Asymmetries of Symbolic Capital in Seventeenth-Century Scientific Transactions: Placentinus's Cometary Correspondence with Hevelius and Lubieniecki

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"Symbolic capital is a credit; it is the power granted to those who have obtained sufficient recognition to be in a position to impose recognition."[1] Epistolary correspondence in the early modern period functioned as a powerful means of accreditation, formation and reinforcement of group identity, and evidenced individuals' ranking within the scholarly community. According to Pierre Bourdieu's understanding of social space, relational, social and physical closeness ought to be accurately distinguished from one another. In fact, *immediately visible* interactions within a physical (e.g. geographical) space do not reveal social proximity. The latter depends on shared "properties" (positions and functions) of agents, i.e. groups or institutions within a topology of (material and symbolic) distribution of resources. Early modern correspondence networks were purposely aimed at making elites' proximity *visible* despite spatial distances. They especially paraded connections between powerful patrons and personalities of high status and recognition. To a historian, indeed, such ostentation has become more visible than the elusive reality of personal 'confabulatory' exchanges, as the former is well documented, while the latter is not.[2] Therefore, the historian's eye reverses the sociological relation of visibility and invisibility. Scientific correspondence and the paratexts of printed books (such as dedicatory letters and laudatory poems) offer direct access to early modern networks (or at least, to their celebration), whilst scholars' immediate environment often disappears. Scholars' collaborators, their families and the people with whom they interacted on a daily basis only fragmentally reappear through indirect sources or archival materials.[3]

Early modern epistolary transactions reveal a particular form of social capital, consisting of scholars' access to and positioning within the learned community, their capacity to benefit from connections for their research (e.g., through exchange and acquisition of data) and the ability to mobilize them for fundraising or dispelling scientific controversies. The exchange of letters was the *symbolic* representation of the *social* positioning on the level of legitimization and recognition. It indeed qualified as an exchange of credit with an economic and cultural bearing.[4]

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[1] Pierre Bourdieu, 'Social Space and Symbolic Power', *Sociological Theory* 7/1 (1989), 14–25, p. 23.

[2] See Mordechai Feingold, 'Confabulatory Life', in *Duncan Liddel (1561–1613), Networks of Polymathy and the Northern European Renaissance*, ed. Pietro D. Omodeo in collaboration with Karin Friedrich (Leiden, 2016), 22-34.

[3] The problem of reconstructing the world of those who "cannot speak" has been addressed many times in historiography. It is the *fil rouge* of Carlo Ginzurg's studies on the Inquisition and witchcraft in capital works of micro-history such as *I benandanti. Ricerche sulla stregoneria e sui culti agrari tra Cinquecento e Seicento* (1966) and *Il formaggio e i vermi: Il cosmo di un mugnaio del '500* (1976). On the "invisible" technicians of early modern experimental philosophy, see Steven Shapin, 'The Invisible Technician', *American Scientist* 77/6 (1989), 554–563. On professorial household, see Elizabeth Harding, *Der Gelehrte im Haus: Ehe, Familie und Haushalt als Standeskultur an der protestantischen Landesuniversität Helmstedt* (Wiesbaden, 2014).

[4] According to Bourdieu, 'Social Space and Symbolic Power', p. 21, symbolic capital can be seen as "economic or cultural capital, when it is known and recognized."

In the system of early modern scholarship, such symbolic capital was unevenly distributed and negotiated within a complex transnational and often cross-confessional system of diplomatic relations, courtly patronage, academic affiliations and university appurtenance.

As a paradigmatic case, Erasmus of Rotterdam fully deployed the symbolic power of correspondence as early as the beginning of the sixteenth century. Deliberately setting himself at the centre of a Europe-wide editorial and epistolary network, the celebrated humanist distributed his letters, advice and cultural credits to powerful people, peers, pupils and admirers. His tireless efforts to weave a web of contacts and relationships was aimed at establishing a *respublica literarum* the appurtenance to which implied adherence to values such as humanist literacy, scientific solidarity and anti-dogmatic tolerance.[5] However, the ambiguity and difficult implementation of such ethos was to sharply emerge from confessional divisions entering late-humanist controversies, from 1550 to 1650, at a time of *Konfessionalisierung* in which learned networks opposed one another.[6] Stability could be granted to networks only by backing up symbolic exchanges through institutionalized hubs, especially in the form of academies. The social power (or, if one prefers, *social capital*) descending from connectedness was continued, symbolically, through "exchanges" of letters alongside books, instruments, data, and—most importantly in this respect—recognition.

In the Gutenberg era, the possibility to publish letters or large epistolary collections offered unprecedented opportunities to deploy strategies of co-optation and exclusion at the corporate level, as well as of self-fashioning and discrediting of adversaries at the level of individual career strategies. Late sixteenth-century printed collections of scientific letters are a clear witness to the double agenda of both disseminating scientific views and of acquiring and conferring prestige in the eyes of the scholarly community. One could suitably mention the Renaissance mathematician and physicist Giovanni Battista Benedetti, who published a miscellanea of scientific epistles as one of the most extensive sections (and the concluding one) of his *Diversarum speculationum mathematicarum et physicarum liber* (Turin, 1585). These letters, known as *Physica et mathematica responsa per epistolas* (*Epistolary Answers on Physics and Mathematics*), constituted a heterogeneous collection on various issues, ranging from geometry to astronomy, meteorology, geography and philosophy. It was organized according to the rank of the addressees: the first letters in the collection were those directed to the Dukes of Savoy, of whom Benedetti was a courtier, as well as to the highest Turin dignitaries, followed by professors, scholars and courtiers whose social position was seen as less important.[7] Another example is the publication of the scientific correspondence by the Danish astronomer Tycho Brahe. In his *Epistolarum astronomicarum libri* (Uraniburg, 1596) his concern with prestige and status recognition is manifest. Coming from a family of noble lineage himself, Brahe gave prominence to epistles directed at aristocrats rather than to those addressing "simple" professors or courtiers. He

[5] Cf. Christoph Galle, *Hodie nullus – cras maximus: Berühmtwerden und Berühmtsein im frühen 16. Jahrhundert am Beispiel des Erasmus von Rotterdam* (Münster, 2013). Also see Pietro Daniel Omodeo and Enrico Pasini, 'Erasmian Science', introductory essay to 'Erasmian Science: The Influence of Erasmus of Rotterdam on Early-Modern Science', *Journal of Interdisciplinary History of Ideas* 6/2 (2014), 2:1–2:19.

[6] The point is clearly stated in Martin Mulsow, 'Netzwerke gegen Netzwerke: Polemik und Wissensproduktion im politischen Antiquarianismus um 1600', in id., *Die unanständige Gelehrtenrepublik: Wissen, Libertinage und Kommunikation in der Frühen Neuzeit* (Stuttgart, 2007), 143–190, 148–149.

[7] Giovanni Battista Benedetti, *Diversarum speculationum mathematicarum et physicarum liber* (Taurini, 1585), Book Six. Cf. Michela Cecchini and Clara Silvia Roero, 'I corrispondenti di Giovanni Battista Benedetti', *Physis* 41/1 (2004), 31–66.

allowed his correspondence with the patron of sciences Landgrave Wilhelm IV of Hessen-Kassel to appear prominently, at the expense of acknowledging his *actual* scientific correspondent in Kassel, the court mathematician Christoph Rothmann.[8] Brahe also used this publication to attack adversaries, most notably the imperial mathematician to Rudolph II, Nicolaus Reimarus Ursus, whom he accused of plagiarizing his geo-heliocentric planetary hypothesis. As this famous *querelle* shows, epistles could escape the control of their senders. For instance, at the climax of the polemic, Ursus published a deferential and flattering letter he had received from the young mathematician Johannes Kepler, who was in search of an employment in Prague. The fact that this epistle appeared, without permission of its author, in the opening of a book including a fierce attack against Brahe created many problems for Kepler, as he then had to apologize to one of the most prominent astronomers and patrons of astronomy of the time.[9]

The seventeenth century offers a wide range of examples of epistolary webs in which key personalities acted as networkers, promoters and circulators of knowledge, as was the case with figures such as Marin Mersenne, Athanasius Kircher, Ismael Boulliau or Samuel Hartlib, to name only some of the most distinguished. All of them exchanged letters with Johannes Hevelius, whose large correspondence network has not been entirely published and is yet to be adequately studied.[10] Another important correspondent of his, the secretary of the Royal Society, Henry Oldenbourg, developed an editorial project called the *Philosophical Transactions*, which contributed to the transformation of the epistolary genre into the prototype of journal communication. An important accomplishment of his generation was the creation of new platforms for communication, including the *Journal des Sçavants* and the *Acta eruditorum*, both of which were closely related to the activities and exchanges of newly-founded scientific academies. Their transactions were said to have taken place in a sort of *terra Franca* extending over and beyond confessional barriers even during the worst religious wars. Such intentions contributed to the creation of the myth of a literary republic ruled by egalitarian ideals of respect and solidarity in the name of objectivity and impartiality. This myth often disguised or mystified a much less idyllic reality, one that was marked instead by asymmetrical access to and possibility of mobilization of the symbolic capital descending from the appurtenance to this community. In this essay, I will explore such asymmetries exemplified in the epistolary exchanges on the comets of the 1660s that took place between three Polish scholars: the heterodox Cartesian Johannes Placentinus; Johannes Hevelius, who was a professor of mathematics at Frankfurt on Oder, protégé of the Brandenburg Prince; and Stanisław Lubieniecki, a wealthy Gdańsk entrepreneur and astronomer, a member of the Royal Society and an aristocratic Socinian émigré in Hamburg.

