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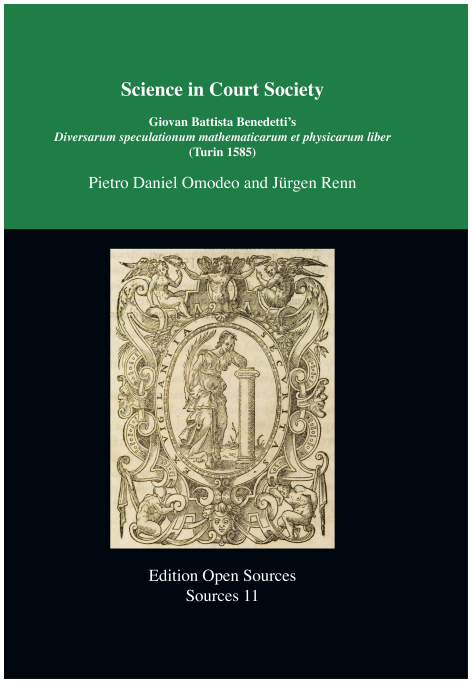
# Concluding Remarks

DOI: 10.34663/9783945561485-09




In: Pietro Daniel Omodeo and Jürgen Renn: *Science in Court Society : Giovan Battista Benedetti's Diversarum speculationum mathematicarum et physicarum liber (Turin, 1585)*
Online version at https://edition-open-sources.org/sources/11/

ISBN 978-3-945561-16-4, DOI 10.34663/9783945561485-00
First published 2019 by Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Edition Open Sources 

# Concluding Remarks

Giovanni Battista Benedetti, the Renaissance scientist, has received ambivalent historical judgements by scholars in the past. The historian of medieval science and philosophy Anneliese Maier, for one, viewed him with mixed feelings. To her, Benedetti appeared to be a sort of intellectual companion of Galileo Galileo, at the same time his "forerunner" in mathematical physics and an epigone who was disrespectful to his own medieval *Vorläufer* or predecessors. Maier wrote that Parisian scholastics such as Nicole Oresme and Jean Buridan had provided Benedetti and Galileo with the concepts they needed to inquire into physics—she particularly had the concept of *impetus* in mind—which they did not acknowledge in their fierce attacks on Aristotelian philosophy.[1] Maier shared Koyré's view that modern mechanics was constructed around a few central concepts and authors relevant for Newton's *Principia mathematica*. They were perplexed by the concomitant reception and rejection of medieval physics by Renaissance scientists. In our view, however, it is too narrow a point of view to just consider individuals and sets of ideas and their genealogies. Instead, one should consider the wider intellectual currents and the shared knowledge they generated. The incipient *querelle des anciens et des moderns*[2] is an example of a debate transcending specific questions and problems, even approaches and methodologies, towards a larger reflection on the relation between past and present. The problems inherent in this gap between the individual perception of change and the intellectual transitions of the time are exhibited by the astronomy of Nicolaus Copernicus, a sort of "unaware revolutionary,"[3] who saw himself (or at least presented himself) as a Renaissance restorer of planetary theories defended in antiquity by the legendary Pythagoreans. By contrast, his scholastic counterpart, the Padua-trained physician and natural philosopher, Girolamo Fracastoro, presented his homocentric reform of mathematical astronomy as a radical innovation, comparable with Amerigo Vespucci's discovery of the New World.[4] Fracastoro's work was based on the modeling of all celestial motions through concentric spheres (in line with a well-established Aristotelian tradition). In Benedetti's case, the rejection of the *philosophia naturalis* taught in the universities was achieved with intellectual means descending from that very philosophical tradition. Rather than viewing this fact as a paradox, it should be regarded as a sign of a profound tension in Renaissance science between past and present and a hallmark of what we have called preclassical mechanics.[5] The *intention* to outdo traditional authorities in order to move beyond their legacy had to rely on the shared knowledge of the time, which was marked by Aristotelian thought. In our introduction we delved into Benedetti's conceptions and reconstructed their socio-cultural coordinates, characterized by the Renaissance tension between conceptual heritage and novelty. Maier's perplexity thus rests upon a lack of reflection on the embedment of in-

[1] Anneliese Maier established a connection between Benedetti's treatment of motion and that of Galileo in Maier 1951, 304–305.

