praedictiones*. See Ian Maclean, “A Chronology of the Composition of Cardano’s Works,” in Girolamo Cardano, *De libris propriis*, ed. Ian Maclean (Milan: Angeli, 2004), pp. 97–98, 103, and 109. Cardano claimed that as a youth he kept a casebook modeled on the Hippocratic *Epidemics*, but his published medical narratives do not conform to the Hippocratic model: see Nancy G. Siraisi, *The Clock and the Mirror. Girolamo Cardano and Renaissance Medicine* (Princeton, N.J.: Princeton University Press, 1997) p. 206 and pp. 197-213. Cardano’s *curationes* are strikingly different from those of Amatus. He gives no detailed accounts of the symptoms over time, no recipes of the remedies used, no learned remarks on each case. He simply lists in a continuous autobiographical narrative a series of patients that he successfully cured, giving their names and social standing, but saying very little about their case histories.

<sup>69</sup> Biblioteca Comunale Ariostea, Ferrara: MS Antonelli 531, *Curationes Antonij Musae Brasavoli* (hereafter BCA, MS Antonelli 131). For a description of the manuscript see *Le figure principali della medicina ferrarese del Quattro e Cinquecento nella Biblioteca Comunale Ariostea. Catalogo della mostra preparata dalla Biblioteca per il XXII Convegno Nazionale della Società Italiana di Anatomia* (Ferrara, 1962), no. 134. The manuscript is in sixteenth-century hand and one of the cures is dated 1547 (fol. 143r). For a fuller analysis see Gianna Pomata, “Sharing cases: The *Observationes in Early Modern Medicine*”, in *Early Science and Medicine*, 15, 2 (2010), pp. 193-236, at pp. 208-15. The manuscript was already examined, though from a different perspective, by Cesare Menini, “Curationes A.M. Brasavoli’: contributo alla conoscenza delle opere di Antonio Musa Brasavola come medico pratico”, in *Rivista della storia delle scienze mediche e naturali*, 43 (1952) pp. 255-61.

<sup>70</sup> More than one person may have written the manuscript, as there are some variations in the handwriting. Brasavola is called *preceptor meus* (my teacher) but so are called other physicians (Luca Riccardo, Antonio Maria Canani, Domenico Bondi). Some of the *curationes* in the final part of the manuscript are indeed cases of Riccardo, Canani or Bondi, not Brasavola’s. A towering figure of Renaissance medical humanism, Antonio Musa Brasavola (1500-1555) taught practical medicine in the Studio of Ferrara since 1541 (*Dizionario Biografico degli Italiani*, Rome, 1972, vol. 14, pp. 51-52). For a brief but effective profile of his work see Vivian Nutton, “The rise of medical humanism: Ferrara, 1464-1555” in *Renaissance Studies*, 11, no. 1 (1997) at pp. 11-16. Amatus lived in Ferrara from 1540 to 1547. He repeatedly referred to his friendship with Brasavola: see for instance Amatus Lusitanus, *Curationum medicinalium centuriae duo, prima et secunda* (Paris: apud Franciscum Bartholomeum, 1554) cent. II, curatio 20, 40v. and Idem, *In Dioscoridis Anazarbei de medica materia libros enarrationes eruditissimae* (Venice: Giordano Ziletti, 1557) p. 14.

- <sup>71</sup> Whoever wrote the manuscript appears to have regularly accompanied Brasavola on his visits to his patients. For each case he diligently noted the sick person's social condition, the symptoms over time, what his teacher said of the illness, plus the regimen and medications prescribed, and their effects on the course of disease. Finally, he recorded the outcome of the case, with the patient's recovery or death.
- <sup>72</sup> BCA, MS Antonelli 131, marginalia to fol. 157r ("Sanguinis sputi curatio"): the references are to Manardi's *Epistolae medicinales* (1528), Nicolò Massa's *Epistolae medicinales* (1550), and Giovan Battista Da Monte's second centuria of *Consultationes* (1558). Given the dates of publication of some of these works, these notes must have been a later addition to the manuscript. They are, however, in the same hand.
- <sup>73</sup> On the relevance of note-taking for the history of cognitive practices see Lorraine Daston, "Taking Note(s)", in *Isis*, 95 (2004) pp. 443-48.
- <sup>74</sup> See Giovanni Battista Da Monte, *Consultationum medicinalium centuria secunda, ... His accesserunt Curationes februm Montani*, ed. Johann Crato von Crafftheim (Venice: in officina Erasmiana, apud Vincentium Valgrisium, 1558) pp. 511-605. Da Monte's *curationes februm* are twenty-two cases, some of them fictitious. Their structure is only partly similar to Brasavola's unpublished ones. Differently from Brasavola's *curationes*, for instance, they report the teacher's own words in the first person. The instructions for writing the *historia* are at pp. 542-43. On Da Monte's innovative clinical teaching see Jerome J. Bylebyl, "Teaching 'Methodus Medendi' in the Renaissance," in Fridolf Kudlien and Richard J. Durling, eds., *Galen's Method of Healing* (Leiden: Brill, 1991) pp. 157-89; Idem, "The Manifest and the Hidden in the Renaissance Clinic," in W.F. Bynum and R. Porter, eds., *Medicine and the Five Senses*, (Cambridge: Cambridge University Press, 1993) pp. 40-68. But see also Giuseppe Ongaro, "L'insegnamento clinico di Giovan Battista da Monte (1489-1551): una revisione critica", in *Physis*, 31, no.2 (1994), pp. 357-69, which questions the widely held notion that Da Monte introduced clinical teaching in the Hospital of San Francesco, arguing that this notion is based on an erroneous interpretation of the sources.
- <sup>75</sup> See Iain M. Lonie, "The Paris Hippocratics" in A. Wear, R.K. French, and I. M. Lonie, eds., *The Medical Renaissance of the Sixteenth Century* (Cambridge: Cambridge University Press, 1985) pp. 169-74, with special reference to Guillaume de Baillou's work.
- <sup>76</sup> Da Monte's *curationes* were published posthumously by his former student Johann Crato von Crafftheim: see above, n. 74. The cases of the "Paris Hippocratic" Guillaume de Baillou were published long after his death: G. Ballonius, *Epidemiorum et ephemeridum libri duo*, ed. M. Jacob Theuart (Paris, 1640).
- <sup>77</sup> The *Centuriae* were republished, in their entirety or in part in 1570, 1580, 1620, and 1628: see Lemos, *Amato Lusitano*, pp. 200-3. It should be noted that Amatus's *Curationes* were censored by the Portuguese and Spanish Inquisition in the 1580s: see Dov Front, "The Expurgation of Medical Books in 16<sup>th</sup> Century Spain" in *Bulletin of the History of Medicine*, 75, no. 2 (2001) pp. 290-96. It seems, however, that Amatus's work enjoyed popularity even