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[8] Cf. Adam Mosley, *Bearing the Heavens: Tycho Brahe and the Astronomical Community of the Late Sixteenth Century* (Chicago, 1993). On Rothmann: *Christoph Rothmann's Discourse on the Comet of 1585. An Edition and Translation with Accompanying Essays*, by Miguel Ángel Granada, Adam Mosley and Nicholas Jardine, (Leiden-Boston: 2014).

[9] Nicholas Jardine, *The Birth of the History and Philosophy of Science* (Cambridge, 1984), in particular Chap. 1, 'The Circumstances of the Composition', 9 and ff.

[10] For general considerations on the challenges of an edition of Hevelius's correspondence, see Chantal Grell and Patricia Radelet-De-Grave, 'Un projet: L'edition de la correspondence d'Hevelius (1611–1687)', *Archives Internationales d'Histoire des Sciences* 60/2–165, (2010), 423–428.

Hevelius's Indiscreet Correspondent, Placentinus

Johannes Hevelius cultivated one of the widest correspondence networks of his time. From the publication of his *Selenographia* (1647) onwards, he kept copies of all of his letters alongside the originals of those he received. Over the years, he gathered an impressive collection of letters to and from the most prominent people of the time, including kings and first-rank politicians, scientists affiliated to the *Académie de France* and the Royal Society, university professors, Jesuit scientists, diplomats and courtiers. About 2,800 epistles are preserved; Hevelius intended to publish them as part of his ambitious scientific and editorial projects, but was hindered by a fire that destroyed his house, observatory and printing press in 1679.

As Chantal Grell has recently stressed, Hevelius's correspondence mirrors a European *réseau* initially directed to secure his contacts with London, Paris and Florence and later re-centred in the Baltic and German area.[11] Hevelius's relations with Paris and the French court were mediated by a loyal friend, Ismael Boulliau. Boulliau introduced him to the "*grand maître des pensions royales,*" Jean Chapelain, who in turn won Hevelius the favour of Jean-Baptiste Colbert and Louis XIV. Another Frenchman, Pierre des Noyers—a pupil of Roberval and secretary to the queen of Poland Maria-Luisa Gonzaga—constantly exchanged letters with him and safeguarded his interests in the Polish court. Hevelius's contacts in Tuscany and with the short-lived *Accademia del Cimento* mainly consist of correspondence with the protector of sciences, Leopoldo de' Medici, with whom he exchanged letters from the early 1660s to the mid-1670s. Moreover, he had close relations with many British scholars, especially Henry Oldenbourg, thanks to whom he could steadily publish in the *Philosophical Transactions*. The Polish aristocrat and diplomat Stanisław Lubieniecki in Hamburg was Hevelius's key to the wide Baltic network. In Germany, his Leipzig connections, in particular the mathematician Christoph Pfautz, co-secretary of the *Acta Eruditorum*, secured Hevelius's publications in this learned journal.[12]

Hevelius's epistolary exchange with Johannes Placentinus is only a fragment of his large correspondence, Placentinus being a 'lesser figure.' Throughout the 1650s, this Polish Cartesian from Leszno had struggled to affirm his philosophical views against peripatetic Lutheran censors at the University of Frankfurt on Oder. In 1656 the protector of the university, Friedrich Wilhelm of Brandenburg, had sanctioned Placentinus's *libertas philosophica* by appointing him as court mathematician.[13] Galvanized by such a legitimation, Placentinus started an intense phase of publications and research activity. Regrettably, his career was tragically interrupted at the beginning of 1666, when his mental health was cast into doubt and as a consequence he was placed under house arrest, and his wife and daughters were taken from him. These events excluded him from public and academic life. In spite of these tragic circumstances, as we will see, he still had the will to continue his intellectual activity in the first phase of his reclusion.[14]

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[11] Chantal Grell, 'Hevelius en son temps', in *Correspondance de Johannes Hevelius*, vol. 1, *Prolégomènes critiques*, directed by Chantal Grell (Turnhout, 2014), 75–89.

[12] Klaus-Dieter Herbst, 'Hevelius' Correspondence with Scholars in Leipzig', in *Studia Copernicana* XLIV, *Johannes Hevelius and His World: Astronomer, Cartographer, Philosopher and Correspondent*, ed. by R. L. Kremer and J. Włodarczyk (Warsaw, 2013), 201–212.

[13] Pietro Daniel Omodeo, 'Central European Polemics over Descartes: Johannes Placentinus and His Academic Opponents at Frankfurt on Oder (1653–1656)', *History of Universities* 29/1 (2016), 29–64.

[14] The details of these events and the reasons for these extreme measures against Placentinus are obscure in many respects. The most significant documents have been summarized in a recent publication by Andrea Lehmann, "'Nun ist wohl keiner bey dieser Stadt, so den traurigen Zustandt gedachten Placentini nicht von Herzen solte

The remaining proof of correspondence between him and Hevelius consists of eight letters exchanged between 1659 and 1665. Seven of them are handwritten and preserved in the Paris Observatory. One more letter was printed by Placentinus in a booklet on the stormy winds of winter 1660/1661, *Physicalischer und Astrologischer Bericht von denen erschrecklichen... Winden* (*Physical and Astrological Report on the Frightening... Winds*, Frankfurt/Oder, 1661).[15]

In the first letter (Gdańsk, 3 December 1659), Hevelius asked Placentinus's support in finding a talented mathematician (*ein studiosus mathematum*) ready to move to Gdańsk to help as his assistant. The tone of the epistle is cordial. It begins by mentioning a personal meeting in Gdańsk: "I remember with pleasure the honour and friendship that You once bestowed on me, when You visited me during one of your travels and You offered me Your devoted service."[16] Acquaintance is the basis upon which a durable connection could be implemented. "Personal meetings [...]—as has been observed relative to the development of scholarly networks in the early-modern period—established the weak ties upon which correspondence could be established."[17] A scholar like Hevelius, being at the centre of many such "weak ties," was in the most favourable position for gathering information and disseminating his ideas.[18]

The rest of Hevelius's first letter to Placentinus is devoted to discussing the appointment of a suitable assistant. The candidate is accurately described: He should be a pious and decent person (*der absonderlich eines gutten frommen und sitsamen habens und verhaltens were*) with a clear predisposition to mathematical studies. He should already be well versed in astronomy, be acquainted at least with planetary theory and be able to make astronomical computations of planetary motions. Moreover, the successful candidate should have good eyesight, in order to observe the smallest stars.[19] The position would last for one year, granted the person meets Hevelius's expectations. He would live in the astronomer's house (*behausung*), have a desk (*einen freyen tisch*) and receive a fair salary (*ein billiges honorarium*). He would be introduced to the use of the astronomical instruments in Hevelius's observatory and be free to improve his scholarship to his own advantage. His duty would be to assist the observational campaigns at night (*er sonsten nicht anders würde zu thun haben als des nachts mir helffen observiren*) and make calculations (*rechnen u. calculiren*).

The next handwritten letter was by Placentinus. It was penned on 25 March 1661, according to the old calendar used in protestant Brandenburg (corresponding to 4 April on the Gregorian calendar). He started by thanking Hevelius for sharing his cometary and celestial observations with him. Placentinus added that they had arrived at the moment in which he was publishing a booklet on the stormy winds of 1660/1661. In his opinion, the winds had been generated by the comet that Hevelius had recently observed. Hence, he had taken the opportunity to print

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Beklagen.' Tragisches Ende der Karriere des Mathematikprofessors Johannes Placentini," in: *Jahresbericht/Forschungsstelle für Vergleichende Universitätsgeschichte (Frankfurt/Oder)* 6 (2011), 40–56.

[15] Placentinus, *Physicalischer und Astrologischer Bericht von denen erschrecklichen... Winden* (Franckfurt an der Oder, 1661), ff. E3*r*-E4*r*.

[16] Hevelius to Placentinus (Gdańsk, 3 December 1659), Bibilothéque de l'Observatoire, Paris (from now onwards abbreviated as OP), coll. BO, vol. 4, n. *555*, [1*r*]: "Ich erinnere mich billig, die Ehr und freündlikeit die er mir erwiesen, wie er eines mahles im durchreisen mich ersuchete, imgleichen der anerbietung seiner willigen dienste."

[17] David S. Lux and Harold J. Cook, 'Closed Circles or Open Networks? Communicating at a Distance during the Scientific Revolution', *History of Science* 36 (1998): 179–211, p. 191. The authors draw on Mark S. Granowetter, 'The Strength of Weak Ties', *American Journal of Sociology* 78 (1973): 105–130.