[2] Lehner and Wendt 2017.

[3] Copernicus's revolutionary role *malgré soi* already puzzled Thomas S. Kuhn, who called him at once "radical" and "conservative" and regarded *De revolutionibus orbium coelestium*, the book propounding the first modern heliocentric theory in mathematical astronomy, "revolution-making" rather than "revolutionary." Cf. Kuhn 1959, 135 and 148.

[4] Goddu 2010 and Granada and Tessicini 2005. Also see Omodeo 2017.

[5] See Renn, Feldhay, et al. 2018.

tellectuals and their theories in socio-cultural processes. Benedetti in particular ought not to be seen as a link in a chain, but rather as one representative of a complex and comprehensive knowledge economy.[6]

In order to correctly locate Benedetti in the knowledge economy of the Renaissance, it is expedient to consider him against the background of the material and intellectual conditions of early-modern science, and as a figure between the intentions and identities of a new genre of intellectuals who formed the archetype for modern scientists. Benedetti's case helps us to reflect upon the social position and intellectual identity of these new types of scholars as well as on the way socio-cultural coordinates penetrated science, as far as its demarcation, content, form, and justification are concerned. With social coordinates we refer to the institutional setting involving Benedetti's role as a courtier and thus to his function as a court mathematician, which, in turn, was linked to the wider socio-economic interests of a Renaissance territorial state.[7]

In his seminal work on the sociological roots of modern science, Zilsel discussed the scientific relevance of the social transformations taking place in the late Middle Ages and the Renaissance. In particular, he argued that the emergence of modern science depended on the rise of capitalism. We could aptly refer to this phase as a pre-capitalistic or early-capitalistic "knowledge society." Technical knowledge proved to be a key element in the organization of life and production while the status of the artisans, those whom Zilsel called the "artist-engineers," increased and received high recognition among civil and political authorities. The town of Florence is prototypical for these changes, as Leonardo Olschki has forcefully demonstrated in his studies on science and vulgar literature.[8] A wide range of artist-engineers transformed Florentine society and its mentalities. Filippo Brunelleschi, most representatively and symbolically, forever changed the skyline of the same town in which, at the end of the Italian Renaissance, Galileo composed works that irreversibly modified the landscapes of science and scientific culture.[9] In Florence and Europe more generally, in the passage from the Middle Ages to early modernity the "artisan-practitioners" were confirmed as a new class. The codification of their experience and knowledge profoundly changed epistemology and science, most evidently in mechanics. This practical art was first codified as a physico-mathematical discipline, and then as a science in its own right, and was later adopted as a methodological and ontological point of reference in the shift toward the mechanistic world views of the seventeenth century.[10]

According to a corollary of the Zilsel thesis about the social origins of modern science, scientific culture was reshaped by the merging of three intellectual strands: the artisanal/technical, the scholastic/logical, and the humanistic/rhetorical. This fusion was accomplished by mediators, who were social actors with an in-between status bridging different intellectual and social realms. "Hybrid experts" became increasingly necessary because of their capacity to bring together the technical and the theoretical dimensions of knowledge. Their socio-cultural relevance would never diminish from the late Middle Ages to the Industrial Revolution and beyond.[11]

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[6] For a recent study accomplished in this vein, see Trzeciok 2016.

[7] For further considerations on Benedetti in light of a discussion on methodological and historiographical approaches, see Renn, Feldhay, et al. 2018.

[8] Olschki [1919–1927] 1965.

[9] On the Florentine prototype, see Renn 2014. Cf. Zilsel 2000, 941.

[10] On artisanal knowledge and its codification, see P. Smith 2004 and Long 2001. On practical knowledge, see Valleriani 2017. On the elevation of mechanics to a worldview, see Renn and Damerow 2010.

[11] Ursula Klein has made this point most forcefully in Klein 2015.