among Catholic readers. His *Curationes* were quoted for instance (though mistakenly attributed to another physician, Petrus de Peramato) by the Jesuit casuist Thomas Sanchez in his *Disputationes de sancti matrimonii sacramento* (1605): see Fernanda Alfieri, *Nella camera degli sposi. Tomás Sánchez, il matrimonio, la sessualità* (Bologna: il Mulino, 2010) p. 254.

<sup>78</sup> François Valleriola, *Observationum medicinalium libri sex* (Lyon: Antoine Gryphius, 1573; Rembert Dodoens, *Medicinalium observationum exempla rara* (Cologne: apud Maternum Cholinum, 1581; partly published already in Rembert Dodoens, *Historia vitis vinique...Item Medicinalium observationum exempla*, Cologne, 1580); Pieter van Foreest (Forestus), *Observationum et curationum medicinalium libri XXXII* (Antwerp, 1584-1609). In these collections, each *observatio* is structured after the model of Amatus's *curatio*, that is, the case narrative is followed by a scholion (Valleriola calls it *explicatio*). Two other medical texts appeared under the title of *observationes* in the 1560s, the *Medicinales Observationes* by Jodocus Lommius (Antwerp: ex officina Gulielmi Sylvi, 1560), and the *Medicae observationes raras* by Johann Wier (Basel: Johannes Oporinus, 1567). But though they both had a strong observational content (Lommius's little volume would be used as a prognosis manual for centuries) they maintained the traditional structure by diseases, not cases, as in the medieval *practica* textbooks. They were not the model of the new genre. On Lommius's *Observationes* see Jacalyn Duffin, "Jodocus Lommius's Little Golden Book and the History of Diagnostic Semeiology", in *Journal of the History of Medicine and Allied Sciences*, 61, no. 3 (2006) pp. 249-287. On Wier (the Johann Wier well known for his enlightened criticism of the witch hunt) see Michaela Valente, *Johann Wier agli albori della critica razionale dell'occulto e del demoniaco nell'Europa del Cinquecento* (Florence: Olschki, 2003).

<sup>79</sup> See Dominique de Courcelles, ed., *La Varietas à la Renaissance* (Paris: École des chartes, 2001), esp. Jean-Marc Mandosio, "La 'docte variété' chez Ange Politien," pp. 33-42; and Marie-Dominique Couzinet, "La variété dans la philosophie de la nature: Cardano, Bodin," pp. 105-18.

<sup>80</sup> Sanches, *Quod nihil scitur* (ed. Limbrick, cited above, n. 7), pp. 117-18: "De individuis autem fateris nullam esse scientiam, quia infinita sunt. At species nil sunt, aut saltem imagination quaedam; sola individua sunt, sola haec percipiuntur, de his solum habenda scientia est, ex his captanda. Sin minus, ostende mihi in natura illa tua universalia. Dabis in particularibus ipsis. Nil tamen in illis universale video: omnia particularia. In his autem quanta varietas conspicitur? Mirum. [...] ille rosae odore aut aspectu labitur in syncopen: iste foeminas odit: haec cicuta nutritur...". The translation is mine; cf. the translation at pp. 213-14 of the Limbrick edition. Sanches also refers to Falloppio's *De humani corporis anatome compendium* (1571) and to Galen, *De simplicium medicamentorum temperamentis et facultatibus*.