[18] Ibid., p. 182.

[19] Hevelius to Placentinus (Gdańsk, 3 December 1659), [1*r*]: "insonderheit aber ein gutt gesicht haben in die fern zusehen, damit er die kleinen fixas wol möchte discernieren können."

Hevelius's letter as a confirmation of his own natural views:

> I would like to thank You, very erudite Sir, in the most devoted manner for the most desired report on the new comet. I received it in the most convenient moment, as the printer was just beginning to print my small treatise on the frightening and unusual winds. Also, this beloved letter reinforces my theory; therefore I printed it in it and hope that my very erudite Sir will have nothing against it.[20]

It is clear that Placentinus tried to take advantage of Hevelius's credit, as one of the most admired astronomers of the time, and exploit the correspondence with him to strengthen his own position and the value of the theses expounded in the booklet *Physicalischer und Astrologischer Bericht von denen erschrecklichen...Winden*. Hevelius's letter (Gdańsk, 2 March 1661) dealt with celestial singularities observed that year: a comet, a nova and a spectacular parhelion ("seven suns"). Placentinus explained to his correspondent that this information was very precious to him, as he had not been able to observe the comet from the very beginning (*weil ich den Comet nicht vom anfang gemercket*) and he had not seen the nova in the constellation of Cetus at all (*die Fixam in Ceto habe auch nicht observiert*). He complained that he had no astronomical observatory but announced that the Electoral Prince of Brandenburg would fund one and endow it with the necessary instruments; but he added a precautionary note: "whether this will happen, only time can tell" (*ob es aber wird geschehen, lehret die zeit*).

Placentinus also briefly reported his main theses. According to him, the comet had been generated from the nova and this, in turn, provoked the devastating winds of 1660/1661. He reassured Hevelius that his views were firmly grounded in Cartesian principles. Accordingly, he could also foretell that the nova would reappear, although he could not determine its exact position due to the lack of observational data. On this account, he required Hevelius to send accurate data concerning the dimensions of the nova and its exact coordinates.

> I am ready to affirm that the newly disappeared star will reappear, not least because this is in agreement with Descartes's principles and hypotheses. I am of the opinion that the comet originated from this new star. From its motion and duration one can determine […] when it will reappear, but I am not able to determine where. Therefore, I kindly request You for more information, in particular on how big the fixed star was and where in Cetus […].[21]

Placentinus also asked for more details on the parhelion (*wegen der 7 sonnen bitte ich umb einen außfuhrliche bericht*) and he proposed to share his observations of a recent solar eclipse in exchange. His tone is self-assured. He relies on the friendship with Hevelius (*große freundschafft*)

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[20] Placentinus to Hevelius (Frankfurt on Oder, 25 March/4 April 1661), PO, coll. BO, vol. 5, n. 665, [f. 1*r*]: "Wegen der gewünschten Nachricht von newlichem Comet, bedanke ich mich gegen meinen hochgelehrte herrn dienstfreundlichst, welche mir zu rechter Zeit ist wol worden da der buchdrucker hatt angefangen zu drucken mein kleines tractätlein von denen erschrecklichen und ungewöhnlichen winden; und weil im vielgeliebte brief meine Meinung bekräfftiget, habe ich denselben auch dabey drucken laßen, hoffe daß er meinem Hochgehrten herrn nicht wird inwider seyn."

[21] Ibid., [f. 1*v*]: "Daß der newe verschwundene stern vom newen widerumb erscheinen werde, gebe ich gerne zu, weil es auch mit denen *principiis* und *hypothesibus Cartesii* ubereinkomt: und halte dafür, daß der Comet auß diesem Nowem stern entstanden, auß deßen *motu* und *duratione* man auch *praeter propter* die zeit zvar aber ich nicht den ort da er wiederumb erscheinen werde derminiren können. Bitte derowegen umb fernere nachricht, wie groß die Fixa gewesen, und wo sie im Ceto gestanden [...]."

and shows interest in Gdańsk's scientific life, asking whether Leurentius Eichsted's former position as chair of mathematics at the Gymnasium had been given to somebody after his death. He himself had attended the school in 1648.[22]

Hevelius found Placentinus's publication quite indiscreet. Judging from the tone of his response on 5 July 1661, he was irritated. Formally, he was polite; he even apologized for his delayed answer. However, he expressed his disappointment for the decision to publish his letter without permission:

> Although I am grateful to You for the small tract on the winds, nonetheless I would have not given my consent to You, my dear Sir, to publish my writing immediately after its reception without my knowledge and approval, as I wrote it in a rapid and confuse manner and did not finish it. In fact, if it had been intended for publication, it should have had a different form. Moreover, if I had wished to announce something about the comet or the new star at that point, I would have done it myself. The motto to follow here is "sat cito si sat bene" [quick enough if well enough], therefore one should better not expose oneself with unfinished things.[23]

After this complaint about the hasty publication of his letter, Hevelius criticized and even mocked Placentinus's competency and assumptions. He claimed to be completely unsurprised that the latter had not observed the nova: this was certainly due to his rushed methods. He accused Placentinus of looking at ephemerides rather than at the heavens (*coelo Stellato*). The new star shone brightly, he insisted, and no astronomical observatory was necessary to see it, but rather application and sufficient knowledge of the sky. Hevelius stressed to his correspondent that many celestial phenomena pass unperceived if one is not familiar with the stars.[24] He did not address Placentinus's post-Cartesian theory of the generation of comets from stars but assured that he did not agree with it. In later writings on comets, he would argue that comets were generated from the exhalations of the outer planets.[25]

In the last part of the caustic letter of July 1661, Hevelius appeared more conciliatory. He reported that he had observed Mercurius' transit on the solar disc on 3 May and asked Placentinus whether he or anybody he knew had succeeded in capturing this event. Probably nobody, he bitterly remarked, since he knew of no calendar-maker who mentioned it, despite its intrinsic astronomical interest and the fact that it could be easily forecast.[26] Hevelius alluded again to Placentinus's incapability to stand out from the ordinary.

Placentinus and Hevelius's correspondence is two-sided. As can be seen, the exchange could

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[22] *Catalogus Discipulorum Gymnasii Gedanensis (1508-1814)*, ed. Zbigniew Nowak and Przemysław Szafran (Warsaw/Poznań, 1972), 161. Also, see my essay, 'The Scientific Culture of the Baltic Mathematician, Physician and Calendar-Maker Laurentius Eichstadt (1596-1660)', *Journal for the History of Astronomy* 48/2 (2017), 1-25.

[23] Hevelius to Placentinus (Gdańsk, 5 July 1661), PO, Coll. BO, vol. 5, n. 666, [f. 1*r*]: "Für das tractatlein von den winden bedanke ich mich zwar freundtlich; ich hette mich aber nicht versehen gehabt, daß der Herr meinen in aller eyll *confus* geschriebenen Schrift, den ich zu dem ende nicht geschrieben, noch ubergeschickt, solte alsbaldt ohn meine wißen und willen drucken laßen. Den wann er hette sollen gedruckt werden, hette er woll könnnen anders auch müßen sein. Dazu hette ich von dem *Comet*en oder newen stern etwas noch Zur Zeit kundt thun wollen hette ich es woll selbsten vorrichtet; uber dieses drucket mich *sat cito si sat bene*, und mit unfertigen dingen ists besser Zu Hauß geblieben."

[24] Ibid.

[25] Cf. Donald K. Yeomans, *Comets: A Chronological History of Observation, Science, Myth, and Folklore* (New York, 1991), 82–87.

[26] Ibid. [ff. 1*r-v*].

turn either into a form of credit or discredit and into a means of inclusion or exclusion from the learned community. "Exchange transforms the things exchanged into signs of recognition and, through the mutual recognition and the recognition of group members which it implies, reproduces the group. By the same token, it reaffirms the limits of the group [...]. Each member of the group is thus instituted as custodian of the limits of the group."[27] Whereas Placentinus seized the opportunity to use his correspondence with Hevelius to gain a better reputation, Hevelius feared that his name could be tarnished if his letters were abusively employed for aims that went beyond his intentions. Hence, Hevelius did not only complain but also made himself a guardian of scientific standards casting doubt onto Placentinus's methods and assumptions. His negative judgment addressed both Placentinus's behaviour and his research activity, thus questioning his credibility. This was a threat to Placentinus's recognition in the *respublica literarum*, of which Hevelius was a very reputed member. As a matter of fact, Placentinus was damaged by his impulsivity: he would not regain Hevelius's respect. His apologetic reply is still extant (a letter from 29 July/8 August 1661), but it is in such bad condition that I was not able to decipher it. Still, it is apparent from the readable fragments that it readdressed the controversial issues: the rushed publication of Hevelius's observations, comets, the position of the nova and his academic duties, which left him no time for regular starry observations.[28]