During the Renaissance, this mediation was secured by a new group of "scientist-engineers," a series of court mathematicians of which Galileo is the best-known figure and which also included his protector, Guidobaldo Del Monte. Actually, the description of the Renaissance figure of the "scientist-engineer" suits the intellectual and social profile of Benedetti very well.[12] Galileo and his like were well versed both in the technical as well as in the intellectual dimensions of knowledge production. Renaissance "scientist-engineers" underwent a period in apprenticeship of practical mathematics, in some field of application like architecture or the art of war, but later distanced themselves from artist-practitioners as they aspired to gain higher social recognition, especially as courtiers. They had a high degree of education, as they mastered theoretical mathematics, the language of the learned, Latin, as well as the courtly language, for instance by acquainting themselves with the elegant Italian of the literature of the time. Scientist-engineers thus acted as mediators connecting the centers of power and decision on the one hand and the workshops and building sites on the other. As was the case with Benedetti, these experts could supervise artisanal work or give advice on technical issues.[13] As courtiers they were additionally required to participate in the refined dialogical and literary culture of the elite, to serve as educators as well as to use their astronomical expertise to cast horoscopes for the rulers.

The most specific socio-political aspect of Benedetti's time is the affirmation of court society as a particular social formation whose features show continuities and fractures both with the earlier aristocratic setting of the feudal society and the later capitalist one. A distinguishing feature is the centralization of power and administration around the court. As Norbert Elias argued, this formation culminated in the absolutism of the Ancien Régime but was preceded, on a smaller scale, by early attempts at territorial centralization.[14] Although such social formations apparently gravitated around an individual sovereign who made all decisions (as much of the literature of the time on the *Principe* and its privileges boasted), it was in fact a hierarchical system in which the group of experts surrounding the princely ruler constituted an oligarchy who operated the complex organization of modern states. The Duchy of Savoy is one such case. The dukes strove to create a "modern" capital city partly by following the model of Florence, insofar as culture and prestige are concerned, but also the Spanish and French models, insofar as the suzerainty of the ruling family is concerned. Other models played a role, too, for instance the Netherlands for military technology and Switzerland for military conscription and discipline.

Benedetti shared the enthusiasm of his patrons (especially Emanuele Filiberto) for mathematics and its perceived powerfulness as an instrument for successful navigation in war and peace. He also shared the aristocratic values of the court such as disinterest and prestige. Adherence to these values largely explains his bias toward theory despite the practical origins of his knowledge and the fields of application of his mathematics (ranging from mechanics to navigation, architecture, and perspective). He also ventured into the most general fields, such as cosmology and philosophy (as seen through his criticism of Aristotelian natural conceptions, his favorable opinion on Copernican astronomy and post-Copernican cosmology, and his remarks on "Pythagorean" philosophy of mathematics).

[12] The figure of the "scientist-engineer" has been introduced into the history of science by Renn 2001, particularly in the contributions by Lefèvre (Lefèvre 2001) and Renn, Damerow, and Rieger (Renn, Damerow, and Rieger 2001). Valleriani discusses it in detail in Valleriani 2010, chap. 6.

[13] Valleriani 2010, 208: "Except for the period of the apprenticeship, an engineer-scientist was almost never personally employed in workshops or building sites, but he was aware of the work procedures followed in these locations and was able therefore either to commission craftsmen or other persons involved with practical activities, to supervise or teach them, or simply be consulted to evaluate their works."

[14] As already discussed in the introduction. The reference work is Elias [1969] 2002.

Actually, he did not hesitate to call his wide and unsystematic work "speculations," an expression that stresses the theoretical character of the endeavor.