<sup>81</sup> Both Brasavola and Da Monte, like other protagonists of the medical Renaissance, lectured extensively on *Epidemics*. Brasavola's lecture notes (from 1544-45 and 1550) are extant in manuscript (BCA, Ferrara, Ms I, 112, no. 46: "Commentaria in libros Hippocratis de morbis

popularibus”). Da Monte’s lectures on *Epidemics* were recorded by his students and published posthumously under his name as *In tertiam primi Epidemiorum sectionem explanationes*, ed. Valentinus Lublinus (Venice, 1554). Da Monte took two Hippocratic cases (those of Philiscus and Silenus, the first two patients in *Epidemics I*) discussing each symptom in great detail, in the chronological sequence of the original. He seems to have meant to provide the students in this way with a model of meticulous observation of an individual case, and he stressed the usefulness, both theoretical and practical, of such an approach: “Habebitis in singulo casu et theoricam et practicam” (You will have in a single case both the theoretical and the practical [parts of medicine])” (p. 40v). The literature on the structure of the case history in *Epidemics* is vast. For an excellent synthesis see Cristina Álvarez Millán, “Graeco-Roman Case Histories and their Influence on Medieval Islamic Clinical Accounts” in *Social History of Medicine*, 12, no.1 (1999) pp. 19-43. On the Hippocratic model of the case history in the Renaissance see Pomata, “*Praxis historialis*” (cited above, n. 65) at pp. 124-27.

- <sup>82</sup> De Gorris, *Definitiones medicae*, cited above n. 14.
- <sup>83</sup> See François Valleriola, *Observationes medicinales* (Lyon 1573), preface: “[Hippocrates] wrote on tablets all that he saw occurring in the sick person, and narrated the complete *historia* of the disease and what happened to the sick each day, each hour, each moment, giving specifically the name of each person [...] as shown in the books of *Epidemics*. In the same way, following Hippocrates’s custom, I prepared for general use the things I wrote down, taking into considerations only those diseases that appeared to me most dangerous and of dubious treatment”. On Valleriola (1504-1580) and his *Observationes* see the detailed analysis in Nance, “Wondrous experience as text” (cited above, n. 67).
- <sup>84</sup> This is also the case of most authors of the collections of *observationes* published in the first half of the seventeenth century. On the sociology and geography of the *observationes* see Pomata, “Sharing Cases” (cited above, n. 69), at pp. 226-30. H. C. Erik Midelfort has pointed out that most of the collections of *observationes* came out in Germany, not in Italy or France, the sites of the most prestigious and long-established universities: *A History of Madness in Sixteenth-Century Germany* (Stanford: Stanford University Press, 1999) pp. 165-66.
- <sup>85</sup> Several collections of *curationes et observationes* advertize new drugs taken from the chemical and Paracelsian pharmacopoeia, as in the work of Martin Ruland the Elder, *Curationes empiricae et historicae in certis locis et notis hominibus optime riteque probatae et expertae* (Basel, 1578-1595), Paul de Reneaulme’s *Ex curationibus Observationes* (Paris, 1606) and Pierre de la Poterie’s *Insignes curationes et singulares observationes centum* (Venice, 1615). Lazare Rivière, author of a 1646 collection, introduced chemical remedies in the University of Montpellier. On Rivière see Haller, *Bibliotheca medicinae practicae*, 4 vols. (Basel, 1776-1788) vol. 2, p. 461: “primus in hac schola Montpeliensi chemica medicamenta dedit”. A belief in chemical medicine features prominently also in the profile of Theodore Turquet de Mayerne (1573-1655), a court physician who left a remarkable collection of



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manuscript casebooks studied by Brian Nance, *Turquet de Mayerne as Baroque physician: the art of medical portraiture* (Amsterdam-New York: Rodopi, 2001).

- <sup>86</sup> Da Monte's *curationes*, for instance, were published by his students (see n. 76 above). Some of Brasavola's *Curationes*, recorded in Ferrara in the 1540s, were printed in Germany in 1607 by Johannes Wittich, a physician and son of a physician, who had found them among his father's manuscripts. Wittich Senior had studied in Italy and had brought back to Germany with him notes of the *curationes* of Brasavola and other famous Italian physicians. Wittich Junior published these *curationes* with those of Elideo Padoani, who had been his father's primary teacher. See Elideo Padovani, *Processus, curationes [et] consilia in curandis particularibus morbis quae prosperos habuerunt eventus ... nunc primum edita a Johanne Wittichio* (Leipzig, 1607) pp. 3-24, 282-284. These *curationes* are very similar to the manuscript of Brasavola's pupil described above. Obviously, *curationes* circulated in manuscript even before they were published. Circulation of manuscripts was still very important in seventeenth-century Europe: see Harold Love, *Scribal Publication in Seventeenth-Century England* (Oxford: Clarendon Press, 1993).
- <sup>87</sup> Francisco Sanches's *Observationes in praxi* were published by his relatives: *Opera medica*, ed. Dionisio Sanches and Guillermo Sanches (Toulouse: apud Petrum Bosc, 1636). Petrus Matthaeus Rossius's *Observationes medico-chirurgicae et practicae* (Frankfurt, 1608) were published by his son Viktor Ross.
- <sup>88</sup> Petrus Severinus, *Idea medicinae philosophicae, fundamenta continens totius doctrinae Paracelsicae, Hippocraticae et Galenicae* (Basel: ex officina Sixti Henricpetri, 1571): "Magna fuit industria et concordia Mortalium illis temporibus. Quisque suas observationes candide in medium attulit. Etenim, vitae brevitatem ad Artis absolutionem, tantarum Observationum collectione proditura, sufficere haud arbitrabantur. [...] Sed humana omnia, ruinis et erroribus obnoxia sunt. [...] Ita senescentibus Experientiae laboribus, maturescentibus linguae honoribus, altiores radices egerunt. Ignavia opem tulit. Brevitatem enim Artis, et compendiosam facilitatem ex Hypothesibus proficiscentem amplexata est potius, quam Experientiae obscuras et longas exercitationes" (dedicatory letter to Frederick II of Denmark, n. pag.). On Severinus see Jole Shackelford, *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context and Influence of Petrus Severinus (1540-1602)*, (Copenhagen: Museum Tusculanum Press, 2004).
- <sup>89</sup> Schenck declared that his goal was to "collect in one volume those new and wondrous things that the most celebrated physicians observed (*observarunt*) not so much by means of doctrine as by means of *experimentum*, and that were transmitted to us piecemeal in a scattered, incidental and straggly way". See Johann Schenck von Grafenberg, *Paratērēseōn, sive observationum medicarum, rararum, novarum, admirabilium et monstrosarum, volumen in tomis septem* (Frankfurt, 1609) "Praefatio ad lectorem", n. pag. This work came out in seven volumes in Basel and Freiburg 1584-97 and was reprinted in Frankfurt 1600, Freiburg 1604, Frankfurt 1609, Lyon 1644, Frankfurt 1665, with additions by L. Strauss (see Lipenius, *Bibliotheca Realis Medica*, p. 309). The word *Paratērēseōn* (genitive plural of the Greek *paratērēsis*, observation) was added to the title in the 1609 edition (edited by Schenck's son