A few years later, in January 1665, Placentinus wrote to Hevelius again in order to communicate his observations of the presently shining comet, expecting in return Hevelius's data. Placentinus's diagram showing the position and trajectory of the comet along with the table of the positions are preserved with the epistle. With his usual straightforwardness (and lack of tact), Placentinus urged Hevelius to procure him a telescope as soon as possible, as he needed it to make closer observations of the phenomenon. He assured Hevelius that his patron, the Prince of Brandenburg, would cover the costs. Moreover, since the fame of Hevelius's *Cometographia* had reached Frankfurt, he requested a copy of the work:

> To my most revered Sir, I send herewith my limited observation of the current comet, which has been taken by means of a quadrant with a radius of six feet [6 *schuh*]. Also, I kindly request You to communicate to me Your observations in return. If possible, would You be able to send me a good telescope [*Tubum Opticum*]? My most serene Lord, the Electoral Prince, will reimburse You the costs. I would be very thankful if You were able to provide a quick response, so that I can continue to observe the comet as I did yesterday.[29]

Before receiving Hevelius's response, Placentinus sent him another message on 30 January/9 February 1665. It contained a revised table of observations and a request to ignore the earlier one, as it contained mistakes. His request for a telescope was reiterated.[30]

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[27] Pierre Bourdieu, 'Ökonomisches Kapital, kulturelles Kapital, soziales Kapital', *Soziale Ungleichheiten*, 2nd special issue of *Soziale Welt* (1983), 183–198, p. 250.
[28] Placentinus to Hevelius (29 July/8 August 1661), PO, coll. BO, vol. 5, n. 680.
[29] Placentinus to Hevelius (Frankfurt on Oder, 16/26 January 1665), PO, coll. BO, vol. 6, n. 925: "Meinem Hochgeehrten Herrn uberschicke ich hiemit meine geringe observation des itzigen Cometen welcher verrichtet wurden auf einem quadrante, deßen radius 6 schuh lang ist, und bitte mir auch dessen observationes reciproce zucommunicieren und wo möglich mir einen gutten großen Tubum Opticum zukommen laßen. S. Churfl. Durchl. mein Gnädigster Herr pp. werden die[...] kosten erstatten; Bitte sehr umb schleunige antwort, damit ich ferner im Comet observiren könne welchen ich auch gestern gemachet habe."
[30] Placentinus to Hevelius (Frankfurt on Oder, 30 January/9 February 1665), PO, coll. BO, vol. 6, n. 927.

Hevelius's response was quick; it was actually a brief note, hastily written on 6 February 1665. It did not meet the expectations of the feverish Placentinus in any respect. Hevelius refused to pass on his observations since he had yet not finished his study of the comet. As to the *Cometographia*, it was still a work in progress. Therefore, Placentinus should patiently wait until its completion. Thirdly, Hevelius made him notice that his time was too precious to construct telescopes for others. If Placentinus wished to buy one, he should look elsewhere:

> Thank You very much for the cometary observations that You, Sir, have sent me. My own are provisional and are not ready to be transcribed, therefore those who desire to see them should wait until my *Cometography* or *History* about this comet is complete. I consider my time too precious to prepare good telescopes of the length of two feet and give them to others. Besides, You can request one from Augsburg, if You have 100 or 150 ducats to spend. I also bought such one.[31]

Far from being applauded by Hevelius, Placentinus had become an unwelcome correspondent and was accordingly marginalized within his own network of correspondents.

Hevelius's Precarious Position in the Republic of Letters

Hevelius refused to give Placentinus his observations of the comets of 1664 and 1665 for several reasons. First, he must have been highly disappointed in Placentinus's use of his earlier letter; second, the lack of deference on Placentinus's side did not make him well-disposed toward him; third, he was investing great energy in editorial projects on comet observations and theory in order to secure himself the protection and the financial aid of princely patrons such as the King of France and, to a lesser extent, Leopoldo de' Medici. Moreover, he probably did not want to be associated with Placentinus's speculative approach to cosmology nor with his fervent Cartesianism. His dissatisfaction with Placentinus can be seen by comparing the harsh tone of his reply to Placentinus's requests with the cordial one he used in exchanges with Stanisław Lubieniecki on the same subject.[32]

Lubieniecki was an aristocratic diplomat and Socinian pastor, who had abandoned Poland in the events following the Swedish invasion, particularly the prohibition and ban of his faith from Poland in 1658. He had first sought refuge in Stettin and later in Copenhagen from 1660 to 1662. Hindered by orthodox censors and in search of a place where he could freely practice his religion, he moved to Hamburg and Altona where he was eventually poisoned, probably for his political and religious positions, and died together with two of his daughters. Among others, he also served as a political correspondent to the king of France, informing the king about the events in northern Europe. The appearance of the comet of 1664 inspired him to write to a

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[31] Hevelius to Placentinus (Gdańsk, 6 February 1665), PO, coll. BO, vol. 6, n. 926: "Für des Hr uberschickte observation des Cometen bedancke ich mich; meine viel sie steh weitleuffig und verdeißlich abzuschreiben, also müßen die liebhaber sich gedulden biß meine Cometographia, oder Historia zum wenigsten dieses Cometen verfertiget. 2 Fuße lange und gutte Tubos opticos selbsten zuverfertigen und anderen uberszulaßen, dazu habe ich meine Zeit viel zu kostbahr. Unterdessen kan der Hr von Augspurg gar wol einen bekommen, wenn er wil 100 oder 150 ducaten spendiren; dergleichen ich selbsten einen gekaufft." Hevelius owned an Augsburg telescope made by Johann Wiessl, which went lost in the fire of his house-observatory in 1679.

[32] Stanislai de Lubienietz, *Theatrum cometicum* (Amstelodami, 1668) I 8 'Communicatio Gedano-Heveliana', 361-414.

wide range of more or less prominent scientists of the time in order to gather observations and comments, which he would finally publish in a collected volume entitled *Theatrum cometicum* in 1668.[33]

On this occasion, Lubieniecki also began corresponding with Hevelius. On 9/19 December 1664, he addressed him in an extremely polite manner, starting with a *captatio benevolentiae* and a mention of their common friendship with Boulliau:

> My most sincere congratulations to You, whom I know not only for Your highest repute all over the world but also for Your image and your most distinguished writings (through which You enlighten Astronomy, that loftiest part of philosophy), to which I should add the study of the most humane letters as well as my wide correspondence with erudite friends. Like me, my erudite friends admire your most celebrated virtues, especially your unique humanity alongside your excellence in astronomical science. However, I hope that the epistolary exchange with You, which I desire and I wish for myself in light of your humanity, will not constitute a burden and an annoyance for You, who are busy with other and more serious enquiries and occupations. You know what ties bind the lovers of the good letters. It must be evident to You, most illustrious man! It could be arranged in such a manner that, as far as Your serious occupations and lofty studies make it possible, You tie with me through the most loyal literary bond – and this will be automatically extended to the very illustrious Ismael Boulliau, a singular and very honest friend of mine as well as Yours. I cultivate a constant correspondence with him (as testified by the transcription of past epistles hereby included). Therefore, if You wish to join this [correspondence] or, as I believe, You already access and practice it, I offer you to take care of the mutual work, an effort that will certainly be most loyal to you.[34]

After this rhetorical introduction, Lubieniecki proposed to act as a mediator between Hevelius and other scholars in Hamburg and elsewhere, in order to establish a fruitful scientific exchange discussing the new comet. The attempt was successful; Hevelius replied positively and started the exchange.

In fact, the growing interest in the comets of 1664 and 1665 among scholars all over Europe, beginning with Lubieniecki and the many publications on the subject, forced Hevelius to anticipate his results and to quickly publish his views on the subject. He had already begun the ambitious composition of the *Cometographia*, a *magnus opus* on comets that was intended to repeat the success of the *Selenographia*. This volume was not complete when the new comets appeared and Hevelius decided to preliminarily publish the introduction of his cometary work. This

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[33] See Volker Weidemann, *Theatrum cometicum: Hamburg und Kiel im Zeichen der Kometen von 1664 und 1665* (Hamburg, 1987), esp. 35–36.