From the perspective of a court scientist such as Benedetti, mathematics was the key to practice and theory. It was his specific field of expertise among the Turin courtly elites; through it he acquired a central epistemological status in line with the exaltation of the *certitudo mathematicarum* by many of his contemporaries, among them his correspondent Pietro Catena. At the same time, the practical context surrounding the mathematical approach in many fields such as mechanics led him to emphasize the contingent element of natural phenomena. Thus, the centrality of mathematics in Benedetti's work has a multilayered meaning, including the theoretical, practical, epistemological, and social. The limits of validity and applicability of Benedetti's mathematical science mirror the boundaries of his field of competence in the division of intellectual labor within his courtly environment. Although he used geometry as a sort of universal key, he could not impose his views on other courtiers who were experts in fields such as philosophy and medicine. In this context of enforced openness, Benedetti's criticisms of Aristotelianism appear as a sort of defense of his professional position in the framework of a courtly dialogical pluralism. Such an environment explains the occasional (and fragmentary) character of the *Diversae speculationes*, which brings together occasional materials such as texts for private teaching, letters, short treatises, expert advice, and polemical essays (among others), in which Benedetti made his mathematical expertise manifest and showed its usefulness.

The intellectual distribution of labor in the Renaissance ensured that Benedetti was at the heart of the courtly milieu by virtue of his family's social status and not through his ambition alone. His work exhibits many similarities with the work of other Italian court mathematicians, most eminently that of the aforementioned Del Monte and Galileo, as far as the range of their interests and the overall approach are concerned. Benedetti's most daring passages, which open up unconventional solutions to technical and theoretical problems, and his remarkable disregard for authority qualify him as one of the Italian *novatores*, although he did not make explicit his natural conception as an all-encompassing alternative to the well-established Aristotelian philosophy. His fierce attacks on crucial aspects of the Aristotelian conception—relating to motion, the void, infinite space, time, infinity, and planetary theory—did not result in a systematic new natural philosophy. Rather, he limited himself to collecting results in different areas and to working on the most varied aspects without finding their common denominator. He also made elliptical references to Pythagoreanism and implicitly rehabilitated some aspects of atomist and stoic conceptions, for instance the plurality of worlds and the fluidity of the heavens. Cardano, whom he appreciated, went much further in the inquiry of the common foundations of the sciences (specifically mathematics, practical arts, and medicine) while Benedetti's correspondent Patrizi advanced a systematic natural philosophy inspired by neo-Platonism. In the same years in which Benedetti finished and published his physico-mathematical speculations in Turin, Bruno published philosophical dialogues in London expounding a natural philosophy and an anthropology that led to far more radical consequences for the premises of cosmology, similar to those reached by Benedetti. Another contemporary of Benedetti, Telesio, had offered the first modern attempt to build up a conception of nature on new principles. His *Natura iuxta propria principia* paved the way for the next generations of scholars searching for new foundations in natural science. Among them was his direct follower Campanella, who brought his philosophy to France in the seminal years of the mechanical philosophies of Pierre Gassendi and René Descartes. Benedetti participated in this wide cultural transformation; he contributed to advancing the mathematical and phys-

ical disciplines and discarding consolidated theories—but without offering a systematic alternative.

To summarize the most evident features of Benedetti's endeavor: it was courtly, secular, anti-Academic, unsystematic, occasional, elitist, learned, abstract, pleasant, and useful. It was *secular*, that is, non-theological, as it was linked to the interests of the ruling class and the state. It was a *useful and pleasant* science: on the one hand, it was practice-oriented but not purely empirical; on the other hand, it proved witty and fit for courtly sociability. It was *abstract and disinterested*: superior to the vulgar and tuned to aristocratic values. *Learned*: fit to be exhibited at court alongside the other arts. *Elitist*: Benedetti elevated mathematics from a practical discipline of scientist-engineers to a refined cultural activity. *Occasional*: linked to the variegated political and cultural interests of the court. *Unsystematic*: fragmented, lacking the inner coherence of scholasticism. *Anti-Academic*: free from concerns about respect for university scholarly traditions. All of these characteristics of Benedetti's science were the hallmark of court science: it was technical and abstract without losing contact with practice and experience—a mathematical-empirical science *in nuce*; it was (relatively) free from bookish tradition and theology but not from the contingencies of courtly life.