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Johann Georg, also a physician) and kept in the following editions. On Schenck von Grafenberg (1530-1598), a town physician in Freiburg, see August Hirsch, *Biographisches Lexicon der Hervorragenden Ärzte* (Vienna and Leipzig, 1884–88), s.v. “Schenck von Grafenberg, Johann.”

- <sup>90</sup> In a prefatory letter published in Schenck’s volume, Theodor Zwinger noted that the book offered “historiarum et curationum microcosmi exempla, per locos communes digesta”. Schenck’s work can thus be considered an example of the “method of commonplaces”, whose significance in early modern natural philosophy has been described by Ann Blair, *The Theater of Nature, Jean Bodin and Renaissance Science* (Princeton: Princeton University Press, 1997) pp. 65-77. Schenck’s work is definitely a *florilegium*, that is, an anthology, but he identified and quoted the authors of the *observationes* with meticulous care, in contrast with medieval *florilegia*, which often effaced the name of the author excerpted. On this feature of medieval *florilegia* see Faith Wallis, “The experience of the book: manuscripts, texts, and the role of epistemology in early medieval medicine”, in Don Bates, ed., *Knowledge and the Scholarly Medical Traditions*, (Cambridge: Cambridge University Press, 1995) pp. 101-126.
- <sup>91</sup> Tilman Kiehne, *Die eigenen Fallbeschreibungen des Freiburger Stadtarztes Johannes Schenk* (Ph.D. Diss. University of Freiburg im Breisgau, 1994). Thanks to Lorraine Daston for referring me to this text.
- <sup>92</sup> Schenck, *Paratērēseōn*, “Praefatio ad lectorem”, n. pag.
- <sup>93</sup> The emphasis on rarity is typical of the early collections of *Observationes*. See Pomata, “*Praxis historialis*” (cited above, n. 65), at pp. 131-32.
- <sup>94</sup> Vallerioli, for instance, published in 1573 only sixty *observationes*, but claimed he had collected six hundred in his daily practice, which he hoped to publish at some later day: see Vallerioli, *Observationes* (cited above, n. 78) at p. 397.
- <sup>95</sup> See Vanden Broecke, *Limits of Influence* (cited above, n. 25), pp. 187–88. *Historia* and *observatio* were interchangeable terms in the medical language of this period: see Pomata, “*Praxis historialis*” (cited above, n. 65), at pp. 122-37.
- <sup>96</sup> Most of his contributors were from German and Swiss towns, but he also named correspondents from Padua and Florence, who sent him the *observationes* of the “Italian friends”. His correspondent from Florence was Neretus Neretius, whom I have not been able to identify. The one from Padua was the celebrated *practicus* and university teacher Ercole Sassonia (1551-1607).
- <sup>97</sup> See Giuseppe Olmi, “Molti amici in vari luoghi: studio della natura e rapporti epistolari nel XVI secolo”, in *Nuncius*, 6 (1991) pp. 3-31; Candice Delisle, “The Letter: Private Text or Public Place? The Mattioli-Gesner Controversy about the *aconitum primum*”, in *Gesnerus* 61 nos. 3-4 (2004) pp. 161-176; Florike Egmond, “Clusius and Friends: Cultures of Exchange in

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the Circles of European Naturalists,” in *Carolus Clusius: Towards a Cultural History of Renaissance Naturalists*, ed. F. Egmond, P. Hoftijzer and R. Visser (Amsterdam, 2007), pp. 9–48.