[34] Ibid., p. 361, Lubieniecki to Hevelius (Hamburg, 9/19 December 1664): "Te mihi non tantum de fama per Orbem clarissima, sed et de facie ac scriptis tuis egregiis (quibus Astronomiam, illam maxime sublimem Philosophiae partem illustras) notum esse, vehementer gratulor. Tibi pariter ut notus fiam, studium literarum humaniorum, sed et commercium amicarum literarum, quod cum doctis hic illic exerceo, facit. Alliciunt et celebratissime virtutes Tuae, praesertim singulari humanitas, cum insigni et excellenti rei Astronomicae scientia, qua itidem delector, conjuncta. Nolim tamen meum literarum Tecum commercium, quod ambio, et Tua Humanitate mihi polliceor, Tibi aliis, iisque gravioribus, studiis et negotiis occupato, negotium et molestiam facessere. Nosti quae vincula viros literarum bonarum amantes conjugant. Patere itaque et Tu, Vir Clarissime! Tibi haec aptari, ut quantum per seria Tua negotia et sublimia studia licebit, mecum fido literarum vinculum jungaris, et sic etiam Clarissimo Ismaeili Bullialdo, Amico meo juxtaque Tuo singulari et integerrimo. Cum quo cum assiduum literarum colam commercium (quod et nuperae epistolae exscriptum exemplum huic adjunctum docet) si et Tu idem desideres vel, quod potius credo, possideas et exerceas, offero Tibi meam qualemcunque in literis mutuo curandis operam, fidam certe te industriam."

introduction, entitled *Prodromus cometicus* (1665), was dedicated to Jean Baptiste Colbert, "councillor of the very Christian King among the most saint ones and highest treasurer of France" (Regis Christianissimi a sanctioribus consilius, summusque Galliarum aerarii moderator). Beginning in 1663, he had received a pension from Louis XIV through Colbert, and this publication aimed to strengthen his ties with his French benefactors. Hevelius's desire to be recognized within the Paris scientific élite is clear from his dedication of the *Prodromus* to Colbert:

> Very Illustrious and Excellent Sir,
> My soul has been encouraged to dare offering these modest pages of mine to Your eyes in consideration that You, the most Illustrious and Excellent, showed such great benevolence and singular favour toward me and my Uranic enquiries that goes beyond all merits and even beyond any hope and expectation of mine. You went so far as to kindly recommending me to the very Christian King so that he judges me worthy of being included among those who benefit from the holy royal clemency and protection.[35]

On 13 May 1665, Hevelius sent Lubieniecki a copy of the *Prodromus*, which Lubieniecki welcomed and later summarized in the *Theatrum cometicum*.[36]

The French reactions to the *Prodromus* were not as positive as Lubieniecki's. The mathematician Adrien Azout dedicated an *Ephéméride du comète* (1665) to the King in the hope that he would be appointed among the first members of the *Académie des Sciences*. He and Hevelius had opposing views on the nature of comets. While Hevelius considered comets to be ephemeral phenomena with elusive spiral trajectories, Azout deemed them to be stable cosmic objects endowed with regular and predictable motions. He and his associate Pierre Petit started a polemic casting doubt upon the accuracy of Hevelius's observations. What was at stake here was not only theory. In fact, it was particularly important for Hevelius to gain recognition in Paris during the time of the establishment of the *Académie des Sciences*, when inclusion implied a "redistribution of credit within a group under the king's direct control."[37] The institutional shift produced much clamour and fostered competition.

The polemic with Azout developed through letters, publications and articles in the *Philosophical Transactions* and the *Journal des Sçavants,* and involved members of both the London Society and the emerging Paris *Académie*. The polemicists eventually asked for the arbitrage of the Royal Society, of which Hevelius had been a member since 1664. Nonetheless, the verdict—communicated to him by Oldenbourg on 24 January 1666—dispelled the controversy in favour of the French party. The consequences were fatal for Hevelius: his prestige declined in London and was irreparably damaged in Paris. In contrast, Azout was appointed both as a member of the *Académie* and as a fellow of the Royal Society.[38] Moreover, these events anticipated the most famous polemic with Robert Hook, who castigated Hevelius's observational methods, in

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[35] Johannes Hevelius, *Prodromus cometicus* (Gedani, 1665), dedication: "Illustrissime ac Excellentissime Domine. Summa Illustrissimae Excellentiae Tuae benevolentia, atque singularis benignitas, qua me meaque qualia Studia Uranica, praeter omne meritum, imo spem meam atque expectatione, prosequeris, usque adeo, ut etiam Christianissimo Regi inter eos, quos Sacra Reg. M. Sua Regali Clementia, ac Protectione dignos iudicavit, me intime commendaveris, animo addidit, ut non verear hasce pagellas Tuis sujicere oculis."
[36] Ibid., pp. 388 ff.
[37] Christian Licoppe, *La formation de la pratique scientifique. Le discours de l'expérience en France et en Angleterre (1630-1820)* (Paris, 1996), 72.
[38] Milani in *Johannes Hevelius and His Gdańsk* (Gdańsk, 2013), ed. Marian Turek, 195–208.

particular his refusal to use telescopic pointers for measuring stellar positions.[39]

In the course of the polemics, Hevelius issued a report on the last comet in 1666, *Descriptio cometae anno... 1665 exorti*, alongside an apologetic essay on the comet of 1664, *Mantissa Prodromi cometici*. This double publication was dedicated to Leopoldo de' Medici, whom he addressed as one of his patrons and a protector of the sciences. In the dedicatory letter, Hevelius reminded him of their earlier correspondence and expressed his wishes to be included among the scholars of his entourage:

> Very Serene Prince,
> It has been a while since I noticed that people who are well-known for the glory of their erudition, especially the investigators of the most sublime and abstract doctrines, concurred from all over the world to celebrate and revere Your very serene height. Their tribute was not as much directed to the splendour of the birth as to the outstanding virtues, as well as the love and intelligence of the loftiest sciences, which are unusual for a prince and which You have at an incomparable degree, legitimately and according to Your merit. Although I do not belong to those people [gathering around You], I also directed all of my will and enquiries so far to enlighten and possibly augment the astronomical knowledge, therefore I dare to add myself to the other very excellent admirers of Yours by dedicating to Your very serene name myself and that part of my efforts – I mean, my observations of recent comets that I was able to observe with instruments not less apt than others.[40]

In the letter to the reader following the dedication to Leopoldo de' Medici, Hevelius recounted the ongoing controversy over his *Prodromus*. In a sense, he was trying to expand the debate beyond the English-French axis. At that time it was impossible for him to anticipate that Leopoldo's *Accademia del Cimento* would quickly dissolve and could not rival the rise of the London Society and the Paris *Académie*. Hevelius's exclusion from the internal *strong ties* of these new institutions would gradually isolate him from the most important European centres of scholarship from the mid-1660s, throughout the 1670s and onwards. He tried to save his position with the publication of the *Cometographia* in 1668, dedicating it to Louis XIV. In this work, he stubbornly repeated his cometary theory, stressing his distance from the opposing views of the French academicians.

In the course of the following years, Hevelius's private observatory came to be regarded as incapable to accomplish the research that was being conducted at richly funded institutions such as the Paris Observatory (established in 1671) and the Greenwich Observatory (1676). His appointment as a royal astronomer and mathematician to Jan III Sobieski in 1677 did not

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[39] Hooke's *Animadversiones on the First Part of the Machina Coelestis of... Johannes Hevelius* notably appeared in London in 1674 by the printer of the Royal Society, John Martyn. Cf. Voula Saridakis, 'The Hevelius-Hooke Controversy in Context: Transforming Astronomical Practice in the late Seventeenth Century', *Studia Copernicana* XLIV, 103–135. On the epistemological stake, see Ofer Gal and Raz Chen Morris, *Baroque Science* (Chicago. 2013), 101–113.

[40] Johannes Hevelius, *Descriptio cometae anno... 1665 exorti* (Gedani, 1666), ff. a2*r-v*: "Serenissime Princeps. Jam dudum animarverti, passim Viros eruditionis gloria celebres, imprimis sublimium, et abstrusarum doctrinarum Indagatores, ad cultum et venerationem Serenissimae Celsitudinis Tuae concurrere; non id duntaxat splendori Generis, quam praecipue summis Virtutibus, et sublimiorum Scientiarum amori, aeque ac Intelligentiae, in Principe pene inusitatis, planeque incomparabilibus jure meritoque tribuentes. Quamvis autem ego inter illos recenseri nequeam; cum tamen nec voluntas, nec studium meum illustrandae, et si fieri possit, amplificandae rei Astronomicae hactenus defuerit: audeo jam in eo saltem me adjungere caeteris Excellentissimis Cultoribus Tuis, ut me, atque conatuum meorum partem, observationes videlicet recentiorum Cometarum, quas Organis haud usque adeo inconvenientibus, non minus mihi, quam aliis, feliciter rimari obtigit, Serenissimo Nomini Tuo devoveam."

change his position, nor did it enable him to restore his reputation in the French and British circles. It was at that time that he shifted the centre of his network to the Baltic and German areas.