What is the common denominator of the great variety of subjects dealt with by Benedetti? What is the center around which they all gravitate? Is there one unifying principle behind the apparent disorder and heterogeneity? It should be emphasized that Benedetti first established his fame *as a mathematician*. His early treatment of motion by mathematical means was explicitly directed "against Aristotle and all philosophers" (*contra Aristotilem et omnes philosophos*). In his time "mathematics" had a wide scope. It comprised arithmetic and geometry, astronomy and astrology, as well as music, but also reached far beyond the boundaries of the *quadrivium* by encompassing optics, practical mechanics, architecture, and engineering. The expansion of mathematics into the fields of physics, natural philosophy, meteorology, and even metaphysics and epistemology was a crossing of the disciplinary boundaries. Benedetti's time bears witness to several attempts to expand the boundaries of mathematics. Cardano, for one, claimed that geometry had the function of a universal logic fundamental to rational thought, and that the practical disciplines including statics, mechanics, and architecture were its subordinate fields of inquiry.[15]

Benedetti's intellectual identity, however, proves much more complex than his corporate identity as a mathematician.[16] His pronounced titles vary. In a short biographical note accompanying the birth horoscope published by Gaurico, he was referred to as "Phylosophus, Musicus, atque Mathematicus"; on October 19, 1589, he signed an astrological report cast for Carlo Emanuele I as "Matematico e Astrologiaro";[17] contemporary admirers of his such as the Milan painter and poet Lomazzo and the Danish astronomer Brahe called him "matematico" and "philosophus et mathematicus inprimis excellentem," respectively.[18] Probably, Brahe's designation of Benedetti as both philosopher and mathematician best captures the poles of his intellectual activity. Intriguingly enough, Benedetti generally dropped the title of "mathematician," keeping only that of "philosopher" in his

[15]Girolamo Cardano, *Encomium geometriae recitatum anno 1535 in Academia Platina Mediolana* in Cardano 1966, vol. 4, 440–445.

[16]By "corporate" we refer here to the *esprit de corps* of a group that considers itself a bounded entity whose interests are marked as separate from other groups. The guild culture of the Middle Ages originated this particular meaning of corporation, which precedes the modern sense of a professional group or legal body.

[17]Roero 1997, 57–58.

[18]Lomazzo 2006, 177: "Del Sig. Gio. Battista Benedetti Matematico" Brahe 1916, 251–253.

publications. On the title page of his *magnum opus* of 1585, the *Diversae speculationes*, he appears as "patritius Venetus philosophus," exactly the same epithet that appears in *De gnomonum umbrarumque solarium usu liber* (1574). In the publications in the vernacular, he correspondingly appears as "filosofo del sereniss. duca di Savoia," e.g., in the *Consideratione… d'intorno al discorso della grandezza terra et dell'acqua* (1579). In the last publication, his self-presentation as court philosopher is interestingly opposed to the designation of his intellectual opponent, Antonio Berga, as "*filosofo nella Università di Torino*," that is, "university philosopher"—which is equivalent to *scholastic* philosopher. These references are telling for Benedetti's self-perception or, to use an in-vogue expression, his *self-fashioning*.[19] In both cases, the image of court philosopher was his intended identity, whether reflected or purposely constructed (or a mixture of both). As was the case with Galileo, the Florentine courtier, the philosopher's social status and reputation was higher than that of the mathematician. This is why, among the conditions for Galileo's appointment as a courtier to the Medicis, he regarded the designation "philosopher" as relevant.[20]

As for the epistemological debates mirroring the disciplinary and social divides and hierarchies of the time, heated controversies began over the "certainty of mathematics." The determination of the degree of certainty of mathematics also concerned the legitimacy of using mathematics in physics. In the case of Benedetti, the tension between his function as court mathematician and his identity as philosopher—and *patrizio*—lies beneath his science. While philosophical legitimacy was essential for the acknowledgment of the intellectual dignity of his endeavor, the practical dimension of mathematics remained fundamental for the social justification of his function as a court expert.