- <sup>98</sup> On this genre see Ian Maclean, “The Medical Republic of Letters before the Thirty Years War” in *Intellectual History Review*, 18, no. 1 (2008), pp. 15–30 and the forthcoming work by Nancy G. Siraisi, *Worlds of Learned Experience: Sixteenth-Century Medical Letter Collections* (delivered as The Singleton Lectures at Johns Hopkins University, October 4, 5, and 7, 2010). The significance of the *epistolae medicae* for the first detailed descriptions of cases has been noted by Vivian Nutton, “Case Histories in the Early Renaissance”, unpublished paper given at the Conference “The History of Case Histories”, Stuttgart 1991.
- <sup>99</sup> Paracelsus had planned to put together an atlas of the different kinds of tartar, and tartar-related diseases, by collecting descriptions of each region’s tartar from the local physicians. See Paracelsus, *Das Buch von den tartarischen Krankheiten* (1537–38), in *Sämtliche Werke*, ed. K. Sudhoff and Wilhem Matthiessen (reprint, Hildesheim: Olms, 1996), vol.11, pp. 26–27. Nothing came out of this project, but it suggests a new trend toward collective medical inquiry. See M. L. Bianchi, “Il tema dell’esperienza in Paracelso”, in M. Veneziani, ed., *Experientia*, X Colloquio Internazionale del ‘Lessico Intellettuale Europeo’ (Florence: Olschki, 2002) p. 202, n. 13.
- <sup>100</sup> See Ellis Jones, “The Life and Works of Fabricius Hildanus,” parts 1 and 2, *Medical History* 4, no. 2 (1960) pp. 112–34; 4, no. 3 (1960) pp. 196–209, at part 1, p. 121. Lazare Rivière, *Observationes medicae et curationes insignes quibus accesserunt observationes ab aliis communicatae* (London and Paris, 1646), published together with his own the observations of nine of his colleagues.
- <sup>101</sup> “Observatorum feremus per secula nomen/Semper enim hoc nomen semperque haec scripta manebunt”. The author of the verses was the physician Martin Holtzapfel: see Schenck, *Paratērēseōn*, prefatory *Epigrammata*, n. pag.
- <sup>102</sup> For a chronological list of *observationes* published in this period see Pomata, “Sharing cases” (cited above, n. 69), appendix, pp. 232–36. See also the copious listings under the headings “*observationes*” and “*historia medica*” in Lipenius, *Bibliotheca Realis Medica* (Frankfurt, 1679) and *Lindenius Renovatus* (Nuremberg, 1686).
- <sup>103</sup> *Epistola invitatoria*, in *Miscellanea Curiosa, sive Ephemerides medico-physicae Germanicae Academiae Naturae Curiosorum*, Annus secundus:1671 (Frankfurt and Leipzig, 1688) pp. 1–6. The *observationes* were supposed to be published in the order in which they were received, irrespective of the fame and rank of the observer, in what the Curiosi called *ordo sine ordinem*, the “orderless order” befitting the horizontal ethos of the Republic of Letters (*Epistola invitatoria*, p. 7). The Academia’s program shifted rapidly, in the first two decades of its life, from the production of natural historical treatises to collecting and publishing the *observationes* of its members. See Daston in this volume, p. 84, and of the same author, “Die Akademien und die Neuerfindung der Erfahrung im 17. Jahrhundert” in *Nova Acta*

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*Leopoldina*, NF 87, No. 325 (2003), pp. 15-33. Other medical journals created in this period adopted the *observationes* format, as for instance the *Acta Medica Hafniensia*, founded by Thomas Bartholin in Copenhagen in 1671.

- <sup>104</sup> The expression is used in Georg Hieronymus Welsch and Johan Michael Fehr, *Epistolae mutuae Argonautae ad Nestorem et Nestoris ad Argonautam de thesauro experientiae medicae* (Augsburg, 1677). In this exchange of letters, Welsch sent to Fehr (one of the founders of the Academia) a sample of his planned *thesaurus* of medical experience. The *thesaurus* was supposed to be a medical encyclopedia organized by topic. Under each heading would be collected all the observations on that topic by physicians of all times. This ambitious plan was never realized.
- <sup>105</sup> Georg Hieronymus Welsch, *Sylloge Curationum et Observationum Medicinalium* (Augsburg, 1667). The other authors were Marcellus Cumanus (second half the fifteenth century), Jeremias Martius (d. 1585), Achilles Gasser (1505-1577), Jo. Udalrich Rumler (seventeenth century), Hieronymus Reusner (b. 1558).
- <sup>106</sup> Welsch later claimed he published two thousand *observationes* from his collection of medical manuscripts: Georg Hieronymus Welsch, *Curationum exotericarum Chiliades II..., nunc primum ex Mss. Editae* (Ulm, 1676). His own description of his manuscript collection is appended to Theodor Jansson ab Almeloveen, *Bibliotheca promissa et latens* (Gouda: Justus ab Hoeve, 1688), 73–132. With a similar purpose, in the first half of the eighteenth century, the founder of the journal *Commercium litterarium ad rei medicinae et scientiae naturalis incrementum* (Literary exchange for the advancement of medicine and natural science), the Nuremberg doctor Christoph Jakob Trew, amassed a huge collection of letters by physicians and scholars from the sixteenth century to his times. The collection, published in microfiche by Harald Fischer Verlag, is available on line:  
[http://www.haraldfischerverlag.de/hfv/trew\\_briefe\\_engl.php](http://www.haraldfischerverlag.de/hfv/trew_briefe_engl.php)
- <sup>107</sup> Tycho and Kepler's works bear ample traces of the exchange of astronomical *observationes*. See Tycho Brahe, *Epistolae astronomicae* (Nuremberg, 1601) and Kepler's correspondence in his *Gesammelte Werke* (Munich: Beck, 1945–49), vols. 14–17. Like the physicians who published their teachers' observational records, Kepler hoped that the forty years of *exquisitissimae observationes*, in twenty-four books, left by his mentor Tycho Brahe, would be published at some point. See Joannis Kepler, *Proemium ad Vitellionem Paralipomena, quibus astronomiae Pars Optica traditur potissimum de artificiosa observatione et aestimatione diametrorum deliquiorumque solis et lunae* (Frankfurt 1604) p. 27: "exquisitissimarum observationum, annos propemodum 40 praeteritos complectantium, libros 24 lector sciat a Tychone relictos esse, quos opportuno tempore in lucem prodituros spero" (cf. *Opera Omnia*, ed. Ch. Frisch, 8 vols., Frankfurt and Erlangen, 1858-71, vol. 1, p. 192). On the role of correspondence in the astronomical community see Adam Mosley, "Tycho Brahe's *Epistolae astronomicae*. A Reappraisal", in Toon Van Houdt et al., *Self-Presentation and Social Identification: The Rhetoric and Pragmatics of Letter Writing in Early Modern Times* (Leuven: Leuven University Press, 2002) pp. 449-68; Idem, *Bearing the*