The more Hevelius felt marginalized from the French and English academic centres, the more he was compelled to strengthen and emphasize his connections. He had long conceived the project to capitalize these ties on a symbolic level by printing his scientific correspondence. However, in his astronomical works Hevelius seldom named his correspondents. In the *Prodromus* he mentioned a letter by Boulliau on the comet of 1664, in the vain hope that it could help reinforce his connections with the higher spheres in France.[41] Like the *Cometographia*, the *Prodromus* appeared as the product of his own ingenuity and efforts, without much acknowledgment of other contemporary scholars. Thus, although Hevelius strongly relied on his network of contacts and correspondents to promote his research, circulate his works, gather support and acquire patrons, he did not regard the scientific web of the Republic of Letters as fundamental to his scientific achievement. It regarded it instead as an unavoidable measure. In 1679, a fire broke out in his house and observatory, destroying most of his printing house and thus bringing the publication of the correspondence to a halt. Without enough funding or a suitable printer, Hevelius only managed to publish a selection of 197 letters (out of about 2,800 scientific epistles). This was entitled *Excerpta ex literis illustrium virorum*, and was edited by his secretary and relative Johann Erich Olhoff in 1683. It was a sort of "*bouquet de compliments*" comprising letters of gratitude and eulogies by princes, prominent political personalities, diplomats and scientists.[42] It appears more as a form of self-promotion than a scientific epistolary dealing with astronomical matters.[43]

The Inclusion of Placentinus in Lubieniecki's 'Philosophical Senate'

Hevelius's *Cometographia* and Lubieniecki's *Theatrum cometicum* were published in the same year. They discussed the same subject with strikingly different approaches to knowledge. Although

[41] Id., *Prodromus cometicus*, p. 42.
[42] Grell, 'Hevelius en son temps', p. 131.
[43] Hevelius omitted to mention Placentinus both in these *Excerpta* of his correspondence and in the *Cometographia* - a work that dealt with the comets of 1652, 1661, 1664 and 1665, and comprised theoretical sections on appearances such as color and light, discussed Hevelius's own hypotheses concerning comets' alleged spiral motions as exhalations departing from the outer planets and ended with a chronicle of all comets ever observed by "historians, philosophers and astronomers." Placentinus's absence can be ascertained by simply looking at the *Catalogus Autorum quorum mentio fit in hoc Opere"* in Hevelius, *Cometogrpahia* (Gedani: Auctoris Typis et Sumptibus, 1668), "Te mihi non tantum de fama per Orbem clarissima, sed et de facie ac scriptis tuis egregiis (quibus Astronomiam, illam maxime sublimem Philosophiae partem illustras) notum esse, vehementer gratulor. Tibi pariter ut notus fiam, studium literarum humaniorum, sed et commercium amicarum literarum, quod cum doctis hic illic exerceo, facit. Alliciunt et celebratissime virtutes Tuae, praesertim singulari humanitas, cum insigni et excellenti rei Astronomicae scientia, qua itidem delector, conjuncta. Nolim tamen meum literarum Tecum commercium, quod ambio, et Tua Humanitate mihi polliceor, Tibi aliis, iisque gravioribus, studiis et negotiis occupato, negotium et molestiam facessere. Nosti quae vincula viros literarum bonarum amantes conjugant. Patere itaque et Tu, Vir Clarissime! Tibi haec aptari, ut quantum per seria Tua negotia et sublimia studia licebit, mecum fido literarum vinculum jungaris, et sic etiam Clarissimo Ismaeili Bullialdo, Amico meo juxtaque Tuo singulari et integerrimo. Cum quo cum assiduum literarum colam commercium (quod et nuperae epistolae exscriptum exemplum huic adjunctum docet) si et Tu idem desideres vel, quod potius credo, possideas et exerceas, offero Tibi meam qualemcunque in literis mutuo curandis operam, fidam certe te industriam."

the success (or lack of success) of Hevelius's work largely relied on its approval by and circulation within the learned community of the Republic of Letters, he underestimated the epistemic value of this web as the discursive context providing the cometary discourse with its scientific legitimation. Rather than dialogical, his attitude was self-referential, which damaged his reputation. He presented his work on comets (which was almost a thousand pages long) as the autonomous product of his ingenuity and of his own entrepreneur-like research. He was the *owner* of both his observatory and his printing press. The *Cometographia* boldly appeared as his own product, both technically and financially: "*Auctoris Typis et Sumptibus*." Unlike English and French academicians, Hevelius's work in Gdańsk underwent no peer discussion whatsoever, since his collaborators—if that is what they could even be considered—were his employees. In many respects, Hevelius's scientific production is intentionally reminiscent of Tycho Brahe's model. The latter's castle-observatory in Uraniborg had been ruled as a fief or personal belonging, which produced consequences also on the extension of intellectual property over the ideas of those who visited it.

Lubieniecki's *Theatrum cometicum* is based on a very different perception of the intrinsic scientific relevance of the Republic of Letters. This collection of letters on the comets of 1664 and 1665 is conceived as a mirror that should reflect the interconnectivity of a Europe-wide web. In Lubieniecki's eyes, this network was an epistemic space permitting the exchange, discussion and comprehension of natural phenomena. He did not avoid repetitions, faithfully printing all reports and diagrams by different authors, even if the information appeared redundant. If several scholars offered similar accounts of the celestial phenomena, this was assumed as evidence for the correctness and accuracy of their work. Moreover, differences should inspire inquiry.

Whereas Hevelius's *Cometographia* is a sort of long monologue, Lubieniecki's *Theatrum* reads as a polyphonic encounter of voices that are sometimes dissonant, but mostly consonant or harmonic. Lubieniecki makes his addressees aware that they are the elected members of a Philosophical Senate (*senatus philosophicus*). The themes dealt with in the correspondence are as diverse as his interests. The front page of the work is indicative of such interdisciplinarity: *Opus mathematicum, physicum, historicum, politicum, theologicum, ethicum, oeconomicum, chronologicum*. Compared to this eclecticism, the intention underlying Hevelius's correspondence is the opposite. When describing the editorial project to Pfautz on 20 December 1681, he stressed the purely scientific character of his epistles, leaving out all political, private and mundane issues:

> These [letters] contain almost nothing private or related to politics and even less on new events occurring in the world. They only deal with issues related to astronomy, geometry, optics, chronology, mechanics or physics.[44]

Moreover, while Hevelius maintained Latin as the language of the learned, Lubieniecki's work was multilingual. It includes excerpts and quotations in French, Italian and German

[44] Hevelius to Pfautz (Gdańsk, 20 December 1681), in Bibilothèque nationale de France, coll. Lat 10349/15, p. 59, quoted from Harald Siebert, 'De Dantzig à Paris', in *Correspondance de Johannes Hevelius*, ed. by Grell, vol. 1, Chap. 1, p. 150, n. 6: "In quibus [literis] nihil fere de rebus privatis, vel politicis, multo minus noviter in orbe gestis occurrit, sed solummodo, quae ad astronomiam, geometriam, opticam, chronologiam, mechanicam, vel physicam spectant."

accompanied by Latin translations. Pluralism does not only refer to a multiplicity of views, but also of idioms; knowledge circulation is *inter*cultural as well as *intra*cultural, as the distances to be bridged are not only geographical but they are also the distances separating the learned from the amateur.

The *Theatrum* resulted from Lubieniecki's efforts to collect information from as many scholars as possible. He was able to benefit from his status as a Polish aristocratic émigré and diplomat to intertwine relations and mediate among scholars belonging to different epistemic cultures and confessions, by presenting himself as an interested and clever interlocutor *super partes*. In the name of a humanistic *libertas philosophandi*, he invited his addressees to openly express their opinions and submit them to their peers. Northern centres of knowledge were most frequently represented in his correspondence, in particular Baltic towns such as Gdańsk, Königsberg, Lübeck, Rostock, Stockholm and Hamburg. Among others, he corresponded with Otto von Guericke in Magdeburg, Rudbeck in Uppsala, Wright, Oldenbourg and others in London, Boulliau and Azout in Paris and the Jesuits Riccioli and Kircher in Italy.[45] Placentinus was also acknowledged as a member of this Philosophical Senate. The section entirely dedicated to him is entitled *Communicatio Francofurto ad Viadrum-Placentinuana*.[46]

Lubieniecki wrote his first letter to Placentinus on the same day he contacted Hevelius, on 9/19 December 1664. He addressed him as "*Vir Clarissime, Doctissime et Humanissime*" and reminded him of their mutual friendship (*amicitia nostra*). Alongside the letter, he forwarded to him reports by others on the comet and asked for Placentinus's advice.

Placentinus did not react immediately; he thought it better to publish first. His *Astronomica et astrologica observatio cometae terribilis... Das ist: Astronomische und Astrologische Observation* appeared in Frankfurt on Oder at the beginning of 1665 as a bilingual booklet in German and Latin. Whereas the introductory and more general parts were written in both languages, the technical sections were exclusively expounded in the language of the learned. On 22 March 1665, Placentinus sent the small tract to Lubieniecki and explained to him the political-providential implications of the heavenly message. He saw the cometary apparition as an admonishment directed at princes and the clergy, urging them to protect and foster the freedom of conscience (*libertas conscientiae*) of their subjects. Particularly, rulers should renounce following the "satanic" reason of state (*Status rationis*) and lift bans that sent religious minorities into exile.[47] He was obviously hinting at the condition of religious fugitives such as Lubieniecki himself and the Polish Socinians, or that of his own family, who belonged to the Bohemian diaspora.[48]

Lubieniecki highly appreciated these political remarks. As an aristocrat émigré himself, he was particularly concerned with politics and often acted on behalf of a sort of patriotic pride,

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[45] For a recent contribution to the study of Lubieniecki's work and network, cf. Maciej Jasinski, *Astronomiczne podglądy Stanisława Lubienieckiego (1623-1675)*, PhD Thesis, Warsaw: Instytut Hisotrii Nauki im. Ludwika I Aleksandra Birkemajerów, 2017, especially section 2, 'Lubieniecki i *res publica litteraria*'. I am very thankful to Dr. Jasinski for sending me a copy of his thesis.