One could single out the social and the political-cultural coordinates of Benedetti's science as two complementary drives. On the one hand, his position as a court mathematician directly determined much of the content of his writings, occasioned by the requests addressed to him as a court *expert* in technical issues pertaining to mathematics. His position also determined formal aspects of his work, in particular its occasional character and fragmentation. On the other hand, Benedetti's identity as a philosopher was directly related to his cultural ambitions and his engagement aimed to affirm *mathematical philosophy* in the intellectual arena against scholastic thinkers and humanistic literati. His political identity as a lay aristocrat made him an organic part of the centralizing project of the court and marked his distance from Counter-Reformist drives which sought to impose Roman universal interests over territorial states' autonomy. His support for a sort of party of the *politiques* resulted in treatises advising on politically relevant technical and cultural issues (e.g., navigation on the occasion of the battle of Lepanto or the calendar reform). His activity as a lay educator, e.g., his arithmetic teaching to the prince, Carlo Emanuele I, is found in his pedagogical writings, some of which were published in his scientific miscellanea. In summary, both content and form, as well as the demarcation of the fields of his scientific competence as a mathematician and philosopher, depended on social settings and cultural engagement.

The fact that Benedetti never established a scientific school around himself can be seen as an indication of the precarity of patronized science, linked to the person of a particular ruler and not institutionalized at the level of an academic body. In the course of the seventeenth century, these limitations of early court society would be solved by securing scientific continuity for patronized science through the foundation of scientific societies.

[19] Greenblatt 1980.
[20] Biagioli 1993. Also see Biagioli 1989.

These societies constituted an improvement over the volatility of Renaissance patronage, which depended on the humors and interests of a prince, by replacing him with a corporative *persona ficta* deputed to protect, credit, and promote science. This did not imply a diminution of the political relevance of science. As has been argued, the institution of the Académie Royale des Sciences as a means to patronize all of the sciences also meant the conquest of a new kingdom, *la république des lettres tout entière*, for Louis XIV.[21]

Montesquieu was a perspicacious observer of the courtly society in which Benedetti lived and worked. In his opinion, the "courtly air," or the ethos of the ruling elites of a monarchic state, "consists in putting away one's own greatness for a borrowed greatness. This greatness is more flattering to a courtier than is his own."[22] Such *grandeur empruntée*, or borrowed greatness, was a function of a person's distance from the ruler. Benedetti's greatness could have solely consisted in his mathematical acumen, in his mechanical insights and demonstrations, or in his philosophical discernment; these are the virtues that the historian of science is inclined to observe as principal. However, Benedetti saw himself as a court gentlemen, and only valued his capacity as a mathematician as subordinate. He presented himself as a *court* intellectual, more precisely, as a "philosopher *to the Dukes of Savoy*." He "borrowed his greatness" (in Montesquieu's words) from his proximity to the rulers. In the courtly milieu, it was honor and rank, together with their corollary, ambition, rather than skill, diligence, and measure that marked the character of a nobleman who belonged to the hegemonic class of the new state. Greatness is a major motivation for Benedetti's science, which cannot be confined to technical demonstrations or the solution of specific problems. Rather, his treatment of details never departed from concerns about the big picture; in his work, special issues were constantly elevated and received their meaning on the level of a grand overview, natural and epistemological.

Greatness is not the only courtly quality to enter Benedetti's science. As Montesquieu further observed: "At court one finds a delicacy of taste in all things, which comes from continual use of the excesses [*superfluités*] of a great fortune, from the variety, and especially the weariness, of pleasures, from the multiplicity, even the confusion, of fancies, which, when they are pleasing, are always accepted."[23] To be sure, one cannot say that Benedetti's knowledge was superfluous in the sense that it had no concrete application. In the Renaissance, it was evident to anybody how closely mathematics was connected to practical realms ranging from war technology to fortification, navigation, and administration. Benedetti's work and activities related to these realms; even his astrological consultancies can be appreciated for their practical orientation—as astrology notably coincided with the so-called *astronomia practica*, as opposed to mathematical astronomy, or *astronomia theorica*. Still, Benedetti insisted on his lineage as a "philosopher" (connected with his claims about the Pythagorean universality of his method and the fragmentation of its applications) despite the attention given to practice and concreteness in Renaissance mathematics. Such a contention was aimed at confirming his superiority over the immediate application of knowledge or the material origin of arts such as mechanics.