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*Heavens: Tycho Brahe and the Astronomical Community of the late Sixteenth Century*, (Cambridge: Cambridge University Press, 2007), pp. 31-111.

On posthumous publication of astronomical observations see the case of Jeremiah Horrocks, whose observations from the years 1636–40 (contained in his letters to his friend and fellow astronomer William Crabtree or left in manuscript) were published after Horrocks's untimely death: "Excerpta ex epistolis Jeremiae Horroccii ad Gulielmum Crabtrium, suum in Studiis Astronomicis socium"; "Catalogus observationum...ut in ipsius schediasmatis reperiuntur", in Jeremiah Horrocks, *Opera posthuma* (London, 1673), pp. 347-439. See Allan Chapman, "Jeremiah Horrocks, William Crabtree and the Lancashire Observations of the Transit of Venus of 1639," *Proceedings of the International Astronomical Union* (2004) pp. 3–26.

- <sup>108</sup> On Tycho, see Shackelford, *A Philosophical Path* (cited above n. 88), pp. 75–84.
- <sup>109</sup> On the exchange of natural-historical specimens through medical correspondence see Olmi, "Molti amici in vari luoghi", cit. above n. 97. Amatus himself was a naturalist, and so were many of the other physicians who authored the early collections of *observationes*. See Pomata, "Sharing Cases" (cited above, n. 69), p. 222.
- <sup>110</sup> Peiresc's omnivorous observational interests are especially striking. They are examined in detail in Peter N. Miller, "Description Terminable and Interminable: Looking at the Past, Nature, and Peoples in Peiresc's Archive", in Pomata and Siraisi, *Historia* (cited above, n. 53), pp. 355-399.
- <sup>111</sup> *Epistola invitatoria* (cited above, n. 103), p. 8: "Authorum verba, quemadmodum communicata fuerunt, ex eorum literis adducimus, Scholion interdum adjungentes, sed absque omni mordace sale, illustrandi causa, et enarratum casum similibus historiis explanantes".
- <sup>112</sup> On early modern "learned empiricism" see Pomata and Siraisi, Introduction, in *Historia* (cited above, n. 53), pp. 17-28.
- <sup>113</sup> Daston in this volume, pp. 83-85.
- <sup>114</sup> Pomata, "Word of the Empirics" (cited above, n. 5).
- <sup>115</sup> On the central significance of the concept of *phainomena* in ancient scepticism see *Historisches Wörterbuch der Philosophie* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1971-2007) vol. 6, cols. 463-64, s.v. "Phänomen". For an early usage of the term in sixteenth-century medicine, see Thomas Jordan, *Pestis phenomena, seu de iis quae circa febrem pestilentem apparent exercitatio* (Frankfurt, 1567). The *Oxford English Dictionary* documents the progressive extension of the term from astronomical to all natural processes. The lemma is absent in the seventeenth-century philosophical dictionaries of Goclenius and Micraelius, but it appears in Goclenius's *Lexicon Philosophicum Graecum* (Marburg, 1615) p. 255: "Phaenomenon est per se manifestum sensibus" (phenomenon is what is in itself manifest to the senses). Chauvin's *Lexicon Philosophicum* (Leeuwarden, 1713) documents the wider acceptance of the word: "phenomenon dicitur illud omne, quod in corporibus sensu

percipitur” (it is said phenomenon all that is perceived in bodies by means of the senses). On the term’s early modern semantich history see Gabriele Baroncini, *Forme di esperienza e rivoluzione scientifica* (Florence: Olschki, 1993) pp. 116-123.