[46] Stanisław Lubieniecki (Stanislaus de Lubienietz), *Theatrum Cometicum* (Amstelodami: typis Danielis Baccamude, 1668), chap. 14, pp. 549–574.

[47] Ibid., pp. 549–550.

[48] Ole Peter Grell has reconstructed the formation of an international identity among Calvinist refugees, who had shared experiences of persecution and exile from the late sixteenth century up until the end of the Thirty Years War. This was reinforced by economic and familiar bonds. Ole Peter Grell, *Brethen in Christ: A Calvinist Network in Reformation Europe* (Cambridge, 2011). Placentinus and Lubieniecki evidently had a shared experience of religious diaspora in a later confessional and geopolitical setting.

which was rather complementary to his philosophical cosmopolitanism. "Our fatherland can be proud of you" (*habet de quo sibi patria nostra gratuletur, quod Te videat...*); he began his second letter to Placentinus with this emphatic *incipit* (Hamburg, 7/17 April 1665).[49] It was a long and rhetorical text, embellished with classical references and quotations. Lubieniecki fully agreed with Placentinus concerning the respect that was due to "*aurea conscientiarum libertate*" (the golden freedom of conscience). Freedom of conscience should always be protected from violence, and dialogue and teaching should similarly be preferred to coercion or, even worse, murder. His proto-enlightenment position is epitomized in his affirmation of the innate right to freedom of thought: "And this is the law of nature, according to which everybody is born endowed with a free conscience."[50] He quoted many classical and modern authors supporting this claim. Among the ancients that gave valuable moral advice to politicians, Marcus Aurelius is an example; among the moderns, there are Erasmus of Rotterdam and Justus Lipsius. As for the state, Lubieniecki called it a modern form of idolatry, though he cautioned Placentinus not to reject politics altogether. Instead, he argued that one should favour an enlightened form of government, although he did not describe what exactly this means in detail.[51]

Before receiving this letter, Placentinus had already written another one to Lubieniecki (Frankfurt on Oder, 19 April 1665). It entailed three *positiones* (i.e. propositions, or theses) concerning the recent comets, which Placentinus intended to communicate to none other than the kings of France, Denmark and Sweden. The first and second theses simply state that the celestial phenomena seen at the end of 1664 and in 1665 are not the same comet but two distinct ones. The third thesis is astrological: "Not only do comets exert their influence onto these inferior beings, but also affect human minds through the human body and they constitute a sort of premonition signs in the heavens."[52] In this context, Placentinus expands on the Cartesian theory that comets are generated from fixed stars and are transported through cosmic space by ethereal vortices.

After receiving Lubieniecki's "political" letter, Placentinus wrote to him again on 18/28 April 1665, signing the letter as P.T.R., that is, as *pro tempore* Rector of the University of Frankfurt. Lubieniecki promptly reacted (Hamburg, 5/15 May 1665), thanking him for both communications and congratulating him on his prestigious academic appointment. It took many more months for Lubieniecki to write a detailed comment in response to Placentinus's cometary views. In this communication (Hamburg, 10 November 1665), he announced his plan to publish the *Theatrum cometicum*. Then, he distanced himself from Placentinus's astrological theses on several accounts, especially concerning the difficult reconcilability between celestial influences and human freedom with the Scriptures. Moreover, he had some reservations concerning the effort of combining of the Cartesian doctrine with astrology, in particular Placentinus's treatment of comets as planets and their inclusion in horoscopes. Finally, since Placentinus hinted at a new form of chiromancy of his invention, Lubieniecki feared that he was going too far and venturing into occult and impious realms:

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[49] Lubieniecki, *Theatrum Cometicum*, p. 550.

[50] Ibid., p. 551: "Et haec est naturae lex, ut quisque libera conscientia praeditus nascatur."

[51] Ibid., pp. 553–554: "Alioquin et bona ac legitima Status ratio, quae in bona Reipublicae forma bonum publicum est, datur, et antiquis quoque temporibus inter recti pravique vices tractabatur."

[52] Ibid., p. 558: "Cometas non modo in haec inferiora influere, sed etiam mediante corpore humano, mentes humanas afficere, ac in caelo tanquam signa portendentia existere."

> As far as the third thesis [*positio*] on the meaning and action of comets, this issue, as you know, is controversial. [...] It is impossible not to find many detractors. I do not dare to recklessly dispel problems that reach beyond my understanding and are far from my studies. Nonetheless I will freely communicate my opinion to you, to which, I hope, you will listen with equanimity bearing in mind the [principle of] philosophical freedom. [...] You are certainly aware of the opinion on chiromancy, similar constructions and other astrological doctrines by learned and wise men. If you can achieve more than they did, you are divine. […] If I do not err, not even astrologers usually mention comets in their birth horoscopes, but only the planets and the other stars. By contrast you affirm that cometary bodies are akin to planets. I leave this undecided. In fact, I know that others bring the origin of comets back to planets and call them false planets. The very illustrious Hevelius shares this opinion.[53]

Placentinus's reply is dated 27 March 1666, after he had already suffered under the medical violence of his adversaries and had been imprisoned as a fool. "I write to you as ex-Rector, not as Rector anymore" (*tanquam Ex-Rectori, nec qua Rectori*), he cautioned his correspondent.[54] For the same reason, he signed with his original name: Joannes Kolaczek, alias Placentinus. He apologized to Lubieniecki for his delayed reply, due to the abuses he had been a victim of: "[...] the chains, offence, the violence without reason of wicked people (alas!) which I suffered in the last winter time."[55] His condition notwithstanding, he wished to respond to Lubieniecki's objections. As far as his chiromancy was concerned, he appealed to the authority of his protectors, especially Friedrich Wilhelm of Brandenburg and Elisabeth of Palatinate, praised as "miracle of this century, who deserves the name of Queen and Empress in the Christian and literary world."[56] Secondly, Placentinus claimed that his astrology was not a probable or conjectural doctrine. He called it a demonstrative science [*scientia demonstrativa*]. Thirdly, the divergences between himself and Hevelius concerning the origin of comets were traced back to Placentinus's adherence to Cartesianism. Eventually, he offered to send Lubieniecki a fourth proposition on these matters.

On 30 April 1666 Lubieniecki offered Placentinus his sympathy for his condition (*de hac dolui ex animo*). He avoided discussing astrology with him and declared that he shared his correspondent's feelings of admiration towards the Electoral Prince and Elisabeth of Palatinate. As far as Descartes was concerned, he had met him in person and admired his wit but declared himself incapable of judging his cometary theory: "It is not my task to refute or defend the philosopher Descartes, who is highly reputed in our century and was once a friend of mine, nor to judge the theories of the very illustrious Hevelius. I leave this task to the experts in the field

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[53] Ibid., p. 563: "Quod ad tertiam positionem de cometarum significatione et operatione attinet: hac res, ut nosti, non aeque certa est. [...] Fieri non potest, quin multos contradicentes invenias. Ego, ut non ausim temere quidpiam de iis, quae capitum meum excedunt, et a studiis meis aliena sunt, decernere, dicam nihilominus libere apud Te sententiam meam, quam Tu libertatis Philosophicae memor, aequus audies. [...] Quid de chiromantia, et thematum erectionem aliique Astrologicis placitis sentiant Viri docti et cordati, probe noris. Tu si plus caeteris hic praestas, divinus es. [...] Nisi tamen fallor, nec astrologi in struendis genethliacis ullam cometae mentionem facere solent, sed planetarum et aliarum stellarum tantum. At vero tu corpora cometica planetis cognata dicis. Hoc ego in medio relinquo. Scio et alios cometarum originem ad planetas referre, eosque falsos planetas vocare. In qua sententia et amplissimus Hevelius est."

[54] Ibid., p. 565.

[55] Ibid., p. 567: "ob vincula, injuriam, violentiam a malitiosis proh dolor! sine causa, praeterito tempore hiemali, mihi illatam."

[56] Ibid., p. 566: "seculi miraculum, quae in orbe Christiano, et literato, nomen Reginae et Imperatricis meretur."