His stress on theory—on "speculation"—is well attuned to the spirit of court society, which was centered on nobility, that is, on disinterest and rank, rather than efficacy. The "superfluity of Benedetti's science" corresponds to the leisure character of knowledge in general, due to fact that its bond with materiality and practice was sublimated. Whereas corporative and merchant societies like those of the Italian Quattrocento (or, more gen-

[21] Biagioli 1995, 1418 and 1438.
[22] Montesquieu 1989, 33.
[23] Montesquieu 1989, 33.

erally, bourgeois and democratic ones like those emerging in the seventeenth century) would emphasize the practical origin and meaning of science, a court society stresses its symbolic value rather than direct usefulness and economical importance.

Besides the *superfluité* (which applies to Benedetti only if it is not taken too literally), all of the other qualifications Montesquieu attached to the court atmosphere suit his endeavor: good taste (we can add, "wit"), variety, pleasure, multiplicity, even confusion. The main virtue of a court society rested on the sense of honor and ambition: "Honor, meddling in everything, enters into all the modes of thought and all the ways of feeling and even directs the principles."[24] Norbert Elias, who agreed with this assessment, also pointed out the fatal consequences for budgetary issues of a mentality that is so distanced from a modern bourgeois economy. From an economic viewpoint, court society was intrinsically flawed. It was destined to bankruptcy because form, ritual, and etiquette counted more than parsimony. Similarly, courtly science displayed detachment from monetary return. Elias has also emphasized the centrality of etiquette for this detachment. At court, formal etiquette was decisive, as it served to maintain and reinforce distances and hierarchies.[25]

The sense of honor and superiority typical of such social formations appears in Benedetti's intended distance (social, intellectual, moral, and epistemological) from artisanal practice and the erudition of university professors. He appropriated the results and methods of both fields, in particular those of the practical arts, but at a higher level of generalization. He particularly envisaged a reformed natural philosophy as the most cherished fruit of his "mathematical-physical speculation." Such theoretical distance from immediacy is the epistemological parallel of the sense of honor and social distance and, as such, it became an essential ingredient of Benedetti's science and added symbolic value. As a court intellectual, he did not identify himself with traditional forms of higher culture such as Scholastic Aristotelianism or humanistic rhetoric. He proudly affirmed himself as a courtier, free to think and philosophize in the protected space of the court, independent of the most immediate material needs, of academic constraints dictated by tradition, and concerns about systematicity and completeness. Ambition, the companion of aristocratic honor, "meddled in everything" and directed Benedetti's search for the most general principles of a new vision of nature, both mathematical and physical. The court protected and promoted a science and philosophy in which disinterestedness was foremost. In its favorable womb, a daring mind could venture out to explore new realms beyond established disciplinary boundaries. The speculative freedom of the court also determined the specific form of Benedetti's work, its occasional character, and the amazing variety exhibited by his *diversae speculationes mathematicae et physicae*.

The economy of honor in the court society left an enduring epistemological imprint on the social fabric of science. Symbolic capital governed modern science long after it became coupled with economic capital and, in many ways, it still significantly influences science and research. The legacy of courtly ingenuity and leisure has to be acknowledged as a lasting influence upon scientific practice as well. Moreover, the topos of a protected space, so attractive to the emergent category of philosopher-scientists in the sixteenth and seventeenth centuries, contributed to creating the myth of the independence of pure science. Constant claims and controversies about scientists' autonomy have accompanied the modern path to science in its migration from the court to the scientific academy and from the scientific academy to the laboratory. The connections of modern science to the

[24] Montesquieu 1989, 33.
[25] Elias [1969] 2002, 173.

economy and society at large, politics, and cultural structures can be appreciated by considering the complex historical ties that link knowledge with its material and cultural conditions reaching far beyond the perception of the individual historical actors. The spirit of Benedetti's science can be seen as typical of an age of profound social transformation and political reconstitution, which is reflected in the exceptional re-structuring of knowledge and the transition to novel forms of scientific acquisition, legitimation, and transmission.