- 116 Baroncini, *Forme di esperienza* (cited above, n. 115), pp. 114-115, and 125. In his lexical annotations to his translation of Sextus’s *Sketch of Pyrrhonism*, Estienne devoted several pages to the term *phainomena*. See *Sexti Empirici Pyrrhoniæ Hypotyposes [sic] libri III* (Geneva: Henricus Stephanus, 1562): the annotations (“Annotationes ... in quibus etiam de quarundam philosophicarum vocum interpretatione agit”) are at pp. 229-88. See Françoise Joukovsky, “Le commentaire d’Henri Estienne aux Hypotyposes de Sextus Empiricus” in *Henri Estienne* (Paris: Centre V. L. Saulnier, 1988) pp. 129-145, at pp. 133-137 (on *phainomena*).
- 117 Jean De Gorris, *Definitiones medicae*, cited above, n. 14, p. 49v: “Vocabulum est Empiricae sectae proprium, quo significabant memoriam eorum quae proprio intuitu unusquisque inspexit” (It is a word belonging to the Empirical sect, by which they used to signify the memory of those things which someone saw with his own eyes). The definition is reproduced verbatim in Bartolomeo Castelli, *Lexicon medicum greco-latinum* (Venice, 1642), s.v. “*observatio*”.
- 118 “Per se inspectio” in Niccolò da Reggio’s translation of Galen’s *Subfiguratio Empirica*: see the text in Karl Deichgräber, *Die griechische Empirikerschule* (Berlin and Zürich, 1965), p. 47. “Intuitus proprius” in Brasavola’s index to the Giunta edition of Galen: *Index refertissimus in omnes Galeni libros, , qui ex secunda Iuntarum editione extant* (Venice: Giunta, 1551), s.v. “*autopsia*.”
- 119 In the vernacular, the use of autopsy in this sense dates back to the mid-seventeenth century: the *Oxford English Dictionary* has “or by autopsie, when by observation we get a certain knowledge of things” Wittie, transl. of Primrose’s *Pop. Err.* I, XIV, 53.
- 120 *De motu cordis* (Frankfurt, 1628), p. 6: “per autopsiam confirmassem”; Preface to *Exercitationes de generatione animalium* (London: O. Pulleyn, 1651), p. 16: “per autopsiam [...], eaque ratione consentanea, ipsemet (Lector!) propriis oculis certior factus”; p. 25: “relictis argutiis, et verisimilibus conjecturis, ipsamque autopsiam amplectendo” .
- 121 On Harvey’s “modified Aristotelianism” see Andrew Wear, “William Harvey and the Way of the Anatomists”, in *History of Science*, 21 (1983) pp. 223-49; Baroncini, *Forme di esperienza* (cited above, n. 115), pp. 145-173.
- 122 Castelli, *Lexicon medicum Graeco-Latinum* (Nuremberg, 1688): “vocabulum erat olim Empiricae sectae proprium [...] Verum & hodieque ad Medicinam Dogmaticam, vel Rationalem summe necessaria est Autopsia, seu eorum observatio et memoria, quae proprio intuitu unusquisque inspexit, Gal. *de partib. Art. Medic.* cap. 2”. The reference to Galen is puzzling, as *De partibus artis medicae* was recognized as spurious since the Renaissance; it was included in fact in Galen’s *Ascripti libri spurii* (Venice: Giunta, 1550).

- <sup>123</sup> In a dialogue on the medical sects (*De medicina veteri et nova*, Basel: ex off. Henrictina, 1571, p. 36), Guinther von Andernach wrote that the best medical sect, i. e., the Rationalist sect, was that “in which experience is joined with the knowledge of causes, both hidden and evident, and with the observation of diseases and remedies, both general and specific” (“in qua tum abditarum, tum evidentium causarum cognitioni, morborum & remediorum non modo communium, sed etiam propriorum observationi iuncta est experientia”).
- <sup>124</sup> | Ramus, *Scholae in liberales artes* (reprint, Hildesheim: Olms, 1970), cols. 257–58, and 318: “Etenim, si nihil κατά τήν ἱστορίαν, inquisitionem observationemque, omisum sit eorum, quae certo ac vere rebus insunt, facile cujusvis rei demonstrationem comperiemus” (col. 257); “Ἄπό της αἰσθήσεως, ἐπαγωγῆς, ἐμπειρίας, ἱστορίας, a sensu, inductione, experientia, *observatione*” (col. 318), emphasis added. In the passage at col. 318 Ramus is discussing Aristotle’s *Posterior Analytics*, so he is definitely referring to the Aristotelian categories of experience.
- <sup>125</sup> Johann Heinrich Alsted, *Compendium logicae harmonicae* (Herborn, 1623), vol. 1, pp. 123 and 441–42: “Methodus inventionis: Aristoteli adminicula ista vocantur, αἰσθήσις, ἱστορία, ἐμπειρία, ἐπαγωγή, id est, sensus, **observatio**, experientia, inductio. Sensus bene affectus et non interruptus vim habet scientiae. **Observatio** est collectio sensualis cognitionis subinde repetita. Experientia est plurium observationum collectio. Inductio denique est plurium experientiarum collectio”. See also J. H. Alsted, *Encyclopaedia* (Herborn, 1630), vol. 1, p. 74: “Parentes et columnae omnium disciplinarum sunt sensus, **observatio**, experientia et inductio [...] Utinam literis aureis atque amplis, et illustribus, pro foribus omnium scholarum, vel potius firma et stabili intelligentia memoriaque in mentibus magistrorum et discipulorum quatuor ista verba scripta essent, αἰσθήσις, ἱστορία, ἐμπειρία, ἐπαγωγή, sensus, **observatio**, experientia, inductio, ut quoties eas legerent et meminissent, omnium verorum dogmatum causam atque originem legerent et meminissent; [...] Ex his *sensus* omnium primum facit suum officium in homine, et ita facit, ut habeat vim scientiae, ut ait Aristoteles 3, de generat. anim., cap. 10. Adeo nempe certa est cognitio, quae proficitur a sensu recta se habente. [...] Sed quia non satis est sentire, nisi observemus ea quae sentimus, secundo loco accedit **observatio**, quae est plurium sensuum sive potius sessionem, collectio, et ad certum usum applicatio”. This sentence echoes Ramus, *Scholae in liberales artes* (cited above, n. 124), col. 258: “Utinam literis aureis, atque amplis et illustribus, pro foribus scholarum omnium vel potius firma et stabili intelligentia memoriaque in mentibus magistrorum, duo ista verba essent inscripta et impressa, ἐμπειρία, ἱστορία”. See also Alsted, *Triumphus Bibliorum Sacrorum* (Frankfurt, 1625) pp. 3–4: “eundem in modum omnia dogmata et axiomata artium sunt constituta, e. g., homo vidit, magnetem trahere ferrum et hoc aliquoties **observavit** et **observando** expertus est et denique post multiplicem experientiam ita collegit inducendo: Magnes trahit ferrum in Germania, India, Persia, etc.”. On Alsted see Howard Hotson, *Johann Heinrich Alsted 1588–1638. Between Renaissance, Reformation, and Universal Reform* (Oxford: Clarendon Press, 2000).