[…]."[57]

The severity of Placentinus's condition is clear from the first lines of his next and last letter to Lubieniecki (Frankfort on Oder, 30 April 1666): "My present state is gloomy, alas!"[58] Nevertheless, he had been able to formulate a fourth thesis (*4. positio*) arguing for a consensus between astrology and the Sacred Scriptures.[59] In the last letter of the correspondence with Placentinus printed in the *Theatrum cometicum*, Lubieniecki thanked him for this additional thesis and agreed that some astrology could be reconciled with faith, but refrained from a full exposition of his views on that matter because, as he stated, this would have made Placentinus upset:

> I am duly thankful to you for the fourth thesis you sent me. I am not the one who should judge it, as I am not the censor of this century and I am aware of my own weaknesses. Even though I could say something on the subject, I do not want to embitter you anymore. I respect your reasons, the more so since the greatest pain has recently been brought to you by the Author of all our lives, who can give us everything and take it away from us at his will […]. I am very sorry for this crude case and I share your pain: I pray God who made you suffer to reward you.[60]

While Placentinus was par-force excluded from the academic world, with the publication of the *Theatrum cometicum* in 1668 Lubieniecki virtually reintegrated him or at least reminded the literary republic of this heterodox and unfortunate professor of mathematics. The publication of Placentinus's epistles among those of the most distinguished literati of the time, together with declarations of grief for his fate, was a gesture worth of such a gentlemen as Lubieniecki, for whom humanity, tolerance and freedom of conscience were signature traits. The presence in absence of the silenced Cartesian symbolically stressed the endurance of the bonds of friendship and solidarity that were supposed to hold together the citizens of the Republic of Letters. Hence, Lubieniecki's orchestration of a self-representation of this elected community was not limited to abstractly illustrating its interchanges, but also served as a means to establish its values. The social status of a disinterested aristocrat in exile was symbolic capital giving credit to the scientific and ethical play staged in his *Cometary Theater*.

Concluding Remarks

Early modern scientific transactions exemplify the production, consolidation and advancement of knowledge through its circulation. In the astronomical debates of the 1660s transfer was not

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[57] Ibid., p. 568: "Cartesium Philosophum nostro seculo celeberrimum, et meum olim amicum, nec refutare nec tueri, ut nec de Amplissimi Hevelii sententia decernere, meum est. Relinquo haec artis peritis [...]."

[58] Ibid., p. 569: "Modernum meum statum lugubrem proh dolor!"

[59] Ibid.: "4. Positio breviter probans, quod *S. Scriptura nec Astrologiam veram et genuinam, nec Astrologos minime superstitiosos reporbet, sed eosdem et illam approbet atque concedat*."

[60] Ibid., p. 573: "Quod ad positionem tuam quartam attinet, quam mihi misisti, gratiam tibi de ea ago debitas. Non est meum de ea judicare. Non enim censor huius anni sum; imo vero propriae tenuitatis prope mihi conscius. Etsi vero possem aliquid de his dicere: merito tamen molestus tibi amplius esse nolo. Debitam enim Tui rationem habeo, eoque magis, quod te recens maximo dolore affecerit omnium nostrum vitae Auctor, qui pro lubitu dat cuncta aufertque nobis, dilectissima vitae et thori socia vi mortis extincta. Huius acerbum casum doleo, et in partem moeroris tui venio: Deumque qui te contristabit, ut te soletur, precor."

an extrinsic factor but rather an indispensible component of science as a discursive practice. Arguably, "science in transit" or "episteme in motion" is not only a cultural phenomenon bridging geographical and linguistic distances;[61] it also concerns the circulation of knowledge among social groups.[62] The early modern debates on comets were famously inter-class and interdisciplinary.[63] Their language was the Latin of the learned as well as the French of the emerging élites and the German of a wide aristocratic and bourgeois readership in the territories of the Holy Roman Empire and beyond, in the Baltic area and in Polish territories. Decentralized and distributed networks of correspondents and of interlinked institutions played an essential role in the processes of science, as they constituted the basis for its mobile stabilization. At once, they guaranteed the endurance of the scientific community, the preservation of its knowledge and its advancement.[64] The *réseaux* of weak ties of the seventeenth-century Republic of Letters promoted communication, secured the transfer and preservation of data and theories through redundant exchange of information and allowed for knowledge to be tested and to progress. The rise of scientific academies in the mid-1660s created a restructuring of the web and the redistribution of credit and of means. In the case of the *Académie des sciences*, it established *strong* local *ties* marking the inner and outer boundaries that could hinder or weaken the wider circulation of information and an extensive assignment of credits.[65] Hevelius, for one, happened to be marginalized during this process of institutionalization of a few powerful hubs.

In the debates on the comets of 1664 and 1665, the importance of scholarly networks for the production and advancement of scientific discourse is particularly evident.[66] Access to learned correspondence, a wide range of contacts and participation in the exchanges of the Republic of Letters were all presuppositions for a scholars' activity and recognition. Various actors related differently to this social capital and the corresponding symbolic capital. The Brandenburg mathematician Placentinus tried to make the most of his correspondence with scholars such as Hevelius, who were located in the high spheres of the scientific network. Although his social capital rested more on strong ties with local patrons in Brandenburg-Prussia than on connections at an international scale, his publication of an epistle by Hevelius in his *Physicalischer*

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[61] See James A. Secord, 'Knowledge in Transit', *Isis* 95/4 (2004), 654–672 and Eva Cancik-Kirschbaum and Anita Traninger, 'Institution – Iteration – Transfer: Zur Einführung', in *Wissen in Bewegung: Institution – Iteration – Transfer*, ed. by Cancik-Kirschbaum and Traninger (Wiesbaden, 2015), 1–14.

[62] Augustí Nieto-Galan, 'Antonio Gramsci Revisited: Historians of Science, Intellectuals, and the Struggle for Hegemony', *History of Science* 49 (2011), 453–478.

[63] See, among other studies, Tabitta van Nouhuys, *The Age of Two-Faced Janus: The Comets of 1557 and 1618 and the Decline of the Aristotelian World View in the Netherlands* (Leiden, 1998) and Meinel, Christoph (ed.), *Grenzgänger zwischen Himmel und Erde: Kometen in der Frühen Neuzeit* (Regensburg, 2009). Anna Jerratsch, whom I wish to thank for discussing these matters with me, is presently completing her PhD dissertation on the early modern cometary discourse at the Max Planck Institute for the History of Science and the Humboldt Universität Berlin.

[64] As has been noticed, a decentered and distributed web is more stable than a centralized one, whereby the dynamic system is entirely dependent on one or a few hubs, and thus its possible collapse might irreparably damage the entire structure and the knowledge it supports. See Dirk Wintergrün, Jürgen Renn, Roberto Lalli, Manfred Laubichler and Matteo Valleriani, 'Netzwerke als Wissensspeicher', *Preprints of the Max Planck Institute for the History of Science* 475 (2015), especially pp. 7–9.

[65] This is the thesis by , David S. and Harold J. Cook, "Closed Circles or Open Networks? Communicating at a Distance during the Scientific Revolution," History of Science 36 (1998): pp. 179-211.

[66] "La correspondence—Chantal Grell remarks ('Hevelius en son temps', p. 75) —est [...] une nécessité pour un astronome qui doit échanger et comparer quotidiennement des observations et des informations et suivre l'actualité des phénomènes célestes. Elle est aussi une arme [...] dans cette course à la propriété intellectuelle."

und Astrologischer Bericht von denen erschrecklichen...Winden (1661) certainly served to credit his work and theories, but also provoked a negative reaction on the part of his correspondent. In fact, the inclusion of his letter in an unconventional tract interpreting comets and wind tempests through Cartesian and astrological lenses threatened to tarnish Hevelius's status as a learned and Latinized scholar, whose ambition was to enter the graces of kings and safeguard his international reputation. Therefore, Hevelius was quick to distance himself from Placentinus and began to weaken his relationship with him. In his eyes, the symbolic capital of correspondence ought to be exploited to promote his own work, to advertise himself and to obtain royal patronage. Nevertheless, he did not acknowledge the *epistemological* importance of the network and the wide connectivity of the Republic of Letters. Of the three scholars considered here, it was Lubieniecki who most clearly recognized the collective dimension of knowledge production fostered through open confrontation and exchange. Lubieniecki's *Cometary Theatre* was at once the product and the *mise en scène* of an "epistemic web."[67] He succeeded in gathering a "philosophical senate," as he called it, *freely* discussing the celestial phenomena of 1664 and 1665. His attitude was shaped by ideals of openness and inclusiveness that especially valued the multiplicity of theories and opinions. In this *democratic* republic a heterodox thinker such as Placentinus had the same right of citizenship as Hevelius, von Guericke, Boulliau, Riccioli and other reputed intellectuals. From the viewpoint of symbolic capital, in the philosophical senate he presided, he was in the favourable position to distribute and impose recognition. However, in the light of the polemics pitting Hevelius against Paris and London scholars, it is evident that Lubieniecki's humanistic vision was an abstract idealization. In the course of the 1660s and the 1670s, it became clear that it was not individuals but emerging institutions such as the Royal Society and the *Acadéemie des Sciences*—and their organs of communication—to be the major repositories and distributors of symbolic capital, and the most important source of scientific credit.

Acknowledgments

This article is part of a project that has received funding from the European Union's Horizon 2020 Research and Innovation Programme (GA n. 725883 EarlyModernCosmology).

[67] On the concept of epistemic web mirroring the structures of social networks circulating and producing knowledge at an epistemological level, see Malcolm D. Hyman and Jürgen Renn, 'Toward an Epistemic Web', in *The Globalization of Knowledge in History*, ed. by Jürgen Renn (Berlin, 2012), 711–726.