- <sup>126</sup> Preface to *Exercitationes* (cited above, n. 120), p. 29: “propria experientia (ex multiplici memoria, frequenti sensatione, atque **observatione** diligente acquisita)”. The general value he attributes to *observatio* is apparent from the assertion that “In every discipline diligent observation is required” (“In omni nempe disciplina, diligens **observatio** requiritur”: ibidem, p. 23).
- <sup>127</sup> The physician Hermann Conring, for instance, equated *observatio* with *experientia* and with *historica cognitio*: see his *Introductio in universam artem medicam* (Helmstedt, 1654) p. 20. See also Pomata, “Praxis historialis” (cited above, n. 65), at pp. 122-37.
- <sup>128</sup> Arno Seifert, *Cognitio Historica: Die Geschichte als Namengeberin der frühneuzeitlichen Empirie* (Berlin: Duncker & Humblot, 1976); Pomata and Siraisi, Introduction to *Historia* (cited above, n. 53), pp. 1-39.
- <sup>129</sup> De Gorris, *Definitiones medicae*, s.v. “*peira*”: “idem vero est observatio atque experientia” (Observation and experience are one and the same thing). The lemma *peira* was introduced in the second edition of de Gorris’s work (Frankfurt, 1578).
- <sup>130</sup> In this sense, the emergence of *observatio* as an epistemic category is part of what Peter Dear has called “the emergence of the discrete experience” as the primary empirical component of early modern natural philosophy. See Peter Dear, “Jesuit Mathematical Science and the Reconstitution of Experience in the Early Seventeenth Century”, in *Studies in the History and Philosophy of Science*, 18 (1987) at pp. 141-43.
- <sup>131</sup> See above, n. 88, for Severinus. On Ramus see Marie Delcourt, “Une lettre de Ramus à Joachim Rheticus”, in *Bulletin de l’Association Guillaume Budé*, 44 (1934) pp. 5–15 (the letter is from 1563). Cf. Ramus, *Scholae Mathematicae* (1569; Frankfurt, 1599), book 2, pp. 46–48, 67, where Ramus uses *observationes* in a strictly astronomical sense, and contrasts them favorably with the sterility of astronomical *hypotheses*. Ramus tried to persuade Tycho Brahe to attempt “an astronomy without hypotheses,” as Tycho himself recounted: see Tycho Brahe, *Epistolae astronomicae* (Nuremberg, 1601) p. 60, letter to Christopher Rothmann, 20 January 1587. See N. Jardine and A. Segonds, “A Challenge to the Reader: Petrus Ramus on Astrologia without Hypotheses”, in M. Feingold et al., eds., *The Influence of Petrus Ramus: Studies in Sixteenth- and Seventeenth-Century Philosophy and Sciences* (Basel: Schwabe, 2001), pp. 248-66.
- <sup>132</sup> On the parallel between “the observational method” as applied to texts and the same method as applied to natural phenomena see Dirk van Miert, “Philology and the Roots of Empiricism: Observation and Description in the correspondence of Joseph Scaliger (1504-1609)”, in Dirk van Miert, ed., *Observations in Early Modern Letters, 1500-1650* (Warburg Institute Colloquia, forthcoming). See also Peter Miller, “Description Terminable and Interminable”, in Pomata and Siraisi, *Historia* (cited above, n. 53), pp. 355-398.
- <sup>133</sup> The eight paintings were commissioned in 1711 by Luigi Ferdinando Marsili, the founder of the Bolognese Istituto delle Scienze, as a gift for the Pope to convince him of the importance



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of building an astronomical observatory in Bologna. The gift was successful. With the support of Clement XI, the first public astronomical observatory was opened in Bologna shortly thereafter. The eight small canvases show the planetary system as it was then known. The artist was guided by instructions specified in a letter from Manfredi to Marsili dated 30 August 1711: see Christopher M. Johns, "Art and Science in Eighteenth-Century Bologna. Donato Creti's astronomical Landscape Paintings", in *Zeitschrift für Kunstgeschichte*, 55, no. 4 (1992) pp. 578-589, at pp. 582-83. On Creti see the catalog of the exhibit *Donato Creti: Melancholy and Perfection*, ed. Eugenio Riccomini and Claudia Bernardini, in cooperation with Keith Christiansen (Milan: Edizioni Olivares, 1998).